190 FERC ¶ 61,115
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Mark C. Christie, Chairman;
Willie L. Phillips, David Rosner
and Lindsay S. See.

PJM Interconnection, L.L.C. Docket Nos. EL25-49-000
Allegheny Electric Cooperative, Inc.
American Transmission Systems, Incorporated
Atlantic City Electric Company
Baltimore Gas and Electric Company
Delmarva Power & Light Company
Duke Energy Ohio, Inc.
Duke Energy Kentucky, Inc.
East Kentucky Power Cooperative, Inc.
Essential Power Rock Springs, LLC
Hudson Transmission Partners, LLC
Jersey Central Power & Light Company
Mid-Atlantic Interstate Transmission, LLC
Neptune Regional Transmission System, LLC
Old Dominion Electric Cooperative
PECO Energy Company
PPL Electric Utilities Corporation
Potomac Electric Power Company
Public Service Electric and Gas Company
Rockland Electric Company
Trans-Allegheny Interstate Line Company
Transource West Virginia, LLC
UGI Utilities, Inc.
Monongahela Power Company
The Potomac Edison Company
Commonwealth Edison Company
Commonwealth Edison Company of Indiana, Inc.
The Dayton Power and Light Company
AEP Appalachian Transmission Company, Inc.
AEP Indiana Michigan Transmission Company, Inc.
AEP Kentucky Transmission Company, Inc.
AEP Ohio Transmission Company, Inc.
AEP West Virginia Transmission Company, Inc.
Appalachian Power Company
Indiana Michigan Power Company

Kentucky Power Company
Kingsport Power Company
Ohio Power Company
Wheeling Power Company
Duquesne Light Company
Virginia Electric and Power Company
Linden VFT, LLC
City of Cleveland, Department of Public Utilities,
Division of Cleveland Public Power
City of Hamilton, OH
Southern Maryland Electric Cooperative, Inc.
Ohio Valley Electric Corporation
AMP Transmission, LLC
Silver Run Electric, LLC
NextEra Energy Transmission MidAtlantic Indiana, Inc.
Wabash Valley Power Association, Inc.
Keystone Appalachian Transmission Company

Large Loads Co-Located at Generating Facilities AD24-11-000

Constellation Energy Generation, LLC EL25-20-000
(Consolidated)

v.

PJM Interconnection, L.L.C.

ORDER INSTITUTING PROCEEDING UNDER SECTION 206 OF THE FEDERAL POWER ACT AND CONSOLIDATING WITH OTHER PROCEEDINGS

(Issued February 20, 2025)

1. The Commission recently has received several filings addressing various aspects of the co-location of large loads at generating facilities in PJM. Moreover, the Commission convened a technical conference in Docket No. AD24-11-000 on November 1, 2024 to examine issues related to large loads co-located at generating facilities. On November 8, 2024, the Commission issued a notice requesting post-technical conference comments on or before December 9, 2024. Separately, on

November 22, 2024, pursuant to section 206 of the Federal Power Act (FPA),[1] Constellation Energy Generation, LLC (Constellation) filed a complaint against PJM Interconnection, L.L.C. (PJM) in Docket No. EL25-20-000. Constellation argues that the PJM Open Access Transmission Tariff (OATT) is unjust, unreasonable and unduly discriminatory because it does not contain rules for interconnected generators to follow when seeking to serve a co-located load configuration that Constellation argues is fully isolated from the grid.

2. As discussed below, based on the combined records of the technical conference and the Constellation complaint proceeding, we find that PJM's Tariff appears to be unjust, unreasonable, unduly discriminatory or preferential. We institute a show cause proceeding pursuant to section 206 of the FPA, and we direct PJM and the Transmission Owners, within 30 days of the date of the order, to either: (1) show cause as to why the OATT, the Amended and Restated Operating Agreement of PJM, and Reliability Assurance Agreement Among Load Serving Entities in the PJM Region (the Tariff) remains just and reasonable and not unduly discriminatory or preferential without provisions addressing with sufficient clarity or consistency the rates, terms, and conditions of service that apply to co-location arrangements; or (2) explain what changes to the Tariff would remedy the identified concerns if the Commission were to determine that the Tariff has in fact become unjust and unreasonable or unduly discriminatory or preferential and, therefore, proceeds to establish a replacement Tariff. We also consolidate the show cause proceeding with the technical conference and Constellation complaint proceeding.

I. Background

3. Co-located load arrangements are becoming increasingly common in PJM.[2] PJM developed a Guidance Document on co-located load, which includes non-binding guidance for generators and loads seeking to enter into co-location arrangements in PJM.[3] In that document, PJM defined co-located load as a configuration through which end-use customer load is physically connected to the facilities of an existing or planned generation unit on the interconnection customer's side of the point of interconnection to the PJM transmission system. For the purposes of this order, we will adopt PJM's

[1] 18 U.S.C. § 824e.

[2] *See, e.g.*, Docket No. ER24-2172, et al.; EL24-149-000.

[3] PJM, *PJM Guidance on Co-Located Load* (March 22, 2024) (updated April 17, 2024), https://www.pjm.com/-/media/DotCom/markets-ops/rpm/rpm-auction-info/pjm-guidance-on-co-located-load.pdf (Guidance Document).

definition[4] of co-located load.[5] Similarly, we will refer to the existing or planned generation in this situation as a co-located generator. When referring to the entire arrangement, both the co-located load and the co-located generator, we will use the term co-location arrangement.

4. In the Guidance Document, PJM makes a number of recommendations. First, PJM recommends that "all co-located load be served from the PJM Transmission System as PJM Network Load with applicable firm transmission service."[6] PJM states that co-located load is "electrically connected and synchronized to the PJM Transmission System when consuming power and therefore benefits from the use of the Transmission System and Ancillary Services." However, PJM also states that certain parties may wish to pursue a co-location arrangement without procuring applicable firm transmission service, in which case the load is not designated as Network Load. In that case, the Guidance Document provides for additional requirements, including that the co-located generator must reduce its Capacity Interconnection Rights (CIR) to reflect the capacity designated to the co-located load.[7] PJM also states that the necessary study process will be used to evaluate the potential reliability impact on the transmission system from a

[4] The Guidance Document states: "A co-located load configuration refers to end-use customer load that is physically connected to the facilities of an existing or planned Customer Facility on the Interconnection Customer's side of the Point of Interconnection ("POI") to the PJM Transmission System (co-located Customer Facility)." *Id.* at 1 (citations omitted).

[5] We acknowledge that Docket No. AD24-11-000 was focused on large co-located loads, but we do not similarly limit this proceeding to co-located loads of a certain size.

[6] Guidance Document at 1. PJM defines Network Load as "the load that a Network Customer designates for Network Integration Transmission Service under Tariff, Part III. The Network Customer's Network Load shall include all load (including losses, Non-Dispatched Charging Energy, and Load Serving Charging Energy) served by the output of any Network Resources designated by the Network Customer. A Network Customer may elect to designate less than its total load as Network Load but may not designate only part of the load at a discrete Point of Delivery. Where an Eligible Customer has elected not to designate a particular load at discrete points of delivery as Network Load, the Eligible Customer is responsible for making separate arrangements under Tariff, Part II for any Point-To-Point Transmission Service that may be necessary for such non-designated load. Network Load shall not include Dispatched Charging Energy." PJM, Intra-PJM Tariffs, OATT, § I.1 (L-M-N, OATT Definitions) (46.0.1).

[7] Guidance Document at 2.

proposed addition or reduction of co-located generator capacity due to a co-location arrangement.[8]

II. Technical Conference

5. The Commission convened a technical conference on November 1, 2024 in Docket No. AD24-11-000 to discuss generic issues related to the co-location of large loads at generating facilities. The technical conference included three panels. As established in the notice, the first panel provided an overview of the issues surrounding large loads co-located at generating facilities. The second panel explored in greater detail potential issues associated with the development and operation of large loads co-located at generating facilities, including: (1) various configuration options for large loads co-located with existing or new generation; (2) whether and how large co-located loads receive wholesale market services or benefits from the transmission system, how those benefits vary by configuration, whether and how those benefits can or should be measured for the purposes of cost allocation, what challenges arise in ensuring appropriate cost allocation, and any potential for cross-subsidization; (3) what impact various co-location configurations may have on reliability and resource adequacy; (4) cost and impact of back-up services, if applicable, for large co-located loads; (5) what impact large co-located load arrangements may have on Commission-jurisdictional markets, such as implications for energy, ancillary services, and capacity market prices; (6) whether and how should any necessary studies on reliability or grid impacts be conducted by the relevant RTO/ISO or transmission provider, including whether or how transmission providers should account for speculative requests and consider resource adequacy impacts for co-location of large loads; and (7) whether large co-located loads can provide additional operational flexibility (e.g., load flexibility) to the transmission system. The third panel included a roundtable with state Public Utility Commissioners, consumer advocates, and other state representatives to reflect on discussions in the first two panels, as well as explore issues pertaining to affordability, consumer impacts, environmental justice, state policy issues associated with large co-located load arrangements, including retail and wholesale issues such as financial subsidies, or other policy considerations. The third panel also explored the interaction between state and federal jurisdiction as they relate to large co-located loads and how the Commission can best work with states on these emerging issues.

6. On November 8, 2024, the Commission issued a notice of request for post-technical conference comments on or before December 9, 2024. A list of commenters and intervenors is provided in the appendix.

[8] *Id.* at 5.

III. Notice of Complaint and Responsive Pleadings

7. Notice of Constellation's complaint was published in the *Federal Register*, 89 Fed. Reg. 95202 (Dec. 2, 2024), with interventions and protests due on or before December 12, 2024. Notices of intervention and timely-filed motions to intervene were submitted by the entities listed in an appendix to this order, which also lists the abbreviated names for each entity and identifies those entities that submitted comments and protests.

8. The Maryland Public Service Commission, the Pennsylvania Public Utility Commission and the New Jersey Board of Public Utilities filed notices of intervention. SCE filed a motion to intervene out-of-time.

9. On November 27, 2024, PJM filed a motion for extension of time. On December 2, 2024, Constellation filed an answer opposing the motion for extension of time. On December 4, Talen Energy also filed an answer in opposition to the motion for extension of time. On December 6, 2024, the Commission denied the motion for extension of time.

10. On December 9, 2024, comments were filed by United States Congressmen John Joyce, Jefferson Van Drew, and Robert E. Latta together, and also by Congressman Jay Obernolte. On December 12, 2024, PJM filed an answer to complaint and motion to dismiss; Calpine filed supporting comments; EPSA and P3 filed supporting comments together; EKPC, Illinois Attorney General's Office, and Vistra each filed comments; and Exelon and ODEC each filed a protest. On December 18, NOVEC filed a motion for leave to file a protest out-of-time and protest. On December 23, 2024, SCE filed comments out-of-time.

11. On December 20, 2024, the PJM IMM filed a motion for leave to answer and answer. On December 23, 2024, Talen Energy filed a motion for leave to answer and answer. On December 26, 2024, Constellation filed a motion for leave to answer and answer. On December 27, 2024, Vistra filed a motion for leave to answer and answer. On January 7, 2025, Exelon and the PJM IMM each filed a motion for leave to answer and answer. On January 21, 2025, PJM filed a motion for leave to answer and answer. On February 7, 2025, Constellation filed a motion for leave to answer and answer.

IV. Procedural Matters

12. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2024), the notices of intervention and timely, unopposed motions to intervene serve to make the entities that filed them parties to Docket No. EL25-20-000.

13. Pursuant to Rule 214(d) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214(d), we grant SCE's late-filed motion to intervene given its interest in

the proceeding, the early stage of the proceeding, and the absence of undue prejudice or delay. We also accept SCE's out-of-time comments and NOVEC's out-of-time protest.

14. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2024), prohibits an answer to a protest or an answer to an answer unless otherwise ordered by the decisional authority. We will accept the answers because they have provided information that assisted us in our decision-making process.

V. Comments

A. Technical Conference

1. General

15. A number of commenters argue that meeting large load growth driven by data centers, artificial intelligence, or other reasons is important to national security.[9] Commenters also argue that data centers have economic benefits,[10] or that meeting load growth is critical to the economy.[11] Intersect argues that traditional utility structures are not a realistic means of meeting the demand for power for new large loads.[12]

16. Wilson Energy Economics notes that data centers provide relatively little local economic development per megawatt (MW) compared to other large loads.[13] Buckeye

[9] *See, e.g.*, ACORE December 9 Post-Technical Conference Comments at 2-3; AEP December 9 Post-Technical Conference Comments at 1-2; Calpine December 9 Post-Technical Conference Comments at 1; CEBA December 9 Post-Technical Conference Comments at 2, 3-4; Constellation December 9 Post-Technical Conference Comments at 7; Google December 9 Post-Technical Conference Comments at 1; LS Power December 9 Post-Technical Conference Comments at 1; PPL December 9 Post-Technical Conference Comments at 2; Talen December 9 Post-Technical Conference Comments at 3-5.

