Maryland People's Counsel response to Survey Questions – PJM Reserve Certainty Senior Task Force (RCSTF) policy development.

May 12, 2026

Introduction.

Maryland Office of People's Counsel (MPC) provides the following responses to the survey seeking comment on the proposal developed by staff of the PJM Interconnection LLC (PJM) for consideration by the Reserve Certainty Senior Task Force (RCSTF) for reform of PJM's reserve product markets.

By way of introduction, MPC appreciates the extensive effort PJM staff have undertaken to develop the proposal and the multiple, extended education sessions provided to stakeholders to explain the proposal.

MPC, however, has the following profound concerns about the proposal. The full explanation and details anchoring MPC's concerns are further described in the answers to the individual questions posed by the survey that follow this introduction.

- **Excess Complexity.** The PJM proposal is overly complex, with many new market design features, some of them new to the industry and untested. There has been inadequate evaluation of the tradeoffs between implementation time, new design malfunction risk and desired features.
- **Inadequate review of and mitigation for exercise of market power.** There has been inadequate evaluation of market power issues created and /or exacerbated by the proposed new design.
- **Deficiencies in Cost Impact Assessment.** Notwithstanding efforts to undertake a cost impact assessment of the proposed reform package, that assessment is deficient, as explained further below.
- **Major Adverse and Distorting Impacts on PJM's energy and other markets.** The PJM proposal is likely to foster conditions leading to potentially very large increases in compensation to generators, by impacting the energy market clearing price, which we believe are not warranted, when coupled with forecasted large increases in electric demand and other on-going market design reforms.

  The proposal should not be motivated by a desire to resolve issues relating to PJM's capacity market. In the context of major "affordability" concerns about PJM's markets currently, the PJM proposal will only exacerbate those concerns. As explained further below, the $/MWh cost of energy in PJM increased by 47.3% between 2024 and 2025. The first quarter of 2025 $/MWh cost of energy exceeded the first quarter of 2024 by 78.5%. These increases were sufficient for hypothetical new entrant combined cycle, combustion turbine, and solar generators to recover 100% of their levelized fixed costs.

- **Undue Risks of Unintended Consequences – Lessons from other RTOs.** The highly complex PJM proposal has significant risk of unintended consequences, especially of much higher energy prices. As we know PJM is examining, experience in other RTOs in implementing parallel reforms has resulted in much higher costs than anticipated. The internal market monitor of ISO-NE reports its new reserve design amounted to 9% of Energy and Ancillary Services cost. Something similar very possibly could happen here.[1] For comparison, in 2025 reserve costs were less than 0.5% of the PJM average energy cost.[2] This further argues for a simplified design and taking smaller steps first.
- **More Orderly Sequencing of Reforms are Needed.** MPC proposes, instead, a more ordered sequencing of reforms to the PJM reserve product markets, outlined below in more detail.

The answers of MPC to the specific questions posed by the PJM survey follow (Part I addresses the PJM package; Part II addresses the IMM Package).

Responses to PJM Survey Questions.

I. PJM Package.

1. **Please indicate your level of support for the PJM proposal (package A).**

   Answer.

   The PJM proposal should be simplified and restructured. It should not be approved in its current state.

   The PJM proposal has a wide variety of new market design features, some of them new to the industry and untested. PJM has not evaluated the implementation effort and schedule of the new design and has not evaluated any of the tradeoffs between implementation time, new design malfunction risk, and desired features. Some of the new features are: nodal procurement, ramp reserve, forecast uncertainty reserve, multiple energy durations, elimination of 10-minute fast-start resources, unnesting of products, and new day-ahead products.

   Software or Market Design Changes?

   PJM listed IT-SCED improvements as part of the scope of the RCSTF, which we support. Improvements to IT-SCED would allow more timely commitment of fast-start resources to alleviate the ramp (IT-SCED does not currently evaluate units for commitment within the next 30 minutes). PJM has not presented such IT-SCED improvements, instead creating new ramp requirements.

