

RTC-RTD Convergence Study Recommendations

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Agenda

- **Background**
- **Analysis performed for the study**
- **Discuss Recommendations**
- **Next Steps**
- **Questions**

Background

Problem Statement:

- Stakeholders and the Market Monitor have expressed concern about price divergences between RTC and RTD.
- NYISO staff conducted an extensive analysis in 2017 to understand how often price divergences occur and what their primary drivers are.

Project Deliverable:

- The 2017 deliverable for the RTC-RTD Convergence project was a completed study.
- The study's aim was to identify primary causes of systematic price divergences between RTC and RTD.
- The NYISO published a whitepaper on December 20, 2017 that explains the analysis the NYISO performed and includes recommendations to improve RTC-RTD price convergence.

Previous Discussions:

- December 5, 2017⁽¹⁾

(1) [Link to previous presentation](#)

Analysis

Study Period

- One year's worth of real-time production data was studied (July 1, 2016 - July 1, 2017)
- This study period bridges recent market design changes.
 - Niagara Generation Modeling Improvements – May 2016
 - Lake Erie Loop flow modifications – June 2016
 - Initialization of Lake Success and Valley Stream PAR's (901/903 lines) – May 2016

Data and Correlations Reviewed:

- Magnitude and frequency of differences between LBMPs in RTC and RTD.
- Correlation between RTC-RTD congestion differences and LBMP differences.
- Correlation between load forecast differences and LBMP divergences.
- Correlation between Desired Net Interchange(DNI) changes and LBMP divergences.
- Correlation between regulation shortages and DNI changes.
- Case studies of three specific occurrences of high price divergences.

Recommendations

The NYISO plans to implement and/or continue the following efforts which are expected to improve convergence between prices in RTC and RTD:

1. Constraint Specific Demand Curves:

- Currently, all transmission constraints utilize a common Transmission Shortage Cost Curve.
- Therefore, small MW differences in violation of certain constraints can lead to significant divergences between the congestion component of LBMP in RTC and RTD.
- This project would reassess the existing Transmission Shortage Cost construct.
- Considerations include developing a more gradual slope to the shortage cost curve.
- This initiative has been prioritized with a milestone of Study Complete in Q3 of 2018.

2. 100+kV Constraint Modeling:

- Currently, the NYISO helps the TOs manage constraints through TO-requested resource commitments and certain operator actions.
- Due to OOM actions, RTD may have a different set of supply resources than RTC, possibly leading to divergence between the RTC and RTD prices.
- Therefore, securing certain 100+kV constraints within the NYISO market model will enable RTC-RTD price convergence by better aligning scheduling and pricing in real-time.
- This initiative has been prioritized with a milestone of Market Design Complete in Q3 2018.

3. Lake Success and Valley Stream PAR schedule changes:

- Currently, the Lake Success and Valley Stream PARs are operated based on a long-standing transmission agreement between ConEd and LIPA and typically change schedules twice a day.
- When the schedule changes, RTD has a shorter time to respond to the change as compared to RTC, which can contribute to price divergences between RTC and RTD.
- The NYISO recommends implementing changes to give RTC and RTD an improved view of the schedule changes in their respective forward-looking optimization horizons as soon as feasible.

Recommendations for Further Consideration

The NYISO is considering whether any of the following concepts should be prioritized for further evaluation:

1. 5-minute Interchange Scheduling:

- Currently, external proxy buses are economically evaluated and scheduled only by RTC in real-time, while RTD sees transactions as fixed interchange.
- This can reduce the flexibility that RTD has to deal with changes on the grid between RTC intervals, which may promote price divergences between RTC and RTD.
- 5-minute interchange scheduling in real-time would provide RTD with additional flexibility, thereby removing some systematic differences between RTC and RTD.

2. Treatment of Resource Ramping between Physical and Ideal Dispatch:

- The physical and ideal dispatch passes of both RTC and RTD utilize different starting conditions and ramp strategies.
- This can lead to differences between ideal prices and schedules in RTC and RTD.
- The NYISO could evaluate whether changes to this logic could improve convergence between prices in RTC and RTD.

3. Use of Offline GTs in RTC and RTD:

- Currently, when an offline GT is not committed by RTC's physical dispatch, it is also unavailable to RTC's ideal dispatch.
- In contrast, RTD can use offline GTs to set price in its ideal dispatch pass.
- This can lead to price differences between RTC and RTD.
- The NYISO could evaluate whether changes in offline GT pricing logic would improve convergence between RTC and RTD prices.

Next Steps

Stakeholder Feedback is requested regarding potential market design changes.

- Written feedback is welcome.
- Further discussion is scheduled for MIWG on February 6th, 2018.

On or before January 31, 2018:

- NYISO plans to implement Lake Success/Valley Stream PAR Scheduling Changes.

Q1 2018:

- Discuss stakeholder feedback regarding additional recommendations for further evaluation.
- Begin Development of Market Design Concept Proposal

Q2 2018:

- Market Design Concept Proposal Due

Please e-mail any questions or feedback to: pjain@nyiso.com

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