[10] *See, e.g.*, ACORE December 9 Post-Technical Conference Comments at 2-3; Constellation December 9 Post-Technical Conference Comments at 7; Google December 9 Post-Technical Conference Comments at 1; Talen December 9 Post-Technical Conference Comments at 3-5.

[11] *See, e.g.*, ACORE December 9 Post-Technical Conference Comments at 2; CEBA December 9 Post-Technical Conference Comments at 2, 3-4.

[12] Intersect December 9 Post-Technical Conference Comments at 3.

[13] Wilson Energy Economics December 9 Post-Technical Conference Comments

asserts that, while data centers are vital to the economy and national security, policies must ensure that the costs and risks associated with these loads are not unfairly shifted to other customers.[14] Wilson Energy Economics claims that data center expansions are primarily driven by commercial entities for applications like artificial intelligence rather than national security.[15] Joint Parties state that co-located data centers should not be prioritized over other national security loads and that efforts to isolate data centers from the reliability of the grid and normal planning process in co-location arrangements may actually increase national security risks.[16]

2. Jurisdiction Issues

17. Several commenters call on the Commission to clarify the jurisdictional implications of co-location arrangements.[17] Vistra argues that the Commission should make only those regulatory adjustments within its jurisdictional purview necessary to satisfy its obligations under the FPA. The Commission's role, Vistra contends, is to ensure: (1) generators co-located with large loads reliably interconnect to the transmission system in a just, reasonable, and not unduly discriminatory manner; (2) rates, terms, and conditions of service for use of the transmission system are just, reasonable, and not unduly discriminatory; (3) rates, terms, and conditions of service in the wholesale markets remain just, reasonable, and not unduly discriminatory; and (4) reliability standards are sufficient to maintain the safe and reliable operation of the bulk electric system.[18] A4CRE urges the Commission to clarify that physically islanded configurations, with no connection to the broader grid, are exempt from Commission oversight.[19] PJM requests the Commission explore the extent to which co-location arrangements are subject to Commission jurisdiction because "they involve Commission-jurisdictional agreements and services, and otherwise affect wholesale rates," but also

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at 3.

[14] Buckeye December 9 Post-Technical Conference Comments at 15.

[15] Wilson Energy Economics December 9 Post-Technical Conference Comments at 5.

[16] Joint Parties December 9 Post-Technical Conference Comments at 4-6.

[17] *See, e.g.*, EPSA December 9 Post-Technical Conference Comments at 3; Mainspring December 9 Post-Technical Conference Comments at 2.

[18] Vistra December 9 Post-Technical Conference Comments at 6.

[19] A4CRE January 19 Post-Technical Conference Comments at 3.

"may involve state law questions about what entities may provide certain services to behind the meter co-located loads and what services may be provided."[20]

18. Multiple commenters argue that the Commission lacks jurisdiction over these arrangements or certain aspects of these arrangements. OPSI contends that there is no regulatory gap involving co-location arrangements, as the Commission regulates the transmission of electricity in interstate commerce and states regulate sales of electricity from a generator to end-use customer in intrastate commerce.[21] OPSI argues that the Commission should confirm that the sale between co-located load and the generator is a retail sale subject to state jurisdiction.[22] Dominion asserts that state law should ultimately govern whether and how a customer can be served through a co-location arrangement.[23] Vistra argues that states have direct authority over most aspects of a co-location arrangement, including the generation facility, the data center facility, the sale of electricity to the data center, and in many cases the facilities used to deliver electricity to the data center.[24] CEBA argues that state jurisdiction over metering arrangements must be preserved, noting that, while it may be appropriate to apply a transmission charge to a co-location arrangement even when there is no Network Load, such charges should be applied to the co-located generator and not the load to avoid intruding on state jurisdiction.[25] Joint Parties contend that the interconnection of load are matters of state jurisdiction.[26] ITC states that state regulators must find a way to bridge potential capacity shortfalls resulting from the co-location of large loads behind the meter taking capacity off the grid.[27]

19. LS Power argues that some co-located load configurations are not subject to the Commission's jurisdiction because they are retail load that do not receive any interstate

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[20] PJM November 4 Pre-Conference Statement of Stu Bresler at 9.

[21] OPSI December 9 Post-Technical Conference Comments at 4-5.

[22] *Id.* at 4; *see* Joint Parties December 9 Post-Technical Conference Comments at 8.

[23] Dominion December 9 Post-Technical Conference Comments at 10.

[24] Vistra December 9 Post-Technical Conference Comments at 6.

[25] CEBA December 9 Post-Technical Conference Comments at 10.

[26] Joint Parties December 9 Post-Technical Conference Comments at 8.

[27] ITC December 9 Post-Technical Conference Comments at 6.

transmission service.[28] LS Power contends that the Commission does not have jurisdiction over a retail customer just because it is served by a generator that is connected to the transmission system.[29] LS Power also asserts that interconnection agreements generally state that they do not provide for transmission service or the purchase or sale of energy or ancillary services, so the interconnection does not provide any benefits to the co-located load, and, regardless, LS Power argues, any ancillary services received by the generator would be for the generator's benefit, rather than the co-located load.[30]

20. By contrast, PPL notes that while the Commission does not regulate retail relationships, it has jurisdiction over wholesale generators and markets and argues that the Commission should address cost-shifting issues by regulating transactions involving behind the meter loads to prevent subsidization by other customers on the grid and to protect market integrity.[31] The NYSRC contends that the interconnection of large load facilities is within the scope of the Commission-certified Electric Reliability Organization's (ERO) mandatory Reliability Standard requirements.[32] The NYSRC contends that the Commission has a substantial role through its policies, oversight, and approval of ERO activities. The PJM IMM argues that, if a load is interconnected to the grid, PJM must have the authority to plan for meeting large load additions in the same way that PJM plans for generation additions.[33]

21. CEBA argues that if transmission charges apply to a co-location arrangement without Network Load, such charges should be applied to the electricity supply customer interconnecting to the grid, not to the underlying load.[34]

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[28] LS Power December 9 Post-Technical Conference Comments at 2-4.

[29] *Id.* at 4.

[30] *Id.* at 3-4.

[31] PPL December 9 Post-Technical Conference Comments at 13-14.

[32] NYSRC December 9 Post-Technical Conference Comments at 2.

[33] PJM IMM December 17 Post-Technical Conference Comments at 3-4.

[34] CEBA December 9 Post-Technical Conference Comments at 10.

3. Wholesale Grid Services

22. Several parties emphasize that customers should only pay for services they use or from which they benefit.[35] However, parties also urge the Commission to ensure that any proposed co-location arrangement does not cause unreasonable cost shifts.[36] Several parties argue that co-located load benefits from its connection to the transmission grid and should bear its fair share of transmission grid costs.[37] PJM recommends that large co-located loads should be in front of the meter and designated as PJM Network Load, arguing this offers a cost allocation framework that assesses charges for use of and reliance on the transmission system.[38] The PJM IMM similarly argues that co-located loads should be directly connected to the grid, because they rely on the grid, and therefore should pay for energy and capacity.[39] The PJM IMM asserts that "the units that provide power to co-located load . . . benefit from all grid services and could not provide

[35] *See, e.g.*, ACP December 9 Post-Technical Conference Comments at 4; Amazon December 9 Post-Technical Conference Comments at 3; Antora December 11 Comments at 3; CEBA December 9 Post-Technical Conference Comments at 8; DCC December 9 Post-Technical Conference Comments at 5; Intersect December 9 Post-Technical Conference Comments at 8; Mainspring December 9 Post-Technical Conference Comments at 2; National Grid January 17 Post-Technical Conference Comments at 7.

[36] *See, e.g.*, ACP December 9 Post-Technical Conference Comments at 4; AEP December 9 Post-Technical Conference Comments at 7; DEC December 9 Post-Technical Conference Comments at 2; ITC December 9 Post-Technical Conference Comments at 4; Joint Parties December 9 Post-Technical Conference Comments at 1; MISO December 9 Post-Technical Conference Comments at 6; PPL December 9 Post-Technical Conference Comments at 12-13; Wilson Energy Economics December 9 Post-Technical Conference Comments at 2.

[37] *See, e.g.*, AEP December 9 Post-Technical Conference Comments at 4-5; Duane December 9 Post-Technical Conference Comments at 5; Glatz/Silverman December 9 Post-Technical Conference Comments at 8-9; ITC December 9 Post-Technical Conference Comments at 4-5; PPL December 9 Post-Technical Conference Comments at 4-5.

[38] PJM November 4 Pre-Conference Statement of Stu Bresler at 2.

[39] PJM IMM December 17 Post-Technical Conference Comments at 6.

service to co-located load without the grid."[40] The PJM IMM argues that the benefits accruing to co-located loads are at the expense of other customers.[41]

23. Dominion notes that cost allocation methodologies using peak load contribution assume that load is always drawing power from the grid and do not contemplate the types of co-location arrangements being considered.[42] NRECA states that the Commission should consider whether rate designs could be improved to track more granular cost responsibility, especially for services like black start and reliability must-run units that support co-located or behind the meter loads.[43] IECA states that each co-location arrangement and new, large networked load requires a detailed analysis to determine the appropriate cost responsibility for such loads.[44]

24. Several parties argue that co-location arrangements in which the load is served behind the meter, do not take transmission service and should therefore not be allocated network transmission changes.[45] Constellation argues that generators supporting Fully Isolated Co-Located Loads, which Constellation defines as "a customer that is connected to a generator behind the generator's meter and that, due to equipment and systems installed by the load and/or the generator, has no physical ability to receive electricity or other services from the transmission system," are not receiving grid services and, regardless, that the OATT has only assigned the costs of such services to load, not generators.[46] Several commenters argue that transmission charges should be based on net load (i.e., net withdrawals of electricity from the grid).[47] However, the PJM IMM argues

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[40] *Id.* at 2.

[41] *Id.* attach. 1 at 1.

[42] Dominion December 9 Post-Technical Conference Comments at 9-10.

[43] NRECA December 9 Post-Technical Conference Comments at 18.

[44] IECA December 9 Post-Technical Conference Comments at 3.

[45] *See, e.g.*, Amazon December 9 Post-Technical Conference Comments at 3; Constellation December 9 Post-Technical Conference Comments at 6, 21; LS Power December 9 Post-Technical Conference Comments at 4 n.9; Talen December 9 Post-Technical Conference Comments at 2.

[46] Constellation December 9 Post-Technical Conference Comments at 1 n.1, 6, 21; *see also* Talen December 9 Post-Technical Conference Comments at 2.

[47] *See, e.g.*, Vistra December 9 Post-Technical Conference Comments at 14; *see also* DCC December 9 Post-Technical Conference Comments at 6; EPSA December 9 Post-Technical Conference Comments at 8, 9; Intersect December 9 Post-Technical

that co-located loads should pay for transmission service based on their gross load.[48] Antora argues that the Commission must distinguish between highly flexible co-located loads and inflexible co-located loads.[49]

25. Some commenters express concern that co-located loads avoid paying transmission charges. Buckeye states that co-located large loads may avoid paying a share of transmission costs while continuing to rely on the grid for ancillary services and other benefits.[50] Glatz/Silverman explain that the PJM interconnection process is designed around generators interconnecting to the grid for the purpose of supplying grid-connected load, and, as such, generators pay only for the upgrades to mitigate the network impacts at initial interconnection, while load pays for transmission service and network upgrades on an ongoing basis through the RTEP cycle.[51] Duane states that if the Commission finds that co-located load uses the transmission system, it should devise additional separate rates to capture: (1) the extent of this use, (2) administrative or non-bypassable wholesale charges that are currently collected through transmission rates, and (3) the impacts that co-location arrangements have on the transmission system.[52] Duane argues that the Commission should exercise its jurisdiction over the generator, as the interconnection customer, to modify the interconnection service agreement to ensure that co-location arrangements that create the need for new grid investment do not escape sharing in the costs of that investment.[53]

26. Parties argue that co-located entities should pay for ancillary service charges if they benefit from or contribute to the need for such services.[54] PJM states that co-located

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Conference Comments at 8; Mainspring December 9 Post-Technical Conference Comments at 2; Vistra December 9 Post-Technical Conference Comments at 15-16.

[48] PJM IMM December 17 Post-Technical Conference Comments at 6.

[49] Antora December 11 Post-Technical Conference Comments at 4.

[50] Buckeye December 9 Post-Technical Conference Comments at 12.

[51] Glatz/Silverman December 9 Post-Technical Conference Comments at 7-8.

[52] Duane December 9 Post-Technical Conference Comments at 3-4.

[53] *Id.* at 6-7.

