Constraint Specific Demand Curves

Jennifer Boyle
Associate Energy Market Design Specialist

MIWG

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Today's Agenda

- Background
- Current Transmission Constraint Pricing (TCP) logic
- Purpose of Project
- Project Considerations
- Scope of Study
- Timeline/Next Steps

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Background

- **March 29, 2017 Management Committee**
  - As part of the approval of revisions to the TCP logic, the NYISO committed to return and discuss potential further enhancements.
  - The revised TCP logic was implemented on June 20, 2017.

- **2016 State of the Market Report**
  - Recommends constraint-specific graduated transmission demand curves to set constraint shadow prices during transmission shortages.

- **The NYISO recognizes that the current single graduated Transmission Shortage Cost mechanism (or graduated transmission demand curve) which is applied to certain facilities and Interfaces may not be optimal for all situations.**
  - Constraints can vary according to the severity and/or duration of the transmission constraint violation.

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Current TCP logic

- During instances of transmission shortages, the current TCP rules establish limits on Shadow Prices that the NYISO's dispatch and pricing algorithms use to resolve transmission constraints.
  - The applicable limits vary depending on whether a zero value or non-zero value constraint reliability margin (CRM) is applied to a given transmission facility or Interface.

- The following limits on Shadow Prices are applied in instances of transmission shortages:

NY Region	Type	Demand Curve (MW)	Demand Curve Price ($)
All	Facilities with non-zero CRM value	Up to 5 Up to 20 Greater than 20 MW	$350 $1,175 $4,000*
All	Facilities with a CRM vaule of zero	All	$4,000*

*The $4,000 value for transmission shortages operates as a Shadow Price cap

- In situations where there are insufficient resources to resolve a constraint, the limit is increased to the flow that can be achieved on the constraint, including, if applicable, consideration of the resource capacity made available by the graduated mechanism for facilities and Interfaces with a non-zero CRM value.
  - The Shadow Price of the constraint is then equal to the marginal cost of resolving the constraint given the increased limit.

Purpose of Project

- **The NYISO is considering ways to avoid potentially over and under valuing transmission constraints related to the current TCP logic.**
  - Currently, the NYISO uses a single graduated mechanism to value all transmission shortages for facilities/Interfaces with non-zero value CRMs.
- **The study will seek to identify under what circumstances/system conditions transmission constraints are potentially being under/over valued.**
  - Identify instances where a transmission constraint may be routinely "relaxed" because there are frequently insufficient resources to resolve the constraint.
  - Identify scenarios where a transmission constraint has a high Shadow Price which may be over valuing the reliability need.
- **The current graduated mechanism is modeled based on a CRM value of at least 20 MW, which represents the CRM assigned to the majority of facilities in NYCA.**
  - The study will seek to determine the appropriate CRM level, if any, for facilities at less than the 230kV transmission level and the implications thereof on application of a graduated pricing mechanism.

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Project Considerations

- **Securing 100+kV transmission facilities in the market model should be considered when establishing pricing outcomes as part of this project.**
  - Applying the current TCP logic to lower level kV transmission constraints may, at times, result in inefficiently high transmission shortage cost values for certain facilities.
- **Creating a pricing mechanism that more appropriately reflects the severity of a transmission shortage when there are insufficient resources to resolve a constraint can provide more appropriate price signals and better align prices with the severity of the transmission constraint.**

Scope of Study

- The NYISO will perform preliminary data analysis to gather historical results. The results will assist in determining the design of the market prototype to run market simulations.

- The NYISO will conduct simulations to assist in determining appropriate demand curve MW and pricing values for different constraints and system conditions. The analysis will include, but is not limited to:
  - Evaluating which transmission constraints are frequently "relaxed" along with the severity and frequency at which they are "relaxed".
  - Evaluating what capped Shadow Price value(s), if any, is appropriate.

- The data gathered will allow the NYISO to make an informed decision as to how to value transmission constraints considering the appropriate level of trade offs and maintaining reliable dispatch.

Timeline/Next Steps

- **Near-Term Next Steps:**
  - On or before October 31st - Receive any written feedback from Market Participants that is in addition to or supplements comments provided during today's meeting.
  - November 27th - Present at MIWG meeting to review feedback and provide framework for study.
- **Longer-Term Next Steps:**
  - January/February 2018 - Market simulations targeted to begin.
  - Q3 2018 - Complete study and present results.

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