[1] David Naughton and Internal Market Monitor, "Recommended Changes to the Day-Ahead Ancillary Services Market," February 4, 2026, https://www.iso-ne.com/static-assets/documents/100032/2026_02-imm-memo-with-daas-recommendations.pdf.
[2] Monitoring Analytics, *2025 State of the Market Report for PJM: Volume 1*, table. 9.

Multi-interval dispatch of on-line resources would also alleviate the ramp problems. PJM has not pursued multi-interval dispatch.

The reasons for not pursuing improvements to IT-SCED and SCED are not clear, although the vendor (GE-Vernova) may be the obstacle. This issue has not been adequately addressed. If the vendor cannot deliver substantial improvements, then the RCSTF should be apprised of the limitations and the new design should limit its scope to feasible changes.

Multiplication of Products

PJM has created divisions among the reserve products by specifying additional eligibility requirements that prevent substitution of one service for another. The creation of multiple products that cannot substitute for each other strengthens market power. Creating multiple products that are not substitutable also tends to increase the quantity purchased. Both of these effects raise prices—including the energy price. It also introduces new strategic bidding opportunities, such as withholding duration.

One division is the energy duration of products, the second is ability to be dispatched through SCED, the third is locational. Since SCED can only dispatch on-line resources, this rules out the use of off-line fast-start resources.

The following table lists the products. There are currently three products. The reform establishes six products. Currently all reserve products are both day-ahead and real-time. The reform creates two products that are day-ahead only. Currently only one type of reserve must be synchronous. The reform requires four of the *six* to be synchronous. The synchronous requirement significantly increases structural market power. Four of the six would be locational. There are now three different duration requirements.

Service	Response Time	Real-Time/ Day-Ahead	Online-Only	Locational	Duration
Synchronized Reserve	10 min	Both	Yes	Yes	1/2 hour
10-Min Ramp/Uncertainty Reserve (10-RUR)	10 min	Both	Yes	Yes	1 hour
30-Min Ramp/Uncertainty Reserve (30-RUR)	30-min	Both	Yes	Yes	1 hour
30-Min Reserve	30-min	Both	No	Yes	4 hours
Day-Ahead Scheduling Reserve	60-min	DA Only	No	No	4 hours
Energy Gap Reserve	60-min	DA Only	Yes	No	4 hours

These divisions reduce the competition among services and require the creation of new software for bidding, dispatch, pricing, and settlement. The changes are in both the real-time software and the day-ahead software. Ancillary software, such as the reserve monitoring software and reserve deployment software will probably also have to be changed.

It is our view that PJM should present a simplified design change; maintaining the current set of products but modifying them. The target for approval and implementation combined should be two years. Recognizing real software and implementation limits should be a part of the design.

Energy Prices and Inframarginal Rent

We do not believe that the RCSTF should be used to improve investment incentives to resolve RPM issues as suggested by PJM Board communications and the recent white paper on investment incentives.[3] The $/MWh cost of energy increased by 47.3% between

[3] PJM Board of Managers and David E. Mills, "Board Decisional Letter on Critical Issue Fast Path - Large Load Additions," January 16, 2026, https://www.pjm.com/about-pjm/who-we-are/pjm-board/public-disclosures; PJM Board of Managers and David E. Mills, "PJM Board Response to Retail Energy Suppliers Association RE Conservative Operations," March 9, 2026, https://www.pjm.com/about-pjm/who-we-are/pjm-board/public-disclosures; PJM Interconnection, *Powering Reliability Through Market Design: Addressing Rising Demand and Constrained Supply, and Stimulating Investment To Support Durable Reliability* (2026), 70, https://www.pjm.com/-/media/DotCom/library/reports-notices/special-reports/2026/20260506-powering-reliability-through-market-design.pdf.

2024 and 2025.[4] The first quarter of 2025 $/MWh cost of energy exceeded the first quarter of 2024 by 78.5%.[5] These increases were sufficient for hypothetical new entrant combined cycle, combustion turbine, and solar generators to recover 100% of their levelized fixed costs.[6]

The emphasis the Board has placed on increasing energy prices through the RCSTF undermines the credibility of the reform proposal.

