UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Carbon Pricing in Organized Wholesale Electricity Markets Docket No. AD20-14-000

OPENING REMARKS OF RANA MUKERJI ON BEHALF OF THE NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.

My name is Rana Mukerji, and I serve as Senior Vice President, Market Structures, for the New York Independent System Operator, Inc. ("NYISO"). The NYISO appreciates the opportunity to participate in this technical conference. My team at the NYISO has been engaged in a project to incorporate a price of carbon dioxide emissions into the wholesale energy market since late 2016. In June 2019, the NYISO presented a complete Carbon Pricing Proposal[1] to its stakeholders after nearly two years of stakeholder discussion and design effort. Reflecting a meaningful state/regional-determined price of carbon dioxide emissions in our wholesale electricity markets will allow the co-optimization of energy and ancillary services to develop least-cost solutions that maintain competitive markets and reliable operation of the electric system, while more fully considering the direct economic implications of state and regional initiatives to promote efficient market outcomes.

NYISO CARBON PRICING PROPOSAL

The NYISO Carbon Pricing Proposal entails: 1) incorporating into the wholesale energy markets a state-determined social cost of carbon dioxide emissions, 2) reflecting the carbon price in locational marginal prices, 3) reducing charges to Load Serving Entities in an equitable manner, and 4) removing the carbon price effect from external transactions so that the

[1] *See* NYISO's Carbon Pricing Proposal at https://www.nyiso.com/documents/20142/7129597/6.20.2019_MIWG_Carbon_Pricing_MDC_FINAL.pdf/cf67ebb8-d0fc-7b4b-100f-c3756d6afae8.

transactions with adjacent control areas are not distorted by differences in carbon prices between control areas (effectively eliminating the leakage effect).

The overarching objective of the NYISO Carbon Pricing Proposal is to maintain the integrity of the wholesale electricity markets under FERC's jurisdiction. We need to recognize that state-administered subsidies, such as Renewable Emission Credits ("RECs"), Zero Emission Credits ("ZECs"), and feed-in tariffs, can undermine price formation in the wholesale markets and ultimately affect market-based investment decisions. Allowing NYISO's markets to send more accurate price signals reflecting the social cost of carbon dioxide emissions that are currently addressed through state subsidy programs will encourage development of these new resources through market-based mechanisms that align pricing with the reliability needs of the system while minimizing consumer costs and consumer exposure to investment risk. Numerous studies, including two separate studies by The Brattle Group and Analysis Group that were sponsored by the NYISO, demonstrate that integrating a carbon price into the competitive energy markets greatly reduces, and may eventually eliminate, the need for out of market subsidies such as RECS and ZECs and may lead to overall consumer savings compared to depending on RECs and ZECs alone.[2]

[2] *See* Sam Newell et al., The Brattle Group, "Analysis of a New York Carbon Charge (Updated)," presented to the NYISO IPPTF, December 21, 2018, available at https://www.nyiso.com/documents/20142/2244202/Brattle-Study-Analysis-of-a-New-York-Carbon-Charge.pdf/0930b5ec-aa1b-b837-4cd8-cd8f8768d57d; *See* Analysis Group, Clean Energy in New York State: The Role and Economic Impacts of a Carbon Price in NYISO's Wholesale Electricity Markets at 37, https://www.nyiso.com/documents/20142/2244202/Analysis-Group-NYISO-Carbon-Pricing-Report.pdf/81ba0cb4-fb8e-ec86-9590-cd8894815231?t=1570098837163; *See* Pallas LeeVanSchaick, Potomac Economics, "MMU Evaluation of Impacts of Carbon Pricing," presentation to the NYISO Market Issues/ICAP Working Group, May 9, 2019, available at https://www.nyiso.com/documents/20142/6474763/MMU%20Study%20re%20Carbon%20Pricing__5092019.pdf/40b832a6-b1f7-f973-9f60-4aaf4e9ab22f.

The NYISO's Carbon Pricing Proposal would allow the wholesale energy market to send price signals consistent with New York State's clean energy and carbon dioxide emission policies and mandates. Appropriately valuing the environmental attribute (*i.e.*, carbon dioxide emissions) that is driving State policy decisions in the market allows all resources to participate in a competitive manner and maintains locational price signals. Incorporating a carbon price in RTO/ISO-administered markets allows emitting resources to increase market competitiveness by reducing their carbon emission profile. Additionally, a carbon price would provide incentives for innovation in low carbon technologies that may not yet exist. Low carbon dioxide emitting New York resources, including efficient carbon-emitting units, renewables, hydropower, and nuclear generators, would benefit from higher net revenues; aligned with pricing all of the attributes valued in the New York power grid through the markets rather than outside of the markets.

