UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.	)	Docket No. ER25-2123-000

COMMENTS OF THE INDEPENDENT MARKET MONITOR FOR PJM

Pursuant to Rule 211 of the Commission's Rules and Regulations[1] Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor ("Market Monitor") for PJM Interconnection, L.L.C. ("PJM"),[2] submits these comments responding to the filing submitted by PJM Interconnection, L.L.C. ("PJM") on April 30, 2025 ("April 30th Filing"). In the April 30th Filing, PJM proposes to replace the Net CONE component of (i) the base formula rate ("Base Formula Rate") and (ii) the capital cost recovery rate for North American Electric Reliability Corporation–Critical Infrastructure Protection ("NERC-CIP Rate"), two of three formula rates for the recovery of Black Start Service Costs ("BSSC") included in Paragraph 18 of Schedule 6A to the OATT. The Net CONE is defined in the capacity market as the locational net cost of new entry for the reference resource, currently a CT. In the proposal, Net CONE would be replaced with an initial value equal to average Net CONE for the entire RTO over the past five years, that would be escalated annually using the Handy Whitman ("HW") inflation index for power plants. The proposed change was based on an anticipated change in the capacity market reference resource from a CT to

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1 18 CFR § 385.211 (2024).

2 Capitalized terms used herein and not otherwise defined have the meaning used in the PJM Open Access Transmission Tariff ("OATT"), the PJM Operating Agreement ("OA") or the PJM Reliability Assurance Agreement ("RAA").

a CC. Because the change did not occur, and the reference resource remains a CT, the April 30th Filing is unsupported and should be rejected. PJM later introduced revised rationales that are not consistent with the stated purpose of the black start tariff, do not support the proposed tariff change and are internally inconsistent. The April 30th Filing fails to explain why or how the proposed change is related to the fixed costs of providing black start under the base formula rate in the tariff and therefore the filing has not been demonstrated to be just and reasonable.

I. COMMENTS

Paragraph 18 of Schedule 6A to the OATT provides the formula for calculating the cost of a generator's annual black start service:

$$\{(Fixed\ BSSC) + (Variable\ BSSC) + (Training\ Costs) + (Fuel\ Storage\ Costs)\} * (1 + Z)$$

The Fixed BSSC term in this black start formula is fixed black start service costs. The fixed black start service costs are intended to represent the annual revenue required to cover the fixed costs of providing black start service, if any. Fixed costs are capital costs. Operating and maintenance costs are recovered through a separate component of this formula, the Variable BSSC component. Under the tariff, the Fixed BSSC can be calculated in three ways: the Base Formula Rate; the NERC-CIP Rate; and the Capital Cost Recovery Rate ("CRF Rate"). The base formula rate is used for the recovery of fixed costs, if any, for black start resources that have completed their capital cost recovery under the capital cost recovery rate based on CRF values and for black start resources that started and remained on the base formula rate. The NERC-CIP rate is used for the recovery of capital costs required to comply with CIP standards.[3] The CRF Rate is used for the recovery of fixed

[3] OATT Schedule 6A para. 18.

black start costs associated with new investments in black start service and is based on the CRF or capital recovery factor.[4]

PJM's proposal is about the base formula rate and the NERC-CIP rate and is not about the CRF Rate.

The complete Base Formula Rate for Fixed BSSC, including the (1 + Z) multiplier that applies to all the black start costs including the Fixed BSSC is:

$$Total\ Fixed\ BSSC\ =\ Net\ CONE\ *\ Black\ Start\ Unit\ Capacity\ *\ X\ *\ (1+Z)$$

The X value is .01 or .02, consistent with the small size of black start capital costs compared to a CT.[5] Z is an incentive factor equal to 10 percent for non fuel assured units and 20 percent for fuel assured units.[6]

The NERC-CIP Rate for Fixed BSSC is:

$$(Net\ Cone\ *\ Black\ Start\ NERC-CIP\ Unit\ Capacity\ *\ X)$$
$$+\ (Incremental\ Black\ Start\ NERC-CIP\ Capital\ Costs\ *\ CRF)$$
$$+\ (Fuel\ Assurance\ Capital\ Costs\ *\ CRF)$$

PJM proposes to change the formula that defines the cost of providing black start service under the Base Formula Rate and the NERC-CIP Rate. Net CONE is currently defined in the tariff to be: "the then current installed capacity ("ICAP") Net Cost of New Entry (expressed in $/MW year) for the CONE Area where the Black Start Unit is located."[7]

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4 The Market Monitor provided education and a critique of PJM's proposal in a presentation to Market Implementation Committee on March 5, 2025, which is provided as an Attachment.

