

NYISO Consumer Interest Liaison Weekly Summary

April 23 – April 27, 2018

Notices:

- *The Selkirk I and II Generator Deactivation Assessment has been posted to the following link: [Generator Deactivation Assessment](#)*
- *The New York Independent System Operator (NYISO) today joined companies from across the state in supporting Governor Andrew M. Cuomo’s “If You Can See It You Can Be It” career learning day for young women. Forty young women from local school districts had the opportunity to tour NYISO’s power control center and learn about the energy industry from women at the NYISO who possess a variety of professional backgrounds and skill sets. “We are committed to using our expertise in the energy industry to encourage the exploration of science, technology, engineering and math,” said NYISO President and CEO Brad Jones. “The dedicated and highly-skilled women who work at the NYISO represent the variety of exciting career opportunities that are available in the rapidly-changing energy industry.” [Press Release](#)*
- *The End Use Consumers Sector will **meet with Potomac Economics** at the NYISO on June 6 from 11 am - 2 pm.*
- *The 2017 Interim Area Transmission Review (IATR) has been posted to the following link (check “Reliability-Compliance” folder): [2017 Interim Area Transmission Review](#)*

Meeting Summaries:

Monday, April 23, 2018

Integrating Public Policy Task Force

The Social Cost of Carbon

Bethany Davis Noll from the Institute for Policy Integrity presented a methodology for calculating the social cost of carbon dioxide (CO₂) emissions. Ms. Noll began by describing early attempts to assign a cost to carbon emissions leading to the development of the Interagency Working Group (IWG). The

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IWG used the three most-cited peer-reviewed models to form a model built to “translate emissions into changes in atmospheric greenhouse concentrations, atmospheric concentrations into changes in temperature, and changes in temperature into economic damages.” The accepted value using this methodology is \$50/ton of CO₂ emitted. This methodology and the resulting value have been endorsed and used by several organizations and states in formal proceedings. To see the complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg_ipptf/meeting_materials/2018-04-23/SCC%20PowerPoint%20for%20NYISO%20Meeting%204.23.pdf

Recommended CO₂ Value to Use in IPPTF Analysis

Warren Myers of the New York Department of Public Service (DPS) presented the likely value of CO₂ to use for the IPPTF analysis incorporating CO₂ into wholesale Locational Based Marginal Prices (LBMPs). The two sources previously used by the Public Service Commission for consideration when assigning a cost of CO₂ are the U.S. IWG Social Cost of Carbon (SCC) estimates minus the Regional Greenhouse Gas Initiative (RGGI) forecasts, and the procurement price for Tier 1 Renewable Energy Credits (RECs). Converting the Tier 1 REC procurements to a cost of per ton of CO₂ results in a price of \$46.00 per ton. Incorporating RGGI into the pricing, the Department of Public Service (DPS) proposes a net carbon price for use in the IPPTF analysis and provided a table with recommended prices of \$40.74/ton in 2020 rising to \$56.77/ton in 2030. To see Mr. Myer’s complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg_ipptf/meeting_materials/2018-04-23/IPPTF%20CO2%20Value%204%202023%202018%20final%20%20pd.pdf

Issue Track 5: Customer Impacts: Proposed Methodology for Modeling and Analysis

Timothy Duffy of the NYISO presented the proposed study plan (Study) to assess the customer impacts of incorporating the cost of CO₂ into wholesale electricity prices. The proposed approach will begin with the updated CARIS base case and evaluate a Simple Change Case with a carbon charge and a Dynamic Change Case. The Study will incorporate three proposed scenarios; Scenario A – CARIS 2026 Model, Scenario B – Off Shore Wind, and Scenario C – Upstate Nuclear, with varying assumptions of nuclear generation retirements and renewable generation additions. Scenarios B and C will assess 2030 only. A timeline was provided:

- April: Proposed Methodology
- May: Assumptions and Scenarios
- June/August: Perform MAPS Simulations
- September/October: Review, Finalize and Study Results

Questions and/or comments can be sent to IPP_feedback@nyiso.com and/or filed under DPS Matter 17-01821. To see Mr. Duffy’s complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg_ipptf/meeting_materials/2018-04-23/IPPTF%20IT5%20Modeling%20workplan%20042318.pdf

Tuesday, April 24, 2018

Joint Installed Capacity/Market Issues Working Group

Proposal for the Annual ICAP Report

Amanda Carney of the NYISO presented the proposal to eliminate the Annual ICAP Report filing obligation to FERC. As discussed in a previous ICAPWG meeting, nearly all the information contained in the Annual ICAP Report is available on the NYISO web site. Ms. Carney led a review of the location on the web site where the information is currently posted. Several charts and tables that are

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currently available in the report will be added to the ICAP Monthly Report for stakeholder convenience. This will include the most recent five years of data from like Capability Period to like Capability period. A request was made for the NYISO to consider changing this posting to a longer time period than five years.

