

Order to Show Cause on Real Time Values and Parameter Limited Schedules

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Market Implementation Committee

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- FERC is concerned that the Tariff provisions dictating how PJM determines which offer is least cost may not be just and reasonable
 - “Because the Tariff requires PJM to commit and dispatch resources based on a lowest cost offer (rather than, for example, selecting the resource offer with the lowest total cost among the parameter-limited offers), sellers may be able to structure their market-based parameter-limited offer strategically to ensure that PJM chooses the market-based offer, which is not subject to parameter limits.”

- FERC is also concerned that the PJM Tariff appears to be unjust and unreasonable because it fails to contain provisions governing what happens if a seller is unable to meet its unit-specific parameters in real time.
 - “While PJM needs accurate, timely information on resources’ operating capabilities, without a clear process for assessing changes to parameter-limited schedules in real time, PJM’s Tariff may not adequately mitigate the potential for sellers to submit Real Time Values to exercise market power.”
 - In addition, the existing practice “does not contain sufficient protections against sellers using Real Time Values to avoid market power mitigation by inappropriately increasing their Notification Time on parameter limited schedules.”

- Within 90 days (Sept. 15), PJM is required to either: (1) show cause as to why its Tariff remains just and reasonable; or (2) explain what changes to its Tariff it believes would remedy the identified concerns if the Commission were to determine that the Tariff has in fact become unjust and unreasonable or unduly discriminatory or preferential and, therefore, proceeds to establish a replacement rate.
- FERC established a refund effective date of June 25, 2021.

- PJM plans to place additional restrictions on the use of Real Time Values during the pendency of the 206 proceeding
 - Only allow real-time values to be submitted for actual unit limitations or those outside of management control
 - Submission of a real-time value would require supporting documentation within three days demonstrating actual unit limitations
 - Real-time values would be allowed to be submitted only after the close of the day-ahead market.

PJM is soliciting feedback on:

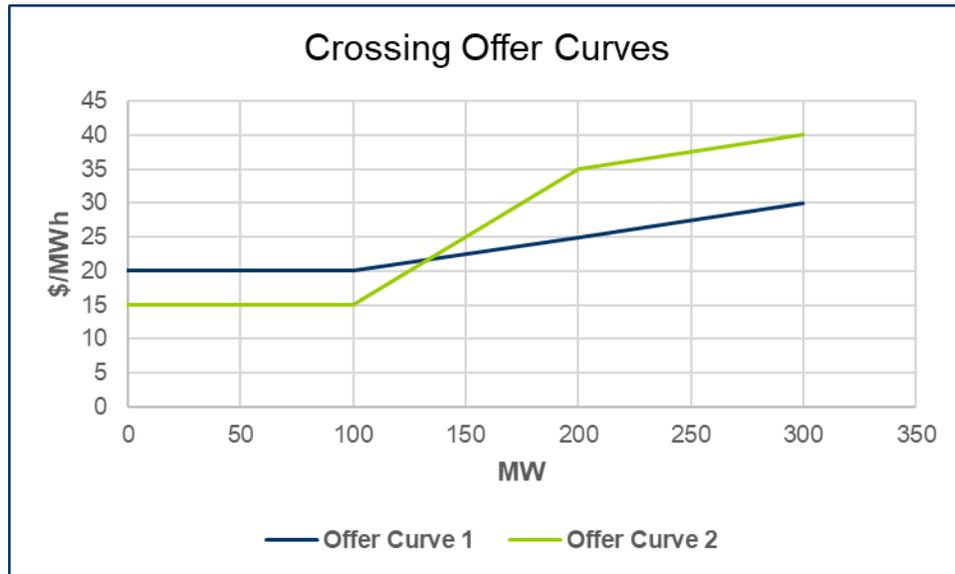
- Retaining or changing the existing practice of committing resources based on the schedule with the lowest production cost
- Potential options to assist in more consistent selection of a parameter-limited schedule and to simplify PJM's offer structure. This could include one or more of the following:
 - Use of a single set of operating parameters across all schedules.
 - Exclude non-PLS schedule (Price Schedule) when a Market Seller fails TPS test and during emergency conditions.
 - Implementing rules to ensure we can more accurately pre-select the least cost unit schedule when dispatch MW is unknown at the time of commitment
 - No crossing of incremental energy offers among schedules.
 - Uniformity in MW blocks on offer curves across schedules.
 - Others?

- Use of single set of operating parameters across all schedules.
 - Single set of operating parameters submitted
 - Only start up cost, no load cost and incremental offers would vary across price and cost schedules
 - Price PLS schedule would no longer be necessary
- Operating Parameters would be parameter limited
 - What changes would be needed to the process of establishing the parameter limits in this case?

- Consider only parameter limited schedules in the selection of the mitigated schedule (i.e. exclude Price (non-PLS) schedule)
 - Resource is committed on cheaper of Cost and Price PLS schedule when the Market Seller fails TPS and/or during emergency conditions
- In this case, the price schedule is not considered even if the price schedule results in lowest system production cost.
 - Is this an acceptable outcome?