5 X is defined to be the black start service allocation factor unless a higher or lower value is supported by the documentation of the actual costs of providing black start service. For such units qualifying as Black Start Units on the basis of demonstrated ability to operate at reduced levels when automatically disconnected from the grid, X shall be zero. For non-fuel assured Black Start Units with a commitment established under Schedule 6A, X shall be .01 for Hydro units, .02 for CT units. For fuel assured Black Start Units with a commitment established under Schedule 6A, X shall be .02 for all units. OATT. Schedule 6A para. 18.

6 OATT. Schedule 6A para. 18.

7 OATT. Schedule 6A para. 18.

Net CONE is Gross CONE minus the energy market and ancillary service revenues for the locational reference resource.

PJM's proposal is to remove the Net CONE term from the equation and replace it with a fixed value based on the average five year Net CONE for the RTO for the 2020/2021 through 2024/2025 Delivery Years. The fixed rate would be increased by the Handy Whitman (HW) inflation index for each subsequent delivery year.

PJM proposes two basic changes to the formula for black start fixed cost recovery. One would remove the locational aspect of the Net CONE calculation. The other would ignore changes in Net CONE and define a fixed number based on the average Net CONE for the entire RTO over a recent arbitrary period.

PJM offers no actual evidence to support the elimination of the longstanding locational differences among black start costs based on locational differences among Net CONE values.

PJM does not explain why selecting an arbitrary five year time period and escalating Net CONE reflects black start costs. Escalating Net CONE is equivalent to separately escalating Gross CONE and net energy market and ancillary service revenues. PJM does not, and cannot, explain why it is reasonable to adjust net revenues by inflation. Net revenues are the result of the energy and ancillary services markets and do not track inflation. Net revenues can be directly and accurately determined and do not need to be estimated or escalated.

The math is straightforward. Specifically, escalating Net CONE is equivalent to this equation:

$$(Gross\ CONE - CT\ net\ revenues) * (1 + HW\ inflation)$$

This is identical to:

$$Gross\ CONE * (1 + HW\ inflation\ adjustment) + CT\ net\ revenues * (1 + HW\ inflation)$$

PJM's original rationale for changing the black start revenue requirement was based on PJM's separate proposal to use a combined cycle (CC) as the reference resource in the capacity market. Net CONE for a CC would have been zero in some LDAs which would

have meant the BSSC payment under the base formula rate would have been zero. As a result, PJM proposed to stakeholders to modify the use of Net CONE in the black start formula rates. PJM subsequently decided to continue to use a combustion turbine (CT) as the reference resource in the capacity market and PJM's rationale to change the black start formula rates disappeared. PJM subsequently developed new rationales for its proposed changes to the payment of black start costs.

PJM's first revised rationale is (at 2):

> This proposal will thereby mitigate against the potential that fluctuations in Net CONE will cause compensation for Black Start Service to fall below what is necessary to maintain the incentive for individual resources to continue to offer to provide this necessary albeit voluntary service.

PJM's second revised rationale is (at 7):

> Net CONE has traditionally been used in these rates as a proxy for the fixed cost for an existing Black Start Service resource to stay online. While Net CONE has been utilized as an effective proxy in the past, the locational aspects of Black Start Service needs do not correspond to the locational aspects driving Net CONE in specific Zone Areas, which is why a fixed cost using a five year average of overall system-wide Net CONE will serve as a superior proxy for fixed cost recovery.

PJM's third revised rationale is (at 7):

> Notably, this filing does not intend to decrease or increase Black Start Service revenues—merely to keep them stable, transparent, and predictable.

PJM's revised rationales are not consistent with the stated purpose of the black start tariff, do not support the proposed tariff change, are internally inconsistent, and are not supported by evidence. PJM's first revised rationale is to increase payments to black start resources taking service under the base formula rate. PJM does not address the fact that the purpose of the BSSC is to pay black start providers the costs of providing black start service. PJM makes no assertions or statements about the actual level of black start fixed costs and provides no evidence about those costs.

PJM's second revised rationale is an unsupported assertion that fixed costs using a five year average of overall system-wide Net CONE will serve as a 'superior proxy' for fixed cost recovery and that the locational differences in Net CONE are not relevant to locational differences in black start service fixed costs.

PJM's third revised rationale states that the filing does not intend to decrease or increase Black Start Service revenues despite the fact that this is contradicted by the first revised rationale and repeated statements to the contrary by PJM in the stakeholder process.

The most fundamental deficiency with the April 30th Filing is that PJM nowhere explains the relationship between the proposed tariff and the actual costs of providing black start service. The Market Monitor supports a careful review of the actual fixed and total costs of providing black start service. PJM has not explained why it failed to address these basic questions. The Market Monitor recognizes the importance of black start resources and supports paying black start resources their full costs of providing the service plus an incentive. The April 30th Filing completely ignores the actual costs of providing the service in adjusting its formula rate that is intended to include the actual costs, and for that reason the April 30th Filing cannot be and is not just and reasonable.

