Resource Adequacy Conceptual Design CIFP Stage III

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Proposal

- AMP has now been joined by JPower USA, proposing:
  - For the October Filing, a phased implementation approach for market reform that is needed to ensure stable market-based structures that can meet the reliability needs of the evolving resource mix.
- AMP and JPower still believe that any reform, both near-term and long-term, needs to adhere to long-standing guiding principles of capacity market design.
- AMP provided proposed enhancements to the SCM at the 7/12 meeting (link).
- Why the IMM's Sustainable Capacity Market (SCM) design?
  - PJM Markets need reliability to survive.
  - The IMM's Sustainable Capacity Market (SCM) design is a stable market-based structure for long term reform.

Phase I (DY 2025/2026 and DY 2026/2027)

- Market Reforms in the current construct to address lessons learned from WSE.
  - Modified Pay for Performance structure (CP).
  - Maintain Status Quo Capacity Must Offer rules into the RPM Capacity Market including categorical exemptions.
  - Institute that all committed capacity (including DR) has a must offer requirement on a daily basis into the energy market.
  - Required transparency of operational decisions by PJM.
  - FRR Entities and their committed FRR Capacity Resources will now face financial penalties on par with RPM resources and no longer have the option for “physical” penalty commitments to be made in subsequent years.
  - For the transition Delivery Years, retain the status quo accreditation for all resource types rather than making a change for a single year and then another change in the subsequent year.
  - Modeling enhancements to model CETO/CETL hourly and continue evaluation of Capacity Benefit of Ties (CBOT).

Phase II (DY 2027/2028)

- Implement Modified Version of Sustainable Capacity Market (SCM) to improve capacity market for future needs of evolving resource mix. Framework includes (link here IMM to proposal):
  - Elimination of Capacity Performance paradigm (CP). No more CPQR.
  - Implementation of “Pay-As-You-Go compensation” (PAYG) based on hourly availability.
  - Risk Modeling on a locational and seasonal basis that is automatically incorporated into the model and market clearing mechanism, as this looks at hourly availability based on season, weather, and other conditions.
  - Improved Accreditation based on Modified Equivalent Availability Factor (MEAF).
- Proposed Enhancements to SCM
  - Implement 2-year auction procurement horizon. Two Incremental Auctions.
  - Modified Energy Must Offer Obligations.
  - Maintain the scheduling, commitment, and dispatch requirements of Phase I transition.
  - Maintain Demand Resources that are Capacity Resources energy market must offer requirement.
  - Frequent Testing Requirements.

Implementation Timeline

- Illustration of the implementation timeline with a 2 Year Auction Horizon and elimination of one Incremental Auction.
  - If the SCM is implemented for 2027/2028 Delivery Year, then the Auction Schedule will be back on track sooner.

<u>Resource Senior Task Force (RASTF)</u>

- After receiving a FERC order from the October 2023 filing, initiate a stakeholder process to finalize the details on the SCM design with a filing by (set date) and potentially explore:
  - Sub-annual procurement with Time-of-Day Pricing and Assessments.
  - Any further long-term reforms to ensure comparability between RPM and FRR.

		Order on 12/1/2023		
Delivery Year	Auction	Auction Open Date	Order -> Auction (Months)	Auction Results (Months)
2025/2026	BRA	Jun-24	6	12
	3rd IA	Feb-25		4
2026/2027	BRA	Dec-24	12	18
	3rd IA	Feb-26		4
2027/2028	BRA	Jun-25	18	24
	3rd IA	Feb-27		4
2028/2029	BRA	Jun-26	30	24
	3rd IA	Feb-28		4

