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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.

COMMENTS OF NRG ENERGY, INC.

By an order issued on January 21, 2016, the Commission expanded the Large-Scale Renewables ("LSR") proceeding in Case 15-E-0302 to include a more expansive set of objectives, namely, to establish a Clean Energy Standard ("CES") to meet Governor Cuomo's ambitious goal of meeting 50% of New York State's electricity needs with renewable energy by 2030 (the "50 by 30 goal"). NRG Energy, Inc. ("NRG") provides the following comments and recommendations to assist the Commission in crafting an effective CES to achieve the desired renewable resources in the most cost-efficient manner for New York State consumers and businesses, while respecting the proper functioning of the NYISO wholesale markets.

I. Introduction

NRG supports the State's move to substantially increase its reliance on renewable energy. NRG is committed to lowering the carbon intensity of electricity production, as well as increasing the deployment of renewable and other clean generation technologies in distributed settings.[1] NRG also supports enabling greater customer empowerment and a more efficient and

[1] In comments earlier in this LSR proceeding, NRG indicated its strong support for expanding the contracting mechanism for renewable energy projects to better address the state's renewable energy goals. NRG Response to

resilient grid, as being entirely consistent with New York State's Reforming the Energy Vision ("REV") initiative.

The Staff White Paper, issued concurrently with the expansion of the docket,[2] appropriately recommends that long-term contracts, with the utilities as off-takers, will result in the lowest-cost development of the renewable projects necessary for New York to reach its ambitious goals. NRG makes the following primary recommendations and suggestions:

1. Utilize bundled Power Purchase Agreements ("PPAs"), i.e., those that include both energy and RECs, as the primary means of securing investment in LSR to meet the State's ambitious 50 by 30 goal.
2. Establish a schedule of interim annual targets in the 50 by 30 goal to establish a level of certainty for the renewable energy development industry.
    a. In forming that schedule, NRG recommends that the Commission back-load compliance in order to take advantage of technology advances and cost reductions that the industry expects to see over the next decade, balanced with the availability of more favorable federal tax incentives over the next several years. In such a declining-cost environment, it makes sense to target a significant quantity of new renewable energy projects for the later years.
3. Ensure that renewable projects procured under long-term contracts with utilities do not undermine the economics of the NYISO capacity and energy markets for merchant generators and investors, or the New York competitive retail market.

Notice Soliciting Comments, August 12, 2015, Case 15-E-0302, http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={1C9C8BFE-A479-4E24-94CF-F0DFBB59E2DD}

[2] Staff White Paper on Clean Energy Standard, Case 15-E-0302, January 25, 2016, http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={930CE8E2-F2D8-404C-9E36-71A72123A89D}

4. Direct that the utilities pass through the net costs of the RECs generated by the renewable projects under long-term contracts (total contract costs net of NYISO market revenues) to all compliance entities - distribution companies and ESCOs - on a competitively-neutral basis as a cost-based per-kWh charge to be applied to each kWh billed to a New York energy consumer.
5. Reject Staff's proposal to create a Zero Emissions Credit ("ZEC") to support certain nuclear resources. Efforts to ensure the viability of nuclear resources should focus on reforms to the NYISO markets rather than side payments. To the extent the Commission proceeds with ZECs, avoid attempting to create a "market" for them. There is simply not a large enough group of suppliers to allow market mechanisms to discipline prices. Instead, ZEC costs should be determined administratively (as proposed by Staff) and passed through in a competitively-neutral manner to all compliance entities as a uniform per-kWh charge to be applied to each kWh billed to a New York energy consumer.
6. With respect to facilitating compliance with the annual CES obligations by ESCOs, implement an electronic registry, tracking and compliance mechanism that minimizes the administrative burden on ESCOs and all parties, modeled perhaps on Pennsylvania's Alternative Energy Portfolio Standard ("AEPS") program.[3]

