

Overview of Three Pivotal Supplier Test

GOFSTF

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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

$$RSIB_j = \frac{\sum_{i=1}^n (S_i) - \sum_{i=1}^2 (S_i) - S_j}{D}$$

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**

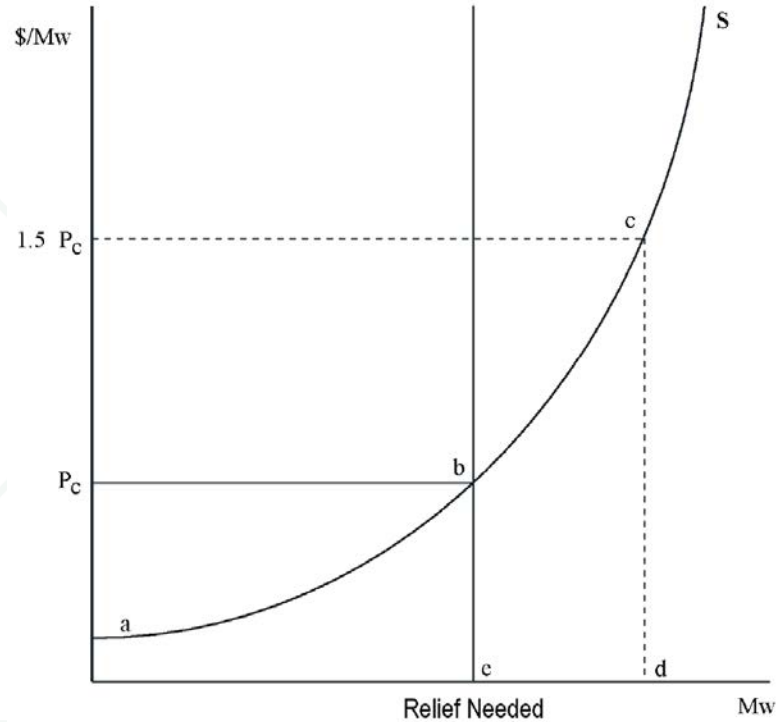
Energy Market: Relevant Market

- **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**

Relevant Market



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**

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