No Crossing of Incremental Offer Curves

- Implement a rule that the submitted schedules cannot have incremental offers curves that cross each other.



- Same MW break points on Incremental Offer Curves for all schedules
- Same MW break points allow direct comparison for cost among schedules

Uniform MW Blocks on Schedules			
Schedule 1		Schedule 2	
MW	Price(\$/MWh)	MW	Price(\$/MWh)
100	20	100	25
200	30	200	30
300	40	300	40
400	50	400	50

Non-Uniform MW Blocks on Schedules			
Schedule 1		Schedule 2	
MW	Price(\$/MWh)	MW	Price(\$/MWh)
100	20	150	25
200	30	175	30
300	40	275	40
400	50	400	50

- PJM welcomes feedback on the impact of these potential options at this meeting or via email.
- This topic will be brought back to the August MIC meeting for further discussion.

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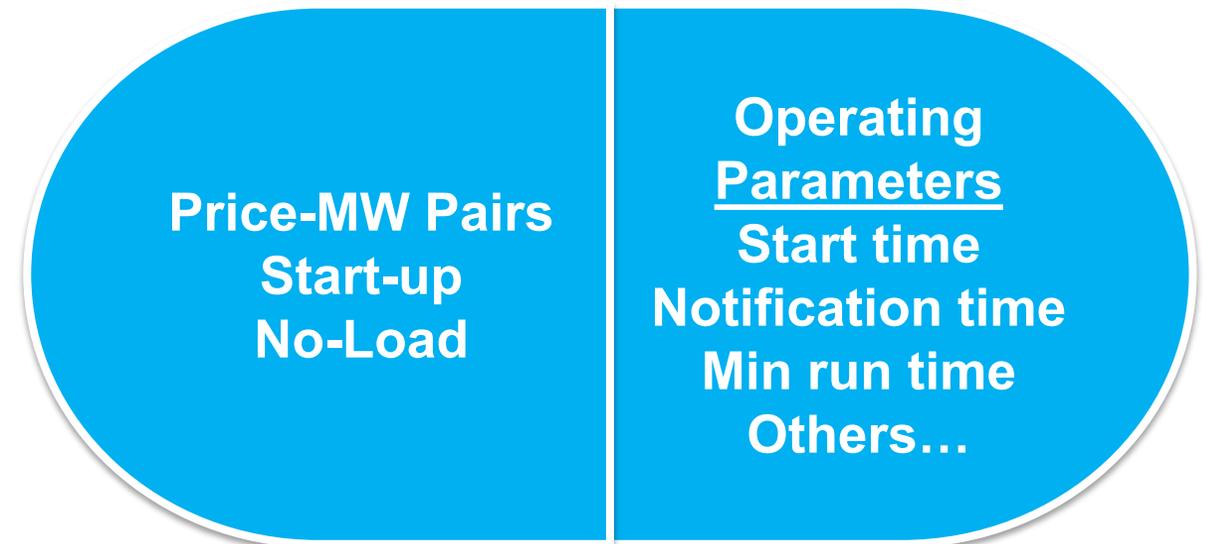
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Appendix

ENERGY OFFERS INCLUDE...

1. Economic components
 - Price-MW pairs (incremental curve)
 - Start-up
 - No-load
2. Operating parameters
 - Notification time
 - Startup time
 - Minimum run time



- Limitations are enforced at the time of offer submission.

Type of Offer/Schedule	Economic Component	Operating Parameters
Cost-based (PLS)	Limited to cost + 10%	Must be at least as flexible as PLS
Price-based (non-PLS)	<ul style="list-style-type: none"> -Capped at \$1,000/MWh unless cost exceeds that -May be higher or lower than cost-based offer 	Does not need to conform to PLS
Price-based PLS	<ul style="list-style-type: none"> -Capped at \$1,000/MWh unless cost exceeds that -May be higher or lower than price-based offer 	Must be at least as flexible as PLS

	Fails TPS	Does Not Fail TPS
Non - Emergency Conditions	Committed on Cheapest of Cost-based PLS offer or Price-based offer (non-PLS)	Committed on Price-based offer (non-PLS)
Emergency Conditions	Committed on Cheapest of Cost-based PLS offer, Price-based offer (non-PLS) , or Price-based PLS Offer	Committed on Cheapest of Price-based offer (non-PLS) or Price-based PLS Offer

**Emergency conditions includes Maximum Generation Emergency, Maximum Generation Emergency Alert, Hot Weather Alert, Cold Weather Alert

The day-ahead and real time markets have different approaches for selecting the cheapest schedule at the time of commitment due to their different time horizons

- **Day-ahead Market: Commitment of resources across all 24 hours of the day are solved in a single solution**
 - Resources are mitigated on the schedule with the lowest overall production cost (considering the MW level at which they are committed in commitment solution)
- **Real Time Market: Commitment decisions happen separately from the 5-minute dispatch decisions.**
 - Selection of the mitigated schedule must use an assumed MW level and commitment duration since the eventual RT dispatch MW and length of commitment beyond minimum run time is unknown at the time of commitment
 - Resources are mitigated on the schedule with the lowest production cost at economic minimum output over the minimum run time of the schedule