II. Background on NRG

NRG is the largest independent power producer in the U.S. with over 50,000MW of diverse resources – powered by solar, wind, nuclear, gas, coal, oil and cogeneration – and is one of the nation's largest competitive retail energy suppliers, with roughly 3 million retail customers. NRG is an active participant in the New York markets, with conventional generation, retail energy services, distributed and grid-scale solar in operation, as well as microgrid,

[3] More information about PA AEPS is available at http://www.pennaeps.com/.

distributed energy management platform and energy storage projects in development. NRG is leading a customer-driven change in the U.S. energy industry by delivering cleaner and smarter energy choices, while building on the strength of the nation's largest and most diverse competitive power portfolio. A Fortune 200 company, we create value through reliable and efficient conventional generation while driving innovation in solar and wind power, electric vehicle ecosystems, carbon capture technology and customer-centric energy solutions.

III. Whitepaper Background

The Staff Whitepaper recommends placing the compliance obligation for the CES on load-serving entities, including competitive ESCOs, utilities in their default service role, and New York Power Authority ("NYPA") and Long Island Power Authority ("LIPA") with respect to their end-use customers. Under the current competitive retail market paradigm, competitive ESCOs do not have contractual certainty with their customers for the length of time needed to enter into long-term contracts with renewable energy developers. To account for this, Staff recommends that the 'growth' tier of the CES be supported by long-term contract procurements by the utilities, which would then make the RECs available to the ESCOs and other compliance entities. The Whitepaper also concludes that it is neither "necessary nor advantageous" for utilities to own large-scale renewables, in part because utility participation "may chill the market and the effect will be less rather than more competitive efficiency." In Staff's view, utility ownership should be limited to "exceptional circumstances."

The Whitepaper also recommends three 'tiers' of the CES, differentiated by vintage and competitive opportunity, but all meeting the technology eligibility requirements of the existing Main Tier. *See* Whitepaper at Appendix C. The Whitepaper also recommends a separate tier, outside of the CES, to support financially-challenged upstate nuclear generators.

The Whitepaper recommends GWh and percentage targets for each tier for the years 2017-2020. After 2020, the Whitepaper proposes that the Commission will set annual targets every three years. In addition, the Whitepaper recognizes the importance of long-term certainty, and suggests that the goals for 2031 and beyond should be explicitly stated to be at least at the 2030 level.

IV. Renewable Project Procurement

A. Long-Term PPAs with Credit-Worthy Counterparties

To meet the growth targets of Tier 1, the Whitepaper recommends utilizing a combination of bundled PPAs, REC-only contracts, and 'self-initiated' new projects. NRG recommends that the Commission focus on the bundled PPA option for LSR. A bundled PPA provides project developers certainty about the value of their REC *and* energy production, which in turn allows project developers to: (i) achieve low cost financing of projects and (ii) decrease equity contributions, which allows for more renewables development per dollar of at-risk capital. A bundled PPA option also provides the highest probability that contracted projects will actually be built. Indeed, NRG has financed and built well over 3,000 MW of both renewable and conventional generation under bundled long-term contracts over the past 8 years. In all cases, the key to financing the projects was a credit-worthy off-taker and a long-term bundled contract that, for most renewables projects, included energy, capacity and REC attributes in a single rate.

To the extent the Commission deems it necessary to include other procurement methodologies, NRG recommends creating a small allocation for REC-only procurements, as well as a small set-aside to provide an opportunity and incentive for self-initiated projects. Should 'self-initiated' projects become more prominent, the Commission can adjust its procurement targets.

B. Schedule of CES Targets and Procurements

The schedule of requirements/procurements should be deliberate, predictable and relatively back-loaded, maintaining a meaningful share of procurements in the later years. Technology costs have been declining rapidly and are expected to continue to decline, even as the technology becomes more sophisticated and efficient. For example, installed costs of large-scale solar facilities have been declining at a rate of about 10% per year since 2008; installed costs for wind have also declined. In a declining-cost environment, it would benefit consumers to procure a substantial portion of the renewable mandate in later years. Back-loading the RPS procurement schedule also provides time for cost and performance improvements in grid-supporting technologies, such as energy storage or energy management systems, which are very beneficial for integrating high penetrations of renewable energy into both the bulk-scale and local power systems. Further, ensuring a steady phase-in of new contractual opportunities will allow the Commission to adjust the procurement mix as market conditions change and will increase the probability that self-initiated projects have an opportunity to become the dominant source of renewables at some point in the future. Finally, there is no question that it will take some time for the industry to respond to the new CES structure and develop a pipeline of projects that can compete in these solicitations and achieve commercial operation at the scale required. Providing ample time for development of these new resources will only increase the quality and completion rate of projects, and avoid a "race to the bank" scenario where lower-quality projects are brought to market quickly in order to satisfy arbitrary deadlines.

