



DATE: September 21, 2026
TO: MRC
FROM: IMM
SUBJECT: RCSTF PJM Response

PJM posted two documents on Friday, September 4, responding to the IMM's August 19 MRC presentation about the RCSTF proposals. The first PJM document asserts that the IMM proposal does not address future reliability needs. The second PJM document is a defense of PJM's proposed market design. This memo responds to the first document.

Market Design Issues

Both the PJM and IMM RCSTF proposals are market design proposals. Neither the PJM nor the IMM proposal would constrain the actions that PJM operations takes during any system conditions, including normal and emergency conditions. PJM operations retains the ability to take market actions needed to preserve reliability under any reserve market implementation. Today, PJM schedules units in advance of the day-ahead energy market due to concerns about poor generator performance, without using any market mechanism to evaluate the options. Today, PJM deploys pre-emergency and emergency DR at PJM's discretion based on market conditions, without using any market mechanism to evaluate the options.

There is an ongoing need to address demand and supply uncertainty in real time. The IMM proposal does that. The IMM proposal addresses the actual, current, defined needs of the system. The IMM does not agree with PJM's effort to expand the proposal beyond the identified needs of the system to address undefined objectives and that include unproven market design proposals and unsupported increases in shortage pricing whose effectiveness is unknown and unproven and whose potentially significantly negative impacts are unknown and unexamined.

The IMM proposal increases the reserve requirements to account for uncertainty in the net load forecast error. Net load is gross load, net of the solar and wind output. Net load is the load that PJM non intermittent generation must actually meet. In contrast, PJM proposes to increase the reserve requirements to account for uncertainty in the sum of the components of the load forecast error while not recognizing the offsetting interactions among them. PJM proposes to calculate load forecast error by separately calculating the forecast error of each of the three elements separately and summing them. PJM's approach fails to account for the fact that the three elements are not perfectly synchronized, are not additive, and offset a times. If the three elements were perfectly synchronized, the IMM method would correctly account for that. PJM asserts, without evidence or explanation that: "The IMM proposal will under-procure reserves when they are most needed and over-procure reserves when they are not needed, including during and following the net-load peak." PJM's statement is incorrect.

PJM includes a ramp product in its proposal. PJM has no evidence that a ramp product would produce benefits in PJM and provides no real world analysis of how it would actually work in PJM with PJM's actual assets. A ramp product is a poor substitute for effective look ahead market clearing software. PJM has been recommending ramp products for years.¹ PJM claims that multi interval dispatch is not feasible and will take years to implement. However, its benefits are undeniable, and other RTOs have found it feasible to implement. PJM should start now in order to be prepared for a future with a higher penetration of intermittent resources and storage resources. The IMM recommends developing look ahead software but does not include that in the IMM RCSTF proposal in order to efficiently address the actual issues related to net forecast uncertainty. Other RTOs have created ramp products, but the evidence is lacking that they have created benefits for the markets.

The IMM proposal extends the current use of a reserve subzone for synchronized reserves to the 30 minute reserve requirement in order to address the deliverability of 30 minute reserves. The IMM proposal is straightforward to implement and relies on the constraint modeling already used by PJM for synchronized reserves. In contrast, PJM proposes transmission constraint reserve requirements that would procure reserves for the loss of the unit that provides the highest pre-contingency relief to each constraint. These additional reserve requirements do not ensure reserve deliverability because they are based on assumptions about where a loss of supply may occur, which could be on either side of a given constraint. It is not clear exactly how this would be implemented or what the costs of implementation would be. Both PJM and the IMM propose to use the same set of constraints to model locational reserve requirements. PJM's September 4th statement contradicts its own proposal when it says that the use of IROL constraints to define the subzone is not appropriate to for 30 minute reserves. In the RCSTF meetings, PJM has stated that PJM would use the same IROL constraints under its locational reserve proposal. There is no difference in the constraints that PJM and the IMM propose to use to define locational reserves, only a difference in the market design. The RCSTF process does not mean that there would not be ongoing work to define the constraints relevant to the deliverability of reserves. That work is needed and the results could be incorporated in the IMM framework. The IMM proposes to continue to use the status quo subzone market design because a better alternative has not been defined. PJM's proposal fails to provide a workable solution.