II. CONCLUSION

The Market Monitor respectfully requests that the Commission afford due consideration to this pleading as the Commission resolves the issues raised in this proceeding.

Respectfully submitted,

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Dated: May 21, 2025

Attachment

Black Start Costs and Net CONE

MIC

March 5, 2025

IMM

Monitoring Analytics

Black Start Revenues

- **PJM has proposed to change the method for defining the costs of black start service under the tariff.**
- **PJM's proposal is to remove the link to current Net CONE:**
  - **Use the average five year RTO Net Cone from the 2020/2021 through 2024/2025 delivery years to create a fixed rate for the 2025/2026 delivery year and all subsequent delivery years.**
  - **The fixed rate will be adjusted by the Handy Whitman index for each subsequent delivery year.**

Issues with PJM Proposal

- PJM's original rationale for changing the black start revenue requirement was based on use of a CC as the reference resource and zero Net CONE values.
  - PJM has modified its recommended reference resource to be a CT
  - Gross CONE for a CT < Gross CONE for a CC
  - Net CONE for a CT > Net CONE for a CC
- Recent black start costs based on Net CONE do not demonstrate a need for change.
- There is no reason to accept PJM's proposal re black start revenues.

Alternative to PJM Proposal

- **Short term:**
  - **Continue to use Net CONE as the basis for black start payments.**
  - **Use average Net CONE across CONE areas for each delivery year rather than separate Net CONE values.**
    - Same payment for black start across PJM.

Alternative to PJM Proposal

- **Longer term:**
  - **Use of Net CONE is not based on actual costs of providing black start service**
  - **Full costs of investments in black start are completely recovered under the Capital Cost Recovery Rate for Fixed BSCC, frequently on an accelerated basis**
  - **Need to define ongoing costs to provide black start service plus an incentive as the appropriate basis for black start revenue**
  - **The current revenues under the Base Formula Rate for Fixed BSSC are largely profit**

Net CONE Facts

- **Net CONE has varied across CONE areas:**
  - **CONE Area 1: AE, DPL, JCPL, PE, PSEG and RECO**
  - **CONE Area 2: BGE and PEPCO**
  - **CONE Area 3: AEP, APS, ATSI, DAYTON, DEOK, DLCO, DOM, EKPC and OVEC**
  - **CONE Area 4: METED, PENELEC and PPL**

Net CONE by CONE Area ($/MW-Day ICAP)

CONE Area	2015/2016 Net CONE	2016/2017 Net CONE	2017/2018 Net CONE	2018/2019 Net CONE	2019/2020 Net CONE	2020/2021 Net CONE	2021/2022 Net CONE	2022/2023 Net CONE	2023/2024 Net CONE	2024/2025 Net CONE	2025/2026 Net CONE	2026/2027 Net CONE
Area 1	$308.14	$311.16	$345.20	$266.73	$264.91	$264.44	$295.29	$246.18	$276.67	$296.70	$245.59	$249.39
Area 2	$265.60	$261.14	$295.31	$227.73	$214.75	$189.09	$249.27	$230.60	$232.39	$247.97	$106.31	$115.35
Area 3	$338.47	$342.01	$352.63	$263.57	$264.40	$264.88	$298.17	$216.12	$243.59	$258.74	$153.62	$136.29
Area 4	$303.65	$305.05	$334.43	$247.58	$224.36	$209.52	$253.22	$207.02	$249.51	$265.37	$164.96	$165.97
Area 5	$238.49	$242.72	$273.56								$237.25	$265.05
RTO	$311.07	$311.72	$331.51	$281.49	$279.55	$273.64	$302.63	$247.26	$261.10	$278.47	$180.76	$157.71
Average CONE Area	$290.87	$292.42	$320.23	$251.40	$242.11	$231.98	$273.99	$224.98	$250.54	$267.20	$181.55	$186.41