[54] *See, e.g.*, AEP December 9 Post-Technical Conference Comments at 4; Buckeye December 9 Post-Technical Conference Comments at 12; CEBA December 10 Post-Technical Conference Comments at 10; DCC December 9 Post-Technical Conference Comments at 6; Dominion December 9 Post-Technical Conference Comments at 7; ITC December 9 Post-Technical Conference Comments at 4; NRECA December 9

loads connected to generators that remain interconnected with the transmission grid benefit from the ancillary services necessary to maintain the reliability of the transmission grid because the load could not be served from the generator unless transmission grid reliability is maintained.[55] PJM argues that the load should pay its ratio share of the costs of ancillary services like any other load interconnected with the grid, even if it is not withdrawing power. Dominion argues that any load that is not completely isolated from the transmission system uses and should pay for its fair share of essential reliability services.[56] Dominion states such services include short-circuit fault current needed to detect and isolate faults, explaining that insufficient fault current is a common issue for microgrids and small islanded systems, and that any co-located load still connected to the transmission system benefits from the short-circuit fault current provided by the system.[57]

27. AEP states that while different protection schemes may determine the circumstances under which co-located load draws power from the grid, the load's reliance on the grid for essential reliability services is constant as long as it is interconnected to and synchronized with the grid.[58] ITC similarly asserts that co-located loads typically require ancillary services that cannot be provided by the generator, and which are therefore provided by the grid.[59] ITC states that lack of transmission availability can cause conditions that can force a nuclear unit offline for safety reasons, and ITC argues that transmission operators undertake substantial planning and investment expenses to minimize such disruptions.[60] PPL and Buckeye argue that co-located loads can avoid paying for grid services, despite benefiting from these services, potentially shifting the costs for such services to other utility customers.[61] Buckeye argues that

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Post-Technical Conference Comments at 18-19; *see also* Vistra December 9 Post-Technical Conference Comments at 17 (not opposing).

[55] PJM November 4 Pre-Conference Statement of Stu Bresler at 8.

[56] Dominion December 9 Post-Technical Conference Comments at 7.

[57] *Id.* at 7-9.

[58] AEP December 9 Post-Technical Conference Comments at 4.

[59] ITC December 9 Post-Technical Conference Comments at 4.

[60] *Id.* at 5.

[61] Buckeye December 9 Post-Technical Conference Comments at 12; PPL December 9 Post-Technical Conference Comments at 4-5.

co-located loads should be treated as front-of-meter customers for cost allocation purposes, even if physically located behind the meter.[62]

28. On the other hand, LS Power argues that co-location arrangements do not take ancillary services from the grid.[63] Constellation argues that Fully Isolated Co-Located Loads have no impact on ancillary services charges to other customers.[64] Vistra asserts that it would be unreasonable to impose ancillary service charges on co-located load based on gross load.[65] CEBA states that the record suggests that ancillary services charges to co-located load would be small, and CEBA defers to the Commission as to whether these charges merit the effort it would take to modify rates.[66]

29. As to specific ancillary services, Dominion argues that any load that is not completely isolated from the transmission system uses reactive power service and should pay for its share of these costs.[67] Dominion also argues that the grid provides the resources to maintain and restore frequency for disturbances, as well as load balancing, and any load that is not completely isolated from the transmission system uses these services and should pay for its share of any related costs. ITC similarly argues that many generators, including nuclear plants, are not designed to handle fluctuating loads, as they are not designed to follow load, and may not meet the immediate load following and voltage support requirements of the co-located load being served.[68]

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[62] Buckeye December 9 Post-Technical Conference Comments at 12.

[63] LS Power December 9 Post-Technical Conference Comments at 4 n.9.

[64] Constellation December 9 Post-Technical Conference Comments at 17.

[65] Vistra December 9 Post-Technical Conference Comments at 17.

[66] CEBA December 9 Post-Technical Conference Comments at 10 (citing Technical Conference Transcript (Emnett) at 126:24–128:21 (explaining that the value of ancillary services represents a small fraction of total bills and, accordingly, the Commission has previously elected not to modify tariffs on a pro forma basis to reflect them), (Muller) at 129:5-6 ("[A]ncillary services are two percent of the cost, right, so it's the tail wagging the dog."), (Commissioner Rosner) at 171:8-14 (expressing a desire to assess, with regard to the various potential reforms discussed at the technical conference, "whether the juice is worth the squeeze, whether it's meaningful enough to have a return on the [Commission's] investment of time and energy")).

[67] Dominion December 9 Post-Technical Conference Comments at 7-8.

[68] ITC December 9 Post-Technical Conference Comments at 4.

30. Constellation argues that because regulation requirements are static, Fully Isolated Co-Located Loads do not affect the amount of regulation service that PJM procures.[69] Constellation acknowledges that generators with Fully Isolated Co-Located Loads may inject less output to the grid and that those injections may be more variable compared to historical injections from the same generator, but argues that generators in PJM do not pay for reserves used to balance variations in their output.[70] Constellation states that, should the Commission wish to revisit that policy, costs should be allocated to generators on a non-discriminatory basis.

31. ITC states that a co-located generating facility is unlikely to maintain sufficient operating reserves if a unit trips offline.[71] However, Constellation argues that Fully Isolated Co-Located Load has no impact on the amount or cost of operating reserves if the co-located generator is not the single largest contingency.[72] ITC states that a co-located generating facility is unlikely to provide its own black start service.[73] However, Constellation argues that Fully Isolated Co-Located Load "imposes no additional burden on the ability of black start services to re-energize the system following a shutdown."[74] Constellation acknowledges that the generator does benefit from this service, but argues that this is true of every generator, and any changes to this policy should be applied in a non-discriminatory manner.[75]

4. Reliability and Resource Adequacy

32. Several parties argue that co-located loads may create reliability risks because they are not visible to or controlled by utilities or grid operators.[76] Joint Parties argue that

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[69] Constellation December 9 Post-Technical Conference Comments at 17-18.

[70] *Id.* at 18 (citing *Integration of Variable Energy Res.*, Order No. 764, 139 FERC ¶ 61,246, at PP 315-335, *order on reh'g & clarification*, Order No. 764-A, 141 FERC ¶ 61,232 (2012), *order on clarification & reh'g*, Order No. 764-B, 144 FERC ¶ 61,222 (2013).

[71] ITC December 9 Post-Technical Conference Comments at 4-5.

[72] Constellation December 9 Post-Technical Conference Comments at 17.

[73] ITC December 9 Post-Technical Conference Comments at 4-5.

[74] Constellation December 9 Post-Technical Conference Comments at 19.

[75] *Id.* at 19.

[76] *See, e.g.*, Buckeye December 9 Post-Technical Conference Comments at 14; Joint Parties December 9 Post-Technical Conference Comments at 8; PPL December 9

co-located loads can affect system performance and generator stability if they are not treated as Network Load.[77] ITC urges the Commission to manage co-location proposals in a way that ensures needs of front of the meter load are met first.[78] PJM states that large loads co-located in front of the meter and designated as PJM Network Load would offer the most robust reliability benefits and holistic planning efficiencies and minimize the need for one-off operational procedures.[79] PJM states that the impact of traditional baseload generation capacity resources becoming no longer available to serve Network Load should be assessed.[80] PJM also states that efforts should be made to promote enhanced situational awareness and communication by and among PJM, the local transmission owner, and the co-location parties.[81]

33. Buckeye argues that co-locating large loads behind the meter could create reliability concerns by bypassing the long-term transmission planning process.[82] PJM explains that behind the meter co-located loads are not included in future planning forecasts or holistically in forward-looking planning processes.[83] PJM states that there may be future risks to reliable system operations if co-located loads integrate behind the meter faster than PJM can reliably plan for them and requests clarity on whether the transmission system should be planned to serve co-located loads.[84] PJM also notes that, should the generator in a co-located load arrangement go offline, PJM will unlikely be able to serve the load from the system until the system is properly planned and enhanced as needed.[85] PJM cautions, that given the "significant social and economic impacts if certain large loads were not able to receive service, it is foreseeable that political, regulatory, and other social forces could exert pressure to attempt to secure service to

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Post-Technical Conference Comments at 6, 10.

[77] Joint Parties December 9 Post-Technical Conference Comments at 8.

[78] ITC December 9 Post-Technical Conference Comments at 4.

[79] PJM November 4 Pre-Conference Statement of Stu Bresler at 2.

[80] *Id.* at 6.

[81] *Id.* at 8.

[82] Buckeye December 9 Post-Technical Conference Comments at 14.

[83] PJM November 4 Pre-Conference Statement of Stu Bresler at 4.

[84] *Id.* at 6, 8.

[85] *Id.* at 6.

such behind the meter load without interruption even if the exclusively-dedicated co-located generator were to become unavailable," which may not be sustainable.[86] Potomac Economics alleges that, when large loads circumvent the interconnection process by co-locating with an existing generator, it may not provide adequate time for planners to address reliability impacts, which Potomac Economics contends is the same as if the co-located load had obtained firm network service.[87]

34. Buckeye contends that co-location rules must not be permitted to bypass critical reliability processes inherent in PJM's planning framework.[88] Similarly, PPL argues that behind the meter loads can create scenarios where large, unplanned electricity demands appear unexpectedly on the system, and that these loads must be planned, monitored, and metered to ensure operational safety and reliability.[89] LS Power, on the other hand, argues this risk is similar to when variable generation output unexpectedly increases due to changes in weather and should be treated like any other generator imbalance.[90]

35. Several parties call for broad and comprehensive studies on the effects of co-location on grid reliability.[91] OPSI argues that the Commission should require RTOs/ISOs to conduct long-term scenario analyses on the potential cumulative reliability and cost impacts of co-location arrangements, and that the Commission should determine if it is in the public interest to allow these arrangements before the Commission accepts changes to existing generator interconnection agreements.[92]

36. Parties also express broad general support for studying co-located loads to ensure that they do not negatively impact reliability.[93] DCC states that grid impact assessments

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[86] *Id.* at 7.

[87] Potomac Economics December 11 Post-Technical Conference Comments at 3-5.

[88] Buckeye December 9 Post-Technical Conference Comments at 15.

[89] PPL December 9 Post-Technical Conference Comments at 10.

[90] LS Power December 9 Post-Technical Conference Comments at 6.

[91] *See, e.g.*, DEC December 9 Post-Technical Conference Comments at 1-2; NRECA December 9 Post-Technical Conference Comments at 13-14; OPSI December 9 Post-Technical Conference Comments at 2.

[92] OPSI December 9 Post-Technical Conference Comments at 2.

[93] *See, e.g.*, ACP December 9 Post-Technical Conference Comments at 4-5; AEP December 9 Post-Technical Conference Comments at 5; Dominion December 9 Post-Technical Conference Comments at 4; Google December 9 Post-Technical Conference

should consider the impact on the local grid infrastructure, grid stability, reliability, and the implications of behind the meter load becoming Network Load.[94] Dominion argues these studies should be similar to those currently performed for the interconnection of new load and generation.[95] The PJM IMM concludes that every new generator and every large load addition should go through a complete analysis and planning process that includes addressing system reliability and is not limited to local transmission issues.[96] PJM states that, regardless of the existence of protection facilities, any request to leverage a capacity resource to serve as a backup unit to co-located load should be subject to coordination, terms and conditions, and advanced authorization from PJM, including, potentially, recall terms.[97]

37. Some parties question the efficacy of the PJM process to study modifications to existing interconnections, the "necessary study," for co-located loads.[98] Duane states that PJM's OATT does not clarify the actual scope of the necessary study in the co-location context, but rather makes clear that the necessary study is intended to address situations where a generation interconnection customer, typically during the project development stage, seeks to change equipment with potentially different electrical characteristics than PJM had originally studied.[99] Duane asserts that this is a narrow purpose with a narrow set of operational effects and that a broader "but for" system impact study should replace the necessary study for co-location.[100] However, Duane also asserts that co-located load should not be charged the full cost of network upgrades that resulted from its impact, to ensure they are not worse off than if they had connected in front of the meter.[101]

Comments at 4; NRECA December 9 Post-Technical Conference Comments at 15-17; OPSI December 9 Post-Technical Conference Comments at 3-4; RMI December 9 Post-Technical Conference Comments at 3-4.

[94] DCC December 9 Post-Technical Conference Comments at 8.

[95] Dominion December 9 Post-Technical Conference Comments at 4-5.

[96] PJM IMM December 17 Post-Technical Conference Comments at 3.

[97] PJM November 4 Pre-Conference Statement of Stu Bresler at 7.

[98] Duane December 9 Post-Technical Conference Comments at 4-5; Glatz/Silverman December 9 Post-Technical Conference Comments at 4-6.

[99] Duane December 9 Post-Technical Conference Comments at 4-5.

[100] *Id.* at 4.

[101] *Id.* at 4-5.

Glatz/Silverman similarly argue the necessary study process is intended for evaluating routine modifications to a generator facility and is not appropriate for co-located load, which grants a new right to serve retail load directly. Glatz/Silverman also argue that there is no mechanism in the OATT to assign cost responsibility for transmission service through the necessary study process.[102] OPSI argues the necessary study analysis is confidential and not subject to public review.[103] By contrast, OPSI maintains, when a generator requests retirement, the generator must provide public notice, PJM must conduct a reliability analysis reviewed in its stakeholder process, and the terms of retirement are subject to the results of the analysis. From the perspective of existing load, OPSI argues the electrical impacts of a generator ceasing to serve the network and serving co-located load instead and resource retirement are similar.

