New York ISO
Independent System Operator

Constraint Specific Transmission Shortage Pricing

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Agenda

- Background
- What are Multiple Active Transmission Constraints?
- Pricing Multiple Active Transmission Constraints
- Next Steps

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Background

Project Background

- **The Constraint Specific Transmission Shortage Pricing project seeks to develop enhancements to the current transmission constraint pricing logic to enable the NYISO's market software to re-dispatch suppliers efficiently in the short term to alleviate constraints, as well as incentivize long-term investment in locations where suppliers could provide the greatest benefits.**
  - Stakeholders approved proposed enhancements to the current transmission constraint pricing logic as part of the 2021 project effort (see October 27, 2021 presentation at the Management Committee)
- **This project will also include the "Lines-in-Series" effort**
  - The Lines-in-Series effort will seek to develop enhancements to the current measures used for addressing the limitations arising from the operation of graduated transmission demand curve mechanisms
  - Given the expanded scope of graduated transmission demand curves envisioned by the stakeholder approved Constraint Specific Transmission Shortage Pricing proposal, the NYISO believes it is prudent to implement the enhancements developed for these efforts together
- **"Lines-in-Series" is referred to as "Multiple Active Transmission Constraints" in this presentation**

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Lines-in-Series Background

- **On September 10, 2019, the NYISO briefed stakeholders on certain limitations associated with the current operation of graduated transmission demand curve mechanisms in its energy market software**
  - During this presentation, which can be found here, the NYISO discussed pricing concerns that can arise from multiple active transmission constraints along the same transmission line path due to the use of transmission shortage pricing
    - As an initial measure, the NYISO implemented changes to the modeling of multiple in-series elements to help mitigate such concerns
    - These current measures seek to limit modeling to only the most limiting element of in-series line segments
  - This discussion also noted concerns with multiple active transmission constraints due to contingency management, or having multiple active transmission constraints for the same transmission facility with different contingencies
  - The NYISO noted its intent to continue assessing potential further enhancements to address concerns related to multiple active constraints and further discuss any additional options with stakeholders

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What are Multiple Active Transmission Constraints?

Multiple Active Transmission Constraints

- **Multiple Active Transmission Constraints (MATCs) can occur for two main reasons:**
  - Topology - Same transmission facility represented as multiple segments in the topology (long radial lines or parallel line segments).
  - Contingency Evaluation - Transmission facilities that are constrained in multiple scenarios (base case and contingency case scenarios) being evaluated.

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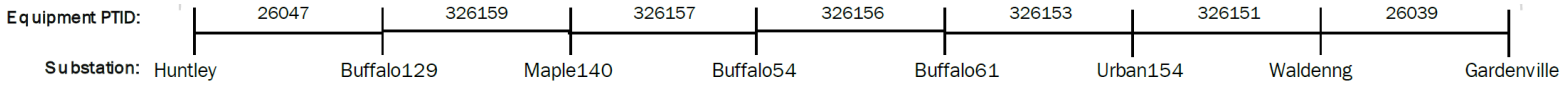
MATCs Due to Topology Example

- **Consider the Huntley-Gardenville 38 Line**
  - This line is represented in the energy market transmission model as having 7 distinct segments



  - Each segment is treated as an individual transmission facility to secure
- **Transmission Shortage Pricing is applied to establish the shadow price for each segment**
  - As described in the September 10, 2019 presentation, the NYISO has taken action to remove multiple in-series segments from evaluation and model only the most limiting segment to largely avoid this circumstance today

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MATCs Due to Contingency Evaluation Example

- **Consider the Dunwoodie-Shore Rd Y50 Cable**
  - This cable is one of the major interconnection points between Long Island and the rest of the New York Control Area
  - The energy market software is designed to secure the Y50 to base flow violations (base case) and contingency violations
  - There can be situations where not enough cost-effective dispatchable generation is available to avoid a base flow violation and a contingency case such Y50 for the loss of the Neptune cable
- **Transmission shortage pricing is applied to establish the shadow price of both the base case Y50 constraint and Y50 for loss of Neptune constraint**
  - The graduated transmission demand curve applies separately to each constraint and any relief provided by a demand curve mechanism to a base case constraint is not considered in the evaluation of additional contingency constraints
  - The prevalence of this concern increases as we introduce lower price points on the transmission demand curve and as additional 115kV and 69kV facilities are secured within the energy market

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Pricing Multiple Active Transmission Constraints

MATC Pricing

- There are no issues with transmission constraint pricing when market resources (e.g., Generators, ESRs, etc.) are setting the price
- Transmission constraint pricing concerns arise with the current application of graduated transmission demand curve mechanisms because the transmission shortage price is applied independently to each constraint without consideration of any other constraint
  - This can lead to circumstances of potentially unnecessary, excessive shadow prices for a single transmission line or facility due to the additive nature of applying transmission shortage pricing to each transmission constraint
    - This can happen due to both topology and/or contingency evaluation
- The NYISO is considering potential options to address the application of transmission shortage pricing to MATCs

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Next Steps

Next Steps

- **Q1/Q2 2022 – ICAPWG/MIWG**
  - Discuss options to address the application of transmission shortage pricing to Multiple Active Transmission Constraints

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Our Mission & Vision

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?