

Constellation's Perspective on PJM CIFP Proposal

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Constellation's perspective on Capacity Market Reform

- Constellation supports the RPM reform framework as directed by the PJM Board and the CIFP. We support the following elements of the PJM proposal:
 - Implement the best possible modeling of reliability risk in all periods of the year
 - Moving to an EUE-based, rather than LOLE-based, reliability standard
 - Resource accreditation based on marginal ELCC, applied to all resource types
 - Strong performance incentives tightly linked to the highest-risk periods of the year
- However, there are several areas where PJM's proposal should be modified to produce improved reliability and/or higher economic efficiency
- This presentation focuses on the areas where we propose to modify PJM's proposal; for elements of the design that we do not mention, we are not presently suggesting changes

Constellation recommends five specific improvements to PJM's proposal

1. Shorten forward term of capacity auction to prompt
2. Maintain meaningful performance incentives with a floor on the number of PAIs
3. “Pay as you go” implemented as payment to resources at end of year
4. Capacity suppliers should be able to reflect their assessment of all commercial risks of capacity obligation in their offers
5. Meeting the reliability standard also requires energy and ancillary services market reform reflecting need for additional “uncertainty reserves.” PJM and stakeholders should commit to an energy market reform to support the CIFP.

1. Moving to prompt auction will improve reliability and market efficiency



Acknowledges change in construction timeline for new resources

- Prompt auction improves market efficiency and leads to a more predictable, reliable portfolio of resources because:
 - Physical investment and retirement decisions reflected in price signal
 - Resource accreditation more accurate, particularly with ELCC-based accreditation
 - Continued facilitation of demand response
 - Improved insight into interconnection status
 - Certainty of fuel supply arrangements
 - Less forecast risk around key parameters – load forecast, intermittent ELCC, load deliverability, etc.
 - Less subject to gaming around resource entry/exit
- Constellation proposes moving to a single prompt auction from the current 3-year forward
 - Base residual auction occurs 6 - 12 months prior to delivery year
 - Incremental auctions eliminated or reduced to one depending on timing
 - Pre-auction timeline/signposts otherwise unchanged
 - Auction mechanics (demand offers clearing) unchanged

2. Maintain meaningful performance incentives

- Performance penalty/bonus rate should continue to be based on Net CONE, not auction clearing price
 - Original logic of CP was that performance shortfalls should be based on the replacement cost of new capacity, or Net CONE; this logic is still valid
 - Performance penalty rate for actual PAIs should remain at its current level of Net CONE / 360
- Constellation supports a lower annual stop-loss
- Constellation also supports a 360-interval floor on the number of PAIs
 - Infrequent PAIs under existing system do not discipline behavior well; more frequent assessment needed to provide ongoing incentives
 - Provides opportunity for energy resources to benefit from performance during times of system stress

3. “Pay as you go” should be implemented as an end-of-year settlement

- “Pay as you go” - payment occurs after service is rendered
 - Resource availability and performance during the most high-risk intervals of the year
 - Aligns incentives: continuous incentive to perform throughout the entire year
 - End of year payment also reduces penalty collection risk
- Straightforward end-of-year payments
 - PJM collects load payments monthly but holds money in escrow until the end of year
 - Resource payments - gross capacity revenue based on clearing price and accredited capacity and net of penalties
 - Payment could also include interest to reflect the difference in timing between collection from load and payment to resources

4. Resources should be able to reflect avoidable costs and risks in their capacity offers

- Resources that assume a capacity obligation incur avoidable operating costs and avoidable risks; All avoidable costs and risks must be incorporated into resource offer caps
 - Cost of risk related to energy market participation include risks related to forward hedging
 - Operating costs/risks include the risk of higher-than-expected forced outages over year and unexpected operating or capital costs
 - Capacity resources also incur opportunity cost (e.g., bonus payments)
- Market seller offer cap formulation should permit recovery of avoidable costs and risks
 - Resource offer cap = higher of (CP energy-only opportunity cost or ACR inclusive of CPQR, cost of energy-related risk, and cost of operating cost risk)
 - Cost of various risks, including CPQR, operating cost risk, and energy-related risk, should be based on resource owner's assessment based on their normal business practices