38. Constellation contends that all new loads must be studied, including co-located loads, but argues the necessary study process is sufficient.[104] EPSA argues the Commission should prohibit any study process or requirement which allows "anti-competitive actions or delays to bilateral co-location arrangements" by distribution utilities.[105] Vistra encourages the Commission to follow its practice of deferring to the engineering judgment of the RTOs/ISOs and transmission owners charged with conducting necessary studies.[106]

39. Glatz/Silverman argue that co-location may give co-located load preferential access to available system capacity, over customers proceeding through the normal interconnection process.[107] Glatz/Silverman argue that there is a potential for some load customers to receive preferential access to available system capacity relative to other load customers that must wait for the annual RTEP process and incur more cost responsibility for needed upgrades.

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[102] *Id.* at 6.

[103] OPSI December 9 Post-Technical Conference Comments at 3.

[104] Constellation December 9 Post-Technical Conference Comments at 15-16.

[105] EPSA December 9 Post-Technical Conference Comments at 8-9.

[106] Vistra December 9 Post-Technical Conference Comments at 9-11.

[107] Glatz/Silverman December 9 Post-Technical Conference Comments at 8.

40. A number of commenters call for improvements in load forecasting in response to resource adequacy concerns,[108] including adopting standardized forecasting practices.[109] Parties note that co-located load may be especially difficult to forecast as large loads may be considering multiple sites based on commercial factors.[110] Google and Wilson Energy Economics argue that the Commission could require large load interconnections be backed by financial commitments to increase forecast certainty.[111] Google states this would protect ratepayers from overbuilding in response to speculative or duplicative requests.[112] According to Wilson Energy Economics, an "S-shaped" growth model, similar to PJM's commercial probability estimates for generation interconnection queues, could help reflect near-term certainty and long-term uncertainty in data center forecasts.[113] CEBA recommends grid operators gather data from and for large loads that have demonstrated a commitment to completion through financial commitments or status commitments to support improved load forecasting.[114]

41. Wilson Energy Economics and the NYSRC bring up concerns regarding load shedding and request that utilities clarify that data center loads will not be allowed to

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[108] *See, e.g.*, CEBA December 9 Post-Technical Conference Comments at 12; DCC December 9 Post-Technical Conference Comments at 2; DEC December 9 Post-Technical Conference Comments at 2; Dominion December 9 Post-Technical Conference Comments at 5-6; Google December 9 Post-Technical Conference Comments at 6; NRECA December 9 Post-Technical Conference Comments at 15-16; LS Power December 9 Post-Technical Conference Comments at 9-10; Potomac Economics December 11 Comments at 3-5; PPL December 9 Post-Technical Conference Comments at 16; Vistra December 9 Post-Technical Conference Comments at 12-13; Wilson Energy Economics December 9 Post-Technical Conference Comments at 2.

[109] *See, e.g.*, Dominion December 9 Post-Technical Conference Comments at 5-6; LS Power December 9 Post-Technical Conference Comments at 9-10.

[110] *See, e.g.*, DCC December 9 Post-Technical Conference Comments at 9-11; Dominion December 9 Post-Technical Conference Comments at 5-6.

[111] Google December 9 Post-Technical Conference Comments at 7; Wilson Energy Economics December 9 Post-Technical Conference Comments at 2 (also suggesting requiring self-provided reliability measures as an alternative).

[112] Google December 9 Post-Technical Conference Comments at 7.

[113] Wilson Energy Economics December 9 Post-Technical Conference Comments at 7.

[114] CEBA December 9 Post-Technical Conference Comments at 12-13.

jeopardize service reliability for existing customers, and that, during high-demand periods, data centers should not receive their full contracted amounts while residential, commercial, and industrial customers are subject to rolling blackouts.[115] The NYSRC argues that it is important for the sudden loss of large co-located loads to be considered in the automatic underfrequency load shedding study, as they may lead to disturbances significant enough to trigger automatic underfrequency load shedding in severe cases.[116]

42. On the other hand, some parties assert that co-located large loads can have reliability benefits to the grid.[117] Advanced Energy United contends that large end-use customers should be compensated for the reliability benefits they provide, such as participating as demand response and sending excess generation to the grid.[118] Constellation argues that co-located load does not present unique reliability concerns and that arguments about reliability are attempts to restrict competition and customer choice.[119] Constellation contends that in PJM, demand served on a Fully Isolated Co-Located Load basis is not included in the Installed Reserve Margin, meaning that if it were Network Load instead, it would increase demand by the MW of load plus a reserve margin.[120]

43. NRECA states that resource adequacy models may not account for shifts from baseload generation to behind the meter configurations and calls for Commission guidance to address notice periods and planning requirements before capacity resources transition to exclusive service for co-located loads.[121] NRECA advocates for broader

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[115] Wilson Energy Economics December 9 Post-Technical Conference Comments at 5.

[116] NYSRC December 9 Post-Technical Conference Comments at 5-7.

[117] *See, e.g.*, Advanced Energy United December 9 Post-Technical Conference Comments at 5; Constellation December 9 Post-Technical Conference Comments at 2-3; LS Power December 9 Post-Technical Conference Comments at 5.

[118] Advanced Energy United December 9 Post-Technical Conference Comments at 5.

[119] Constellation December 9 Post-Technical Conference Comments at 4, 13-14.

[120] *Id.* at 14.

[121] NRECA December 9 Post-Technical Conference Comments at 13-14.

metrics, including loss of load hours and expected unserved energy, to better capture resource adequacy risks posed by evolving demand patterns and load configurations.[122]

44. Several parties urge the Commission to focus on resource adequacy more broadly rather than co-location exclusively.[123] Wilson Energy Economics asserts that the rapid growth in data center loads could jeopardize resource adequacy and reliability for existing customers, whose demand has remained flat for years.[124] Parties also express concern that co-location arrangements with existing generators will remove valuable generation resources from the system.[125] PJM states that unprecedented demand growth is outpacing available generation capacity and that PJM is projecting a potential generation shortfall by the end of the decade.[126] OPSI and Dominion argue that co-location arrangements may result in new resource adequacy shortages if not properly accounted for in the planning process.[127] The PJM IMM states that given that PJM's excess reserves are currently less than 1,000 MW, removing a relatively small amount of MW to serve co-located load would have a significant impact on reliability and could easily result in a shortfall in reserves in PJM.[128] The PJM IMM concluded through sensitivity analyses that if all nuclear capacity in PJM did not offer into PJM's capacity

[122] *Id.* at 14.

[123] *See, e.g.*, ACORE December 9 Post-Technical Conference Comments at 1; Constellation December 9 Post-Technical Conference Comments at 8; DEC December 9 Post-Technical Conference Comments at 2; DPN December 9 Post-Technical Conference Comments at 8; Joint Parties December 9 Post-Technical Conference Comments at 1, 4; LS Power December 9 Post-Technical Conference Comments at 7-8; PJM IMM December 17 Post-Technical Conference Comments at 4; Vistra December 9 Post-Technical Conference Comments at 12.

[124] Wilson Energy Economics December 9 Post-Technical Conference Comments at 2.

[125] *See, e.g.*, Buckeye December 9 Post-Technical Conference Comments at 13; Dominion December 9 Post-Technical Conference Comments at 6; IECA December 9 Post-Technical Conference Comments at 2; Mainspring December 9 Post-Technical Conference Comments at 3; PPL December 9 Post-Technical Conference Comments at 16.

[126] PJM November 4 Pre-Conference Statement of Stu Bresler at 4.

[127] Dominion December 9 Post-Technical Conference Comments at 6; OPSI December 9 Post-Technical Conference Comments at 2.

[128] PJM IMM December 17 Post-Technical Conference Comments at 3.

market, the RTO would be short of the reliability requirement.[129] Mainspring argues that, given challenges with generator interconnection, these resources may not be replaced in the near-term.[130] PPL asserts that utility-connected loads allow for more precise planning and are less likely to result in resource adequacy concerns compared to behind the meter configurations.[131] Similarly, several parties state co-locating new large load with existing generation could raise capacity market prices.[132]

45. On the other hand, Constellation argues that that Fully Isolated Co-Located Load does not increase capacity prices and that any price increases from load growth regardless of configuration are the result of supply and demand fundamentals.[133] Constellation argues that Fully Isolated Co-Located Load configurations can reduce capacity market procurements.[134] SEIA states the price and reliability impacts of co-location are unclear.[135] Vistra argues that improving resource adequacy requires attracting capital, and a framework that supports co-location arrangements.[136] LS Power argues that, given recent capacity prices, it is rational for a generator to pursue a co-location arrangement with guaranteed long term revenues, and, while this may raise resource adequacy concerns, creating regulatory impediments to this behavior will encourage resources to island and deprive the system of any incremental generation and services.[137]

[129] *Id.* attach. 2 at 3.

[130] Mainspring December 9 Post-Technical Conference Comments at 3.

[131] PPL December 9 Post-Technical Conference Comments at 16.

[132] *See, e.g.*, Buckeye December 9 Post-Technical Conference Comments at 13; Dominion December 9 Post-Technical Conference Comments at 6; IECA December 9 Post-Technical Conference Comments at 2; PPL December 9 Post-Technical Conference Comments at 16.

[133] Constellation December 9 Post-Technical Conference Comments at 5, 16.

[134] *Id.* at 2-3.

[135] SEIA December 9 Post-Technical Conference Comments at 3.

[136] Vistra December 9 Post-Technical Conference Comments at 8.

[137] LS Power December 9 Post-Technical Conference Comments at 10.

5. Benefits of Co-Locating Large Loads

46. Several parties argue that co-located load configurations provide a quicker path to service for new loads.[138] Amazon argues that co-location is quicker and less expensive for all ratepayers than traditional front-of-the-meter arrangements.[139] Parties aver that large loads co-located with generators can add operational flexibility to the grid,[140] participate as demand response,[141] and sell excess generation to the market.[142] National Grid argues that co-location can support system reliability by preventing the retirement of uneconomic resources and more efficiently deploy generation in regions with an overabundance of intermittent resources.[143] However, Duane cautions that the transmission system must be planned to accommodate any such flexibility.[144]

47. Several parties argue that behind the meter co-located loads can reduce ratepayer costs by reducing the need for network transmission investments and upgrades.[145]

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[138] *See, e.g.*, Constellation December 9 Post-Technical Conference Comments at 2-3; MISO December 9 Post-Technical Conference Comments at 2; RMI December 9 Post-Technical Conference Comments at 2.

[139] Amazon December 9 Post-Technical Conference Comments at 1.

[140] *See, e.g.*, Advanced Energy United December 9 Post-Technical Conference Comments at 5; Constellation December 9 Post-Technical Conference Comments at 20; DPN December 9 Post-Technical Conference Comments at 8; Intersect December 9 Post-Technical Conference Comments at 8; Mainspring December 9 Post-Technical Conference Comments at 1.

[141] *See, e.g.*, Advanced Energy United December 9 Post-Technical Conference Comments at 5; *see also* Intersect December 9 Post-Technical Conference Comments at 8.

[142] *See, e.g.*, Advanced Energy United December 9 Post-Technical Conference Comments at 5; Constellation December 9 Post-Technical Conference Comments at 20.

[143] National Grid January 17 Post-Technical Conference Comments at 4; *see also* Soluna December 10 Comments at 1.

[144] Duane December 9 Post-Technical Conference Comments at 1-3.

[145] *See, e.g.*, Advanced Energy United December 9 Post-Technical Conference Comments at 9; Amazon December 9 Post-Technical Conference Comments at 2; Constellation December 9 Post-Technical Conference Comments at 2-3, 11; *see also* LS Power December 9 Post-Technical Conference Comments at 5; Soluna December 10

Constellation also argues that Fully Isolated Co-Located Load protects other customers from stranded costs because fewer network upgrades are required relative to grid connections.[146] CEBA argues that co-location of new loads could ease the burden of interconnection studies.[147] Several parties also argue that co-location arrangements may relieve congestion by providing a cheaper alternative to network upgrades.[148] Advanced Energy United states that behind the meter co-located loads can provide significant savings to ratepayers from reduced congestion charges because loads such as data centers are drawn to locations with low-cost power that are often areas of heavily curtailed renewables.[149] Constellation also argues that Fully Isolated Co-Located Load configurations reduce line losses, result in more efficient utilization of existing infrastructure, and free up delivery capacity on the grid.[150]

48. A number of entities support the Commission encouraging co-location of load with new generation, rather than existing generation.[151] Google states that "the promise of co-location rests on matching *new* load with *new* generation," but that interconnection queue backlogs have delayed new generation projects.[152] Mainspring argues that large

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Comments at 1.

[146] Constellation December 9 Post-Technical Conference Comments at 12.

