Market Design Concepts to Prepare for Significant Renewable Generation: Real Time Performance Incentives

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NYS CLEAN ENERGY STANDARD GOALS

	Carbon Pricing in the Wholesale Markets	Market Design Concepts to Prepare for Significant Renewable Generation
Forum	Integrating Public Policy Task Force (IPPTF)	Market Issues Working Group (MIWG) / Installed Capacity Working Group (ICAPWG)
Led by	NYISO + NY DPS + NYSERDA	NYISO
Objective	To further explore options to incorporate the cost of carbon dioxide into wholesale energy markets with the goal of contributing to achieving New York State's public policies, while providing the greatest benefits at the least cost to consumers and appropriate price signals to incentivize investment and maintain grid reliability.	To propose, analyze and develop new energy and capacity market products and/or rule changes that would incent the participation of resources that can enhance the availability, flexibility, predictability, and dispatchability of the NY Power System.
2018 Deliverables	Draft proposal and supporting rationale for how carbon could be priced in NY's wholesale electricity markets.	1. Market Design Concept Proposals for potential near-term products and rule enhancements. 2. 3-5 year vision for market design.

MASTER PLAN - Q2 2018

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Agenda:

- Background of the 2017 Market Assessment
- Current Performance Incentives
- Stakeholders Feedback
- Timeline

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Background

Background

- The NYISO conducted a preliminary review of the market design concepts proposed in the Market Assessment with 50% Renewables Report. (2017 Market Assessment)
- Concepts were evaluated according to the following criteria:
  - Whether the product or rule change would incentivize performance attributes such as availability, predictability, flexibility, and dispatchability.
  - Need demonstrated by the results of the NYISO's 2017 Market Assessment.
  - Anticipated future system need based on observations from other control areas or other NYISO studies.
- The NYISO recommends that concepts which may offer benefits but are not yet well defined be prioritized as future studies or longer-term market design efforts.

Background

- **The NYISO recommended that the following potential design concepts be further explored during Q1 and Q2 2018:**
    1. Flexible ramping product to address forecast uncertainty
    2. Re-evaluate shortage pricing for Ancillary Services
    3. Real-Time performance incentives when LBMP's are low
    4. More frequent transaction scheduling
- **Market Design Concept Proposals for these products or rule changes will be considered for inclusion in the Master Plan**

2017 Market Assessment Findings

- Persistently negative LBMPs were observed in the Real-Time Market (RTM) study cases. [1]
  - Incremental renewables added for the Market Study cases were treated as price sensitive at -$47/MWh.
  - The point of price sensitivity is dependent on available incentives and may change in the future, but is not expected to be positive. [2]
- Increased penetration of renewables is expected to drive energy prices to settle at or below zero much more frequently in the future.
- When real-time (RT) Energy prices are zero or negative, it is still important that suppliers respond to NYISO dispatch instructions.
  - This effort seeks to determine whether current performance incentives are adequate in this regard.

1. 2017 Market Assessment Page 77
2. $47/MWh is the sum of the Federal Production Baseline Tax Credit (PTC) available to qualifying renewable resources and the average value of RECs awarded by New York State in 2016.

Purpose:

- Review the current performance incentives that apply to Generators that participate in the NYISO's Real Time and Day Ahead Markets.
- Consider examples of how those settlements are applied during both positive and negative pricing events.

Current Performance Incentives

Current Performance Incentives

- Balancing Market Supplier Settlements
- Bid Production Cost Guarantee (BPCG)
- Day-Ahead Margin Assurance Payment (DAMAP)
- Over/Under Generation Charges

- The following slides are intended to cover the general application of the rules. Further details and eligibility criteria can be found in the NYISO Tariff's and the Accounting and Billing Manual.

Balancing Market Supplier Settlements

- **When the actual Energy supplied in RT is greater than what was scheduled in the Day-Ahead Market (DAM), the supplier is required to either pay a charge or be compensated for the Energy Imbalance.**
  - Calculation: RT LBMP * (Lower of (actual,(RT schedule + Compensable MW)) – DAM schedule)
  - Compensable MW limited to 3% of the supplier's normal upper operating limit (UOL_N)
- Special rules applied when RT LBMP is negative

(Accounting & Billing Manual 4.1.3.4)

Balancing Market Supplier Settlements

- When the actual Energy supplied in RT is less than what was scheduled in the DAM, the supplier is required to either pay a charge or be compensated for the Energy Imbalance.
    - Calculation: RT LBMP * (DAM schedule – Lower of (actual,(RT schedule + Compensable MW)))
    - Compensable MW limited to 3% of the supplier's UOL_N.