The NYISO will consider a request from a stakeholder to enhance the Retirement Notice page of the web site by posting a cumulative retirement notice to allow stakeholders to see all plant retirements in one listing.

The NYISO will return to the ICAPWG with a presentation of the ICAP posting tariff requirements in the near future. This presentation will have additional information on the locations for future postings. Ms. Carney also addressed the frequency of the semi-annual Demand Response Report. The NYISO is proposing to post to the NYISO website a single annual report, as presented at the February 15, 2017 ICAPWG. A summary of the previous presentation was provided as an appendix to today's presentation.

All information that is presently provided in confidential attachments to the Annual ICAP Report will continue to be provided to the MMU and to FERC's Office of Enforcement.

To see the complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg/meeting_materials/2018-04-24/Annual%20ICAP%20Report%20Proposal.pdf

External Resource Performance & Eligibility

Ethan Avallone provided the initial presentation for External Resource Performance & Eligibility. The Management Response to the Analysis Group (AG) Performance Assurance Report recommended that the NYISO and its stakeholders consider improving requirements for external capacity resources. The NYISO is considering the following project scope:

- *Performance*
 - *Improve requirements for external capacity resources to ensure these resources are providing comparable reliability value for consumers as is expected of internal resources*
- *Eligibility*
 - *Continue to evaluate what, if any, additional performance requirements and obligations are needed for deliverability to the NYCA border when deciding which resources are able to sell capacity into the NYISO*

The NYISO is targeting a Market Design Concept Proposal for June 2018 to build on the process used to perform a Supplemental Resource Evaluation (SRE) on external resources. Mr. Avallone reviewed the existing consequences for external capacity suppliers for energy delivery shortfalls; the NYISO is considering whether any revisions to these rules are necessary.

Feedback is encouraged and stakeholder discussion will continue through the development of a Market Design Concept Proposal in mid-June 2018. To see the complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg/meeting_materials/2018-04-24/External%20Resource%20Performance%20%20Eligibility%20April%202018%20ICAPWG%20FINAL.pdf

Capacity Market Rules for Energy Storage Resources

Zachary T. Smith of the NYISO presented market design concepts for discussion with stakeholders for input into the development of rules for the participation of Energy Storage Resources (ESR) in the Installed Capacity (Capacity) market. It was explained to stakeholders that this presentation was not a

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market design proposal but was intended to review existing Capacity requirements in an effort to gain feedback to assess issues that may require revision for the inclusion of ESRs in the Capacity market. At this time, the discussion would also be limited to facilities defined as in front of the meter. Mr. Smith began the discussion by leading a review of the three main aspects of ICAP supplier determination:

- *Eligibility*
- *Calculation of Capacity Amount Available*
- *Obligations of a Capacity Supplier*

Stakeholders suggested that along with current eligibility requirements for suppliers, there may be a further need, when discussing ESRs, to evaluate the duration of available capacity as a factor. Mr. Smith noted this suggestion and explained that the current General Electric Consulting Services (GE) study of Distributed Energy Resources (DER) potential contribution to Capacity supply will be used to help inform the discussion on the aspect of Capacity duration.

Mr. Smith led a review of the current methodology used to determine the amount of Capacity a supplier can sell into the Capacity market. Duration of a supplier's ability to inject energy into the grid was also suggested as a topic to consider in this discussion. Also, the North American Electric Reliability Corporation (NERC) does not currently have modeling established for all types of ESRs in the Generating Availability Data System (GADS). Again, it was suggested that the pending GE study may help inform on this matter.

During the discussion of existing Capacity supplier obligations, Mr. Smith noted the current obligations while adding that issues such as State of Charge and Minimum and Maximum Charge Levels may be issues for consideration when discussing ESRs and Capacity obligations. When asked about current ESRs such as Hydro Pump Storage, Mr. Smith responded that there will be a review and evaluation of current rules with consideration of potential requirement updates.

