

Market Design Concepts to Prepare for Significant Renewable Generation

More Frequent Transaction Scheduling

Jennifer Boyle
Energy Market Design

Market Issues Working Group

May 9, 2018, Rensselaer NY, Krey Corporate Center

DRAFT – FOR DISCUSSION PURPOSES ONLY

©COPYRIGHT NYISO 2018. ALL RIGHTS RESERVED



Agenda

- Background
- Benefits of More Frequent Transaction Scheduling
- Developing More Frequent Transaction Scheduling
- How External Transaction Scheduling Works Today
- Next Steps/Timeline
- Appendix: Summary of Transaction Scheduling with External Control Areas
- Appendix: Links for More Details on Previous External Transaction Scheduling Efforts

Background

- **The NYISO conducted a preliminary review of the market design concepts proposed in the Market Assessment with 50% Renewables report.**
- **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.**

The Benefits of More Frequent Transaction Scheduling

- Today, external transaction schedules can change once every quarter hour at interfaces where 15-minute transactions are enabled and once every hour everywhere else.
- As more intermittent renewable resources are integrated into the bulk power system, net load variability is expected to increase.
 - This was observed in the 2017 Market Assessment with 50% Renewables.
- **More frequent transaction scheduling with our neighbors could:**
 - expand the set of resources available to balance the system, which could lower the cost to serve load in New York
 - lower the cost to meet reliability standards because neighboring systems could efficiently provide additional power during times of shortages
 - provide a quicker response rate to real-time events
 - provide more guidance to developers and investors interested in upgrading existing interconnections and/or developing new merchant interconnections.
- **More frequent transaction scheduling could also help improve price convergence between RTC and RTD.**
 - 5 minute interchange scheduling could provide RTD with additional scheduling flexibility.
 - 15 minute interchange scheduling could improve convergence as binding RTC schedules would be established closer to real-time.

Developing More Frequent Transaction Scheduling

■ Hydro-Quebec

- Hydro Quebec TransEnergie remains interested in 5-minute transaction scheduling. The NYISO and Hydro Quebec have continued to discuss this opportunity since the implementation of 15-minute transaction scheduling at the Chateauguay Proxy Generator Bus. The NYISO recommends continuing to evaluate a 5-minute transaction scheduling protocol based on its operational coordination practices with HQ.

■ ISO-NE

- ISO-NE is not ready to pursue more frequent transaction scheduling with the NYISO at this time.

■ IESO

- IESO is not ready to pursue more frequent transaction scheduling with the NYISO at this time.

■ PJM

- PJM is willing to discuss 5-minute transaction scheduling with the NYISO. The NYISO is engaged in several other activities with PJM that could influence the design of a 5-minute transaction scheduling protocol. The NYISO continues to engage, as appropriate, in discussions on a 5-minute transaction scheduling protocol.

How External Transaction Bidding Works Today

- **DAM transactions bids are submitted and confirmed by 5 A.M. of the day-ahead of the bid date.**
 - Transactions are bid on an hourly basis.
 - An eleven point bid decremental cost curve is the structure used to submit economic scheduling of LBMP external transaction bids.
- **RTM transaction bids are submitted and confirmed no later than 75 minutes before each hour.**
 - The RTM re-evaluates all accepted DAM bids and evaluates all new RT transactions.
 - Each bid must indicate whether the transaction should be scheduled as hourly or intra-hour transaction and whether it is a LBMP or CTS bid.

How External Transaction Scheduling Works Today

- DAM transactions are evaluated by SCUC on an hourly basis.
- In the RTM, RTC determines schedules for hourly transactions once per hour and for intra-hourly transactions once every 15 minutes.
- RTD treats the transactions scheduled from RTC as fixed interchange, and does not re-evaluate any transactions.
- All external transactions require the submission of NERC e-tags and are subject to a checkout process.

DRAFT – FOR DISCUSSION PURPOSES ONLY

©COPYRIGHT NYISO 2018. ALL RIGHTS RESERVED

How External Transaction Settlements Works Today

- DAM Settlement is based on the DAM proxy bus LBMP and the DAM MW, and is calculated at the hourly level
- RTM Settlement is based on the RT MW and the RT proxy bus LBMP (inclusive of applicable RTC congestion), and is calculated at the 5-minute interval level
- For each market settlement, bilateral import, export and wheel-through transactions are charged a Transmission Usage Charge (TUC) based on the difference in losses and congestion components of the LBMP between the source and sink of the transaction.
- Links to past presentations which provide more detail on external transactions are provided in the Appendix for those who wish to learn more.

DRAFT – FOR DISCUSSION PURPOSES ONLY

Next Steps/Timeline

- The NYISO will engage in internal discussions to determine high-level design considerations as the implementation of 5-minute transaction scheduling with HQ would be complex, with many elements to consider.
- The NYISO will continue discussions with HQ in 2018 regarding the evaluation of 5-minute transaction scheduling.
- The NYISO recommends prioritization of this project for 2019 with a goal of Market Design Concept proposal by Q2.
- The NYISO will review the results of the 2019 project prioritization to assess stakeholder interest in continuing the market design for 5-minute transaction scheduling.
- **Draft Master Plan**
 - A proposed timeline for more frequent interchange scheduling projects will be published in the Draft Master Plan with 5/15 MIWG materials.

DRAFT – FOR DISCUSSION PURPOSES ONLY

Questions?

We are here to help. Let us know if we can add anything.

Appendix: Summary of Transaction Scheduling with External Control Areas

Neighboring Control Areas	Proxy Bus Name	Scheduling Bid Type Options	15 min Transaction Scheduling	60 min Transaction Scheduling
Hydro Quebec	Chateauguay -Import/Export	LBMP	X	X
Hydro Quebec	Wheel	LBMP		X
Hydro Quebec	Cedars	LBMP		X
ISO-NE	Sandy Pond - A/C Interface	CTS	X	
ISO-NE	Cross Sound Cable	LBMP		X
ISO-NE	Northport Norwalk 1385	LBMP		X
Ontario	Bruce - A/C Interface	LBMP		X
PJM	Keystone - A/C Interface	CTS & LBMP	X	
PJM	Neptune	CTS & LBMP	X	
PJM	VFT	CTS & LBMP	X	
PJM	HTP	CTS & LBMP	X	

* An exception to the current scheduling frequency above – Wheels through NYCA are always scheduled on an hourly basis, for example a wheel from HQ to NY to NE will have an hourly scheduling frequency

Appendix: Links for More Details on Previous External Transaction Scheduling Efforts

- **Enhanced Interregional Transaction Coordination Concept -**
http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2010-06-07/Agenda_04_EITC_Scheduling_Pricing_Concept.pdf.
- **Special Pricing Rules under CTS -**
http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2013-06-06/Special%20Pricing%20Rule%20Updates%20for%20CTS%20-%20MIWG%2020130606.pdf.
- **CTS with PJM -**
http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2013-06-25/CTS%20NY+PJM%2006192013%20FINAL.pdf.
- **CTS with NE -**
 - http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-02-12/CTS%20with%20ISO-NE%20How%20it%20will%20Work%203.pdf.
 - http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-03-10/CTS%20with%20ISO-NE%20How%20it%20will%20Work.pdf
 - http://www.nyiso.com/public/webdocs/markets_operations/committees/bic_miwg/meeting_materials/2015-04-02/CTS%20with%20ISO-NE%20How%20it%20will%20Work%205.pdf

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



www.nyiso.com

DRAFT – FOR DISCUSSION PURPOSES ONLY

©COPYRIGHT NYISO 2018. ALL RIGHTS RESERVED