PJM Gross Avoidable Costs for Existing Generation

Proposed approach for delivery years beginning 2030/31

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Agenda

1. Introduction
2. Recap of 2022 Gross Avoidable Cost Study
3. Proposed Approach for 2026 Avoidable Cost Study
4. Next Steps

Background on default ACRs and their application

- PJM's tariff requires PJM to update its Default Avoidable Cost Rates (ACRs) every four years, and the last update was done in 2022
- Default Gross ACRs minus unit-specific net energy and ancillary services revenues (E&AS Offset) result in Net ACRs which are used by PJM to determine default offer thresholds, the Market Seller Offer Cap (MSOC), to mitigate supplier-side market power in the capacity market
- Any resources subject to MSOCs can offer above the default net ACRs only by demonstrating higher costs through unit-specific reviews
- Default ACRs may also be used in buyer-side market power mitigation through the Minimum Offer Price Rule (MOPR) applied to existing units, although application is likely very limited

Source: PJM OATT, Attachment DD, Section 5.10(a)(iv) and Section 6.8(a).

Scope of the current analysis

- PJM retained Brattle and S&L to provide an update following a similar approach as the 2022 study to:
  - Update the gross avoidable costs for existing resource types;
  - Solicit input from stakeholders on any potential new resource types to be included; and
  - Draft a report summarizing methodology and conclusions

- Based on this analysis, PJM will determine the resource types and Gross ACRs to file

Overview of gross avoidable cost approach

1. Determine Reference Resource Types

2022 Resource Types

- Multi-unit Nuclear
- Single-unit Nuclear
- Coal
- Natural gas-fired combined-cycle turbines (CC)
- Simple-cycle combustion turbines (CT)
- Oil and gas-fired steam turbines (ST O&G)
- Onshore Wind
- Solar PV (>1 MW)

Potential Additions

- 4hr BESS

2. Conduct Bottom-up Cost Analysis

Resource Specifications

- Starting point: same types and specifications from 2022 study
- Updates: Review current fleet to determine if any additional changes for reference resource types are needed

Cost Estimates

- Bottom-up estimates of gross avoidable costs based on S&L engineering assessment and other public benchmarks

3. Calculate Gross ACRs and Supporting Variable O&M Estimates

Gross ACR

- As in the prior study, will provide enough information for PJM to select a single, well-supported default value for each Resource Type that balances the risk of triggering too many unit-specific reviews and against the risk of under-mitigation
- Will inform variability in costs by also identifying the likely range of costs for each Resource Type, and discuss rationale for middle value as balance between over- and under-mitigation

In summary, approach is the same as 2022 study except for potentially adding 4-hr BESS

2022 resource types for existing generation

Plant Type	Total MW (Summer ICAP)	% of Total PJM Capacity	Recommendation
NGCC	55,828	28%	Included
Coal	41,554	21%	Included
Nuclear	32,556	16%	Included
Simple Cycle CT	28,496	14%	Included
Wind	9,911	5%	Included
ST O&G	9,240	5%	Included
Solar	7,790	4%	Included
Pumped Storage	5,243	3%	Unit-specific review
Hydro	3,319	2%	Unit-specific review
Other	3,427	2%	Unit-specific review
PJM Total Installed Capacity	197,364	100%	

2022 Resource Types covered ~94% of the PJM fleet (in ICAP terms)

Source: Newell et al., Gross Avoidable Costs for Existing Generation, January 9, 2023.

2022 gross avoidable cost estimates for existing generation

Representative resource types were selected based on median values of the main cost drivers for each resource
(Representative high-and low-cost plants were also identified where possible to show potential variations in costs)

Resource Type	Representative Plant ($/MW-day)
Multi-unit nuclear	537
Single-unit nuclear	591
Coal	94
Natural gas CC	113
Simple-cycle CT	52
Steam oil & gas	64
Onshore wind	147
Large-scale solar PV	70

Notes and Sources: All values shown are in Mid-2022 Dollars per Nameplate MW per Day. See Newell et al., Gross Avoidable Costs for Existing Generation, January 9, 2023.

Proposed approach for reference resource types

2022 ACR Study	2026 ACR Study Proposed Approach
Representative Resource Types based on median values of the main cost drivers for each resource type: (1) unit size (2) plant age and technology vintage (3) plant location in PJM (4) configuration of the units (including pollution controls)	**Begin with 2022 representative resource types and ranges** **Review current fleet to determine if median characteristics or ranges have changed** **Solicit stakeholder feedback if a 4-hour BESS should be included**
A "representative-high" and "representative low" cost plant were identified (where possible) based on clusters of the above cost drivers	**Same as 2022 Study**

Proposed approach for bottom-up cost estimates

2022 ACR Study	2026 ACR Study Proposed Approach
Aligned with PJM's Tariff, gross costs include fixed capital costs and fixed operation & maintenance (FOM) costs but not major maintenance costs for systems directly related to electric production, since those can be included in maintenance adders for cost-based energy offers	**No change from 2022 study**

Plan for next MIC meeting July 8th, 2026

Consolidate stakeholder feedback

Present updated fleet analysis and draft avoidable cost ranges

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