C. Utilities Should be Prohibited from Owning Large-Scale Renewable Generation

NRG supports Staff's position that utility-owned renewable generation should not be allowed, as a rule, and only in 'exceptional circumstances.' NRG's experience in the California market (which largely prohibits utility ownership of generation) shows that high-quality contract

opportunities have historically attracted a large number of renewables development opportunities. Competition has indeed been very robust, which drives down prices for consumers and has successfully jump-started a solar industry in California.

Importantly, the CES structure and how new project procurements are administered will influence how well the market is able to respond. NRG respectfully suggests that prior to declaring a "market failure," the Commission should evaluate the mechanics of its procurement program and implement changes *prior* to allowing utility-ownership of large-scale renewables. In such a case, the Commission should fully investigate the relevant solicitations and determine to what extent the design or administration of the solicitation(s), or the overall CES design, contributed to the failure of competitive suppliers to respond.

D. Tier Definition

The existing technology definitions included in Appendix C of the Whitepaper are reasonable and should not be changed without full process. In particular, large-scale hydro should not be contemplated for eligibility to meet the CES. The CES should be focused on supporting the expansion of technologies that meet the current eligibility criteria, which are appropriately limited to low-impact run-of-river hydro and incremental expansions of existing hydro facilities that do not require any new impoundments.

E. Solar REC Carve-Out

The Commission should implement a separate "solar carve-out" provision to insure that New York's CES procures both wind *and* solar resources over the next decade. As the Commission is aware, different renewable energy technologies possess different, but often complementary, cost and operational attributes, and New York consumers will be best served if the 50 by 30 program procures a wide range of different renewable technologies.

NRG's experience has been that the combination of a REC and energy payment for solar facilities generally serves to provide an effective driver for investment in solar. To secure a balanced portfolio of renewable resources, NRG recommends that the Commission consider a RPS carve-out for solar resources. A carve out for solar facilities is justified, since solar has a number of unique benefits, including localized deployment, a production profile that typically follows peak load, silent operations, no moving parts, and zero emissions. Such benefits, in particular solar generation's daytime, load-following profile, serve as a strong complement to wind power and other renewables.

However, as the Commission is aware, solar resources encompass a relatively young and still-developing technology group, which offer unique benefits to the bulk-scale and local power systems often difficult to capture in simple bundled energy + REC bids. As such, solar resources typically offer power system benefits on a more expensive $/W or $/kWh basis than other renewable resources, like wind power, which typically has the lowest levelized cost of electricity among bulk-scale renewable resources. Thus, it is foreseeable that unless the Commission establishes a separate solar carve out, wind will serve as the primary resource for meeting the 50 by 30 goal, resulting in the state's renewables deployment to skew towards a single resource type.

The Commission's cost study on the CES reinforces the need for the CES to pursue a balanced portfolio of renewable resources, particularly in the early years of the program. In the cost study, modeling of Tier 1 resources finds that solar deployment will be relatively stagnant until the mid- to late-2020s, and even then solar market growth is anticipated to occur primarily in utility-scale solar deployment.[4]

[4] See p280 in the New York, "Clean Energy Standard White Paper – Cost Study." The chart shows limited Tier 1 solar growth through the mid- to late-2020s.

Notably, most states surrounding New York have utilized a special Solar REC, or SREC, to drive solar investment. In addition, co-incentives, if in fixed payment form, do not reward units for production efficiency the way SRECs can, i.e., SRECs promote the most efficient, low-cost generation first.

