

Transmission Constraint Penalty Factors

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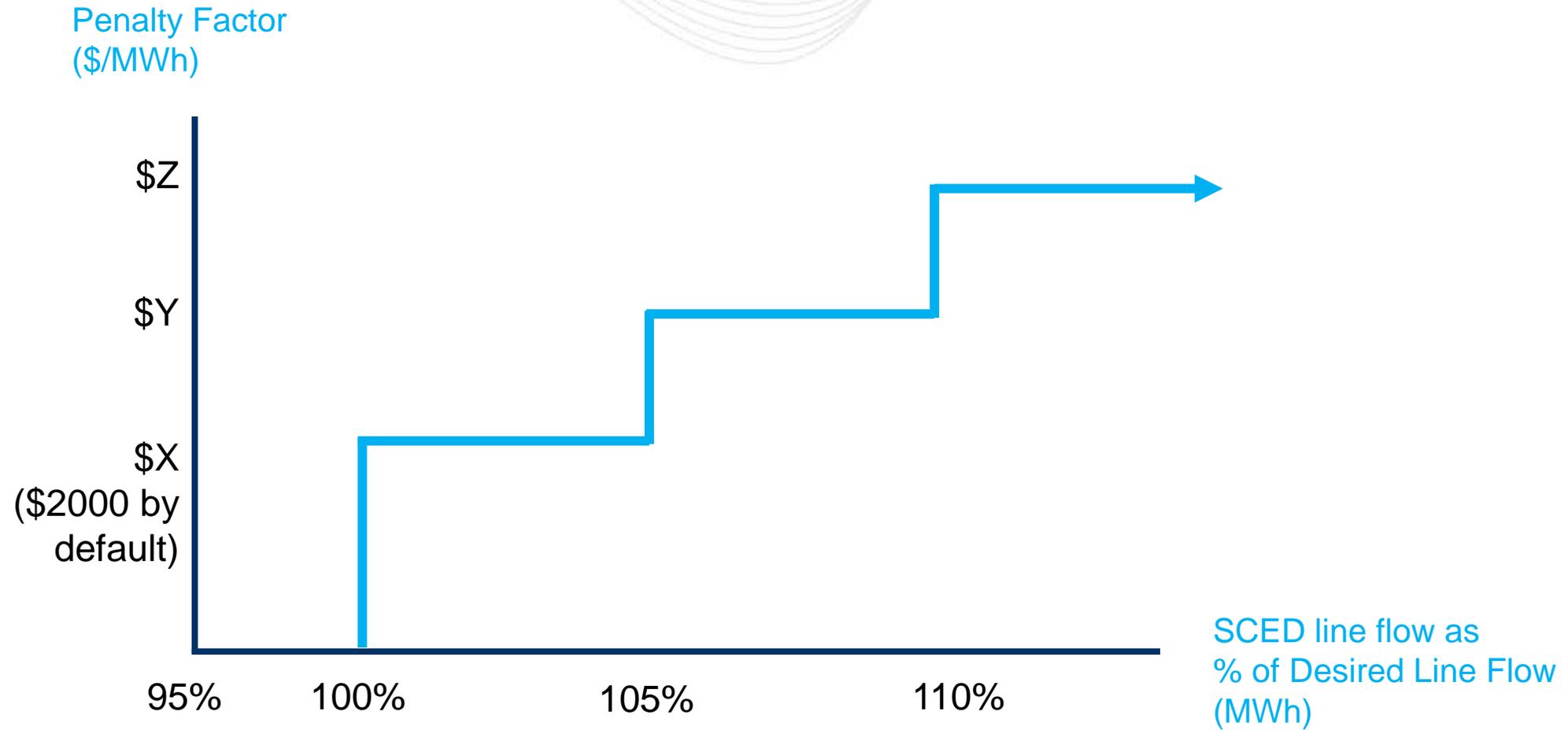
What are Transmission Constraint Penalty Factors?

- Transmission constraint penalty factors are parameters used by the Security Constrained Economic Dispatch (SCED) applications to determine the maximum cost willing to be incurred to control a transmission constraint.
 - Similar in concept to the Operating Reserve Demand Curves used for pricing reserve shortages
- The ultimate effect of the penalty factor is that it limits the controlling actions SCED can take to resolve a constraint by limiting the cost that is willing to be incurred to control it.

- PJM does not allow the transmission constraint penalty factor to set the shadow price of a constraint.
 - The longstanding business practice is to have the price set by a resource that is providing constraint control in the dispatch solution
- In the MCE, constraints that are violated must be relaxed to prevent the penalty factor of a violated constraint from setting the clearing price (referred to as Constraint Relaxation).
- This practice produces congestion prices that can understate the severity of the localized transmission shortage

- How should transmission penalty factors be used going forward?
- Can standards can be developed to govern how transmission penalty factors are determined?
- To kick start these stakeholder discussions, PJM and the IMM are investigating:
 - An option that would eliminate constraint relaxation and allow the transmission penalty factor to set congestion prices when relief is scarce
 - Standards for modifying the transmission constraint penalty factors

Potential Revision to Transmission Constraint Demand Curve



- The modified curve may not be appropriate in all circumstances
 - Reactive transfer interfaces (penalty factors kick in prior to reaching 100% of desired line flow due to pre-contingency load shed procedures)
 - \$2000 default penalty factor is too much or too little for some constraints
 - Under what conditions should the default be modified?
 - What guidelines can be developed to identify when the default penalty factor should be modified?
 - What formula should be used to calculate a revised set of penalty factors when modification is appropriate?

- Prior to January MIC:
 - Continued discussions between PJM and IMM
 - Stakeholders are invited to provide feedback
- January MIC
 - PJM and IMM will post updated matrix prior to the meeting
 - Work the matrix during the meeting