

Constraint Specific Transmission Shortage Pricing

High-Level Design Considerations

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Project Summary

- **The NYISO is considering ways to avoid potentially over and under valuing transmission constraints related to the current transmission constraint pricing logic.**
 - Currently, the NYISO uses a single graduated mechanism to value all transmission shortages for facilities/Interfaces with a non-zero value constraint reliability margin (CRM).
- **This study seeks to identify under what circumstances/system conditions transmission constraints are potentially being under or 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.
 - 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.
- **Transmission constraints can be valued according to key reliability criteria:**
 1. CRM value
 2. Voltage level
 3. Location

Scope of Study

Initial Step: NYISO staff will study:

1. The impact of the NYISO's implementation of the revised transmission constraint pricing logic (implemented on June 20, 2017), which included:
 - The modification of the value for the second step of the graduated Transmission Shortage Cost mechanism from \$2,350 to \$1,175/MWh.
 - The application of the graduated Transmission Shortage Cost mechanism more broadly to include facilities assigned non-zero CRM values.
2. How other ISOs/RTOs implement transmission shortage pricing.
3. How the NYISO implements transmission shortage pricing, including factors such as CRM values, Shadow Price capping mechanisms, and “relaxation” of transmission constraints.

Second Step: The NYISO will propose potential enhancements and conduct impact assessment to test concepts for improved transmission constraint pricing.

Third Step: The NYISO will publish a report summarizing the results of both the proposed improvements and impact-assessment, with recommendations for market enhancements.

- Project Deliverable – Study report reviewed with stakeholders and published by the end of Q3 2018

Review of Enhancements Proposed by Stakeholders

Proposed Enhancements by Stakeholders

- The NYISO has received feedback and proposals from stakeholders regarding potential enhancements to the NYISO's current transmission constraint pricing logic, which is being considered in developing a proposed high-level design. Stakeholder feedback and suggestions include the following enhancements:
 1. Value transmission shortages by voltage level.*
 2. Better account for CRM values other than 20 MW in the pricing mechanism.*
 3. Apply a pricing mechanism that places value on varying facility limits.
 4. Allow facilities to have varying CRM values which are dependent on the varying facility limits.
 5. Consider reliability value of the type of contingency (e.g., base case vs. N-1)
 6. Eliminate constraint relaxation and allow demand curve mechanisms to set price.*

**Enhancements 1, 2 & 6 are included in the high-level design concept considerations in the following slides*

Proposed High-Level Design Components

High-Level Design Proposal

■ Design Objective:

- To create an enhanced transmission constraint pricing mechanism that creates pricing outcomes that are consistent with the severity of the transmission shortage

■ Concept Proposal:

- The NYISO recommends a transmission constraint pricing mechanism that would be applied to transmission facilities and internal interfaces based on voltage class and location. Additionally, the mechanism is intended to account for variations in facility/interface CRM values.

Criteria for Enhanced Pricing Mechanism

- While the existing construct already considers the severity of the constraint, additional characteristics including the location and voltage class should be considered in the proposed design due to unique reliability needs in different locations of the state
- Number of constraints resolved by either relaxation and/or some portion of MW from the demand curve portion of the graduated Transmission Shortage Cost under the current pricing logic (based on data from July 2017 through February 2018):*

Location	Voltage Class					Total
	115 kV	138 kV	230 kV	345 kV	Internal Interface	
West	-	-	748	-	-	5372
North	127	-	34	25	5	
Mohawk Valley	-	-	-	63	-	
NYC	-	2755	-	152	-	
LI	-	1101	-	81	-	
ROS	-	-	73	64	144	
Total	127	3856	855	385	149	

- Additionally, any proposed transmission constraint pricing construct should avoid large amounts of ineffective re-dispatch for limited congestion relief, and therefore limited reliability benefit