Energy Price Risk

This highly complex proposal has significant risk of unintended consequences, especially of higher energy prices. ISO-NE recently implemented a new day-ahead reserve product which has had much higher costs than anticipated. Something similar very possibly could happen here. This argues for a simplified design and taking smaller steps first.

We appreciate that PJM staff prepared an assessment of the costs using the ORDCs. It was useful but assumed that the offers were $0/MW. PJM has stressed that reserve offers would have expanded offer caps and the ability to incorporate fuel costs and penalty risks. However, no offer cap calculation has been presented and the proposal is incomplete without it. Perhaps more importantly, it was conducted with day-ahead hourly market software whereas contingencies, intra-hour ramping, and intra-hourly uncertainty are real-time events.

There is a significant possibility of much higher offers, due in part to the new penalties, that could raise the reserve and energy clearing prices. MPC cannot support the proposal until the cost capping methodology is described and more accurate cost estimation is performed.

The proposal has also not finalized the penalty factors necessary for a full cost impact study. The Whitepaper creates more uncertainty over the level of penalty factors and the energy price risk.

a. Please explain any significant concerns you have with the PJM proposal overall

Answer:

MPC believes that PJM does, in fact, face upcoming changes in its resource mix that will require adjustments to dispatch and commitment that affect the type and level of reserves held. That said MPC believes that the reserve market changes should be structured into two phases.

[4] Monitoring Analytics, *2025 State of the Market Report for PJM, Volume II*, table. 10.
[5] IMM, "Market Monitor Report," PJM Members Committee, April 22, 2026, https://www.pjm.com/-/media/DotCom/committees-groups/committees/mc/2026/20260422/20260422-item-04---market-monitoring-report---presentation.pdf.
[6] Monitoring Analytics, *2025 State of the Market Report for PJM: Volume 1*, 56.

The first phase would limit changes to what can be implemented with minimal software effort due to the vendor's track record. This is the path chosen by ISO-NE—who has the same vendor. As ISO-NE recently wrote: *"…it leverages the existing real-time co-optimization framework, it achieves these goals without necessitating the time-consuming development of entirely new products, new offers, or new settlement systems.*"[7]

The first phase should be based on an assumed implementation time, such as one year. This implementation time would inform the design features.

The second phase would be refined after an evaluation of the first phase. More complex design features such as new products, differences in duration, and locational requirements would be reevaluated before the final second phase.

The first phase can be simplified in part because there have been recent changes reducing the immediacy of two of the issues that were originally highest priority:

1. RCSTF Key Work Area #2: Reserve Resource Performance and Penalty Structure

   The work done by PJM and the IMM has improved the synchronous reserve performance as discussed in the April 22 Market Monitor Report to the Members Committee.[8] This lowers the urgency of the issue.

   However, we recognize that the original concern of low penalties due to low reserve prices has merit. If the penalties are based on the prices, then penalties will be subject to a feedback loop that sends them too low or too high. The past problem was low prices leading to low penalties and low performance; the future problem is likely to be high prices leading to high penalties and higher performance but also higher costs.

   MPC recommends addressing the performance issue in three ways.

   a. Derating the reserve capability of resources to their most recently observed performance. PJM does not have procedures for capability testing or evaluation for the reserve performance other than for synchronous reserve events. Currently, if a resource owner knows that it is unlikely respond adequately, it still offers the unrealistic amount and PJM accepts MW as reserve that PJM knows is not likely to

7 Parviz Alivand and Yujie Hu, *Dynamic Operating Reserves for a Changing System: Update*, NEPOOL Markets Committee (ISO-New England, 2026), https://www.iso-ne.com/static-assets/documents/100033/a06_mc_2026_3_10-12_dynamic_operating_reserves_memo.pdf.
8 IMM, "Market Monitor Report."