[147] CEBA December 9 Post-Technical Conference Comments at 6-7.

[148] *See, e.g.*, ACP December 9 Post-Technical Conference Comments at 6; CEBA December 9 Post-Technical Conference Comments at 6-7; Soluna December 10 Comments at 1.

[149] Advanced Energy United December 9 Post-Technical Conference Comments at 8-9.

[150] Constellation December 9 Post-Technical Conference Comments at 2-3, 10, 12-13.

[151] *See, e.g.*, CEBA December 9 Post-Technical Conference Comments at 6; Dominion December 9 Post-Technical Conference Comments at 7; Enchanted Rock December 9 Post-Technical Conference Comments at 3-4, 8; Google December 9 Post-Technical Conference Comments at 5; IECA December 9 Post-Technical Conference Comments at 3; Intersect December 9 Post-Technical Conference Comments at 9-10; Mainspring December 9 Post-Technical Conference Comments at 3; NREMC December 9 Post-Technical Conference Comments at 4; SEIA December 9 Post-Technical Conference Comments at 6-7.

[152] Google December 9 Post-Technical Conference Comments at 2.

loads that bring new generation can add value to the grid beyond that of an equally sized new grid resource because it may reach commercial operation faster by reducing the workload for grid operators.[153] Mainspring explains that these resources may require fewer interconnection studies and should not be treated the same way as new load using existing generation.[154]

49. Several entities express interest in a process that allows for studying new co-located load and generation together rather than separately.[155] Dominion and Intersect argue this could mitigate resource adequacy risks.[156] MISO states that it is considering the simultaneous evaluation of co-located load and new generation to mitigate potentially redundant network upgrades and more accurately capture their impacts on the system.[157] RMI advocates for co-location arrangements where new renewable generation is built at existing fossil fuel generation facilities with existing interconnections, so the co-located load is served behind the meter but surplus generation can be sold to the grid.[158] RMI states that few or no upgrades would be required for this arrangement and that the fossil generator can provide back-up for the co-located load when it is not needed by the grid.[159]

B. Complaint

1. Complaint

50. Constellation argues that the OATT is unjust and unreasonable and unduly discriminatory because it lacks rules for interconnected generators to follow when seeking to provide service to end-use load co-located with generation behind the meter in a configuration with protective relays to prevent the load from receiving electricity from

[153] Mainspring December 9 Post-Technical Conference Comments at 3-4.

[154] *Id.* at 4.

[155] *See, e.g.*, Enchanted Rock December 9 Post-Technical Conference Comments at 3-4, 8; IECA December 9 Post-Technical Conference Comments at 3; Intersect December 9 Post-Technical Conference Comments at 10.

[156] Dominion December 9 Post-Technical Conference Comments at 7; Intersect December 9 Post-Technical Conference Comments at 9.

[157] MISO December 9 Post-Technical Conference Comments at 5.

[158] RMI December 9 Post-Technical Conference Comments at 1-2.

[159] *Id.* at 2.

the grid, a configuration that Constellation refers to as "Fully Isolated Co-Located Load."[160] Constellation states that the Guidance Document includes, for the first time, procedures and requirements for Fully-Isolated Co-Located Load and creates new procedures and requirements for some configurations that were not in the Tariff or manuals.[161] Constellation argues that the lack of Tariff rules for generators seeking Fully Isolated Co-Located Load arrangements —and some utilities' exploitation of that lack of rules—is unjust, unreasonable, and unduly discriminatory and has two consequences.[162]

51. First, Constellation alleges that local utilities have exploited the lack of clarity in the OATT to block or delay competition to serve data centers.[163] Specifically, Constellation contends, Exelon has actively blocked several Fully Isolated Co-Located Load projects due to the lack of clear rules in the OATT.[164] For those projects, Constellation argues, PJM completed necessary studies for potential loads at Constellation generation sites and concluded that Constellation's proposed modifications, which incorporate protective relays to ensure that the co-located load would not be able to draw from the grid, will have no adverse impact on transmission grid reliability.[165] Second, Constellation argues that the lack of OATT rules allows different transmission owners in PJM to treat generators differently, as evidenced by the fact that some utilities such as PPL follow the Guidance Document while others like Exelon do not.[166]

52. Constellation states that, in establishing the replacement rate, the Commission should conclude that provisions of the PJM Guidance Document not on file with the Commission (particularly sections 2, 3, 5, and 7) must be incorporated into the OATT under the rule of reason, which will provide certainty to generators and transmission owners by ensuring that the PJM Guidance Document is applied to all interconnected generators seeking to serve co-located load.[167] Constellation asserts that the Commission should set for paper hearing and settlement procedures on an expedited 90-day schedule

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[160] Complaint at 1.

[161] *Id.* at 5.

[162] *Id.* at 9.

[163] *Id.* at 6.

[164] *Id.* at 17.

[165] *Id.* at 7, 16.

[166] *Id.* at 8, 19.

[167] *Id.* at 20.

any other issues needed to ensure that rules applicable to generators seeking to serve Fully Isolated Co-Located Load are just and reasonable and not unduly discriminatory.[168]

2. Jurisdiction Issues

53. Several parties comment on the relationship between the Complaint and state law. SCE states that the Complaint unjustifiably assumes that a generator may serve, at retail, load behind the meter without regard for laws that dictate who can provide or sell power to end-use load that is connected to facilities owned by a utility.[169] SCE urges the Commission to clarify that it has no authority to preempt laws that prohibit third-party generators from selling directly to retail load.[170] EKPC states that, should the Commission grant the complaint, the Commission should require language in the OATT that makes clear that any co-located load configurations must comply with state laws and regulations.[171] The Illinois Attorney General's Office states that co-located load that qualifies as retail load should be subject to the same charges as other retail electric customers in the state.[172]

54. Parties also submit information on particular state matters they view as relevant to the Complaint. The Illinois Attorney General's Office points out that four of Constellation's nuclear plants in the ComEd zone of PJM in Illinois receive state subsidies that expire in 2027 and, therefore, those plants cannot be dedicated to co-located load until then.[173] EKPC states that Kentucky law does not authorize a third-party generator in the state to sell power directly to retail load and that only franchised utilities with certificated service territories in Kentucky can serve retail load in the state.[174]

55. SCE also expresses concern over the statement in PJM's Answer that the Commission has jurisdiction over the regulation of "large load interconnections," a term

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[168] *Id.* at 28.

[169] SCE December 23 Comments of Complaint at 8 & n.17.

[170] *Id.* at 8-10.

[171] EKPC December 12 Comments of Complaint at 2-4.

[172] Illinois Attorney General's Office December 12 Comments of Complaint at 13.

[173] *Id.* at 3-4.

[174] EKPC December 12 Comments of Complaint at 3 (citing Ky. Rev. Stat. Ann. § 278.018(1)).

that SCE interprets to mean interconnections of retail/end-use loads to transmission facilities.[175] SCE contends that, since the adoption of the FPA, state commissions have regulated retail transmission-level load interconnections, as evidenced by the fact that utilities, including some in retail choice states, have retail rates specifically for loads interconnected at transmission voltage.[176] SCE asserts that the only way for the Commission to assert jurisdiction over a large load interconnection is to find that the large load is interconnecting to transmission facilities to take Commission-jurisdictional unbundled retail transmission service.[177]

56. In response to SCE, PJM argues that the Commission has jurisdiction over many issues related to co-located load as described in the complaint.[178] PJM argues that the Commission has jurisdiction over generating facilities seeking to serve co-located load because the generator has a Commission-jurisdictional interconnection service agreement, engages in wholesale transactions, and because such transactions use Commission-jurisdictional transmission service. PJM suggests that transactions related to co-location involve wholesale sales. PJM notes that Constellation's Calvert Cliffs facility and Talen Energy's Susquehanna facility are Exempt Wholesale Generators (EWG), and that EWGs cannot make retail sales.[179] PJM indicates that under certain co-located load arrangements, like those proposed by Susquehanna and Constellation, EWGs seek to sell power to an intermediary in what appears to be a retail sale.[180] PJM avers that Commission-jurisdictional transmission service is involved in effectuating these wholesale transactions.

57. PJM also argues that the Commission has jurisdiction over a generating unit's participation in (and exit from) a capacity market, jurisdiction over grid reliability, and jurisdiction over regional transmission planning.[181] Thus, PJM concludes, the Commission can regulate the entities, transactions, reliability, and market implications of large load interconnections to the extent they directly affect wholesale transactions. The

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[175] SCE December 23 Comments of Complaint at 2 (quoting PJM December 12 Answer at 15, 25).

[176] *Id.* at 5 (citations omitted).

[177] *Id.* at 2, 5-6.

[178] PJM January 21 Answer at 17.

[179] *Id.* at 17-18.

[180] *Id.* at 18.

[181] *Id.* at 20.

PJM IMM asserts that the process of interconnecting large loads must be subject to regulatory oversight to maintain system reliability for all customers.[182]

3. Wholesale Grid Services

58. Several parties dispute Constellation's characterization of "Fully Isolated Co-Located Load" and argue that the arrangement requires wholesale services. PJM argues that grid-connected resources and load cannot follow only certain electrons along a contract path.[183] NOVEC states that the Guidance Document provides that co-located load "benefits from the use of the Transmission System and Ancillary Services."[184] Exelon argues that a nuclear facility serving co-located load must remain interconnected to the grid.[185] Several parties argue that the arrangement relies upon services from the grid, such as load following, voltage support, black start, uplift, backup power, and certain ancillary services, because a nuclear facility cannot provide them.[186]

59. Exelon argues that, consistent with Commission ratemaking policy, PJM's transmission rates are designed to recover the embedded costs of the existing grid, and that Constellation's approach would shift grid costs onto others.[187] NOVEC likewise argues that Constellation's proposal would harm other customers by increasing transmission rates due to co-located data centers not paying their fair share.[188] Several other commenters argue that co-location arrangements will cause and thus should bear costs involving the need for new transmission lines, substations, or voltage devices

[182] PJM IMM January 7 Answer at 4.

[183] PJM January 21 Answer at 18.

[184] NOVEC December 18 Protest of Complaint at 5-7.

[185] Exelon December 12 Protest of Complaint at 8-11.

[186] *Id.* at 8-9; ODEC December 12 Protest of Complaint at 6; NOVEC December 18 Protest of Complaint at 5-7.

[187] Exelon December 12 Protest of Complaint at 12 (citing *Inquiry Concerning the Comm'n's Pricing Pol'y for Transmission Servs. Provided by Pub. Utils. under the Fed. Power Act; Pol'y Statement*, FERC Stats. & Regs. ¶ 31,005, at 31,137 (1994) (cross-referenced at 69 FERC ¶ 61,086)).

[188] NOVEC December 18 Protest of Complaint at 9.

needed to maintain reliability, as well as network upgrades resulting from removing existing generation from the grid to serve a co-located load.[189]

60. Constellation disagrees, arguing that, under cost causation principles, users do not pay for embedded costs of the transmission grid if they do not use the grid.[190] Relatedly, Constellation claims that Tariff provisions for Network and Point-to-Point service are inapplicable.[191] Exelon asserts that Constellation's co-location arrangement must pay the costs to maintain the grid because Constellation believes any utility interconnected to co-located load must plan and build the transmission grid to serve these units and their customers.[192] Constellation disagrees, arguing that transmission owners should not be allowed to plan for load unless the load becomes a transmission service customer.[193]

61. Exelon argues that Constellation seeks a new service where there is no Network Customer, and thus no entity responsible for Commission-jurisdictional service charges.[194] Exelon contends that Constellation is asking the Commission to require retail wheeling to serve an end user (co-located load) using the transmission grid and in violation of FPA section 212(h), which bans mandatory retail wheeling.[195] In response, Constellation asserts that it is not seeking mandatory retail wheeling.[196]

4. Reliability and Resource Adequacy

62. The Illinois Attorney General's Office urges the Commission to require a comprehensive and transparent analysis of grid impacts as part of the process for approving large co-location arrangements and to direct PJM to implement tariff

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[189] Illinois Attorney General's Office December 12 Comments of Complaint at 12; ODEC December 12 Protest of Complaint at 6.

[190] Constellation December 26 Answer at 20-22.

[191] *Id.* at 22.

[192] Exelon December 12 Protest of Complaint at 13-14 (citing Constellation, Answer, Docket No. ER24-2888-000, et al., at 16 (filed Nov. 12, 2024)).

[193] Constellation December 26 Answer at 21-22 (citing Exelon December 12 Protest of Complaint at 13-14).

[194] Exelon December 12 Protest of Complaint at 20.

[195] *Id.* at 21-22.