*** Back on Track for 27/28 DY

Appendix
AMP Stage III Presentations

Additions to the CIFP Matrix

- AMP continues to advocate for long-term holistic market design reforms to the PJM resource adequacy construct as part of robust stakeholder processes.
- Given the overwhelming consensus of the package endorsed by members at the MC on May 11th, AMP is still supportive of bringing a proposal forward that ties the penalty to the clearing price and modifies the PAI trigger, to be considered as part of the CIFP process and ensure Board consideration for the October 1, 2023 filing.
- In our presentation on 4/19, and the previous RASTF, AMP has introduced conceptual designs to eliminate the current Capacity Performance mechanism.
  - "*Replace with new mechanism that requires regular resource testing (eg, monthly or quarterly basis) for all cleared capacity resources".* (DC 20 – KW4)
- **Update: As a permanent solution, AMP added the endorsed design components to the matrix that tether the performance assessment structure to capacity revenue (*i.e.,* BRA LDA Clearing price).**

New Performance Assessment Structure

For DY 25/26 and beyond

Non-Performance Charge Rate (Design Component 28 – KWA 4)	• For Capacity Performance Resources and Seasonal Capacity Performance Resources, the Non-Performance Charge Rate = (Base Residual Auction clearing price for the LDA and Delivery Year for which such calculation is performed * (the number of days in the Delivery Year / 30) / (the number of Real-Time Settlement Intervals in an hour).
Stop-Loss for Non-Performance Charges (Design Component 29 – KWA 4)	• The Non-Performance Charges for each Capacity Performance Resource (including Locational UCAP from such a resource) and each PRD Provider for a Delivery Year shall not exceed a Non-Performance Charge Limit equal to 1.5 times the Base Residual Auction clearing price for the applicable LDA and Delivery Year times the megawatts of Unforced Capacity committed by such resource or such PRD Provider times the number of days in the Delivery Year. The Non-Performance Charges for each Seasonal Capacity Performance Resource for a Delivery Year shall not exceed a Non-Performance Charge Limit equal to 1.5 times the Base Residual Auction clearing price for the applicable LDA and Delivery Year times the megawatts of Unforced Capacity committed by such resource times the number of days in the season applicable to such resource.
Timing of Performance Assessment(s) (Design Component 21 – KWA 4)	• "Emergency Action" shall mean (1) any megawatt shortage of the Primary Reserve requirement (as specified in the PJM Manuals) in a Reserve Zone or Sub-Zone, inclusive of any adjustments to such requirement to account for system conditions, as determined by the dispatch run from the security constrained economic dispatch and where there is also a Voltage Reduction Warning and reduction of critical plant load, Manual Load Dump Warning, Maximum Emergency Generation Action, or the curtailment of non-essential business loads and voltage reduction that encompasses such Reserve Zone or Reserve Sub-zone or (2) anytime the Office of Interconnection identifies an emergency and issues a load shed directive, Manual Load Dump Action, Voltage Reduction Action, or deploy all resources action for an entire Reserve Zone or Reserve Sub-zone.

Caveat

- The following slides and positions may be modified based on a combination of events including:
  - Feedback from stakeholders
  - Future education
  - Lessons Learned from Winter Storm Elliott reports when provided by PJM

Objectives

- Simpler, less administrative market construct for resource adequacy.
- Resource adequacy clearing mechanisms that reflecting the unique needs of each geographic area of PJM while accounting for extreme weather risk, regardless of the month in the year.
- Eliminate Capacity Performance expectation and modify mechanism to include required resource testing and assessment of energy market offer obligations.
  - Potential reforms may be needed to the Emergency Procedures steps, triggers and price formation to improve energy & reserve market price signals, recognize reliability attributes, and align with fuel markets to ensure fuel security.
- Maintain incentives (bonuses/penalties) that are reasonably tethered to capacity revenue (*i.e.,* BRA LDA Clearing price).
- Focus on lowest possible cost – inclusive of all inputs including potential RPS non-compliance penalties that would be passed on to consumers

AMP's Resource Adequacy Conceptual Design

Key Elements

- Base Auction Timing
  - Less than 3 years forward annual auction clearing with a sub-annual component
    - Members have experience with BRAs held <36months before start of DY
- Enhance LSE self-supply optionality
  - Aids with state specific RPS compliance
- Eliminate CP and create a new incentive structure (e.g., "Pay as you go")
  - Includes elimination of CPQR
- Modified Testing, Performance Assessment, and Accreditation for all supply resources
- Recognition of Reliability Attributes (e.g., Storage, Fuel Secured, Load Following, Fast Start).
  - Future performance expectations aligned with operational reality.
  - MWs procured today in RPM are incorrectly assumed to be fungible
- Maintain Must Offer Obligations for all existing *and* planned resources
- Consider Strengthening Reliability Backstop

