PJM's Implementation of the Three-Pivotal Supplier Test

MIC

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Context of TPS Test Results

- TPS test is triggered in real time whenever PJM's Unit Dispatch System (UDS) dispatch software detects the need to provide incremental relief for a transmission constraint.
- The universe of real-time TPS tests is all intervals in which PJM's UDS software identifies the need to provide incremental relief for a transmission constraint.

Units Subject to Offer Capping

- Only offline units are subject to offer capping
- In the majority of cases, the relevant supply curve consists of units which are already operating
- Such units (already operating) are not subject to offer capping, regardless of the TPS test result

Context of TPS Test Results

- The existence of a TPS test does not mean that dispatchers made any decision based on the test result
- Only a subset of the test results result in a dispatcher's decision to impose or not impose mitigation on a newly started unit
- The existence of a failed test result does not mean that mitigation was imposed
- Only a subset of failed tests result in mitigation

Units Eligible for Mitigation - Results

Constraint	Period	Average Number Units	Average Number of Units Eligible for Mitigation	Average Percent of Units Eligible for Mitigation
5004/5005 Interface	Peak	409.9	2.6	1.1%
	Off Peak	354.0	1.3	0.4%
Bedington - Black Oak	Peak	250.7	1.8	0.8%
	Off Peak	228.1	1.2	0.5%
AP South	Peak	373.3	5.6	1.8%
	Off Peak	336.4	4.2	1.1%
Western	Peak	427.2	0.3	0.1%
	Off Peak	401.5	0.5	0.1%
Central	Peak	448.7	0.7	0.3%
	Off Peak	458.4	0.0	0.0%
Eastern	Peak	257.8	10.6	6.5%
	Off Peak	292.0	42.0	14.4%

- The results indicate that a very small proportion of the units failing TPS are eligible for mitigation.
- Units actually mitigated are a subset of the units that both fail the TPS and are eligible for mitigation.
- Most available constraint relief is from units that are currently operating.
- Units that fail the TPS are mitigated only when they are the least cost solution to the constraint and they are brought on to relieve the constraint.

- PJM suggests that the TPS test may result in “excessive” mitigation or “false positive” results, but neither defines nor supports these assertions.
- The small number of tests which may result in mitigation does not support PJM’s assertions.
- The results of the three pivotal supplier test are based on actual, underlying market dynamics as faced by dispatchers in real time.

- PJM suggests that the use of a single price-based offer curve by generators each day makes it unlikely that a generation owner could exercise market power when an owner has a non-competitive test result for only a few intervals.
- There are a number of daily strategies for exercising market power in such a case, absent offer capping.

- PJM suggests that “oscillation” in TPS results in the potential application of mitigation when not necessary.
- PJM has not defined and therefore not measured “oscillation” in a meaningful way.
- PJM has not linked specific TPS results to actual or potential dispatcher mitigation actions.
- PJM has not determined if the TPS results could have resulted in a mitigation decision for a unit not currently operating.
- The TPS test measures actual, real-time system market structure based on actual system conditions and the test results reflect the dynamic nature of actual supply and demand.

- If the actual market conditions faced by system operators change, then the test results change. That is the intended and appropriate result.
- The time lag between running a test and actual unit response and the dynamic nature of the actual system conditions can result in changed pass/fail results for the owner of a given unit within a short period of time.
- The potential for short term changes in the market and corresponding changes in TPS test results exists in the real-time energy market and not in the day-ahead market.
- The TPS test results cannot change mitigation for an owner and a unit after a mitigation decision has been made.

- PJM does not currently log which occurrence of the TPS test forms the basis for a dispatcher's mitigation decision for a specific unit for a specific constraint at a specific time.
- There is a time lag between when the mitigation decision is made, contact is initiated with the unit's owner and the request is logged by PJM.
- During this time, multiple TPS tests may be applied by the PJM system software.
- For analysis, there is no clear link between test inputs, test results and dispatcher action.
- Many TPS tests are not relevant to a dispatcher decision.

- Meaningful analysis of changes in test results is not possible without this data.
- When the data is available, the MMU will include such an analysis in its quarterly reports.

Impact of Exemption from Offer Capping

- The LMP impact in a single hour of not offer capping a unit does not capture the full impact of that decision.
- A comprehensive analysis must begin with the day-ahead market, the impact of the offer capping decision in the day-ahead market and the effect of mitigation on the selection of units which run in real time.
- The analysis in real time must analyze the impacts of not offer capping throughout the operating day.
- The analysis must include the impact of not offer capping on operating reserve payments to such units.
- The mark up of units that are part of the supply curve for resolving specific constraints is an important measure of potential impact of not offer capping.
- The total dollar impact of not offer capping is an important measure of the impact of not offer capping, in addition to the per MWh impact.

- PJM stated that “The offer exemption is necessary because it reduces the potential for excessive mitigation during times of regional scarcity.”
- This statement is not supported in the PJM document and the statement is not correct.
- PJM has clearly defined FERC approved scarcity pricing rules.
- The scarcity rules explicitly state that all offer caps are relaxed during scarcity conditions, regardless of three-pivotal supplier testing results.
- The MMU has stated that the PJM scarcity pricing rules should be modified to ensure that economic scarcity conditions are actually reflected in prices.
- Scarcity pricing, in every case, would mean that offer capping would not be imposed.

- When there are no binding transmission constraints, the relevant market is the entire PJM footprint. In that case, there is a presumption of competitiveness in PJM and there is no offer capping.
- When there is a binding transmission constraint, the relevant market is the incremental supply available to solve the demand for MW to relieve that constraint.
- PJM's reference to the overall competitiveness of the "subregion" does not refer to an identifiable market from an economics or operational perspective.
- Mixing the results of different markets is not meaningful.

- PJM suggests that there should be no offer capping for the exempt interfaces because they are used as reference points for bilateral trading and providing certainty is an important objective.
- It would be preferable for the markets to have the certainty that the interface prices are not subject to market power but are the outcome of competitive forces.

- Determine whether offer capping is applied to all non-exempt constraints in the day-ahead market.
- Clearly define the link between test inputs, test results and market operator offer capping decisions.
- Save data which will permit a reproducible, detailed analysis of the application of the TPS test in the day ahead market.
- Cooperate with the MMU to facilitate a complete review by the MMU of the implementation of the TPS test in the day-ahead market.
- These tasks must be completed in order to permit a full evaluation of the application of the TPS in the day-ahead market and to ensure that it is being applied as intended.

- Create an automated method for identifying the specific real-time TPS test result used by the dispatcher in making mitigation decisions.
- Modify scarcity pricing rules to ensure that economic scarcity conditions are reflected in prices.
- Cooperate with the MMU to facilitate a complete review by the MMU of the implementation of the TPS test in the real-time market.
- These tasks must be completed in order to permit a full evaluation of the application of the TPS in the real-time market and to ensure that it is being applied as intended.