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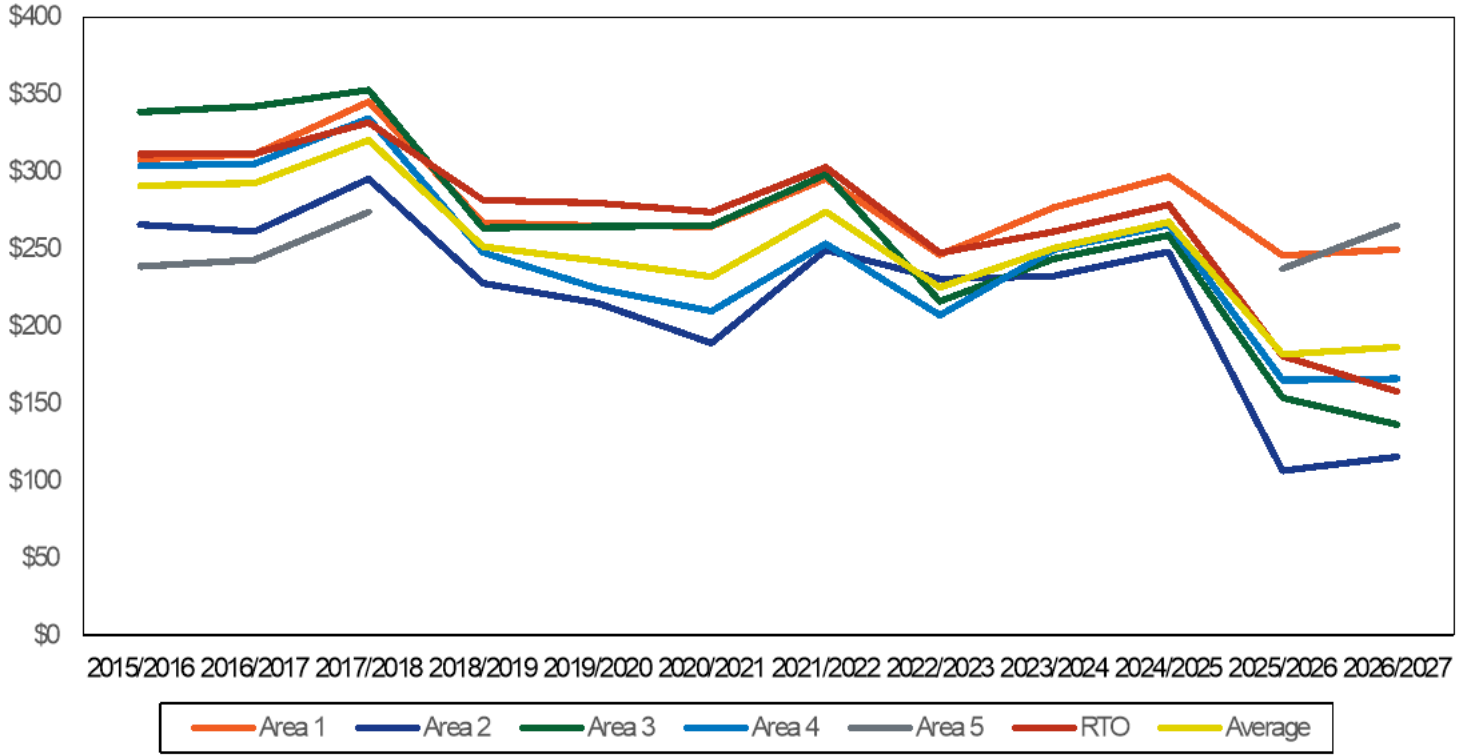
Net CONE by CONE Area ($/MW-Day ICAP)



Example of Current Black Start Revenues

- **The total annual revenues using the Base Formula Rate for Fixed BSCC for a 150 MW CT with a diesel added for black start capability by CONE area:**
  - **Average in 2024/2025: $319,802 or $2,132 MW-year**
  - **Average in 2025/2026: $218,672 or $1,458 MW-year**
  - **Average in 2026/2027: $224,531 or $1,497 MW-year**

Example of Current Black Start Revenues

Year	UnitName	Example Zone	CONE Area	MW	Fixed Cost Formula	Unit type	X Factor	Fixed BSSC	Z factor	Fixed BSSC Plus Z Factor ($)	Fixed BSSC $/MW-year
2024/2025	Unit A	AE	1	150	BFR	CT/Diesel	0.02	$324,897	0.10	$357,387	$2,383
2024/2025	Unit B	BGE	2	150	BFR	CT/Diesel	0.02	$271,527	0.10	$298,680	$1,991
2024/2025	Unit C	AEP	3	150	BFR	CT/Diesel	0.02	$283,320	0.10	$311,652	$2,078
2024/2025	Unit D	PPL	4	150	BFR	CT/Diesel	0.02	$290,580	0.10	$319,638	$2,131
2024/2025	Unit E	COMED	5	150	BFR	CT/Diesel	0.02	$283,320	0.10	$311,652	$2,078
2025/2026	Unit A	AE	1	150	BFR	CT/Diesel	0.02	$268,921	0.10	$295,813	$1,972
2025/2026	Unit B	BGE	2	150	BFR	CT/Diesel	0.02	$116,409	0.10	$128,050	$854
2025/2026	Unit C	AEP	3	150	BFR	CT/Diesel	0.02	$168,214	0.10	$185,035	$1,234
2025/2026	Unit D	PPL	4	150	BFR	CT/Diesel	0.02	$180,631	0.10	$198,694	$1,325
2025/2026	Unit E	COMED	5	150	BFR	CT/Diesel	0.02	$259,789	0.10	$285,768	$1,905
2026/2027	Unit A	AE	1	150	BFR	CT/Diesel	0.02	$273,082	0.10	$300,390	$2,003
2026/2027	Unit B	BGE	2	150	BFR	CT/Diesel	0.02	$126,308	0.10	$138,939	$926
2026/2027	Unit C	AEP	3	150	BFR	CT/Diesel	0.02	$149,238	0.10	$164,161	$1,094
2026/2027	Unit D	PPL	4	150	BFR	CT/Diesel	0.02	$181,737	0.10	$199,911	$1,333
2026/2027	Unit E	COMED	5	150	BFR	CT/Diesel	0.02	$290,230	0.10	$319,253	$2,128