perform. This raises questions about misrepresentation and thus even fraud that should be carefully examined.[9]

b. Base capability estimates on regularly observed performance during normal dispatch and commitment as well as during Synch. Reserve Events. The objective should be to measure capability before a rare emergency rather than after the emergency has occurred.
c. The current penalty structure creates a positive feedback loop where the penalty is either too low based on low past prices or too high based on high past prices. The RCSTF proposal dramatically increases the penalty in an effort to push the loop into high penalties and high prices. An alternative is to link the penalty to another product or a fixed rate. A viable alternative is to require the resource to replace the missing performance with Regulation MW that is added to the system. Added Regulation MW would improve the RTO's CPS and DCS performance in a way that a financial penalty does not. Another way of delinking the penalty from the spot price would be to set a fixed penalty or a penalty based on another product such as energy or regulation.

2. KWA#3: Reserve Offer structure appropriately reflects resource capabilities and aligns with resource fuel procurement

   This work area was motivated by the experience of Winter Storm Elliot when the lack of fuel created forced outages. We have had three winter storms since then and PJM has implemented a series of reforms collectively referred to as "conservative operations." The analysis of Winter Storm Fern presented by the IMM on April 8 shows that forced outages caused by lack of fuel dropped dramatically in all three events.[10] Events have overtaken the original urgency.

   MPC also agrees with the IMM in this case that the market design is incomplete without a specification of how the offer cap for reserve offers would be calculated.

   MPC recommends reassessing the priority of changes to the offer cap and presentation of an initial design for any offer cap change.

A Phase 1 "Simple" proposal would include:

9 FERC, *Order Assessing Civil Penalties: American Efficient LLC et Al.* (2026), https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20260415-3078.
10 Joel Romero Luna and IMM, "Winter Storm Fern," Market Implementation Committee, April 8, 2026, https://www.monitoringanalytics.com/reports/presentations/2026/IMM_MIC_Winter_Storm_Fern_20260408.pdf.

Table 1: Simple Phase 1

PJM Concerns	Simple Implementation
Reserve performance failures	• Audit responses for all reserve products • De-rate resource reserve MW to most recent audit value • Require non-performing reserve resources to replace missing MW with Regulation MW or pay fixed penalty
Day-Ahead Risk, Winter Risk	• Continue conservative operations • Monitor, and add plan for a Phase 2 of reform after evaluation of Simple implementation
Renewable Uncertainty	• Dynamic real-time adjustment of existing ORDCs for ramp and uncertainty • Keep existing products, bidding, clearing, settlement • More frequent fast-start commitments (less than 30-min.) to fulfil ramp needs
Storage Risk	• Uniform 1 hour duration for any reserve resource • Move other storage enhancements to ESR Model Enhancements Project
Fuel Availability, Capacity Performance	• Address in RPM

MPC believes that it is necessary to address ramp, net load uncertainty, and storage risk, but also believe that modification of the current mechanisms should be pursued first.

1. **Please indicate your level of support for representing the Day-Ahead increased operational uncertainty based on the assessed risk level in the Day-Ahead Market (PJM's proposal for Day-Ahead Scheduling Reserves).**

   Answer.

   MPC does not believe that this is needed. PJM has the authority to commit units for reliability both before and after the DA market. The imposition of additional constraints in the DA market will drive up energy and reserve prices in the DA market. Price management should not be the focus of these reforms.

   a. **Please explain any significant concerns with this element of the proposal.**

      The DASR proposal does not allow for start times beyond 1 hour. This limits it to a small subset of resources. It is likely that the primary reliability commitments after the DA market involve units, such as gas combined cycles and thermal units, that have start-up and notification times greater than one hour. If such units are

excluded, the usefulness of the DASR is limited and more likely just serves to increase prices.

2. **Please indicate your level of support for representing the Energy Gap (the gap between the cleared physical supply and PJMs load forecast) in the Day-Ahead Market on high and medium risk days in the winter?**

   Answer

   This proposal should not be implemented.

   A big trigger of the California Energy Crisis of 2000-2001 was the requirement that the utilities buy 100% of their energy needs through the CalPX day-ahead market. This prevented buyers from escaping market power exercise by purchasing in the real-time market. It was not the only cause of the bankruptcies, but enabled strategies that contributed to the problem.

