Problem/Opportunity Statement

PJM last seriously explored a sub-annual approach to capacity market auctions in 2023. At that time, PJM reaffirmed the need for "near-term achievable improvements to the market's ability to meet resource adequacy requirements in an efficient, least-cost manner."[1] The lack of a sub-annual approach to capacity credentialing and procurement results in unnecessary cost increases for PJM ratepayers and simultaneously fails to adequately compensate generators whose units are being underassessed. The need for this reform has only grown in the years since PJM last considered a sub-annual model. Immediate action is necessary to fulfill PJM's core mission of affordability and reliability.

PJM's Reliability Pricing Model (RPM) Base Residual Auction (BRA) procures resources on an annual basis for an entire delivery year. However, in 2022 and 2023, PJM explored moving to a two-season capacity market auction structure. Independent analyses and information published by PJM as part of that exploration demonstrated that a sub-annual capacity mechanism is preferable to the current annual process. Likewise, PJM's Independent Market Monitor has also proposed moving to a sub-annual market structure. Other key capacity markets across the U.S., including MISO, NYISO, and ISO-NE, either have or are in the process of designing sub-annual capacity markets due to the benefits of sub-annual markets over annual markets in the evolving energy landscape.

First, according to PJM's own prior analysis, there has been "a significant shift in the patterns of reliability risk to the winter season, where prior resource adequacy analysis has historically shown almost all risk during summer peaks." In other words, the risks associated with winter peaks have increased, and winter peak risks are not always correlated with summer peak risks. As a result, procurement of sufficient resources to cover the historic summer peak may no longer provide sufficient reliability year-round. Additionally, a growing proportion of generation resources (both renewable resources like wind and solar and gas fossil generators) exhibit distinct seasonal dynamics. Natural gas electric generators, for example, compete between electricity and heat generation during the winter. PJM has stated that a sub-annual approach to the capacity market auction would be "[m]ore robust to the uncertainty in relative risk patterns between winter and summer," lowering the risk of grid unreliability.

Second, the magnitude of summer and winter peak loads are different, and the annual capacity auction model inefficiently procures resources to meet peak demand in each season, to the detriment of ratepayers. Independent analyses have found that the current annual approach with seasonal matching elements systematically undervalues certain seasonal resources, such as summer-only demand response, winter-optimized wind and combustion resources, and summer-optimized solar.[2] As demand grows and new resources come online, the existing sub-annual mis-accreditation will become more prominent, harming grid reliability and increasing consumer costs. A more comprehensive sub-annual solution, including fully separate seasonal reliability requirements, capacity ratings, and capacity payments could more efficiently procure the type and amount of generation resources actually needed to meet anticipated peak demands at different times of the year.

In 2023, PJM found that "[g]iven these results, the reliability and efficiency benefits in moving to a seasonal design are now greater." According to PJM, a sub-annual construct "[a]llows for improved market efficiency and price signals for capacity," "[i]mproves the alignment of system and locational accreditation

[1] PJM, Capacity Market Reform: PJM's Proposal (2023). https://www.pjm.com/-/media/DotCom/committees-groups/cifp-ra/2023/20230614/20230614-item-02---pjm-cifp-stage-3-proposal.pdf

[2] The Brattle Group, Opportunities to More Efficiently Meet Seasonal Capacity Needs in PJM (2021). https://www.brattle.com/wp-content/uploads/2021/05/13723_opportunities_to_more_efficiently_meet_seasonal_capacity_needs_in_pjm.pdf

of resources" and "[s]olves certain problems with the current annual construct that would need to be addressed given the shift in reliability risk." Despite these findings, further progress towards a comprehensive sub-annual capacity auction design has not taken place.

This problem statement is offered now to allow sufficient time for any necessary changes to PJM's capacity auction model to be implemented before December 2026, ensuring they take effect in time for pre-auction activities for the 2030/2031 delivery year. Further delay beyond the 2030/2031 delivery year—given the risks of grid unreliability and inefficient resource procurement described earlier in this document—would be particularly harmful given projections of additional significant load growth and resource constraints.

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Background Materials

- The Brattle Group, Opportunities to More Efficiently Meet Seasonal Capacity Needs in PJM (2021) https://www.brattle.com/wp-content/uploads/2021/05/13723_opportunities_to_more_efficiently_meet_seasonal_capacity_needs_in_pjm.pdf-content/uploads/2021/05/13723_opportunities_to_more_efficiently_meet_seasonal_capacity_needs_in_pjm.pdf
- PJM, Capacity Market Reform: PJM's Proposal (2023) https://www.pjm.com//media/DotCom/committees-groups/cifp-ra/2023/20230614/20230614-item-02---pjmcifp-stage-3-proposal.pdf

Issue Charge

Issue Source

The issue charge is presented by Governor Josh Shapiro, on behalf of the Commonwealth of Pennsylvania.