F. Behind the Meter Distributed Renewable Energy Resources

Behind the meter distributed renewable resources should be fully eligible, not only to be counted in the State's inventory, but to access the value of RECs through NYGATS, including SRECs, to the extent there is an additional solar carve-out. Depending on vintage, those resources could qualify for Tier 1 or Tier 2. Unless some other incentive being provided to the BTM renewable resource explicitly and fully compensates the owner for its 'renewable energy' attributes, the owner or project developer should be able to access the revenues available in the REC market.

G. All RECs should be Denominated at the Wholesale Level

Staff includes a specific note in the Whitepaper (p. 11, fn 8) regarding grossing up the compliance requirement to the wholesale level, since most RECs will be generated by large-scale renewable projects connected to the wholesale system. Likewise, BTM resources should have their eligibility in NYGATS grossed up to reflect losses, to put them on a comparable basis with renewable generation measured 'at the generator bus.'

H. Energy Storage

Staff invites comment in the Whitepaper (p. 13) regarding whether energy used to charge electric vehicles, or to power heat pumps, should be subject to the CES compliance obligation, based on the contribution of these technologies to the advancement of the modernization and decarbonization of the grid. NRG agrees with Staff's suggestion, and further recommends that all energy storage be treated similarly. Storage will be a critical component in meeting the

State's long-term renewables goals. As the state approaches a 50% share of the energy mix coming from largely intermittent renewables, the ability to store energy when it's available from the sun and wind and use it later when customers need it will be critical to managing both cost and reliability. While protections against double counting and "green washing" will need to be addressed in the future, it makes sense that storage should be developed alongside the renewables that will make up the State's 50% renewables target. A policy decision to exempt charging energy from CES compliance provides an early, incremental boost to storage technologies. Further policy support will likely be needed for storage, but that will fall outside the scope of the CES.

I. Wholesale Market Impacts

The Commission should carefully consider how units with long-term PPAs interact with the FERC-jurisdictional wholesale markets. In order to reach the 50 by 30 goal, NRG estimates that New York will need between 15,000 – 25,000 megawatts (nameplate) of new capacity. Simply adding that amount of capacity into the NYISO ICAP market, as if it had no cost, would significantly distort the capacity market price signal for both existing and new generators that rely on the ICAP market to remain in business or to make new investment decisions.[5] Thus, if policy does not directly address the appropriate treatment of contracted resources in the NYISO markets, the Commission risks creating significant dislocation in the existing generation market, which would potentially lead to expensive reliability-must-run contracts, which ultimately undermines reliability and increases ratepayer costs.

[5] Price suppression from an average of 250MW per year added to the ICAP market would be devastating to plants and investors that rely on the competitive markets for all of their revenues. With the current slope of the ROS demand curve of approximately $0.25/kW-month per 100MW, an incremental 250MW of capacity will reduce price by $0.625/kW-month, despite the fact that the new renewable energy projects will have actual costs that likely exceed the cost of existing or even new incremental 'traditional' capacity projects in the market.

To counteract these impacts, the Commission should consider exempting new renewable resources procured under long-term contracts from participating in the NYISO's capacity markets. This approach would recognize the different purposes being served: the NYISO capacity market as the tool to attract and allocate capital to meet the state's resource adequacy needs, and the contract-based procurements under the CES as the means to leverage private capital to meet the larger societal goals of reduced emissions and environmental sustainability.

If not exempted from participation in the NYISO market, to prevent these contracts for new renewable energy from inefficiently displacing lower-cost existing or new merchant capacity, the renewables should be subject to the NYISO's buyer-side mitigation provisions, which should apply in ROS as well as in the down-state capacity zones. At a minimum, the Commission should ensure that participation by new capacity is phased into the wholesale capacity market.

