Overview of Three Pivotal Supplier Test

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Monitoring Analytics
TPS Background

- The three pivotal supplier test is a reasonable application of the Commission’s delivered price test
  - Tests for whether the level of excess supply results in an adequately competitive market structure.
  - Need at least four suppliers to pass test.
  - Permits targeted mitigation in the relevant market.
TPS: Relevant Market

- The three pivotal supplier test measures the degree to which the supply from three suppliers is required in order to meet the demand in the relevant market.
TPS: Formula

\[
RSI_{j} = \frac{\sum_{i=1}^{n} (S_i) - \sum_{i=1}^{2} (S_i) - S_j}{D}
\]

where,

- \( D \) = Total demand for the product
- \( \sum_{i=1}^{n} (S_i) \) = total available supply in relevant market
- \( \sum_{i=1}^{2} (S_i) \) = supply from two largest suppliers
- \( S_j \) = supply from the supplier being tested
TPS: Applications

• Applied in:
  • Real-Time Energy Market
  • Day-Ahead Energy Market
  • Regulation Market
  • Capacity Market
Energy Market: Relevant Market

• The three pivotal supplier test measures the degree to which the supply from three suppliers is required in order to meet the demand for relief of a constraint, which defines the relevant market.

• Relevant supply tested in the energy market is constraint relief MW for a particular constraint.
Relevant Market

- Two key variables in the analysis are the demand for and the supply of constraint relief MW
  - Demand consists of the incremental, effective MW required to relieve the constraint.
  - Supply consists of effective MW of supply incrementally available to relieve the constraint at a distribution factor (DFAX) greater than or equal to the DFAX used by PJM in operations.
TPS: Real Time Energy

- Objective, ex ante test of market structure, behavior and impact for localized markets for incremental relief
- TPS replaced approach that capped local energy markets all the time
  - Pass the test, taken on current offer, price or cost
  - Fail the test, taken on the lesser of price or cost
- TPS only results in a cost offer dispatch (capping):
  - When there is a determination of structural market power
  - When unit price offer > unit cost offer
  - When the unit is actually dispatched for the constraint and would therefore affect the price
TPS and Type I vs. Type II Error

• Type 1 error is detecting market power when none exists
  • Mitigation results in setting offer equal to MC
  • Mitigation results in a competitive outcome
  • Cost of type 1 error is zero

• Type 2 error is a failure to detect market power when it exists
  • Failure to mitigate results in market power and prices above competitive level
  • Cost of type 2 error is large