The IMM proposal requires all reserves to be able to sustain a four hour duration when called on, while PJM's proposal is that only 30 minute reserves be required to have a four hour duration requirement. The IMM proposal would ensure that in the case of a synchronized reserve event, PJM will not immediately have to call on more reserves to back up the reserves

¹ See PJM Interconnection, L.L.C., "Modernizing Wholesale Electricity Market Design" Report of PJM Interconnection, L.L.C., Docket No. AD21-10 (October 18, 2022) and Technical Conference Regarding Energy and Ancillary Services Markets, Docket No. AD21-10 (October 12, 2021).

it used. The September 4th statement asserts that there is value in using a subset of the PJM fleet for 10 minute reserves with a shorter (30 minute) duration requirement than for 30 minute reserves (four hours). PJM also asserts that the potential future role of batteries requires that a shorter duration requirement is needed for synchronized reserves. The facts in PJM do not support that assertion and PJM provided no supporting evidence. The rule for reserves will continue to evolve. Given the lack of evidence regarding the role of shorter duration batteries in the reserve market and the lack of a PJM storage model defining the use of batteries in PJM, PJM's speculation about how batteries would participate under its proposal versus under the IMM proposal is not a reason to support PJM's proposal.

The IMM proposes to include day-ahead reserves that match the expected reserve requirements in real time, as is done currently. PJM claims that its proposal to add additional day-ahead reserves will result in earlier resource commitments for reserves that will change generator behavior such that they can make more reserves available. PJM provided no evidence to support this assertion. PJM ignores the fact that the advance scheduling issues are being addressed separately at the MIC in a joint PJM/IMM proposal. Day-ahead reserves do not solve the advance scheduling issues identified by PJM and the IMM. The analysis supporting that effort has shown that PJM's proposed day-ahead reserves do not align with operator actions taken to procure additional energy or reserves after the day-ahead market.^{2 3} The question of day-ahead reserves is another example of PJM attempting to add unrelated issues to the RCSTF rather than focusing on the actual problem to be solved.

Demand Response Counted in Reserves

The IMM proposes to recognize that quick start (30 minute) pre-emergency and emergency demand response are part of the defined supply of thirty minute reserves. These resources are currently ignored when PJM measures thirty minute reserves. These demand response resources would only be recognized based on the existing definitions of how PJM calls on demand response resources. Pre-emergency demand response would be included in the supply of secondary reserves during hot and cold weather alerts, and emergency DR would only be included during EEA2 events. The hot and cold weather alerts reflect the conditions under which pre-emergency DR is used under current rules. There is no defined trigger for calling pre-emergency DR, so the hot and cold weather alerts do not encompass all possible times that PJM uses them. Under the IMM proposal, PJM would still call pre-emergency DR to curtail when needed, whether or not those resources are included in reserves. Current use of pre-emergency DR almost always occurs during hot and cold weather alerts, and PJM frequently holds back the faster 30 minute DR as a form of reserves while calling the longer lead time

² *Monitoring Analytics, L.L.C., "DA Reserve Product and Post DA Commitments," IMM Presentation to the RCSTF (August 27, 2025).*

³ *See AMP RCSTF proposal (August 19, 2026).*

resources, without including the thirty minute DR explicitly in the reserve market. The IMM proposal does not imply any changes to this or any of PJM's use of pre-emergency DR under any conditions, including emergencies. The IMM proposal to recognize that DR provides reserves requires no changes from the perspective of the DR provider. The deployment and responsibilities of DR providers would not change.

The IMM proposal is simply to include in the supply curve for reserves during the applicable event the amount of load reduction capability that is already reported to PJM in DR Hub. The treatment in the supply curve would be the same as the treatment of offline generators that have not yet been called on for energy. Demand resources would already be on notice of their requirement to curtail load due to the event declaration, so there are no additional obligations imposed on demand resources. The MW of demand response that are included in cleared reserves would receive reserve market payments as secondary reserves. The actual deployment of demand resources would follow the current rules for pre-emergency and emergency DR. Generators that clear secondary reserves similarly perform by responding to PJM's standard process to commit and dispatch them in the energy market. There is no secondary reserve event defined in the PJM rules, so there would not be an increased use of DR under the IMM proposal. The performance measurement would be the existing performance measurement for DR compliance. There would be no new metering or telemetry requirements. The penalty for a resource's failure to provide reserves is equal to the resource's reserve market revenue, so no DR resource would be worse off than under the status quo for not responding. There are no additional penalties or requirements associated with this proposal.