NRG Comments on NYISO Integrating Public Policy Project

Project Description: *The Clean Energy Standard (CES) is intended to increase the amount of renewable energy generation in NYS to 50% of total generation by 2030, while retaining upstate nuclear power plants in support of the state's carbon dioxide emissions reduction goals. The recommendation includes annual targets for each tier beginning in 2017, with the ultimate goal of realizing 33,700 GWh of incremental renewable generation by 2030. What impact will achievement of NY's CES goals have on the NYISO energy and capacity markets, as currently designed? Is the existing capacity market construct sufficient to maintain existing generation, while incenting new generation? Is there a fundamental redesign needed in the capacity market? How will the high penetration of renewable resources impact the NYISO energy markets?*

The NYISO is seeking stakeholder feedback on whether NYISO should explore concepts for internalizing the value of zero-emission resource within NYISO's market structure.

Impacts on *both* the Energy and Capacity Markets should be considered within this project

The scope of the CES standard proposed by the NYPSC requires a holistic examination of energy, ancillary services and capacity markets to ensure that they continue to send the necessary investment signals to maintain system reliability. The CES is proposing significant subsidies for nuclear units, and will lead to significantly more weather-dependent renewables in the system. The impact of large amounts of zero marginal cost energy on LBMP levels, as well as the retention of uneconomic nuclear capacity, will stress the capacity market's ability to both incent new and retain existing units. Thus, NRG recommends that the NYISO not limit this effort to energy market reforms only.

Ongoing discussions of the current capacity market design and whether it is sufficient to both incent new resources and maintain existing units, especially as we transition into an increased renewable system, should be a priority. At a minimum, the capacity market should accommodate state actions to meet the CES requirements, while protecting price formation and market signals.

In addition, while the CES Order focuses on an LSE renewable obligation via RECs, the Order leaves open the possibility that alternative procurement mechanisms (e.g. PPAs) will be considered, if the State is not meeting its renewable targets. Regardless, higher penetration of renewable resources – especially those that may be on contracts that may make the resources unresponsive to the market energy price – will have a significant impact on both the energy and capacity markets. NYISO's evaluation should consider whether the concept of LBMP will still function efficiently and effectively as a dispatch control signal and as a settlement value, in a system characterized by 50% or more renewable energy.

Carbon Pricing should be considered, but it is not a panacea and cannot substitute for CES goals

NRG recommends that the NYISO clearly identify what goals NYISO believes can, or should be, addressed by putting an additional price on carbon. For example, the carbon price that would be needed to incent the amount of new renewable resources anticipated by the CES is likely different from the price needed to ensure clean energy resources are maintained. Which goal is NYISO addressing and why? Specifically, NRG recommends that the analysis focus on the following key issues:[1]

[1] NRG takes no position on whether the NYISO has the legal authority to price carbon attributes in its wholesale markets.

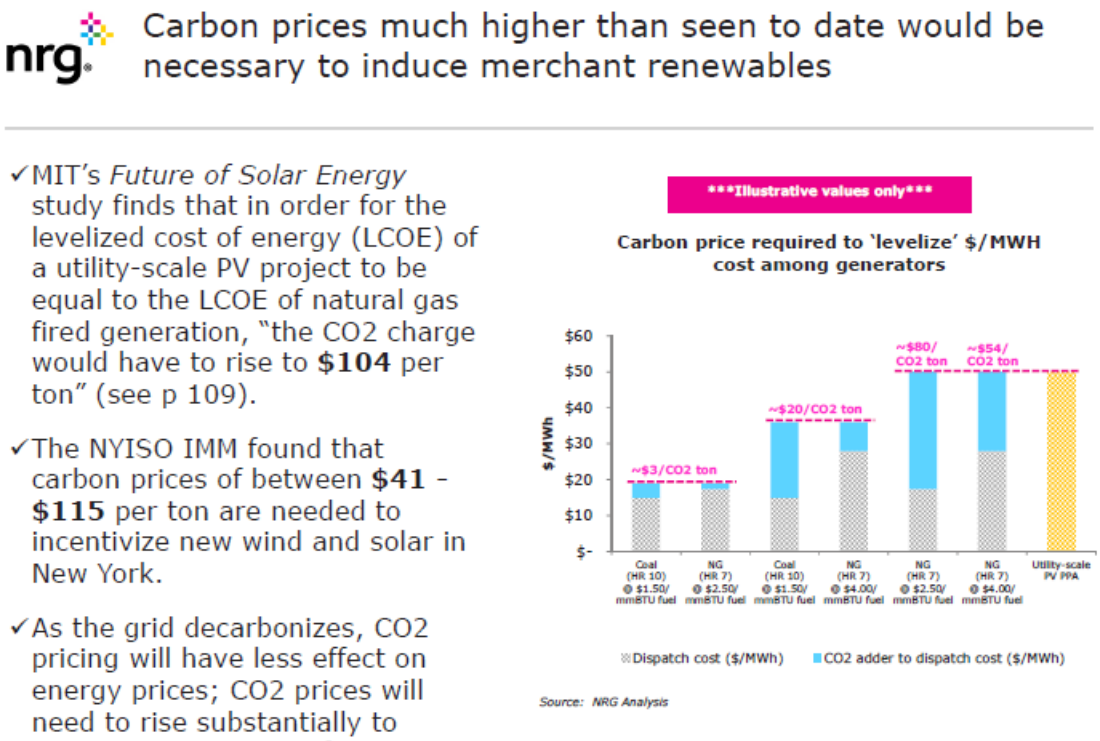
1. Is putting a price on carbon in the energy markets sufficient to drive investment in new renewable generation on the time scales laid out by the NYPSC in its CES order?

