Report on
CURRENT MARKET INITIATIVES RELEVANT TO RELIABILITY
March 11, 2016

1) Behind the Meter: Net Generation Model

The NYISO's market rules do not include provisions that clearly explain how generation whose primary purpose is to serve onsite load can sell their excess generation into the wholesale electricity markets. This effort would look to clearly define those rules to allow this incremental generation capability to participate in the NY wholesale electricity markets.

Implications to Reliability: Increased transparency and ability to schedule generation which is currently behind the meter.

Update: NYISO received stakeholder approval of the market design in December and will file the relevant tariff with FERC shortly. NYISO will also engage with stakeholders on further enhancements to integrate distributed resources into wholesale markets in 2016.

2) Comprehensive Shortage/Scarcity Pricing/Fuel Assurance

The Comprehensive Shortage Pricing tariff changes were implemented in November 2015.

Improvements to the scarcity pricing mechanism will include application of scarcity prices to external locations and improve the efficiency of market outcomes through the modeling of a scarcity reserve product in the optimization during reliability Demand Response (DR) calls. This effort will look to move Scarcity Pricing into the real-time scheduling and pricing optimization engine to better align scheduling decisions with pricing outcomes.

Update: NYISO has engaged stakeholders in a review of the market design improvements to enhance the scarcity pricing mechanisms. The NYISO received stakeholder approval of the changes in October and is targeting implementation of the new practice in 2nd Quarter of 2016.

Improvements to fuel and performance incentives are aimed at creating additional incentives for ICAP suppliers to be available on critical operating days. The NYISO will evaluate the need for additional mechanisms to enhance incentives for suppliers to be available to reliably meet the real-time needs of the NYCA, especially on days

when there is a high risk of a reduction in real-time resource availability due to factors including high demand and fuel supply uncertainty.

Implications to Reliability: Improved real time market incentives will promote increased unit availability.

Update: The NYISO is reviewing various options for recognizing fuel-constraints through additional bidding features to evaluate interest in further developing the concept. Incorporating the fuel limitations directly in the scheduling software will allow for more efficient use of the resources to meet reliability needs.

3) Reforming the Energy Vision (REV)

The NYS Public Service Commission (PSC) initiated the "Proceeding on Reforming the Energy Vision (REV)" with the goal of aligning electric utility practices and the regulatory paradigm with technological advances in information management, power generation, and distribution. These changes include:

- A new business model in which Distributed Energy Resources (DERs) become a primary tool in the planning and operation of electricity systems. Utilities would be encouraged to invest in DERs that help to avoid or defer the need for more historically traditional distribution system investments.

- The establishment of a Distributed System Platform Provider (DSP) that actively manages and coordinates DERs while providing a market in which customers are able to utilize DERs in response to dynamic system conditions. Such customers would provide, and be compensated for, any system benefits associated with their responses.

Implications to Reliability: Enhanced system reliability and resiliency through distributed resource availability and active management of load consumption based upon market conditions.

Update: The NYISO is looking to partner in various REV demonstration projects to evaluate the potential for operational and market impacts from DER participation.

4) Reliability Must Run (RMR) Service Agreements

The FERC directed the NYISO to develop and file a set of rules to designate resources for RMR service to ensure the continued reliable and efficient operation of the power system and the NYISO Markets. The structure and administration of the program will require specifying the retirement notification obligations, process for evaluation of alternative solutions, definition of compensation and cost allocation provisions, and expectations for participation in the capacity and energy markets. The NYISO is additionally exploring enhancements to its long-term planning process to support identification of, and development of solutions for, potential generator retirements.

Implications to Reliability: Enhanced system reliability and resiliency through resource availability and improved planning processes, and improved market certainty and transparency.

Update: The NYISO has developed and filed with the FERC a proposed solution framework, but has not yet received approval for the new provisions.

5) Locational Capacity Requirements (LCR): Review of Alternate Methodologies

The NYISO has initiated stakeholder discussion on evaluating alternate methodologies for setting LCRs. There are multiple possible approaches to determine the LCR requirement for a Capacity Zone after the IRM has been set under NYRCC's Policy 5. NYISO is facilitating a discussion in a ICAP Working Group Task Force to identify appropriate methodologies.

Implications to Reliability: Enhanced system reliability and resiliency through resource availability and improved planning processes, and improved market efficiency and transparency.