Example of Black Start Revenues Under PJM Proposal

- **Fixed BSSC for each CONE Area based on a 150 MW unit.**
- **The CONE Area values used are based on PJM's proposed value ($272.62/MW day).**
- **The CONE Area values used for the 2025/2026 and the 2026/2027 planning period are based on PJM's proposal. For the 2026/2027 year the PJM fixed rate was increased by three percent as a proxy for PJM's proposed Handy-Whitman escalation.**

Example of Black Start Revenues Under PJM Proposal

- **The total annual revenues using the Base Formula Rate for Fixed BSSC for a 150 MW CT with a diesel added for black start capability by CONE area:**
  - **Average in 2024/2025: $319,802 or $2,132 MW-year**
  - **Average in 2025/2026: $328,371 or $2,189 MW-year**
  - **Average in 2026/2027: $338,222 or $2,255 MW-year**

Example of Black Start Revenues Under PJM Proposal

Year	UnitName	Example Zone	CONE Area	MW	Fixed Cost Formula	Unit type	X Factor	Fixed BSSC	Z factor	Fixed BSSC Plus Z Factor ($)	Fixed BSSC $/MW-year
2024/2025	Unit A	AE	1	150	BFR	CT/Diesel	0.02	$324,897	0.10	$357,387	$2,383
2024/2025	Unit B	BGE	2	150	BFR	CT/Diesel	0.02	$271,527	0.10	$298,680	$1,991
2024/2025	Unit C	AEP	3	150	BFR	CT/Diesel	0.02	$283,320	0.10	$311,652	$2,078
2024/2025	Unit D	PPL	4	150	BFR	CT/Diesel	0.02	$290,580	0.10	$319,638	$2,131
2024/2025	Unit E	COMED	5	150	BFR	CT/Diesel	0.02	$283,320	0.10	$311,652	$2,078
2025/2026	Unit A	AE	1	150	BFR	CT/Diesel	0.02	$298,519	0.10	$328,371	$2,189
2025/2026	Unit B	BGE	2	150	BFR	CT/Diesel	0.02	$298,519	0.10	$328,371	$2,189
2025/2026	Unit C	AEP	3	150	BFR	CT/Diesel	0.02	$298,519	0.10	$328,371	$2,189
2025/2026	Unit D	PPL	4	150	BFR	CT/Diesel	0.02	$298,519	0.10	$328,371	$2,189
2025/2026	Unit E	COMED	5	150	BFR	CT/Diesel	0.02	$298,519	0.10	$328,371	$2,189
2026/2027	Unit A	AE	1	150	BFR	CT/Diesel	0.02	$307,474	0.10	$338,222	$2,255
2026/2027	Unit B	BGE	2	150	BFR	CT/Diesel	0.02	$307,474	0.10	$338,222	$2,255
2026/2027	Unit C	AEP	3	150	BFR	CT/Diesel	0.02	$307,474	0.10	$338,222	$2,255
2026/2027	Unit D	PPL	4	150	BFR	CT/Diesel	0.02	$307,474	0.10	$338,222	$2,255
2026/2027	Unit E	COMED	5	150	BFR	CT/Diesel	0.02	$307,474	0.10	$338,222	$2,255