2. An assessment of the relationship between the carbon intensity of the system and the energy price impact of a carbon price, including a scenario with more energy from renewable resources than traditional generators.

3. A clear explanation of the underlying assumptions that would support a carbon price. For example, if using the social cost of carbon, then the discount rate, conversion rate, etc., that go in to selecting a cost should be identified and justified.

4. How would implementing a price on carbon impact the earnings of nuclear or renewable facilities that are also receiving subsidies pursuant to the CES order?

In response to NRG's Question #1, our analysis suggests carbon pricing, by itself, is insufficient to allow the State of New York to accomplish the rapid deployment of renewables mandated by the CES order. As shown in the picture below, carbon pricing is unlikely to drive new investment in renewable generation unless it is at extremely high (and likely politically unrealistic) levels:



While adding a carbon price in the energy market may induce some level of increased renewables investment over the long term, it is highly unlikely to mobilize financing in the next few years to reach the CES targets. Instead, the NYISO should evaluate whether a forward procurement of renewables that is integrated into the wholesale market and specifically targeted to meeting the State's renewables

procurement targets, would be more effective at incenting renewable investment than carbon pricing. A forward renewable energy market, such as NRG recently proposed in New England,[2] has the twin benefits of ensuring that renewables procurement decisions are made in the most competitive possible environment and that renewables projects can be financed at relatively low cost.

In response to NRG's Question #2, we recommend that the NYISO evaluate the efficacy of carbon pricing as the State moves towards its 50% renewables by 2030 goal. With more renewables on the system, and fewer carbon emitting resources, we anticipate that the impact of a carbon adder on energy prices will be diluted. As the energy uplift from carbon pricing decreases, its ability to incent long-term investment in renewables likewise decreases. We would ask the NYISO to evaluate the likelihood that carbon pricing, at various levels, would provide the long-term framework for the financing of renewable generation sufficient to meet the CES.

In response to NRG's Question #3, we note that there is currently no recognized consensus around a single social cost of carbon. Instead, values range dramatically depending on the discount rate assumed. As the United States Government's Interagency Working Group on Social Cost of Carbon stated:

> The 2009-2010 interagency group recommended a set of four SC-CO2 estimates for use in regulatory analyses. The first three values are based on the average SC-CO2 from three integrated assessment models, at discount rates of 5, 3, and 2.5 percent. SC-CO2 estimates based on several discount rates are included because the literature shows that the SC-CO2 is highly sensitive to the discount rate and because **no consensus exists on the appropriate rate to use for analyses spanning multiple generations**.

Thus, NRG requests that the NYISO evaluate a variety of carbon pricing scenarios, as well as evaluate whether putting an additional price on carbon (above the existing RGGI costs) will drive additional de-carbonization.

In response to NRG Question #4, we are concerned that any action that the NYISO may be contemplating could create perverse bidding incentives for renewable or nuclear units receiving subsidies under the CES standard *and* benefiting from any additional price of carbon imputed into the NYISO's markets. We request that the NYISO expressly include this issue within the scope of its analysis.

[2] *See*, *e.g.*, http://www.nepool.com/uploads/IMAPP_Presentaion_NRG.pdf.