5. PJM and Stakeholders should commit to energy-market reforms to support CIFP

- PJM's reliability modeling assumes away operational reliability risk driven by forecast uncertainty and resource operational constraints, effectively assuming that those risks are fully addressed by the energy market
- PJM's energy markets, however, do not address the growing operational risks of the system, and no capacity market solution will solve this problem
 - Today, PJM engages in considerable out-of-market activity to create additional “reserve-like” capabilities to manage operational reliability needs driven by resource constraints, load forecast uncertainty, and intermittent resource uncertainty
 - These problems will get worse as the energy transition continues
 - To fully achieve PJM's reliability mandate in an in-market fashion, energy market reform is needed
- To this end, PJM and stakeholders should address these issues now to reduce the "missing money" burden on the capacity market and reward the "right" resources

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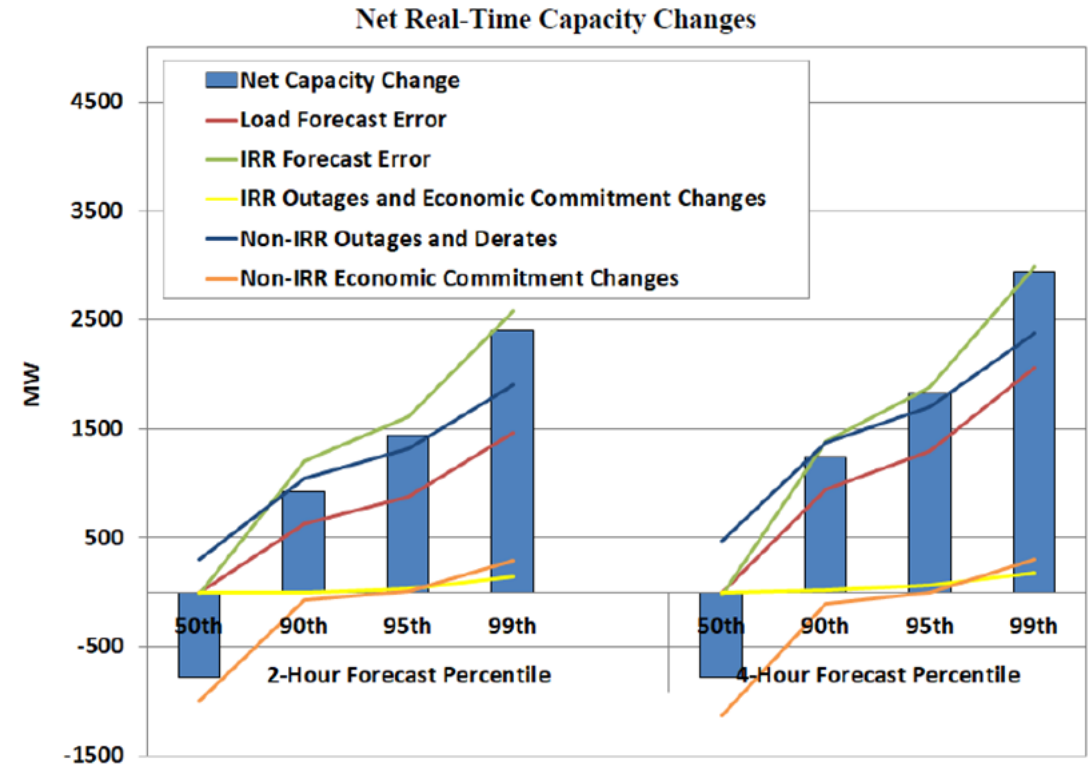
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Potential Approach Energy & Ancillary Services Market Reform

- New ancillary services are required to address the short-term operating uncertainty (next 1-4 hours). This need for additional reserves is driven by load forecast and intermittent resource output forecast error.
- While different markets have labeled this new ancillary service differently (“flexibility,” “ramping,” or “uncertainty”), the underlying product is the same – the commitment of additional resources in the operating day to protect operating day grid reliability.
- Ancillary services are integrated into LMP through co-optimization of energy and ancillary services. Every RTO, except ERCOT, co-optimizes energy and ancillary services because it minimizes the overall cost of providing energy and ancillaries.
- An uncertainty product thus correctly prices the ancillary services needed to manage operational reliability with a changing grid, and greatly reduces the need for out-of-market actions which distort prices and potentially compromise reliability.



The changing grid is forcing the grid operators to supplement the existing NERC requirements with new products or out-of-market solutions.