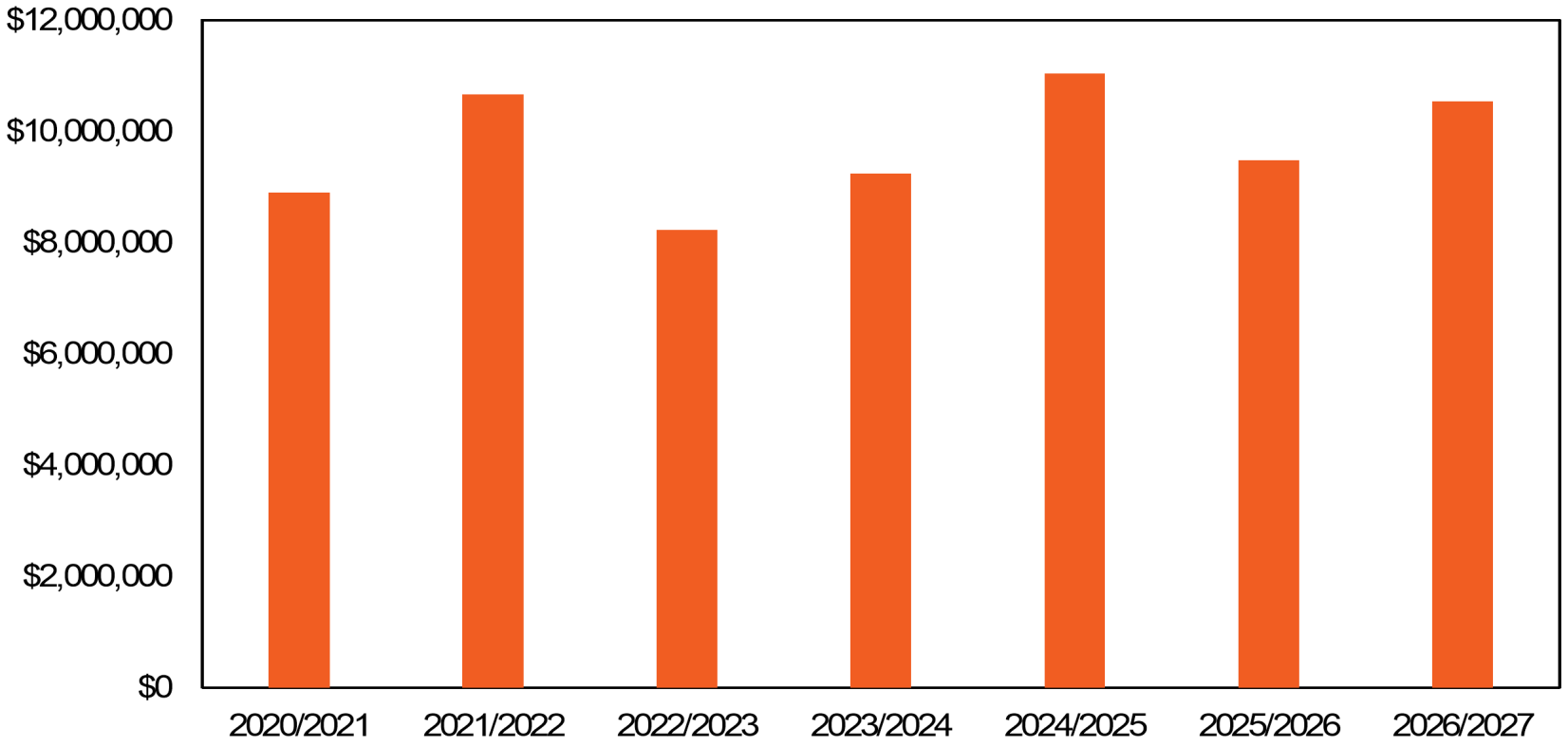
Difference in Example Black Start Payments Between Status Quo and PJM Proposal

Year	Average Current Fixed BSSC Plus Z Factor ($)	Average Current Fixed BSSC $/MW-year	Average PJM Fixed BSSC Plus Z Factor ($)	Average Fixed BSSC $/MW-year	Difference Fixed BSSC Plus Z Factor ($)	Difference Fixed BSSC $/MW-year
2024/2025	$319,802	$2,132	$319,802	$2,132	$0	$0
2025/2026	$218,672	$1,458	$328,371	$2,189	($109,699)	($731)
2026/2027	$224,531	$1,497	$338,222	$2,255	($113,691)	($758)

Total Annual Fixed BFR BSSC Revenue

- **Total annual revenue for black start units paid under the Base Formula Rate for Fixed BSCC.**
- **The Net CONE Area values for a CT were used to estimate revenue for the 2025/2026 and the 2026/2027 Delivery Years.**
- **The total annual revenue for existing black start units under the Base Formula Rate for Fixed BSCC calculated by PJM was not correct because it did not account for the exact timing of when individual units started/ended recovery under this rate.**