Alternatively, if the buyer-side mitigation presents an insurmountable obstacle to the new renewable energy projects from being compensated in the NYISO capacity market, stakeholders should consider a 'two-tier' pricing mechanism, in which the contracted renewables would be included in the capacity market and paid the market clearing price based on their inclusion in the market, while other capacity would be paid the price that would have occurred *but for* the contracted renewable capacity entering. This maintains the effectiveness of the capacity market price as an indicator of the marginal cost of meeting resource adequacy requirements with market-based merchant resources, while providing capacity revenue to contract-based renewables that are meeting state policy goals, albeit at a reduced level.

As a second alternative, stakeholders could consider a pro-rating approach to easing the impact of contracted renewables. Under this approach, contracted renewables would follow minimum offer price rules consistent with buyer-side mitigation. The entire cost of the capacity

market to consumers would be based on the amount of capacity that cleared, which may include some or all of the contracted renewables. To the extent some contracted renewables did not clear, however, those MW would still take on a capacity obligation and be paid for capacity, but the price paid to all capacity suppliers would be a pro-rated price, calculated by dividing the total cost by the total amount of cleared resources as well as uncleared renewable MW that did not clear due to the application of MOPR. This approach has the salutary effect of significantly mitigating the price suppression caused by uneconomic capacity in the market, while also providing a uniform payment rate to all capacity, both merchant-based capacity installed to meet resource adequacy requirements and contract-based capacity procured to meet state policy goals.

V. CES Compliance

A. ESCO Obligation

NRG does not oppose establishing a CES compliance obligation on ESCOs. States in PJM, New England ISO and ERCOT impose a Renewable Portfolio Standard obligation on retail electric suppliers, and those entities have adapted to be able to manage that obligation and include the costs of compliance in their competitive offers to customers. A key element in all of these states is that the utilities providing default service are also subject to this compliance obligation, to ensure that there is no structural bias in customer shopping decisions. The compliance obligation would be to demonstrate, after the calendar year is over, sufficient RECs to meet the % requirements. ESCOs have the option to secure RECs ahead of time through bilateral or broker markets, or just prior to the demonstration deadline.

However, the Whitepaper correctly acknowledges that the compliance obligation on ESCOs is not sufficient to produce the new investment in renewable energy that will be required to reach the state's goals. The procurement aspect is discussed above.

The compliance obligations for distribution companies serving default service load and ESCOs should be uniform and competitively neutral, meaning that CES compliance obligations should be applied equally to all electric sales to customers - utility default service customers as well as retail choice customers. All associated CES compliance costs of distribution companies should be included in generation supply rates and all charges on customer bills associated with the CES should appear as an explicit line item to ensure fair competition between ESCOs and default service providers.

B. Compliance Procedures

NRG recommends the Pennsylvania Alternative Energy Portfolio Standard as a model for structuring the CES compliance process. In the PA process, all utilities and suppliers serving retail load verify retail sales volumes through the AEPS Web Portal and retire credits in the PJM Generation Attribute Tracking System ("GATS"). The PJM GATS serves as the single database for alternative energy credits, and is aligned with the AEPS retirement timeline. The PA process includes a 90-day true-up period that allows a supplier to acquire additional alternative energy credits if necessary – making it easy for suppliers to meet the compliance deadlines.

Each quarter, the AEPS is populated with supplier sales data using utility reported sales volumes, and each Supplier confirms or updates those data directly in the web portal based on billing data. Annually, the Supplier accesses PJM GATS to ensure that a sufficient number of credits are retired to its GATS account to cover PA sales obligations, and sends the AEPS Administrator a PJM GATS RPS Retirement Report via email. If a supplier is short of credits, the AEPS Administrator reports to the PUC and the PUC invoices the supplier for the amount of ACP due. Importantly, all record-keeping and interaction with this system is via the web, eliminating paper records, manual data entry and delays associated with mail or other physical delivery.

For the New York CES, NRG recommends the NYGATS as the single centralized registry, and that NYGATS be structured to work entirely as an electronic platform, to achieve the efficiencies and low administrative overhead of the PA AEPS. NRG anticipates that NYSERDA will fill the role of the third party compliance administrator. All LSEs should have access to a self-service online compliance portal, and should not have to prepare or submit any paper reports. EDCs would periodically report ESCO sales/billing volumes in the portal, which would be verified or corrected by ESCOs on a quarterly basis via the portal. EDCs would also populate each LSE's REC account with RECs received under long-term contracts, and would invoice LSEs for the REC volumes at the levelized per-kWh cost of those RECs. On an annual basis, following the close of the compliance year, ESCOs, EDCs (as default service providers), NYPA and LIPA would retire RECs in NYGATS to match their sales volume-based obligations.