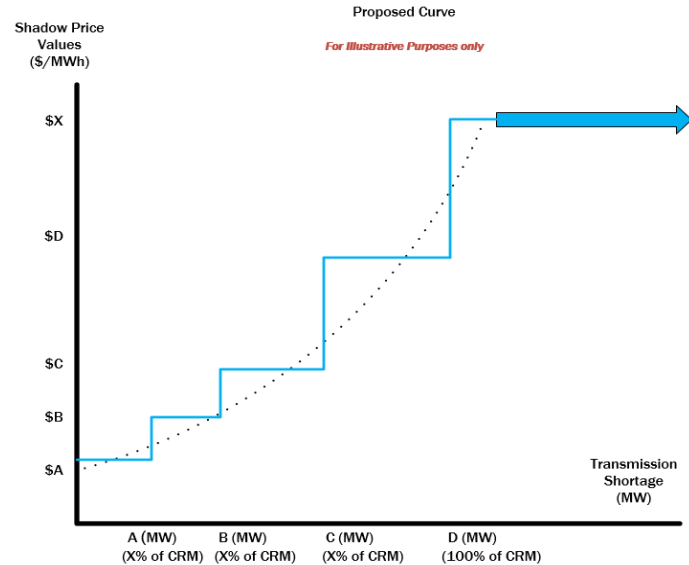
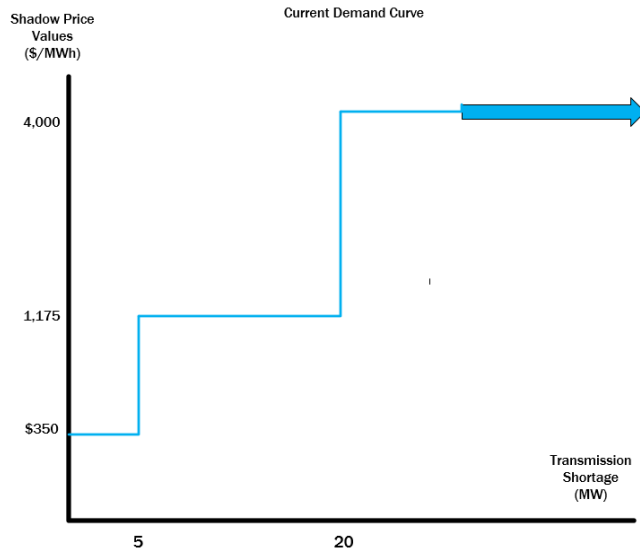
**See the presentation entitled “Constraint Specific Transmission Shortage Pricing: Analysis Update” from the June 25, 2018 MIWG meeting for additional information regarding the NYISO’s assessment of historical transmission constraint pricing outcomes*

Structure of Price and MW Values

- The price values of the demand curves should be set such that the appropriate resources are dispatched to resolve a transmission shortage.
- Coordination of the trade-offs between transmission constraint pricing and other dispatch constraint pricing, like operating reserve demand curves, should be considered when setting transmission demand curve pricing values to maintain the relative priority for enforcing reliability requirements.
- The MW values of demand curves should represent some portion of the applicable CRM value.
- Consistent with the experience with current transmission constraint pricing logic, it is anticipated that the last portion of the demand curves would not typically/routinely be used to resolve transmission shortages.

Structure of Price and MW Values

- In general, the demand curve should rise more gradually than the current pricing mechanism, which will:
 - Facilitate a more gradual increase in prices with increasing levels of shortage;
 - Reduce unnecessary extreme price volatility; and
 - Improved reflection of the severity of some transmission shortages.



Transmission Constraint Relaxation

- **Today, when there are insufficient resources to resolve a transmission constraint:**
 - the limit is increased to the flow that can be achieved on the constraint by the available resources; and
 - if applicable, available demand curve MW are used in establishing shadow prices.
- **When a transmission constraint is relaxed the resulting shadow price may understate the severity of the transmission shortage.**
- **The NYISO is proposing to allow the last cost value of the demand curve mechanism to set price and remove the constraint relaxation logic for internal facilities/interfaces.**
 - The maximum value will serve to limit the controlling actions taken to resolve a constraint by limiting the cost of re-dispatch that would be pursued.
 - The NYISO is still considering the application of transmission shortage pricing to external control area interfaces

Treatment of Zero Value CRM Facilities

- **Zero value CRM facilities primarily represent:**
 - Facilities out of generation complexes; and
 - Facilities at external interfaces that connect NYISO with other control areas.
 - These facilities are assigned a zero value CRM to address NERC Reliability Standards requiring that neighboring areas must use a common operating limit.
- **Today, the graduated Transmission Shortage Cost mechanism is not applied to facilities assigned a zero value CRM.**
- **The NYISO proposes to assign a non-zero CRM value to all internal facilities currently assigned a zero value CRM.**
 - The NYISO is still considering the application of transmission shortage pricing to external control area interfaces.

Next Steps



Next Steps

- **September 11, 2018 MIWG/ICAPWG Meeting– Review Key Highlights of Study Report and Concept Proposal.**
- **Q4 2018 - Continue Analysis on Concept Proposal for progression towards a Market Design Complete goal by Q2 2019.**
 - Evaluate resource costs and shift factors to inform the determination of revised demand curve price and MW values.

The Mission of the New York Independent System Operator, in collaboration with its stakeholders, is to serve the public interest and provide benefits 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 policy makers, stakeholders and investors in the power system



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Questions?