New York ISO
Independent System Operator

St Lawrence Project Modeling Update

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Background

- The purpose of this presentation is to inform Market Participants of modeling enhancements to the St Lawrence-FDR Power Project
- Specifically, this involves applying the distributed dispatch model previously deployed to the Niagara Power Project in December 2018
- For details on the Niagara Modeling update are below:
  - https://www.nyiso.com/documents/20142/1395217/Enhancements%20to%20the%20Niagara%20Model_MIWG2018.pdf
  - https://www.nyiso.com/documents/20142/1396120/Enhancements%20to%20the%20Niagara%20Model%20vFINAL.pdf
  - https://www.nyiso.com/documents/20142/2181548/MIWG%2020MW%20CRM_July18vFINAL.pdf
  - https://www.nyiso.com/documents/20142/2181113/Enhancements%20to%20the%20Niagara%20Model%20vJuly24_2018vFINAL.pdf
- Details on the workings of the distributed model logic as applied at the Niagara Project can be found here:
  - Optimzation Example - Enhanced Niagara Model_vFINAL.pdf (nyiso.com)

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Overview of the St Lawrence-FRD Power Project

- The St Lawrence Power Project is made up of 16 individual generating units, divided into four distinct points of injection onto the power system:
  - Moses 230kV Bk 5
  - Moses 230kV Bk 6
  - Moses 115kV Bk 7
  - Moses 115kV Bk 8
- Currently, the plant is represented at a single point of injection for scheduling and pricing purposes at a 115kV bus.
- Similar to issues identified at the Niagara Project, transmission constraints have different impacts (relieving/aggravating) between the four injection points.
- NYISO has historically managed this issue with manual intervention on which bus(es) output should be maximized.

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Modeling Enhancement

- **NYISO proposes to utilize the distributed model that is already in place for the Niagara Project at St Lawrence.**
- **This will allow the market software to recognize the distribution of St Lawrence injections across its four buses to address transmission constraints.**
  - There will be four(4) new LBMP points representing the points of injection on the 115KV and 230kV buses.
    - PTID 34035 ST LAW 230 BK5 LBMP
    - PTID 34036 ST LAW 230 BK6 LBMP
    - PTID 34037 ST LAW 115 BK7 LBMP
    - PTID 34038 ST LAW 115 BK8 LBMP
  - Like those created for the Niagara project, these are informational only and will not replace the existing aggregate St Lawrence #23600 PTID

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Modeling Enhancement, cont.

- This model enhancement enables RTD/RTC/SCUC to more effectively address transmission constraints. The below constraints will be secured in tandem with the deployment of this enhancement:
  - PTID 25582 Moses-Alcoa N. 115kV (MAL4)
  - PTID 25583 Moses-Alcoa S. 115kV (MAL5)
  - PTID 25581 Moses-Alcoa N. 115kV (MAL6)
- To ensure feasibility of generation schedules, the plant single point of injection for scheduling and pricing is being moved from the 115kV bus to the 230kV bus
  - This change allows the market software to secure the above transmission constraints while simultaneously creating feasible generation schedules

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Further Details

- **This modeling enhancement will distribute the generation from the St Lawrence Project in a manner that minimizes congestion on the transmission system.**
  - It will use the same dispatch input parameters as used for the Niagara Project to ensure that the optimization respects the individual unit characteristics when distributing the total generation schedule.
    - The total sum of MW distributed across the 4 individual Moses buses must simultaneously equal the total optimized plant energy schedule
    - The MW on each individual Moses bus must honor the maximum and minimum MW parameters for each bus, inclusive of any NYISO Operator overrides i.e., minimum and maximum bus and plant limits
- **It is expected that with this enhancement, the market systems will shift generation as needed between the injection buses, develop a total plant schedule, and deliver distribution instructions to both the plant and NYISO Operators.**

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Further Details, cont.

- **Like the implementation at the Niagara Project, this model allows for NYISO Operators to restrict the market systems using Operator Overrides, if the recommended distribution from the optimization cannot be achieved, by reflecting any limitations in the relevant input parameter(s).**
  - Operators are able to enter necessary individual bus limitations into the dispatch software when said limitations prevent the realization of the optimization distribution.
  - This feature is in place to reduce the frequency of Out of Merit operation of the St Lawrence project
- **The improvement will not result in TCC modeling impacts, as the St. Lawrence gen is already distributed among the generator step-up transformers.**
  - This change better aligns the Energy Market with the TCC Market
  - Existing TCCs involving PTID 23600 will continue to settle at that PTID
  - The newly secured constraints will be secured in the TCC auctions for the Autumn 2024 Centralized TCC Auction.

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Next Steps

- NYSIO already has the tools and procedures for this distributed model in place for the Niagara Project
- NYISO is currently working on phased-in approach to adapting the distributed model to the St Lawrence Project
- NYISO is targeting Q2 2024 to have the necessary work complete and ready for production implementation

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Mission

Ensure power system reliability and competitive markets for New York in a clean energy future

Vision

Working together with stakeholders to build the cleanest, most reliable electric system in the nation

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Questions?

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