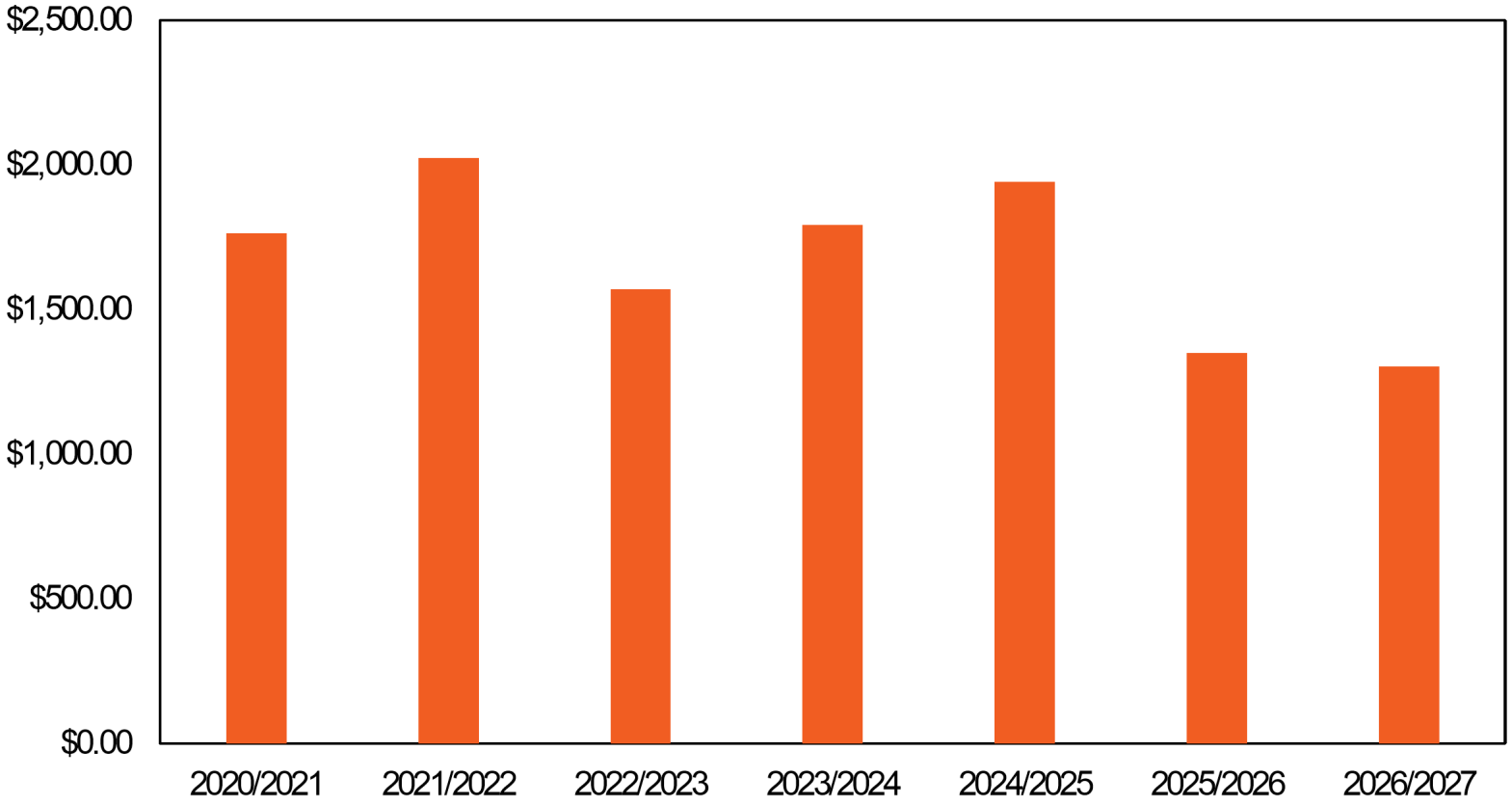
Total Annual BFR Fixed BSSC Revenue



Annual BFR Fixed BSSC Revenue per MW-Year

- **Annual revenue for black start units paid under the Base Formula Rate for Fixed BSCC in $/MW-year.**