[196] Constellation December 26 Answer at 21-22.

provisions that enable PJM to ensure reliable operation of the transmission system and adequate resource supply.[197] ODEC states that it would support a process to allow conditional approval of co-located loads to reduce delays that are hampering the development of co-location arrangements, subject to certain conditions, including that appropriate studies are completed to ensure the loss of capacity would not present a significant concern for reliability or resource adequacy.[198]

63. Several commenters express concern regarding the impact of co-location arrangements on resource adequacy and energy prices.[199] NOVEC explains that the PJM market is currently struggling with a capacity shortfall and high prices, and argues that further reductions in supply due to co-location will undermine the market and inflate prices.[200] The PJM IMM argues that Constellation's proposal would remove from PJM's system more excess reserve capacity than was present after the last capacity auction, reducing PJM's reserve margin below its target and, thus, degrading reliability in PJM.[201] However, PJM recognizes that, if large co-located loads are designated as Network Load, there would still be resource adequacy concerns.[202] PJM thus encourages a broader, more holistic approach to issues arising from co-located loads.[203]

64. Vistra states that a unit committed to providing primary service to co-located load should not be able to sell capacity to PJM, but units providing occasional back-up service may be able to do so.[204] Vistra argues that PJM's necessary study process already considers the reliability impacts of co-located load and need not also account for resource adequacy, an issue that is not the result of co-location configurations and cannot be

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[197] Illinois Attorney General's Office December 12 Comments of Complaint at 10-11.

[198] ODEC December 12 Protest of Complaint at 8.

[199] Illinois Attorney General's Office December 12 Comments of Complaint at 4-11; NOVEC December 18 Protest of Complaint at 7 (citing PJM IMM, Answer, Docket No. ER24-2172-000, at 7 (filed July 10, 2024)).

[200] NOVEC December 18 Protest of Complaint at 8.

[201] PJM IMM December 20 Answer at 6-7.

[202] PJM January 21 Answer at 5.

[203] *Id.* at 5, 10.

[204] Vistra December 27 Answer at 6.

solved by policies specific to co-location.[205] Applying resource adequacy-related rules for necessary studies to co-located customers, Vistra alleges, would be facially discriminatory.[206] Vistra adds that using the necessary study process to commandeer generation resources for PJM's own resource adequacy purposes is impermissible under Commission precedent and may also constitute a regulatory taking.[207]

VI. Discussion

65. As the foregoing discussion indicates, the surge of interest in co-location arrangements in PJM has put before the Commission several significant and novel issues. To address those issues on a comprehensive basis, we are instituting a show cause proceeding under section 206 of the FPA, and we consolidate it with Docket Nos. AD24-11-000 (the co-location technical conference) and EL25-20-000 (the Constellation Complaint) because they raise common issues of law and fact, and considering the proceedings together will result in greater administrative efficiency.[208] We direct PJM and the Transmission Owners, to the extent the matters addressed herein implicate aspects of the Tariff over which they have the filing rights, to respond to concerns raised in this show cause order. Other entities are strongly encouraged to comment on these matters as well.

A. Jurisdiction

66. At the outset, we clarify the principles relating to the Commission's jurisdiction over the matters relevant to co-location arrangements. The issues presented in this proceeding implicate both federal and state interests, and their resolution will require the involvement of both federal and state actors, including the Commission, state public utility commissions, and other state and local entities. The Commission is a creature of statute and has jurisdiction only over those matters that Congress has given it the authority to regulate.[209] That authority includes jurisdiction over the wholesale sale and

[205] *Id.* at 8-9.

[206] *Id.* at 9.

[207] *Id.* (citing *PJM Interconnection, L.L.C.*, 178 FERC ¶ 61,121, at P 97 (2022); *ISO New England, Inc.*, 135 FERC ¶ 61,029, at P 255 (2011)).

[208] *See Sw. Power Pool, Inc.*, 190 FERC ¶ 61,018, at P 21 (2025) ("In general, the Commission consolidates multiple proceedings when required to resolve common issues of law and fact and if consolidation will ultimately result in greater administrative efficiency.").

[209] *Atl. City Elec. Co. v. FERC*, 295 F.3d 1, 8 (D.C. Cir. 2002).

transmission of electricity in interstate commerce, including the facilities used for such sale and transmission.[210] Principally relevant here, the Commission must ensure that the rates, charges, and classifications for such wholesale sale and transmission of electricity, as well as the practices directly affecting such sale and transmission of electricity, are just and reasonable and not unduly discriminatory or preferential.[211]

67. At the same time, the FPA expressly reserves to states the authority over any other sale of electric energy, including retail sales and wholesale sales not in interstate commerce (such as wholesale sales within the Electric Reliability Council of Texas region), as well as the facilities used for the generation and distribution of electricity.[212] These matters are consistent with those that the Supreme Court has long held to be within the states' historic police powers,[213] and the Court has observed that the FPA's jurisdictional divide "was drawn with meticulous regard for the continued exercise of state power, not to handicap or dilute it in any way."[214] In short, under the FPA, the Commission and states each regulate within separate zones of exclusive jurisdiction, with the states retaining authority over those matters not expressly conveyed to the Commission under the FPA.[215]

68. As the comments described above illustrate, the boundaries between federal and state jurisdiction are not hermetically sealed.[216] The application of these principles to the

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[210] 16 U.S.C. § 824(b)(1).

[211] 16 U.S.C. §§ 824d, 824e; *see FERC v. Elec. Power Supply Ass'n*, 577 U.S. 260, 278 (2016) (*EPSA*) (approving "a common-sense construction of the FPA's language, limiting FERC's 'affecting' jurisdiction to rules or practices that 'directly affect the wholesale rate'" (cleaned up)).

[212] 16 U.S.C. § 824(b)(1); *see Dayton Power & Light Co. v. FERC*, No. 21-4072, 2025 WL 227515, at *14 (6th Cir. Jan. 17, 2025).

[213] *See, e.g.*, *Munn v. People of State of Ill.*, 94 U.S. 113 (1876).

[214] *Oneok, Inc. v. Learjet, Inc.*, 575 U.S. 373, 384-85 (2015) (discussing the analogous provisions in the Natural Gas Act) (quoting *Panhandle E. Pipe Line Co. v. Pub. Serv. Comm'n of Ind.*, 332 U.S. 507, 517-18 (1947)); *see also Nw. Cent. Pipeline Corp. v. State Corp. Comm'n of Kan.*, 489 U.S. 493, 511 (1989).

[215] *Nat'l Ass'n of Regul. Util. Comm'rs v. FERC*, 964 F.3d 1177, 1187 (D.C. Cir. 2020) (citing *N. Nat. Gas Co. v. State Corp. Comm'n of the State of Kan.*, 372 U.S. 84, 91-93 (1963)).

[216] *EPSA*, 577 U.S. at 281.

issue of co-location will often depend heavily on the specific facts and circumstances presented in particular situations. Nevertheless, it is possible at this point to articulate our view of certain basic principles that will apply across those different situations. First and foremost, states retain exclusive jurisdiction over the terms of retail sales, generally including the rate designs that determine how the costs of the wholesale sale and transmission of electricity assigned to a wholesale customer are allocated among that wholesale customer's retail customers. Thus, while "a State may not conclude in setting retail rates that the FERC-approved wholesale rates are unreasonable,"[217] it is within a state's exclusive jurisdiction to determine how those FERC-approved rates are collected among the relevant retail consumers along with the rates for state-jurisdictional matters. The same goes for wholesale sales to the extent that they are not in interstate commerce. In addition, states retain the authority through, for example, state franchise laws, to regulate which entities may make retail sales within their borders, as well as the rates, terms, and conditions of those retail sales.[218]

69. Applied in the context of co-location, that means that, under the FPA, the states get to determine which entities are legally permitted to provide electricity to retail customers in co-location arrangements. The states also get to determine how the wholesale costs of providing electricity to those retail customers are recovered through retail rates. That is true irrespective of where the load interconnects (i.e., to the distribution system, the transmission system, or the generator itself).

70. States also have authority over their generation resource mix, including through their siting authority.[219] This means that which generating resources are sited and allowed to operate to serve co-located load is also a question of state law. That is true notwithstanding the fact that PJM's markets might indirectly influence the resource mix through, for example, capacity-market price signals guiding resource entry and exit.[220]

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[217] *Nantahala Power & Light Co. v. Thornburg*, 476 U.S. 953, 966 (1986).

[218] *See, e.g.*, EKPC Comments of Complaint at 3 ("A third-party generator in Kentucky is not authorized by Kentucky statute to sell power directly to retail load; only the franchised utilities (including electric cooperatives) with certificated service territories in Kentucky are authorized to serve retail load in the state.").

[219] *See, e.g.*, *Citizens Action Coal. of Ind., Inc. v. FERC*, 125 F.4th 229, 238 (D.C. Cir. 2025) (citing 16 U.S.C. § 824(b)(1)).

[220] *Accord EPSA*, 577 U.S. at 281 ("It is a fact of economic life that the wholesale and retail markets in electricity, as in every other known product, are not hermetically sealed from each other. To the contrary, transactions that occur on the wholesale market have natural consequences at the retail level. And so too, of necessity, will FERC's

71. At the same time, the Commission has exclusive authority over the rates, terms, and conditions for the sales from generating resources used to serve co-located loads, as well as the practices directly affecting such sales, *provided* that they are sales for resale in interstate commerce. If they are not sales for resale—that is, if they are made directly to the end-use consumer—or if they are not in interstate commerce[221] then the co-located generator's sales are under state jurisdiction.

72. In addition, the Commission has exclusive jurisdiction over the provision of transmission service used to serve co-location arrangements, again *provided* that transmission of electricity is in interstate commerce.[222] As part of that jurisdiction, the Commission has exercised authority over the terms of certain interconnections to the transmission system as "an essential element of [t]ransmission [s]ervice."[223] Although the Commission reached that conclusion based on the nature of interconnection to the transmission system generally, not the purpose for such interconnection (i.e., to make a

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regulation of those wholesale matters.").

[221] *See supra* P 67.

[222] *See supra* P 67. The Supreme Court has held that transmission facilities connected to the interstate grid operate in interstate commerce, but the presumption that transmission is in interstate commerce will not necessarily hold if transmission-level facilities are not connected to that interstate grid. *See New York v. FERC*, 535 U.S. 1, 16 (2002) (citing *FPC v. Fla. Power & Light Co.*, 404 U.S. 453, 466–67 (1972) (*Florida Power*)); *see also Florida Power*, 404 U.S. at 462-63 ("[The Commission's] alternative assertion that energy commingles in a bus is, in our opinion, sufficient to sustain [the Commission's] jurisdiction.").

[223] *Standardization of Generator Interconnection Agreements & Procs.*, Order No. 2003, 104 FERC ¶ 61,103 (2003) (Order No. 2003), *order on reh'g*, Order No. 2003-A, 106 FERC ¶ 61,220, at P 698, *order on reh'g*, Order No. 2003-B, 109 FERC ¶ 61,287 (2004), *order on reh'g*, Order No. 2003-C, 111 FERC ¶ 61,401 (2005), *aff'd sub nom. Nat'l Ass'n of Regul. Util. Comm'rs v. FERC*, 475 F.3d 1277 (D.C. Cir. 2007); *see Nat'l Ass'n of Regul. Util. Comm'rs v. FERC*, 475 F.3d at 1280 (affirming Order No. 2003 and observing that "interconnections appear to be relationships between parties with respect to electricity flowing over facilities. . . . By establishing standard agreements [the Commission] has exercised its jurisdiction over the *terms* of those relationships."). The Commission has reiterated this finding repeatedly. *Pac. Gas & Elec. Co.*, 115 FERC ¶ 61,193, at P 36 (2006) ("[I]interconnection is part and parcel of transmission of electric energy in interstate commerce, and thus interconnection service is part and parcel of jurisdictional transmission service."); *see also id.* P 36 n.52 (citing *Tenn. Power Co.*, 90 FERC ¶ 61,238, at 61,761, *reh'g dismissed*, 91 FERC ¶ 61,271 (2000)).

wholesale sale or to make a wholesale or retail purchase), it has not historically exercised jurisdiction over any and all transmission-level interconnections of retail load.[224]

73. Parties are invited to comment on these jurisdictional principles as well as any other relevant aspects of the Commission's jurisdiction.[225] In particular, we encourage parties to address when and under what circumstances a co-located load is interconnected to the transmission system in interstate commerce. That includes what evidence the Commission should deem sufficient and/or necessary to determine that co-located load is interconnected to the interstate transmission system. For example, if a co-located load is connected to the interstate transmission system only through the generator or if it is served by the generator at a transmission-level voltage, but using facilities that are not interconnected to the interstate transmission system, does that constitute a transmission interconnection in interstate commerce? Similarly, if the load in a co-location arrangement is allegedly fully isolated (and we herein seek comment on the characteristics of such arrangement below), does that constitute an interconnection to the transmission system? If a fully isolated co-location arrangement does not constitute an interconnection to the transmission system, what are the characteristics of the fully isolated configuration necessary or sufficient to reach that determination? Finally, we also encourage parties to discuss whether the Commission must, should, or can exercise jurisdiction over the interconnection of co-location arrangements to the transmission system in interstate commerce as an element of transmission service, including where the purpose is to facilitate a retail sale. Parties should consider both what general standard should apply to these questions and discuss specific examples that illustrate the point.[226]

B. Tariff Provisions

74. Turning to the specific provisions of the Tariff, we find that the existing Tariff appears to be unjust and unreasonable or unduly discriminatory or preferential because it does not contain provisions addressing with sufficient clarity or consistency the rates,

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[224] The Commission did examine whether certain facilities had a "dual use," (i.e., the facilities were used for both wholesale and retail purposes), but the Commission limited its assertion of jurisdiction to distribution level interconnections. Order No. 2003, 104 FERC ¶ 61,103 at P 804.