Accounting and Billing Manual 4.1.3.4.2

Bid Production Cost Guarantee (BPCG)

- A BPCG is available to ensure a resource is able to recover its operating costs when instructed to operate by the NYISO. A BPCG provides an incentive for resources to offer marginal costs and to allow the NYISO market software to make scheduling determinations.

- A supplier is eligible for a BPCG payment if it will not recover its offered costs for scheduled Ancillary Services, Minimum Generation, Start-Up Bid Costs and Incremental Energy through market revenues, including energy and ancillary services payments.
  - The guarantee is separately available for DAM and RT schedules.
  - The need for a payment is assessed over the entire Market Day.
  - General Application:
    - Suppliers that are economically scheduled by the NYISO markets and/or following NYISO dispatch instructions.

Accounting and Billing Manual 4.1.5 & E.1

Day-Ahead Margin Assurance Payment (DAMAP)

- A DAMAP is available to provide incentives for resources to offer flexibly in the RTM by ensuring the resource will not incur a reduction in their their earned DAM margin when following NYISO instructions.
- Guarantee the difference between an eligible resource's DAM bid cost and the RTM price when the resource is adversely affected financially by the NYISO dispatch instructions to deviate from their DAM schedule.
- General Application:
  - Resource must bid Self or ISO-Committed Flexible
  - Not applicable to intermittent resources that depend on wind for fuel.

Accounting and Billing Manual 4.1.7 & B.1

Over/Under Generation Charges

- Over/Under Generation Charges apply to resources that are not accurately following NYISO dispatch instructions.

Over Generation Charges

- **Over Generation Charges are only applicable for wind units when the NYISO has directed the resources to reduce its output.** Accounting & Billing Manual 4.1.3.3 & I.18
  - Over Generation Charge= (actual- RT Schedule) x Max ($MPRC_{DAM}$, $MPRC_{RT}$)
    - $MPRC_{DAM}$: Regulation Capacity Market Price in the DAM
    - $MPRC_{RT}$: Regulation Capacity Market Price in the RTM
  - Charges does not apply if the energy difference is negative or falls within a tolerance band equal to 3% of the unit's UOL_N.

Under Generation Charges

- **Under Generation Charges apply when a resources operates below its penalty limit for under generation.**
  - Persistent Under Generation Charge= (RT schedule – actual) x Max ($MPRC_{DAM}$, $MPRC_{RT}$)
    - $MPRC_{DAM}$: Regulation Capacity Market Price in the DAM
    - $MPRC_{RT}$: Regulation Capacity Market Price in the RTM
  - Charge does not apply if the energy difference is negative or falls within a tolerance band equal to 3% of upper operating limit the resource's UOL_N; a 15 minute duration, is also applied when determining energy difference.
  - Numerous exemptions are available to different resources types and different operating situations.

Accounting and Billing Manual 5.2.4.1

Summary

- The NYISO will continue to review current performance incentives to follow dispatch to ensure they are adequate for current generators and assess what enhancements, if any, may be needed to prepare for significant renewable generation.

- The NYISO welcomes stakeholder feedback on the current incentives and potential for future enhancements.

Timeline

2018 Project Plan- Market Design Concepts to Prepare for Significant Renewable Generation

2018 Working Group Meetings	Topics
April 10	Analysis/ discussion of recommended market design concepts
April 24	1. Analysis/ discussion of recommended market design concepts 2. Present draft outline of Master Plan
May 9	1. Analysis/ discussion of recommended market design concepts 2. Present draft outline of Master Plan
May 23	Discuss rough draft and any proposed revisions to Master Plan
June 13	MDCP: Present Final Master Plan

Next Step

- Discuss stakeholder feedback internally.
- The NYISO will continue to discuss Market Design concepts with stakeholders at future meetings.

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits to consumers by:

- Maintaining and enhancing regional reliability
- Operating open, fair and competitive wholesale electricity markets
- Planning the power system for the future
- Providing factual information to policy makers, stakeholders and investors in the power system

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Questions?

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