Annual BFR Fixed BSSC Revenue per MW-Year



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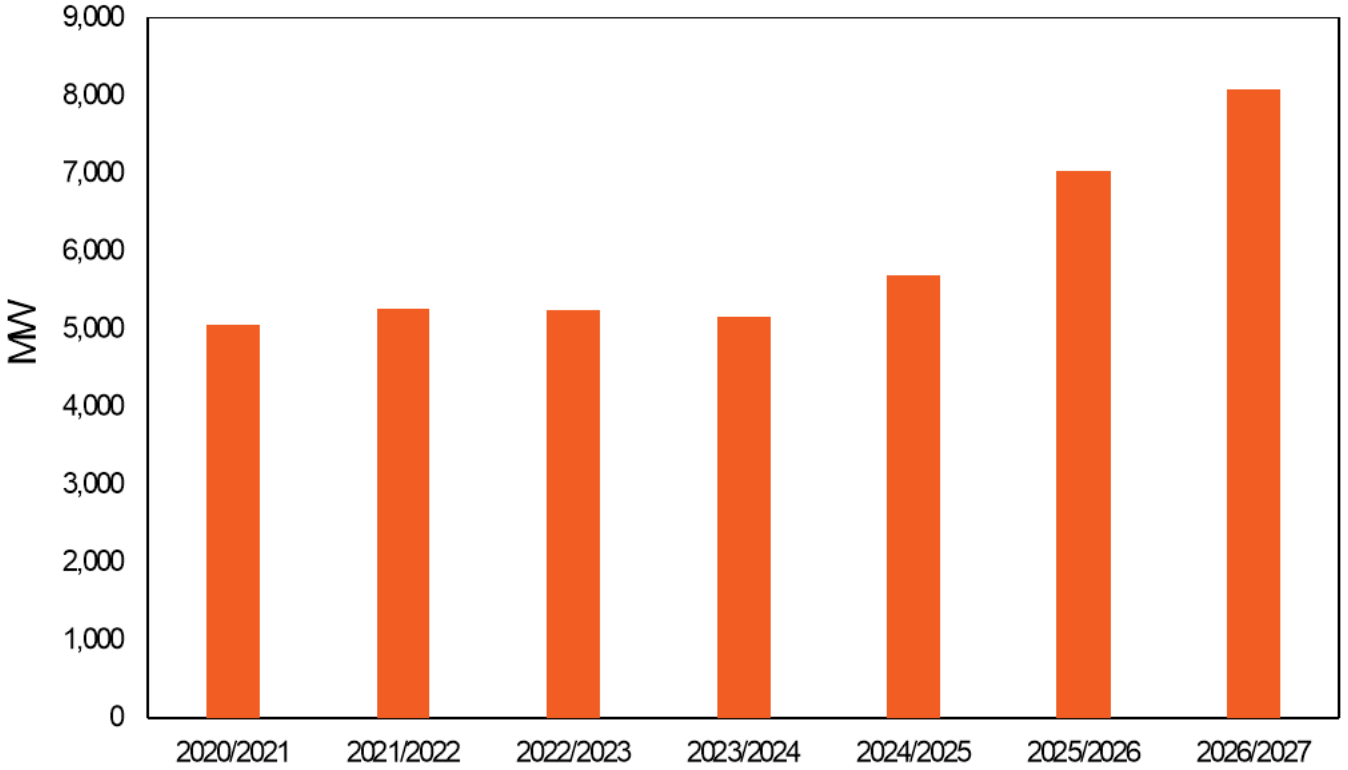
Total BFR ICAP MW

- **Total ICAP MW for black start units paid under the Base Formula Rate for Fixed BSCC.**

Total BFR ICAP MW



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Annual Revenue Requirement

- **Black Start Formula Rate:**
  - **Annual Revenue Requirement = {(Fixed BSSC) + (Variable BSSC) + (Training Costs)+ (Fuel Storage Costs)} * (1+Z)**

- **Base Formula Rate (BFR) for Fixed BSSC under section 5 of 6A:**
  - **Fixed BSSC BFR = Net CONE * Black Start Unit Capacity * X**

- **Total Base Formula Rate (BFR) for Fixed BSSC payments under section 5 of 6A:**
  - **Total Fixed BSSC = Net CONE * Black Start Unit Capacity * X * (1+Z)**

Source: PJM OATT Schedule 6A

Status Quo Compared to PJM Proposal

Year	Current Fixed BSSC Plus Z Factor ($)	Current Fixed BSSC $/MW-year	PJM Fixed BSSC Plus Z Factor ($)	PJM Fixed BSSC $/MW-year	Difference Fixed BSSC Plus Z Factor ($)	Difference Fixed BSSC $/MW-year
2025/2026	$9,479,262	$1,350	$13,841,048	$1,971	($4,361,786)	($621)
2026/2027	$10,542,267	$1,304	$16,650,635	$2,059	($6,108,368)	($755)

For PJM BSSC in 2026/2027 Net CONE was escalated by 3 percent

IMM Proposal Compared to PJM Proposal

Year	IMM Fixed BSSC Plus Z Factor ($)	IMM Fixed BSSC $/MW-year	PJM Fixed BSSC Plus Z Factor ($)	PJM Fixed BSSC $/MW-year	Difference Fixed BSSC Plus Z Factor ($)	Difference Fixed BSSC $/MW-year
2025/2026	$9,217,381	$1,312	$13,841,048	$1,971	($4,623,667)	($658)
2026/2027	$11,053,579	$1,367	$16,650,635	$2,059	($5,597,056)	($692)

The average of the Net CONE Area used in IMM BSSC

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CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Eagleville, Pennsylvania,
this 21st day of May, 2025.

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