[225] We recognize that, in a separate proceeding, Baltimore Gas & Electric Company and PECO Energy Company have filed a petition for declaratory order on various matters, including aspects of the Commission's jurisdiction over co-location arrangements. *See* Docket No. EL24-149-000. To the extent that parties to this proceeding want to introduce the issues raised in the petition in Docket No. EL24-149-000 to this proceeding and address those issues, they are free to do so.

[226] *See infra* Part VI.D (Briefing Questions).

terms, and conditions of service that apply to co-location arrangements. The absence of such provisions may leave entities unable to determine what steps they can or must take to effectuate co-location arrangements of various configurations and how to do so in a manner that is just and reasonable. These steps include determining how the arrangement would be categorized under the Tariff, which wholesale services, if any, would be necessary for that arrangement, and the appropriate charges for those services. Without such a common and consistent understanding of entities' responsibilities relevant to co-location, many of which may significantly affect rates and are realistically susceptible of specification,[227] we are concerned that these arrangements may be developed in a manner that is itself unjust and unreasonable or that may result in unjust and unreasonable rates for other customers. Moreover, as discussed further below, we are especially concerned that the absence of Tariff provisions creates the potential that participants in a co-location arrangement may not be required to pay for wholesale services that they receive, as required by the cost causation principle, which provides that all Commission-jurisdictional rates and charges must "reflect to some degree the costs actually caused by the customer who must pay for them,"[228] and that costs must be allocated in a manner that is at least roughly commensurate with the benefits that entity receives.[229]

75. In addition, we preliminarily find that this lack of applicable Tariff provisions raises the potential for undue discrimination or preferential treatment. For example, there are allegations in the record that Exelon has delayed work on Constellation's requests to co-locate load with its generators at certain facilities due to Exelon's concerns that such requests are not allowed under the Tariff without arranging for wholesale transmission or retail distribution service.[230] On the other hand, as a factual matter, the proceeding in Docket Nos. ER24-2172-000, *et al*. indicates that PPL allowed a generator in its service territory to enter into a co-location arrangement without requiring the co-located load to take Network Integration Transmission Service. As such, the record of proceedings before the Commission appear to suggest that Transmission Owners are taking different approaches to performing the steps necessary to accommodate a co-location arrangement and in the transmission service that they are requiring entities to take. We find that these dynamics raise the potential for undue discrimination—albeit, in this example, by the

[227] *Hecate Energy Greene Cnty. 3 LLC v. FERC*, 72 F.4th 1307, 1312 (D.C. Cir. 2023).

[228] *Midwest ISO Transmission Owners v. FERC*, 373 F.3d 1361, 1368 (D.C. Cir. 2004).

[229] *See, e.g.*, *Ill. Com. Comm'n v. FERC*, 576 F.3d 470, 476 (7th Cir. 2009).

[230] Complaint at 17; Exelon December 12 Protest of Complaint at 20.

Transmission Owners, not PJM—due to the lack of Tariff provisions governing co-location arrangements.

76. We now turn to specific concerns regarding the *status quo* of co-location arrangements in PJM (i.e., beyond the above generalized concerns regarding adverse consequences associated with the absence of Tariff provisions). We begin with the cost causation concerns associated with the way in which co-location arrangements may be taking and paying for transmission service.[231] The Commission has defined transmission service as the provision of "electric transmission, network or point-to-point service, ancillary services or other methods of electric transmission, or the interconnection with jurisdictional transmission facilities."[232] The record demonstrates that different co-location arrangements are likely to use or benefit from the transmission system in different ways depending on how they are configured and, moreover, that those different configurations will themselves likely have different impacts on the transmission system. For example, Network Load may co-locate with a generator that is not a grid resource and that either serves the load as an off-grid backup or that reduces the Network Load's consumption during peak hours.[233] On the other end of the spectrum, Constellation states that Fully Isolated Co-Located Load would rely on protective relays to ensure that the co-located load never takes delivery of energy from the transmission grid.[234] These questions present unique issues for PJM, as the system planner.[235]

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[231] *See* Technical Conference Transcript (Bresler) at 41:16-20 ("… even a co-located behind the meter load that is added to the system, in my view is dependent upon, and benefits from the reliable operation of the transmission grid to which the generator on which it is relying is connected, and cannot disconnect from"). *See also* Technical Conference Transcript (Bowring) at 122:24–123:7 (locating behind the meter means "you are not paying for the transmission system, which you are using contrary to what many have said, you are not paying for ancillary services, contrary to what many have said. Of course you are. … the idea that that co-located load doesn't rely on black start, or other ancillary services is just non-realistic").

[232] 18 C.F.R. § 358.3(f) (2024).

[233] Mainspring December 9 Post-Conference Comments at 5-6.

[234] Complaint at 1.

[235] *See, e.g.*, Technical Conference Transcript (Bresler) at 40:11-21 ("[C]an I really plan the system on that basis? In other words, if that generator is unavailable," given "the potential criticality of the loads that we are talking about," then "[i]s it going to be an acceptable answer" to not serve that load based on its contractual commitments "to not be on the system if that generator is unavailable"?).

77. PJM states that co-located load is "electrically connected and synchronized to the PJM Transmission System when consuming power and therefore benefits from the use of the Transmission System and Ancillary Services."[236] Although PJM recommends that large co-located loads be in front of the meter and designated as PJM Network Load,[237] the Tariff does not appear to require that arrangement and there is no clear record before us that Network Integration Transmission Service is the appropriate transmission service for all co-location arrangements or that such service would be consistent with the cost causation principle (i.e., that Network Integration Transmission Service appropriately aligns costs and benefits in a manner that is roughly commensurate) for all such arrangements.

78. Parties have raised questions regarding whether it is appropriate to require co-location arrangements to procure point-to-point transmission service, Network Integration Transmission Service, or other, as-yet undefined types of transmission service. In addition, they have questioned whether PJM's existing transmission service offerings adequately reflect the potentially unique physical and operational characteristics of different configurations of co-located load, including whether there should be alternative transmission services tailored to co-location arrangements. It appears that PJM does not have a process for determining what transmission service different co-location configurations must take, including what costs, if any, should be allocated to co-location arrangements, which raises questions about whether co-location arrangements are paying a just and reasonable rate for the transmission service they take, if any, and/or any benefits that they may derive from the transmission system. In addition, parties have raised questions about whether and how administrative or non-bypassable wholesale charges that are collected through transmission rates should be allocated to co-location arrangements.[238] Given these questions, we find that the existing Tariff may be unjust, unreasonable, unduly discriminatory, or preferential insofar as it does not specify the

[236] Guidance Document at 1.

[237] PJM November 4 Pre-Conference Statement of Stu Bresler at 2.

[238] Duane December 9 Post-Technical Conference Comments at 3-8; *id.* at 5 ("Before debating which of, and to what extent, these charges should be allocated to co-locating parties, the RTO must help the Commission to identify and explain the nature of such charges. The equity in sharing certain wholesale costs (*e.g.*, charges to fund regulatory agencies) is obvious; less obvious might be sharing system operations costs, such as uplift and reliability must-run charges."); Technical Conference Transcript (Duane) at 48:16-24 ("these [administrative system] charges are really much broader than use they're just charges that come with being a part of the system"); Technical Conference Transcript (Bresler) at 41:5-12 ("even at the wholesale level I think there are questions around the equitable nature of cost allocation [of non-bypassable charges].").

transmission service that co-location arrangements must take, if any, or otherwise provide a process to ensure that co-location arrangements are paying for the benefits they receive from the transmission system consistent with the cost causation principle.

79. We also find that the absence of rates, terms, and conditions of interconnection service specific to co-location arrangements, and, especially regarding studies of the impacts of those arrangements, may render the Tariff unjust and unreasonable or unduly discriminatory or preferential. For example, the technical conference record in particular raises issues regarding how PJM should study the reliability impact to the transmission system of co-locating load with an existing generator and, if there is a potential for a reliability violation associated with the arrangement, how PJM should allocate the cost of any transmission system upgrades needed to mitigate that impact. Although several parties express confidence in the current necessary study process by which PJM studies changes to existing generator interconnections to assess reliability impacts,[239] others question whether this process is sufficient to evaluate reliability impacts from co-location arrangements, especially a large co-located load such as a data center.[240] It is not clear from the record whether the necessary study provisions are reasonably used for studying a change from a generator serving network load to serving, in whole or in part, co-located load, what the scope of a particular necessary study covers, and whether the existing necessary study process is sufficient to ensure a generator serving co-located load is interconnected reliably. For example, Duane states that, while the scope of the necessary study process is unclear, there is nothing to suggest that it is broad enough to replace a system impact study.[241] At the technical conference, Duane also charged that the necessary study process is not a system impact evaluation but rather is a much more localized study as to what the co-located generator needs for its new configuration and not what transmission or the rest of the system needs.[242] OPSI also points out that PJM's

[239] *See, e.g.*, PJM December 12 Answer at 17; Vistra December 27 Answer at 8-9.

[240] Duane December 9 Post-Technical Conference Comments at 4-5; Glatz/Silverman December 9 Post-Technical Conference Comments at 4-6.

[241] Duane December 9 Post-Technical Conference Comments at 4 ("Nowhere do these rules describe what happens when hundreds of MWs of load are interconnected alongside the generator").

[242] Technical Conference Transcript (Duane) at 46:4-20; *see id.* at 46:17-20 (arguing that a nuclear plant came online historically "hand in glove" with transmission system planning to deliver power to the grid); Illinois Attorney General's Office December 12 Comments of Complaint at 9 (supporting Duane's technical conference testimony). Duane notes in his post-conference comments that the necessary study process usually addresses situations like a change in plant equipment, with potentially different electrical characteristics than PJM originally studied. Duane December 9 Post-

necessary study analysis is confidential and not subject to public review, and argues that the scope of the analysis must be comprehensive.[243] We are concerned that the necessary study process may not be fully capturing the transmission system impacts of co-locating load, which could result in such arrangements not paying the costs of network upgrades that would be caused by the co-location.

80. We have similar concerns regarding the need for and potential use of ancillary services[244] and black start services by co-located load arrangements.[245] Although parties generally agree that participants in a co-location arrangement should pay for any wholesale services from which they benefit, including ancillary services, there is significant disagreement in the record regarding which ancillary services different co-location arrangement configurations may use or otherwise benefit from, and whether PJM's existing rate designs for ancillary services are sufficiently tailored to these arrangements' interactions with the transmission system. PJM states that co-located loads connected to generators that remain interconnected with the transmission system benefit from the ancillary services necessary to maintain the reliability of the transmission grid because the load could not be served from the generator unless transmission grid reliability is maintained.[246] PJM argues that the co-located load in such arrangements should pay its ratio share of the costs of ancillary services like any other load interconnected with the grid, even if it is not withdrawing power.[247] For example, some parties argue that co-located loads, like those served by nuclear facilities, benefit from load following service (i.e., regulation and frequency response service), because nuclear units cannot provide this service,[248] and/or that any load that is not completely

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Technical Conference Comments at 4.

[243] OPSI December 9 Post-Technical Conference Comments at 3.

[244] The ancillary services specified in the PJM Tariff include: (1) Scheduling, System Control and Dispatch Service; (2) Reactive Supply and Voltage Control from Generation or Other Sources Service; (3) Regulation and Frequency Response Service; (4) Energy Imbalance Service; (5) Operating Reserve - Synchronized Reserve Service; and (6) Operating Reserve - Supplemental Reserve Service. *See* PJM, Intra-PJM Tariffs, OATT, § I.3 (Ancillary Services) (3.0.0).

[245] PJM Manual 12 includes black start service as an ancillary service. *See* PJM, *PJM Manual 12: Balancing Operations* 33 (Revision 54, effective Dec. 17, 2024), https://www.pjm.com/-/media/DotCom/documents/manuals/m12.ashx.

[246] PJM November 4 Pre-Conference Statement of Stu Bresler at 8.