Update: NYISO continued discussions with stakeholders on alternative methods for determining Locational Minimum Installed Capacity Requirements (LCRs). This effort will look for ways to optimize LCRs based on minimizing capacity costs statewide while maintaining minimum Loss of Load Expectation criteria, and address any cost allocation rules to ensure that loads are paying their fair share of capacity costs.

6) Demand Curve Reset

The NYISO is reviewing vendor proposals to complete the upcoming Demand Curve Reset cycle. The selected consultant will conduct a study of the parameters used as the basis to set the NYISO's Installed Capacity Demand Curves beginning with the Summer 2017 Capability Period; will assess whether these parameters should apply to Demand Curves for a three, four, five or six year period, and; will propose and evaluate alternative methodologies to enhance the projection of Energy and Ancillary Services revenues used to determine the Unit Net CONE of the Demand Curve proxy plant, including approaches to reflect impacts from expected market rule changes.

Implications to Reliability: Enhanced system reliability and resiliency through improved market transparency and financial stability.

Update: The Analysis Group is leading the Demand Curve reset evaluation and has had several discussions with stakeholders on the framework of the current DCR process, an evaluation of the periodicity of the DCR and process for updating the net energy and ancillary services revenue offset, and has begun conversation on potential CONE unit types and typical costs. Any tariff revisions for a change in the

periodicity of the DCR process will be filed with FERC after stakeholder consideration in March 2016. The DCR process will continue throughout 2016 with filing of revised parameters in November 2016.

7) Clean Energy Standard ("CES")

On January 25th, DPS Staff issued a whitepaper outlining its recommendations to the Public Service Commission for implementing the state's Clean Energy Standard (CES). The CES is intended to increase the amount of renewable energy generation in New York State to 50% of total generation by 2030 while retaining upstate nuclear power plants in support of the state's carbon dioxide emissions reduction goals.

To achieve the objectives, DPS Staff recommends the formation of three tiers of resources eligible for support under the CES. Tier 1 is targeted at New Renewable Resources. Tier 2 targets Existing Renewable Resources and is subdivided into merchant resources that are not under contract with the state or whose contracts with the state expire (Tier 2A), as well as resources that are not eligible for RPS obligations in states with control areas adjacent to New York (Tier 2B). Eligible resources in Tiers 1 and 2 may be located in New York State or adjacent control areas provided they are able to deliver power into the NYISO Control Area. Tier 3 is designated for nuclear facilities in service prior to January 1, 2015 that are "facing financial difficulty as determined by a Staff examination of the books and records of the facility." DPS Staff recommends that compliance with the Clean Energy Standard would be best achieved by requiring that all Load Serving Entities (LSEs), including direct customers of the NYISO, execute Power Purchase Agreements (PPAs) with eligible renewable resources.

Implications to Reliability: To achieve the renewable energy targets, the NYISO estimates that the CES could require the development of: (i) at least 25,000 megawatts of solar capacity to meet the targets solely with solar resources; or (ii) at least 15,000 megawatts of wind capacity to meet the targets solely with wind resources; or (iii) approximately 4,000 megawatts of hydro capacity to meet the targets solely with high availability hydro resources or (iv) a combination of the above three renewable energy sources. Integrating 50% renewable energy sources which is comprised largely of intermittent resources will require studies to determine appropriate levels of regulation and reserves and may result in increases to the installed reserve margin (IRM).

Update: The NYISO is participating in the DPS stakeholder discussions and preparing comments on the whitepaper.

8) Energy Storage Resource Integration

Since the announcement of the NYS PSC REV initiative, there has been a growing interest in wholesale market participation of storage resources. Currently the NYISO has several resource classifications that can accommodate participation of storage in the wholesale markets that include: (1) Energy Limited Resource (ELR); (2) Limited Energy Storage Resource (LESR); and, (3) Demand Side Ancillary Services Program (DSASP). New storage resource characteristics may facilitate additional opportunities to participate in the markets.

Implications to Reliability: Energy storage resources represent a new class of equipment looking to participate in the markets and reliability services. Understanding the characteristics of the equipment and their capabilities, relative to the expectations of the reliability services, is necessary to ensure compliance with reliability standards.

Update: The NYISO is initiating discussions in the market working groups to engage stakeholders in a review of resource characteristics, existing market rules that define the opportunities for storage resources to participate in the markets and an evaluation of revisions that may be necessary to accommodate new storage resources.