New York ISO
Independent System Operator

5-Minute Transaction Scheduling

Study Discussion

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Agenda

- Background
- Discussion of Study

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Background

5-Minute Transaction Scheduling

- **The 2020 objective for this project contained two components:**
  - Study the potential and feasibility for external transactions with external control areas to be scheduled on a 5-minute basis
  - Consider a proposed mechanism to enhance the real-time interchange scheduling processes by allowing the economic scheduling of interchange across interties nominally every 5-minutes
- **The proposed 2021 effort for this project was Market Design Complete. This effort was not included in NYISO's 2021 final project budget recommendation due to the project scoring during the 2021 project prioritization process**
  - This project will move forward when it gets selected in the project prioritization process

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Expected Benefits

- **More frequent transaction scheduling is a market enhancement that is expected to improve NYISO's ability to respond to supply and load variability that may occur when NYISO adds significant quantities of intermittent renewable resources to its resource mix**
  - As more intermittent resources are integrated into the bulk power system, supply and load variability are expected to increase
  - To address these future challenges, more frequent transaction scheduling could:
    - Provide pricing and investment signals necessary to reflect system needs and to incent development of resources that are capable of resolving those needs
    - Expand the set of resources available to balance the system
    - Expand the capability of neighboring systems to efficiently provide additional power during times of shortages and provide a quicker response rate to real-time events

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Expected Benefits (cont.)

- **More frequent transaction scheduling could also:**
  - Improve convergence between prices in Real-time Commitment (RTC) and Real-time Dispatch (RTD)
    - 5-minute interchange scheduling could provide RTD with additional scheduling flexibility
    - By moving the scheduling of transactions into RTD, it is expected that the existing RTC to RTD divergence risk would be reduced, as transaction flows and pricing would both be determined in RTD
    - Even moving 60-minute interchange scheduling frequency to every 15-minutes could improve convergence as binding RTC schedules would be established closer to real-time
  - Offer increased flexibility to the market optimization software

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Discussion of Study

Purpose

- **The purpose of this paper is to evaluate the feasibility of more frequent transaction scheduling**
- **Study outline:**
  - Describe current bidding and scheduling practices for external transactions
    - Provides necessary background to understand the key concepts that would need to be addressed during the market design process
    - Identifies areas which would require further analysis and discussion
  - Identify key concepts that would need to be addressed in the market design, and topics that would require further analysis and discussion

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Current External Transaction Bidding and Scheduling

- Types of Transactions and Scheduling Bid Types
- Proxy Buses
- Ramp Capacity
- E-tagging and Checkout
- Day-Ahead Market (DAM) scheduling
- Real-Time Market (RTM) scheduling
  - RTC, RTD

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Considerations for More Frequent Transaction Scheduling

- **Technical Implementation**
  - Technical feasibility
    - NYISO has identified two technically feasible software options to allow the economic scheduling of transactions on a 5-minute basis
    - Both software options would require extensive software development
    - NYISO's preferred approach would be a generator model, which would leverage the existing generator dispatch model within RTD to evaluate and schedule transactions
  - E-tagging and checkout
    - New checkout procedures and operator tools would need to be developed
  - Technical and operational limitations at external interfaces
    - Neighboring control areas would need to be able to incorporate 5-minute interchange schedules into their commitment and dispatch

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Considerations for More Frequent Transaction Scheduling (con't)

- **Stakeholders have expressed interest in the ability for external transactions to provide ancillary services, specifically reserves**
  - Transaction scheduling at a 5-minute level is a prerequisite for external resources to be able to provide operating reserves
  - However, implementation of 5-minute transaction scheduling would not guarantee that NYISO would be willing to hold operating reserves in external areas at any time in the future due to regulatory and reliability concerns
- **Proxy bus pricing**
  - Pricing rules for competitive and non-competitive proxy buses would need to be modified to reflect congestion formed in RTD

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Considerations for More Frequent Transaction Scheduling (con't)

- **Utilization of 5-Minute Transaction Scheduling**
  - Full benefits of 5-minute transaction scheduling will only be realized if there are MPs that take advantage of this flexibility with their real-time offers
    - Potomac Economics regularly provides an evaluation of CTS performance and liquidity of CTS bids in its quarterly and annual State of the Market reports, and has frequently cited transaction fees at the NYISO/PJM border as an economic barrier leading to a lower liquidity of bids. This is an important consideration when evaluating the potential utilization of a 5-minute construct at the PJM border.
    - NYISO evaluated the average import bids and schedules for intra-hour and hourly LBMP import and exports on a annual basis, finding that the volume of hourly bids is far greater than intra-hour bids. This observation concludes that there is not a lot of utilization of existing flexible, intra-hour (15 minute) bidding capabilities
      - In previous discussions with MPs on this topic, MPs have cited the ineligibility of transactions to receive Bid Production Cost Guarantee payments as a barrier to bidding flexibly in the RTM

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Considerations for More Frequent Transaction Scheduling (con't)

- **Consultation with neighboring control areas**
  - NYISO has consulted with its neighboring control areas to determine their levels of interest in pursuing this effort
  - All neighboring control areas have expressed a general consensus that they recognize the potential benefits of more frequent transaction scheduling
    - HQT would be interested within the short-term (1-2 years)
    - IESO, PJM, and ISO-NE indicated that any involvement in this effort would be a longer-term priority

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Conclusion

- NYISO recognizes the many potential benefits of more frequent transaction scheduling, especially as more intermittent generation comes online
- This study identified the key considerations that would need to be addressed during the market design process if more frequent transaction scheduling is identified as a market project in the future, while highlighting the technical and regulatory complexities which would need to be considered and addressed
- This effort would require a collaborative interregional effort to ensure that the benefits of more frequent transaction scheduling are realized

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Questions?

Our mission, in collaboration with our stakeholders, is to serve the public interest and provide benefit 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 policymakers, stakeholders and investors in the power system

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