Resource Auction Design

Design Components

RPM Auction Timing	• Less than 3-year forward design.
Reliability Requirements for RTO and LDAs	• Annual requirement to pre-determined amount (see Clearing Optimization, below) • Sub-annual requirements. (see Clearing Optimization, below)
RTO Procurement Metric and Target Level	• Variable seasonal risk that totals max of 1 day in 10 LOLE or equivalent.
LDA Procurement Metric and Target Level	• Sum of LOLE across all months ≤ 0.10 Annual LOLE or equivalent.
Capacity Product Offer Quantity	• Resource can offer: Annual Capacity (would clear first) • Any uncleared capacity that has a must offer requirement must participate in the sub-annual auctions. • Annual capacity sets ceiling price for sub-annual auctions
Clearing Optimization	• Option 1: Annual Capacity clears relative to a vertical line based on the VRR curve pegged at IRM + X% (e.g., Point B on VRR curve). Sub-annual cleared between Point B and Point C on VRR curve. • Option 2: Annual Capacity quantity is based on the minimum of the sub-annual peaks. Quantity of sub-annual capacity procured based on remaining requirement between the “baseload” quantity cleared in the BRA and the sub-annual period’s peak plus reserves.

New Incentive Structure : Eliminate CP
Modify Resource Testing and Performance Assessment

Design Components

Overview	• Eliminate Capacity Performance. Replace with new mechanism that requires regular resource testing (e.g., monthly or quarterly basis) for all cleared capacity resources.

Expected Performance Testing	• Annual or sub-annual testing to meet cleared capacity MW value. PJM will endeavor to perform resource testing when the unit is committed and dispatched to minimize uplift.
Non-Performance Charge Rate	• MW shortfall between cleared MWs and testing result times the annual or sub-annual capacity clearing price
Allocation of Non-Performance Charges and other funding details	• Penalties from non-performance tests are allocated to generators that met their capacity obligation by passing performance testing. Allocation value determined based on the number of generators that pass their test

Resource Risk and Market Mitigation

Design Components

Capacity Market Must Offer Obligations	• Consistent with status quo, existing and planned capacity units have a capacity market must offer obligation. In addition, any uncleared capacity that has a must offer requirement must participate in the sub-annual auctions • Planned resources to notify PJM of intent to offer prior to the posting of planning parameters.
Default MSOC methodology	• MSOC defined by a unit specific algorithmic, verifiable method. No default value.

Market Design Areas

Not in AMP's conceptual design, but considering alternative solutions, including PJM's and IMM's

- ``Enhanced Risk Modelling
  - Looking for additional rules to improve capacity procurement on a sub-annual basis
    - Interested to learn how transitioning to an EUE metric can be done on a sub-annual basis.
  - Looking for additional rules to improve locational modeling needs (CETO/CETL)
- Resource Accreditation
  - Generally supportive of improving accreditation for all supply-side resources that will determine value individually according to their contribution to system reliability.
    - Believes that a focused stakeholder effort may be needed to determine if the method should move from average to marginal accreditation.
  - Looking for additional rules in accreditation to address locational differences
- Performance Assessments
  - Interested to learn more about a "Pay-as-you-go" approach where resources are only compensated for capacity upon delivery
- Market Mitigation
  - Not supportive of reintroduction of previous failed MSOC proposals

Previously presented conceptual designs:

Source: RASTF Template for High-Level Design Concepts – AMP (October 31, 2022)

Source: RASTF - Seasonal Capacity Perspectives – AMP (June 20, 2022)

Source: CCPPSTF – Proposed Modifications to RPM – AMP (October 16, 2017)

For more information visit

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