   The Energy Gap proposal repeats this problem by forcing load to buy in the DA market when PJM determines that its load forecast should replace load bidding. This will occur during periods when PJM determines that there is a possible generation shortfall, in other words, when generators are almost certain to have market power.

   PJM has the authority to make reliability commitments outside DA market. There is no need to repeat the mistakes of the California Energy Crisis.

   a. **Please explain any significant concerns with this element of the proposal.**

      See above.

3. **Please indicate your level of support for representing net load forecast uncertainty in PJM's reserve requirements and creating new reserve services to represent the ramp and uncertainty needs?**

   Answer

   MPC agrees that increasing uncertainty and increasing ramp requirements need to be addressed. However, much of it should be addressed through software improvements, such as improved short-term commitments. MPC urges modifying the current reserve products. For example, by adding a sloped ORDC that begins at the end of the contingency amount as proposed for the 30-minute Reserve. As mentioned, this is the direction of the current ISO-NE reform.

   One approach would be to develop a metric for ramp need experienced in real-time and trigger additional reserve product features, such as a ramp product or an extended reserve requirement only when a threshold has been triggered. We would like PJM to present analysis of the frequency of ramp-constrained events.

   a. **Please explain any significant concerns with this element of the proposal.**

Net load ramp and net load uncertainty should be distinguished. Net load ramp is the mean forecast of ramp. Uncertainty reserve is beyond that amount. An operator must be able to meet the contingency even if the system is ramping. In the past there was sufficient flexibility in the system such that it could meet the ramp and the contingency. When the system becomes ramp constrained and uses some of the contingency reserve to meet the ramp, the operator is in danger of not being able to recover from a contingency. This is a problem with more renewables.

Uncertainty is an additional factor. It is forecast error. PJM's proposal ascribes the forecast error to three components: load, solar generation, and wind generation:

> *Uncertainty = % Load Forecast Uncertainty x Forecasted Load + % Wind Forecast Uncertainty x Forecasted Wind + % Solar Forecast Uncertainty x Forecasted Solar*

This is adequate but raises concerns about cost responsibility. If data centers create large amounts of load uncertainty, why should customers pay for the reserves? If the uncertainty in the ORDC causes the energy price to rise, how do we resolve that?

Since the proposal is for a nodal procurement where areas with large concentrations of data centers may face higher reserve costs, the assumption that it is okay to socialize the uncertainty becomes less tenable.

4. Please indicate your level of support for the shape and penalty factor levels of the PJM-proposed ORDCs.

Answer.

The proposed reforms to the ORDC are not ready yet for implementation.

a. Please explain any significant concerns with this element of the proposal.

The unnested design makes it more difficult to evaluate whether the ORDCs will be effective. The reserve hierarchy as prescribed by the ORDCs needs to be more fully specified and stress tested.

The maximum possible price should be specified and hard price caps for energy and reserves should be proposed to avoid unintended consequences.

We have requested a simple model of the design that would allow participants to recreate the outcome of simple examples presented by PJM. This would extend our understanding and allow participants to stress test the design. The model could be expressed in GAMS or AMPL.

We believe that basing the ORDCs on their ability to cause the commitment of additional resources is the right approach. However, there should be recognition that fuel prices can change (such as due to the Iran war) and thus the ORDCs should be able incorporate such changes without being refiled.

5. **Please indicate your level of support for locational reserve clearing prices included in the PJM proposal.**

   Answer.

   MPC does not support this approach.

   a. **Please explain any significant concerns with this element of the proposal.**

      The nodal procurement approach is unlikely to be implementable by the current vendor in a timely fashion.

      The nodal procurement will increase energy prices by modeling reduced transmission availability. Given that the actual variability may come from unexpected areas of the network, there is the risk that one area may pay more for reserve but never use it.

      We believe that the Synchronous Reserve locational procurement will have fewer implementation risks and should be tested in a real-time market simulation.