Comments are encouraged and can be sent to ztsmith@nyiso.com or deckels@nyiso.com. To see the complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg/meeting_materials/2018-04-24/ESR%20Capacity%20Rules.pdf

Master Plan Outline

Whitney Lesnicki of the NYISO presented an outline for the Master Plan that is intended to provide a single cohesive strategic vision for market design. The Master Plan will consider the interdependencies of continuing projects, FERC compliance directives, and new market design concepts identified in 2017 and 2018. It is intended to provide a comprehensive 5-year plan that will enable the NYISO to prepare for anticipated changes to the bulk power system. The Master Plan will define and describe two unifying themes that the NYISO has identified; flexibility and resilience.

Ms. Lesnicki explained the structure of the pending report prior, explaining the strategic vision for market design. This section will provide a discussion of why each project is needed, what it will accomplish, dependencies with other projects, and proposed timelines. Some of the projects and categories of projects that will be discussed in this section of the report include:

- *ESR Participation Model*
- *More Frequent Transaction Scheduling*
- *Large Solar Participation Model*
- *Distributed Energy Resource Integration*
- *Price Formation*
- *Performance Incentives*
- *Evolution of Ancillary Services*

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In response to a stakeholder question regarding the inclusion of changes to the modeling of the Niagara Generating Station, Ms. Lesnicki acknowledged that these modeling changes currently underway will have an impact on the future grid but are not within the scope of the Master Plan.

A timeline for the development of the Master Plan was provided with a draft version anticipated for a May 10, 2018 posting and a final Master Plan presentation at the June 13, 2018 MIWG meeting. To see Ms. Lesnicki's complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_icapwg/meeting_materials/2018-04-24/Master%20Plan%20Outline.pdf

Wednesday, April 25, 2018

Budget and Priorities Working Group

Disposition of Funds from 2017 Budget Cycle

Cheryl Hussey of the NYISO provided an update on the disposition of funds remaining from the 2017 budget cycle. Following the March completion of NYISO's financial statement audit, the actual results are:

- *A Rate Schedule 1 under-collection of \$0.4M*
- *A spending under-run of \$4.6M*
- *Total funds remaining from 2017 budget cycle of \$4.2M*

Ms. Hussey referenced the 2016 Management Committee recommendation that indicated that if a Rate Schedule 1 over-collection and/or a spending under-run occurred, the related funds should be utilized to pay down the principal amount of outstanding debt or reduce anticipated debt borrowings.

Based on the MC recommendation referenced above, the NYISO will retain the remaining \$4.2M to pay down principal on outstanding debt beginning May 2018. In response to a question as to why the NYISO does not apply all remaining funds in a lump sum, Ms. Hussey explained that the amount of interest for this short period was negligible in comparison to the ability to have funds available in the event of an unforeseen expense during 2018. To see the complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/mc_bpwg/meeting_materials/2018-04-25/Disposition%20of%20Funds%20Remaining%20from%202017.pdf

2018 Budget Actual

Cheryl Hussey of the NYISO presented the 2018 year-to-date budget vs. actual status. Rate Schedule 1 recoveries are \$0.9M ahead of budgeted revenues through March. Year-to-date budgeted costs vs. actual costs through March reflect a \$1.1M budget under-run. To see Ms. Hussey's complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/mc_bpwg/meeting_materials/2018-04-25/Budget_vs_Actual%20Results.pdf

NYISO 2018 Project Prioritization and Budgeting Process

Brian Hurysz of the NYISO provided an update on the 2019 Project Prioritization and Budgeting Process. Mr. Hurysz noted that the reposting of last year's list of projects and scoring results was made shortly after the April 11, 2018 BPWG, so that stakeholders could review what projects were not approved last year. Mr. Hurysz introduced several project description changes, along with additional candidates in the presentation prior to leading a review of project candidates by product category for stakeholder questions, comments or advocacy. Product candidate information was updated to include proposed deliverables as requested by stakeholders. There was a discussion with stakeholders to clarify the end goal of the Integrating Public Policy Task Force if agreed upon by the joint task force, and the NYISO stakeholder process to develop such proposal into a NYISO project.

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A timeline was provided with written feedback requested by May 1, 2018 to be included in the next BPWG Project Prioritization Process discussion. An additional project identification and advocacy meeting is scheduled for May 10, 2018, which is also the deadline for stakeholders to identify projects and have them included in the scoring survey. Stakeholder advocacy and draft scoring survey distribution are scheduled for May 30, 2018 BPWG.