Additionally, ESCOs should also be able to own or contract for the energy and/or RECs from specific renewable facilities that meet the applicable deliverability requirements, as a means to effectively hedge the cost of RECs by self-supplying.

Any costs incurred by the utilities or the state to procure RECs should be passed through to all LSEs on a uniform per-kWh basis to be included in their supply charges (including utility POLR service). If pass-through is not adopted, the Commission should direct utilities to file for approval clear marketing plans and policies, designed to ensure that RECs are readily available to ESCO buyers and brokers on a bilateral basis, with no preferential treatment or withholding by utilities. If the utilities are permitted to sell RECs rather than allocate them at cost, a high percentage, e.g., 90%, of all revenues in excess of cost should be returned to customers with the utility retaining 10%, and any shortfalls should likewise be recovered from customers and shareholders 90/10.

C. Establishing Compliance Targets

In the compliance target calculation methodology presented in Appendix B of the Whitepaper, there are three major variables that can be forecasted only imprecisely: load, EE and NYPA hydro. The Whitepaper suggests that EE and existing NYPA hydro will be subtracted from forecast load, and thus would be external to the CES tiers and compliance obligations.

NRG recommends that the PSC establish aggregate obligation targets, to establish Tier 1 PPA procurement levels, based on GWh forecasts and assumptions of load, EE and NYPA hydro, but that compliance targets for LSEs will be stated as % of *actual* net load served by each ESCO or default service provider. Those percentages should be set in advance of each compliance year, so the only variable in an ESCO's calculation of its compliance obligation is the GWh of load it serves.

The Whitepaper refers to a differential between the total renewable energy requirement and the amount to be reflected in the tiers of the RPS program, indicating that the difference is due to state-controlled NYPA hydropower (p. 12). The annual GWh quantity of NYPA hydro should be fixed in advance, perhaps based on the NYISO 2016 Gold Book value, for purposes of calculating the RPS Tier requirements, and should not be open to expansion for additional large-scale hydro, whether owned by NYPA, contracted or imported. The only incremental hydro allowed should conform to the Main Tier RPS eligibility requirements, i.e., low-impact hydro and uprates without new impoundment.

The ACP for Tier 1 and Tier 2A should be at least as high as the ACP in neighboring states, to ensure that there is not a structural bias for new and existing renewables to export their energy and attributes from NY to other states.

VI. Nuclear Tier

The economic challenges faced by upstate nuclear resources, and in fact many resources in New York, are based in part on market design flaws, such as inadequate scarcity pricing and incomplete capacity markets. Efforts to retain these resources should focus on market design reforms, such as improved energy market price formation and a forward capacity market, rather than a bolt-on to the Clean Energy Standard.

To the extent, however, that the Commission adopts Staff's proposal for nuclear units, Tier 3 should be appropriately excluded from the actual CES, since it is primarily an economic development mechanism for the communities hosting certain nuclear generating plants in New York with the collateral benefit of emission-free energy. However, due to the inherent structural limitations – i.e., only one or perhaps two sellers, with one of them affiliated with one of the largest ESCO buyers in the state – there should be no pretense that Tier 3 could be a 'market.'

Instead, if the state proceeds with Tier 3, NRG recommends establishing the cost of ZECs prospectively based on the proposed 'missing money' comparison of costs and expected market revenues described in the white paper, and passing through the costs proportionally to all ESCOs and default service providers, including NYPA and LIPA, on a uniform per-kWh basis that suppliers will include in their supply charges to all NY energy consumers.

Any true-ups for estimation errors would be included in the following year's fixed per-kWh pass-through, to avoid exposing LSEs to ZEC cost risk.

Respectfully submitted,

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