Issue Content

The current annual market auction structure with seasonal matching elements is suboptimal. PJM and external stakeholders have recognized the benefits of a comprehensive sub-annual capacity market auction structure for grid reliability and efficiency for many years. Other major RTOs/ISOs have already taken advantage of these significant benefits from a sub-annual approach, allowing every available megawatt of capacity to be called upon throughout the year by more accurately recognizing real-world conditions.

In an environment of significant projected load growth and resource constraints, there is a pressing need to implement a sub-annual capacity model, which could provide "near-term achievable improvements to the market's ability to meet resource adequacy requirements in an efficient, least-cost manner."[3] This issue charge would require PJM to hire an independent consultant to thoroughly and rapidly investigate and recommend solutions that implement a fully sub-annual capacity model, which should include at minimum:

- Sub-annual reliability requirements, targets, and demand curves.
- Sub-annual CETL values.
- Sub-annual resource capacity ratings, resource accreditation, and resource qualifications.
- A sub-annual auction structure with sub-annual clearing prices, with a mechanism to address generator annual revenue requirements.
- Sub-annual capacity obligations and charges.
- Cost allocation for the sub-annual market charges.

Key Work Activities & Scope

Hiring of a consultant to complete subsequent activities:

1. Education and comparison of PJM's annual auction with sub-annual auctions and approaches used by other RTOs/ISOs.
2. Development of key design principles and criteria for a sub-annual capacity market model, including at minimum:
    a. Sub-annual reliability requirements, targets, and demand curves.
    b. Sub-annual CETL values.
    c. Sub-annual resource capacity ratings, resource accreditation, and resource qualifications.
    d. A sub-annual auction structure with sub-annual clearing prices, sufficient to compensate generator annual revenue requirements.
    e. Sub-annual capacity obligations and charges, including potential changes to planned maintenance and outage rules.
    f. Sub-annual resource offer caps.
3. Education and scenario analysis of proposed sub-annual capacity market models that have sufficient stakeholder support and can be implemented for the 2030/2031 delivery year.

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[3] PJM, Capacity Market Reform: PJM's Proposal (2023). https://www.pjm.com/-/media/DotCom/committees-groups/cifp-ra/2023/20230614/20230614-item-02---pjm-cifp-stage-3-proposal.pdf

4. Modified cost allocation for the sub-annual market charges.
5. Exploration of potential further reforms.
6. Development of proposal(s) based on the above analysis, discussion, and findings.

Out of Scope

- Changes to the RPM unrelated to sub-annual market structure, including a more holistic review of potential RPM reforms that may be desirable but cannot be completed expeditiously.

Expected Deliverables

1. Consultant-provided education and analysis as needed concerning items identified in the scope of work.
2. Consultant-provided proposed solution(s) to address the areas identified in the scope of work, and corresponding proposed revisions to PJM's tariff, governing documents, and manuals as appropriate.
    a. This activity is an important first step for identifying modifications in existing PJM rules and for developing rules for a sub-annual capacity market. Stakeholders will have additional opportunities after this first period of activity to weigh in on proposed changes to the manuals and governing documents.

Tier 1, consensus (unanimity) on a single proposal (preferred default option) following consultant report.

Stakeholder Group Assignment

The issue shall be considered expeditiously by a newly formed Sub-Annual Senior Task Force which shall report to the MRC.

Expected Duration of Work Timeline

Work on all topics should begin immediately. Topics should be completed by December 20, 2025:

Topic	Design Timeline	Need Timeline
Hiring of a consultant to complete subsequent analysis	Start: Immediately Timeline: 2-4 weeks	August 2025
Sub-annual reliability requirements, targets, and demand curves.	Start: Immediately Timeline: 5 months	December 20, 2025
Sub-annual CETL values.	Start: Immediately Timeline: 5 months	December 20, 2025
Sub-annual resource capacity ratings, resource accreditation, and resource qualifications.	Start: Immediately Timeline: 5 months	December 20, 2025
A sub-annual auction structure with sub-annual clearing prices.	Start: Immediately Timeline: 5 months	December 20, 2025
Sub-annual capacity obligations and charges.	Start: Immediately Timeline: 5 months	December 20, 2025
Cost allocation for sub-annual capacity charges	Start: Immediately Timeline: 5 months	December 20, 2025

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Deleted: a. Corresponding revisions to PJM's Tariff and the Operating Agreement consistent with the solutions proposed will be brought to the MRC and MC for review and endorsement, resulting in a FERC filing. Proposed revisions to PJM Business Practice Manuals conforming to the FERC approved solution will be brought to the appropriate Standing Committees for review and endorsement. Each Key Work Activity product may be brought forward for vote separately, and items need not be voted and advanced together. ¶ Decision-Making Method ¶

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- The effort should be completed for ultimate implementation before the 2030-2031 BRA.
- Priority Level: High
- Timing: Immediate
- Meeting Frequency: Monthly
- Charter: This document will serve as the Charter for a new group created by its approval.

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