To see the complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/mc_bpwg/meeting_materials/2018-04-25/2019%20Project%20Prioritization%20Process%20-%20Updated.pdf

Wednesday, April 26, 2018

Market Issues Working Group

ESR Participation Model: Energy Level Monitoring

Daniel Noriega of the NYISO provided an update on the Energy Level Monitoring aspect of Energy Storage Resources (ESRs). Mr. Noriega began with a review of the directives from FERC Order 841. During 2018, the NYISO will complete the market design of the ESR participation model. Two items that are not in the scope of FERC Order 841 and will not be addressed in the Order 841 compliance filing are ESR aggregations and dual participation. These issues will be addressed by the NYISO in 2018 in a process outside of the Order 841 compliance filing. The NYISO proposes that ESRs be allowed to participate in one of two modes:

- *NYISO-monitored energy level monitoring*
- *Self-monitored energy level monitoring*

Mr. Noriega explained that ESRs that choose to have the NYISO monitor their energy level constraints will be ensured to receive physically feasible schedules. The proposal will not, however, permit ESRs to specify an energy level they wish to have at the end of a dispatch increment (the “ending energy level”). This ability is under consideration as a future market enhancement. The NYISO will monitor the following operating characteristics for ESRs that opt-in to NYISO-monitored energy level:

- *Beginning Energy Level (MWh)*
- *Upper Storage Limit (%)*
- *Lower Storage Limit (%)*

Self-monitoring ESR’s will be responsible for managing their own energy level constraints through their offers. It will be possible for self-monitoring ESRs to receive physically infeasible schedules. ESRs will be eligible for Regulation Service and Operating Reserves and will not be scheduled to provide Ancillary Services in excess of their physical capabilities. They will, however be responsible for managing their energy level so that they are able to honor their schedules and/or paying any applicable penalties if they fail to do so. Mr. Noriega provided examples of potential ESR scheduling with Ancillary Services awarded bids. A timeline was provided with continued MIWG discussions through August and an anticipated FERC compliance filing in the fall. To see the complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2018-04-26/Energy%20Storage%20I_O%20MIWG%20180426.pdf

Market Design Concepts to Prepare for Significant Renewable Generation – Flexible Ramping Product

Ethan Avallone of the NYISO provided an update on developing a flexible ramping product to accommodate uncertainty due to volatility in load ramp that was observed in the Real-Time Market Study portion of the 2017 Market Assessment with 50% Renewables. Mr. Avallone explained the resources providing the ramp product would be compensated with a clearing price that would include

lost opportunity cost. The shortage pricing methodology applied to operating reserves and regulation service today would apply to a ramp product.

Mr. Avallone provided feedback from stakeholders suggesting details that would need refinement prior to the completion of a market design, including the concept of potentially separate ramp-up and ramp-down products.

The NYISO studied the implementation of CAISO's current flexible ramping product.

The NYISO recommends that stakeholders prioritize the Flexible Ramping Product project after 2019 for the following reasons:

- *Delaying the market design for this concept would permit further market outcomes from the CAISO implementation to develop and demonstrate evidence of value.*
- *There does not appear to be an immediate near-term need to develop this product*
 - *The NYISO's look-ahead software currently considers net load variability when dispatching resources, and this has not yet been significantly impacted by intermittent renewables.*
 - *NYISO wind generation has the ability to dispatch down for economic and reliability reasons.*
 - *10 minute locational spinning reserves are currently providing the NYISO with adequate ramp-up capability.*

This product will remain part of the NYISO Master Plan but at this time other projects offer more promise in the near term. Resolving outstanding questions for the Market Design Complete phase of the Flexible Ramping Product project should be considered as intermittent renewable resource penetration increases. The NYISO will review the results of the 2019 project prioritization to assess stakeholder interest in continuing the design for a flexible ramping product and encourages stakeholder feedback. To see the complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2018-04-26/Flexible%20Ramping%20Product%20April%202018%20MIWG%20FINAL.pdf

DER Participation Model: Measurement & Verification

Brian Yung of the NYISO provided updates to the measurement and verification of metering for the Distributed Energy Resource (DER) program. Mr. Yung explained the need for and the complexity of developing metering configuration requirements for DER.

A net facility meter at the point of interconnection of the DER to the transmission or local Distribution network will be required for NYISO wholesale market performance and settlement purposes. The NYISO may consider allowing gross load and/or gross generation meters for collecting data to calculate a capacity baseline similar to the BTM:NG Resource participation model and will be discussed at future MIWG meetings. Requirements for the net facility meter were provided.