6. **Please share any additional feedback you have on the PJM proposal.**

   a. **Please explain any significant concerns with this element of the proposal.**

      See above for description of significant concerns.

II. IMM Package.

1. **Please indicate your level of support for the IMM proposal (package B)**

We support further development of the IMM proposal as the primary approach. The primary benefit of the IMM proposal is that it maintains the current software and design framework. It reduces design risk and implementation time risk. It addresses the challenges presented in a more pragmatic manner. It can be seen as evolutionary rather than revolutionary and better matched to PJM's current circumstances.

We believe that additional details need to be developed and that PJM should provide feedback on implementation details.

Please explain any significant concerns you have with the IMM proposal.

The IMM proposal does not address ramp issues. It assumes that ramp issues can be resolved with multi-interval dispatch. There may be real software implementation issues. The IMM should include an assessment of the implementation timelines.

The issue of ramp needs to be addressed and monitored. We need a metric of how close to system ramp constrained PJM has become. Does it happen once a year or once a week?

There should be more emphasis on testing and derating unit ramp and start performance. Derating individual non-performers would allow PJM to stop over-procuring reserve as insurance against non-performers.

The IMM proposal for penalty structure maintains the broken PJM design of assessing penalties only when there is a reserve "event". Since this is rare—it has never happened for primary reserve—the penalty is ineffective. Further, since the expected penalty price determines the offer cap, infrequent events have driven the offers down and thus the prices down. Since reserve is a public good without demand participation to determine a true market value—impossible with public goods—the prices cannot represent value and should not be used for penalties.

2. **Please indicate your level of support for representing the real-time operational uncertainty in the Day-Ahead Market based on the same method used to calculate the real-time reserve requirements (IMM's proposal for day-ahead reserve requirements)**

We support this in principle.

Please explain any significant concerns with the element of the proposal.

The IMM should explain how DA to RT forecast uncertainty will be handled in the proposal. We assume that in its proposal the reliability commitments after the DA market will correct for DA underbidding or forecast errors. There should be a quantification of this.

3. **Please indicate your level of support for representing net load forecast uncertainty in PJM's existing Primary Reserve requirement by extending the requirement when 30-minute net load forecast uncertainty exceeds 50 percent of the largest contingency.**

We support this approach.

Please explain any significant concerns with this element of the proposal.

The IMM proposal is for a single MW amount at the 95th percentile. This is simpler to implement than a downward sloping curve. We would appreciate further discussion explaining the IMM's reasoning for not applying a downward sloping curve as PJM did.

4. **The IMM proposes to remove the performance adder to the synchronized and primary reserve requirements. (PJM's current reserve requirement has an adder of 20 percent of the largest contingency for the synchronized requirement, which then translates to an adder of 30 percent for the primary reserve requirement). Please indicate your level of support for removing the adders.**

We support this because the performance has increased so much. PJM should have the flexibility to require higher reserve amounts based on predetermined metrics of system performance.

Please explain any significant concerns with this element of the proposal.

Our support hinges in part on the imposition of resource specific derating of reserve capability based on observed capability and performance. Good performers should not be treated the same as poor performers.

5. **Please indicate your level of support for adding generator uncertainty as represented by the largest contingency and two-hour real-time net load forecast uncertainty into the 30-Minute Reserve requirements, as described in the IMM package.**

We support this approach.

Please explain any significant concerns with this element of the proposal.

The IMM proposal is for a single MW amount at the 95th percentile. This is simpler to implement than a downward sloping curve. We would appreciate further discussion of the IMM's reasoning for not applying a downward sloping curve as PJM did.

6. **Please indicate your level of support for maintaining the status quo reserve product nesting structure and ORDC penalty factors.**

We fully support keeping the current structure. Implementing a non-nested approach would impose too much design risk (unforeseen consequences) and implementation risk. The current ORDC penalty factors have been sufficient for the software to dispatch and commit resources. The unnested design combined with the new penalty factors could result in unforeseen consequences.

Please explain any significant concerns with this element of the proposal.

7. **Please share any additional feedback you have on the IMM proposal.**

NA. See prior responses.