Draft
White Paper on Plan to address: Reliability and Market Considerations for a Grid in Transition

Goal

Prepare a white paper synthesizing NYISO position to address potential reliability concerns and identify needed Market Enhancements to support a Grid in Transition. The paper will examine if there are gaps in the analyses that need to be filled when determining if market rules are sufficient or what market rules need to change. The paper will drive updates to the long term Master Plan.

The Market Enhancements identified in this white paper should be expected to support State Policy Objectives through 2040 while preserving investment signals and avoiding the need for out-of-market actions by the NYISO to maintain reliability. The State's more aggressive trajectory for transitioning to a greener and more sustainable energy future call for a transition to 70% non-carbon energy production by 2030 leading to a 100% Carbon free grid in 2040. (This "Green New Deal" goal supplants the Clean Energy Standard (CES) goal of 50% non-carbon energy production by 2030). The NYISO's objective is to create incentives through markets rather than having to rely on contracts (RMRs).

The White Paper will address

a. What are the reliability, resilience and flexibility needs of the future grid transitioning to a 70% Carbon free grid by 2030 with the further goal of 100% Carbon free grid by 2040.
b. What Market Enhancements are needed to efficiently attract/retain and operate the necessary new and existing resources while avoiding additional out of market compensation (e.g. RMRs, PPAs, etc.) and how to get market signals in the investment timeframe (in advance of the need).

Audience

NYISO Board, Stakeholders and Regulators

Outline

1 Background

a. New York State Public Policy Initiatives (CES + REV) driving rapid change
b. Implications of Federal (FERC) action on Resilience, MOPR, Price Formation, ESRs, and DERs
c. Grid is in transition (State policies will influence the make-up of the future resource fleet (i.e. clean, variable, etc.)
d. Large amounts of zero variable cost resources are being added
e. The market is long (15,000 mw of additional intermittent resources may lead to retirement of 4000 mw - 6000 mw of conventional resources)
f. Public policies are driving grid changes faster than market forces

2. Reliability considerations

a. Implications/reliability issues of NOx rules (drives downstate retirements)
b. Describe the challenges with managing/maintaining reliability with this future grid
    i. Need for a reliability gap analysis
    ii. Need for flexibility
    iii. Need for fuel security
c. Increased Forecast Uncertainty
    i. Load Forecasting (complicated by behind the meter solar)
    ii. Response of Distributed Resources not participating in wholesale markets

iii. Price Responsive Load not participating in wholesale markets
iv. Is there a need for new/different stress tests with increased intermittent resources

d. How the IRM changes over time/stays in line with an evolving system
e. Supporting Reliability Studies
   i. 2019-2028 CRP
   ii. Fuel security study

3. How the existing markets and planning processes provide grid reliability and revenue adequacy for needed resources

a. Describe the Reliability Planning Process and the Generator Deactivation Process (Provides Long Term Backstop to the NYISO's short-term capacity markets)
b. Describe role of the capacity, energy and A/S markets, include revenue sufficiency goals for the current market construct
   (Capacity Market is the backstop for revenue adequacy)
   i. Evaluate the A/S market revenue as a key driver for investment in needed resources (just Capacity Market signal is not enough – Capacity Market sends signal to build 30 min gas turbines when 10 min gas turbines are needed)
   ii. Describe how the current market construct will/will not meet the revenue sufficiency goals for the future grid (Provides adequate revenues to retain needed resources and provides adequate investment signals for needed new capacity)
   iii. Describe how changing fleet and changing IRM interact to provide price signals.

4. Revenue Sufficiency with and without Carbon Pricing

a. Capacity Market as the Market backstop for revenue adequacy
b. Do the market revenues become too Capacity revenue heavy?
   i. Show analysis of Today, A/S Concepts, Carbon + A/S Concepts, More A/S w/o Carbon
c. If so, what can be done to ensure resources have incentives to follow operational instructions?
d. Is there a "proper" level of capacity/energy/AS revenue mix that creates/motivates the necessary attraction/retention of the "right or needed" resources?
e. Is the investment signal there while the fleet is in transition and who should bear the risk?

5. Enhancements to the Energy Market (need for Flexibility)

a. Does the fleet have the needed characteristics to meet reliability? For example, do we continue to need GTs?
b. Are new investments necessary?
c. Cite:
   i. Wholesale Markets with 50% Renewable Study
   ii. State of Storage report
   iii. Performance Assurance Report

6. Enhancements to the Capacity Market

a. Review the shape and slope of the demand curve
b. Is there a need for a tailored availability product?
c. Importance of setting the Demand curve right to avoid the need for out of market contracts
   i. Discuss Hogan's view of the importance of setting the CONE right (lower than needed CONE will lead to RMRs, if CONE is set higher than needed we get some excess which is preferable to setting CONE too low)

ii. Choice of DCR Proxy Plant

7. **Protecting the Markets from Market Power (Mitigation Regime for Aggressive Public Policy Implementation Enrvironment)**
    a. Managing Market Power and Preserving Investment signals in an environment of Public Policy based resource additions

8. **Planned Market Design changes**
    a. Recent changes
    b. 2020 Project changes
    c. Updates to the 5 year Master Plan

9. **Conclusions and Key Takeaways**