Mr. Yung clarified the differences between DERs with an injection response and a load reduction response and provided examples of the metering requirements for potential configurations of both. Baseline methodology for developing a DER Coordinating Entity Aggregation (DCEA) Economic Customer Baseline Load (ECBL) for measuring load reductions was defined and reviewed with stakeholders. The ECBL is scheduled to be implemented in the NYISO market by Q4 2018 as part of NYISO's Order No. 745 compliance. Although there are similarities, the differences between the ECBL for a DCEA and the ECBL for the Day Ahead Demand Response Program were explained. Examples of ECBL calculations and DCEA response calculations were provided for clarity. Mr. Yung explained the requirement for the DCEA to provide within its aggregated telemetry signal the MW portion that (1) represents the DCEA's Load Reduction response and (2) represents the DCEA's

Injection response. The DCEA Load Reduction response will be the sum of the resource-level response of Load Reduction resources.

Comments are encouraged and can be sent to the DER mailbox at DER_Feedback@nyiso.com. To see the complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2018-04-26/DER%20Market%20Design%20MV_MIWG%2020180426.pdf

Update on GE Study: Capacity Value of Resources with Energy Limitations

Wes Hall of GE Energy Consulting (GE) provided an update on the study to determine the capacity value of resources with energy limitations. Mr. Hall referred to a study performed in 2012 to evaluate the contribution of special case resources to resource adequacy for the Installed Capacity Subcommittee (ICS) of the New York State Reliability Council (NYSRC) considering:

- *Penetration*
- *Duration of Use*
- *Persistence of Use*

The NYISO has contracted with GE to expand the scope of the analysis performed in the 2012 study to include Distributed Energy Resources (DERs) and additional resources with energy limitations while studying the impacts of:

- *Penetration*
- *Duration of Use*
- *Persistence of Use*
- *Diversity of Resources*
- *Performance*
- *Seasonal or Daily Limitations*

Mr. Hall presented the approach GE will use for the study utilizing GE MARS to simulate the NYISO markets and the process GE will use to develop resource schedules.

To date, GE has developed the required modifications to GE MARS and is prepared to run the post processing tool developed for a range of energy limitation parameters on the 2018 Installed Reliability Margin (IRM) Base Case and the 2018 IRM High Wind High Solar Case prior to providing results and analysis to NYISO stakeholders. To see the complete GE presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2018-04-26/04232018%20Capacity%20Value%20of%20Resources%20with%20Energy%20Limitations.pdf

CTS Performance Assessment

Pallas LeeVanSchaick of Potomac Economics (MMU) presented the second year evaluation of Coordinated Transaction Scheduling (CTS) between ISONE and NYISO. With the December 15, 2015 implementation of CTS, the NYISO tariff required the MMU to evaluate CTS after the first and second years comparing the Tie Optimization Interchange (TO) and the Optimal Interchange (OI). There is a tariff-defined trigger that would lead to the adoption of TO if a study of Year 2 indicated it would lead to significant savings. Mr. LeeVanSchaick explained that the Year 2 results are similar to Year 1 results showing that TO would have increased production costs. Therefore the trigger for moving to TO has not been satisfied. The MMU included potential improvements to the current system. To see the complete presentation, please go to:

http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2018-04-26/Second%20Year%20Evaluation%20of%20CTS_for%20NYISO_04132018.pdf

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FERC Filings

April 27, 2018

NYISO filing, on behalf of Niagara Mohawk Power Corporation, of an interconnection agreement between Niagara Mohawk Power Corporation and the Village of Ilion (Service Agreement No. 2416)

FERC Orders

April 30, 2018

Order accepted revisions to modify NYISO's deadlines for correcting erroneous day-ahead and real-time energy and ancillary services prices

April 30, 2018

Order accepted revisions addressing provision of synchronized reserves by inverter-based energy storage resources

April 24, 2018

Order accepted January 16, 2018 and March 15, 2018 filings effective October 20, 2015, the effective date of other previous accepted RMR revisions

April 23, 2018

Order granted in part and denied in part the Entergy request for clarification and rehearing and directed a NYISO compliance filing within 30 days to address the establishment of a timeline for the completion of final market power reviews of deactivating generators

Filings and Orders:

http://www.nyiso.com/public/markets_operations/documents/tariffviewer/index.jsp