Incorporating the carbon price in the energy market prices provides greater incentives for both conventional and clean resources to respond to prices that reflect operational needs. For example, energy market prices enhanced by carbon pricing will provide greater incentives for flexible units such as fast start gas turbines or energy storage to provide ramping capability to meet a rapid increase or decrease in system demand. Carbon pricing will influence the commitment and dispatch of units, consistent with environmental policies and programs currently in place in New York. Lower-emitting and non-emitting resources will be rewarded by being committed and dispatched more often. Higher-emitting resources will see their margins erode and will be dispatched less. Carbon pricing enhances incentives for flexible resources to respond to changing market conditions

Carbon pricing enhances system reliability by improving price formation, which incents better resource performance in the short term. It will also improve long-term market signals by providing more market revenues to retain existing resources needed for reliability. By enhancing price formation, carbon pricing will also encourage the entry of flexible resources that will be needed to balance intermittency of the future grid. Over the long term, carbon pricing will help keep the system in balance by expediting the exit of inflexible emitting resources, which are ill suited to provide the ramping and other grid services necessary to balance system intermittency. The exit of these inflexible resources will create room for entry of flexible conventional resources, additional intermittent resources, and flexible storage resources. The transition of the grid would be facilitated through the market rather than through out of market mechanisms.

Under the NYISO Carbon Pricing Proposal, Load Serving Entities ("LSEs") would be charged the market-clearing price for all wholesale energy purchases. The NYISO settlement calculations for wholesale electricity consumed would account for the carbon price adder of emitting marginal resources and will reduce the resulting invoices to each LSE, by the amount of unit-specific carbon price charges to emitting resources for the same settlement interval (*e.g.*, the weekly or monthly invoice). The guiding principle for this allocation is to provide equitable relief to LSEs subject to higher market-clearing prices after incorporating the carbon price.

The NYISO determined that simultaneously crediting the charges to emitting resources to customers in a proportional manner created the most equity among LSEs. The proposed proportional allocation will avoid major cost shifts among customers by providing an equal percentage of Carbon Pricing charges back to each LSE. In other words, the calculation equalizes the reduction to each LSE based on the ratio of the carbon pricing charges to the carbon charge impact on the Zonal LBMP, and, therefore compensates for zonal differences in the carbon

charge impact on the LBMP. The credit on the invoice should be proportional to the carbon price impact on the same invoice, *i.e.*, those LSEs most impacted by the carbon price should get more of the allocation. NYISO looked at several different residual allocation methods with stakeholders before recommending the proportional allocation methodology. The NYISO's proposed proportional allocation produces the most accurate approximation of the carbon price impact on locational market-clearing prices and avoids major cost shifts among LSEs.

The NYISO Carbon Pricing Proposal includes a measure to address leakage concerns related to the cost of carbon emissions causing resources in the New York Control Area to potentially become less competitive compared to resources outside the New York Control Area that are not subject to a cost of carbon dioxide emissions. The NYISO proposes to apply a carbon charge or credit to all external transactions that flow in real time such that they compete with internal resources (and each other) as if the NYISO were not applying a carbon charge to internal suppliers. Imports would be paid the LBMP and pay a carbon charge equal to the carbon impact to the LBMP at the relevant border. Exports would pay the LBMP and receive a carbon payment equal to the carbon impact to the LBMP at the relevant border. Wheel-through transactions would incur a two-part carbon charge; a carbon impact payment at the import interface and a carbon impact charge at the export interface. Failing to address this concern could shift energy production to emitting resources that are outside the RTO/ISO that price carbon dioxide emissions. The NYISO focused on the design principle to maintain a level playing field among internal and external resources and not to impose New York State policies and mandates on external resources, *i.e.*, the Carbon Pricing Proposal removes the effect of carbon dioxide emission charges from the economic evaluation of interchange between the New York Control Area and neighboring control areas.

For NYISO, the treatment of leakage was limited to interchange with other control areas. For multi-state RTOs, the complexities of treating alternate valuation of the carbon attribute by different states, which are not separate control areas, poses more complex design challenges in terms of settlements and the potential reduction of charges to load. However, we believe this challenge can be addressed and our neighboring RTOs are engaging in a carbon pricing design with their stakeholders.

CONCLUSION

Thank you for this opportunity to participate in the Carbon Pricing in Organized Wholesale Electricity Markets technical conference. I look forward to continuing this critical discussion to explore the operational and market design issues that arise as RTOs/ISOs seek to integrate carbon pricing into energy and ancillary services markets.