[247] *Id.*

[248] *See also Promoting Wholesale Competition Through Open Access Non-*

isolated from the transmission system uses reactive power service provided by the grid and should pay for its share of the costs of these services.[249] Other parties assert that "Fully Isolated Co-Located Load cannot take services from the grid and, instead, relies solely on the host generator for both power and ancillary services."[250]

81. With respect to black start service in particular, parties highlight that nuclear facilities cannot provide black start service, and, in the event of an electric power grid outage, the nuclear unit would trip offline and cannot restart until the grid is restored. Loads co-located with such generators therefore rely on other grid resources for black start service, which is typically billed through Network Integration Transmission Service. Such co-location arrangements could not function without a network resource providing black start service to the co-located generator. This appears to be undisputed in the record.[251]

82. To the extent that certain co-location configurations benefit from or contribute to the need for certain ancillary services and black start services, it may be appropriate to allocate a portion of the costs of those services to those co-location arrangements, consistent with the cost causation principle. However, the Tariff does not address this issue. Therefore, we find that the absence of rates, terms, and conditions governing the

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Discriminatory Transmission Servs. by Pub. Utils.; Recovery of Stranded Costs by Pub. Utils. and Transmitting Utils., Order No. 888, FERC Stats. & Regs. ¶ 31,036, at 31,707 (1996) (cross-referenced at 75 FERC ¶ 61,080), *order on reh'g*, Order No. 888-A, FERC Stats. & Regs. ¶ 31,048 (cross-referenced at 78 FERC ¶ 61,220), *order on reh'g*, Order No. 888-B, 81 FERC ¶ 61,248 (1997), *order on reh'g*, Order No. 888-C, 82 FERC ¶ 61,046 (1998), *aff'd in relevant part sub nom. Transmission Access Pol'y Study Grp. v. FERC*, 225 F.3d 667 (D.C. Cir. 2000), *aff'd sub nom. New York v. FERC*, 535 U.S. 1 ("We conclude that Regulation Service and Frequency Response Service are the same services that make up the Load Following Service referenced in the NOPR."). The PJM tariff defines regulation as "the capability of a specific generation resource or Demand Resource with appropriate telecommunications, control and response capability to separately increase and decrease its output or adjust load in response to a regulating control signal, in accordance with the specifications in the PJM Manuals." PJM, Intra-PJM Tariffs, OATT, § I.1 (R-S, OATT Definitions) (38.0.0) (defining Regulation).

[249] Dominion December 9 Post-Technical Conference Comments at 7-8.

[250] Constellation December 9 Post-Technical Conference Comments at 17.

[251] *Id.* at 19 ("The host generator, of course, does benefit from black start service just like every other generator does, and just like every generator uses some level of reserves to manage fluctuations in output.").

use and sale of ancillary services and black start services by co-location arrangements may render the Tariff unjust and unreasonable or unduly discriminatory or preferential.

C. Reliability and Resource Adequacy

83. We are also concerned about the reliability and resource adequacy implications of co-location arrangements. Some parties have raised concerns that reliability risks arise when load co-locates behind the meter with a generator.[252] For example, PPL has argued that, without a meter, the co-located load can be invisible to the transmission and distribution operator, and if the generator were to trip offline, then load could appear instantaneously on the grid and cause serious grid level events at the scale of a data center.[253] In particular, PPL contends that because the co-located load has not been modeled, it cannot be shed, whereas Network Load would be shed rather than appearing instantaneously.[254] NERC also raises concerns about grid-level reliability impacts, noting that, in response to a recent fault on the system, 1,550 MW of voltage-sensitive load (e.g., data centers) disconnected from the system without any action by the utilities, leading to a momentary voltage drop.[255] Similarly, PJM states that co-located loads that are not Network Loads are not holistically planned for and PJM may not be capable of providing such loads reliable service in the event the co-located generation is not available.[256] PJM

[252] *See, e.g.*, Technical Conference Testimony of Stu Bresler at 41:1-4 ("even though I agree with everything Mike [Kormos] said about what a generator is taking on when it decides to co-locate behind its meter, from a reliability perspective is it the best answer or not?"); PJM IMM Post-Technical Conference Comments at 4; PPL December 9 Post-Technical Conference Comments at 3, 9.

[253] PPL December 9 Post-Technical Conference Comments at 3; *see id.* at 10 ("Even if they [the local utility, the regional grid operator, and/or balancing authority standing behind it] are generally aware of [the load's] existence, from a real-time operating perspective, the load appears only as diminished output of the generator."); *see also* NERC, *Incident Review: Considering Simultaneous Voltage-Sensitive Load Reductions* 1 (Jan. 8, 2025), https://www.nerc.com/pa/rrm/ea/Documents/Incident_Review_Large_Load_Loss.pdf ("Simultaneous large load losses have two effects on the electric system: First, frequency rises on the system as a result of the imbalance between load and generation; second, voltage rises rapidly because less power is flowing through the system.").

[254] PPL December 9 Post-Technical Conference Comments at 11.

[255] NERC November 4 Pre-Conference Statement of Howard Gugel at 2; *see* Technical Conference Transcript (Gugel) at 35:11-23.

[256] PJM November 4 Pre-Conference Statement of Stu Bresler at 6.

states that this may be a particular concern if large behind the meter loads supporting artificial intelligence are deemed important for reasons such as national security or internet access.[257] Furthermore, PJM notes that the addition of co-located load increases the complexity of associated relaying designed for normal fault clearing and load disconnection that would need to be evaluated on an individual basis as co-location configurations can vary widely and can result in power swings and other unintended consequences if this relaying fails.[258] PJM states that the equitable and practical impacts of service interruption and curtailment must also be explored.[259] PJM further states that by adding co-located loads faster than they can be reliably incorporated in planning, there may be risks to future operations.[260] We take these reliability concerns raised by PJM, the system operator, and PPL, a transmission owner with experience with co-location arrangements, extremely seriously, and, as such, we are concerned that the Tariff may be unjust and unreasonable and unduly discriminatory or preferential insofar as it lacks rules necessary to provide PJM with sufficient information to perform appropriate analysis to ensure reliable system operations given the characteristics of co-location arrangements.[261]

84. In addition, we note that the PJM IMM has raised specific concerns about the market impacts of removing multiple nuclear units from their current operations to serve co-location arrangements.[262] The PJM IMM observes that power flows on the grid would change, potentially dramatically, if a significant number of nuclear generators were diverted to serve co-location arrangements, which could have a pronounced impact given that the grid was originally designed and built to deliver low-marginal-cost power from

[257] *Id*.

[258] *Id.* at 7.

[259] *Id.* at 6.

[260] *Id.* (stressing that, if a co-located generator has a temporary failure, then PJM likely cannot serve the co-located load from the PJM system until the system is properly planned and enhanced with necessary reinforcements).

[261] PPL December 9 Post-Technical Conference Comments at 4; PJM IMM December 17 Post-Technical Conference Comments at 3-6.

[262] PJM IMM December 17 Post-Technical Conference Comments at 4-5; *see* PJM IMM December 20 Answer at 6 (arguing that PJM's excess reserves after the auction for the 2025/2026 Delivery Year are less than 1,000 MW and that Constellation's proposal would remove more than the existing excess from the system, reduce the PJM reserve margin below its target level and negatively affect PJM reliability as a result, and also noting that PJM stated in April 2024 that it had received 5,000 MW of requests for studies of co-location arrangements).

nuclear units.[263] In addition, the PJM IMM notes concerns that a significant increase in co-location arrangements using existing generation could cause a spike in capacity and/or energy prices. For example, in his analysis, the PJM IMM claims that under current system conditions, if the Peach Bottom nuclear plant in Pennsylvania (2,500 MW installed capacity) did not offer in the capacity market, then PJM would be short of the reserve margin requirement and the clearing prices would be equal to the maximum price.[264] Likewise, the Illinois Attorney General's Office argues that co-location arrangements that abruptly remove large resources with high capacity values from the grid will cause further, perhaps significant price increases while the PJM markets struggle to respond.[265]

85. That being said, we recognize, as does PJM, that these concerns are not necessarily unique to co-location arrangements and that significant load growth more generally may raise many of the same concerns.[266] Along the same lines, Vistra strongly disagrees with the argument that co-location raises resource adequacy concerns, alleging that there is no meaningful difference for resource adequacy based on how the load interconnects.[267] Vistra contends that opposing commenters assume the co-located load would not materialize on the grid absent co-location arrangements.[268] Nevertheless, as the Illinois Attorney General's Office argues, the concern "is not with load growth or data center development *per se*, but the speed and terms on which these new loads would be contracting for existing generation and taking it out of the wholesale markets."[269] Given the current record comments, while both co-located load and non-co-located load may have similar resource adequacy impacts, the speed at which co-located load can be

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[263] PJM IMM December 17 Post-Technical Conference Comments at 4-5.

[264] *Id.* attach. (Supplemental Comments to the Maryland Public Service Commission) at 1.

[265] Illinois Attorney General's Office December 12 Comments of Complaint at 5.

[266] PJM January 21 Answer at 15; *see also, e.g.*, Technical Conference Transcript (Bowring) at 104:17–105:18 ("…co-located load is a distraction….the issue is reliability. At the moment PJM is right on the edge, in talking about dumping or not dumping. Adding 10 or 20,000 megawatts of load on a system that is already very tight doesn't make a lot of sense, so the question is what's the problem? The problem is reliability. How do we deal with it? It's about expanding generation.").

[267] Vistra December 9 Post-Technical Conference Comments at 12.

[268] *Id.* at 11-12.

[269] Illinois Attorney General's Office December 12 Comments of Complaint at 6.

added to the grid may pose particular resource adequacy challenges, especially if co-location arrangements are not adequately and transparently reflected in existing resource adequacy planning mechanisms, e.g., the PJM capacity market. After all, the potential speed with which co-location arrangements can be implemented—at least relative to in-front-of-the-meter arrangements, appears to be one of the principal factors driving interest in co-location.[270] The risk that co-located loads will not be reflected in resource adequacy planning mechanisms with sufficient forward notice is particularly concerning given how long it takes to add new generation capacity or upgrade transmission facilities.

86. Parties have raised concerns regarding whether PJM's capacity market rules adequately consider the potentially unique physical and operational characteristics of different co-location arrangements and sufficiently provide for their participation in the capacity market in a way that ensures just and reasonable rates. Parties have also raised questions regarding whether a commitment to provide backup power to co-located load would interfere with the backup resource's capacity obligations. For instance, Vistra states that there appears to be consensus that a unit cannot sell capacity to PJM if it is committed to providing primary service to a co-located load but that there is disagreement about whether a second unit at the same generation facility should be allowed to sell capacity to PJM if it will provide backup service to the co-located load.[271] We also recognize that several commenters contend that co-location arrangements can provide operational flexibility to the grid,[272] and that these benefits may help mitigate or offset some the concerns outlined above. Nevertheless, the record contains only limited information on what these flexibilities might be, how they relate to various co-location arrangements, and how they may be used to benefit the grid.

D. Briefing Questions

87. Based on the foregoing, pursuant to FPA section 206, we direct PJM and the Transmission Owners within 30 days of the date of this order either: (1) to show cause as to why the Tariff remains just and reasonable and not unduly discriminatory or preferential due to the lack of provisions addressing with sufficient clarity or consistency

[270] *See* Technical Conference Transcript (Philips) at 80:22-24 ("what's driving the short-term is the co-located load wants speed to access the generation, and that's what's driving it."); *id.* at 81:7 ("It's really about speed."); Technical Conference Transcript (Muller) at 84:6-7 ("I completely agree there with the speed elements.").

[271] Vistra December 9 Post-Technical Conference Comments at 3.

[272] Mainspring December 9 Post-Technical Conference Comments at 1; Advanced Energy United December 9 Post-Technical Conference Comments at 5; DPN December 9 Post-Technical Conference Comments at 8; Intersect December 9 Post-Technical Conference Comments at 8.

the rates, terms, and conditions of service that apply to co-location arrangements; or (2) to explain what changes to the Tariff would remedy the identified concerns if the Commission were to determine that the Tariff has in fact become unjust and unreasonable or unduly discriminatory or preferential and, therefore, proceeds to establish a replacement Tariff.[273] Interested entities may respond within 30 days of PJM's and the Transmission Owners' filings, addressing either or both of: (1) whether the existing Tariff remains just and reasonable and not unduly discriminatory or preferential; and (2) if not, what changes to the Tariff should be implemented as replacement rates. If PJM and the Transmission Owners prefer to propose revisions to the Tariff on the subject of this order, then they may do so pursuant to their applicable FPA section 205 filing rights. In such filings, PJM and the Transmission Owners should state explicitly that they are submitting their proposals under section 205.

88. In addressing the concerns described above, PJM and the Transmission Owners should include in their response answers to the following, including supporting evidence and analysis.

a. **General**

i. Do you agree with the jurisdictional principles outlined in section VI.A and should the Commission reach any other conclusions regarding jurisdiction in a final order it may issue in this proceeding? Why or why not?

ii. Does the Tariff sufficiently address co-location arrangements with respect to each issue listed in this order? Please include specific tariff provisions or other governing documents that may apply;

iii. If the Tariff does not sufficiently address co-location arrangements, how should the Tariff be modified to do so? As part of your answer, address whether portions of the Guidance Document may serve as a just and reasonable and not unduly discriminatory or preferential replacement rate. Alternatively, address whether existing rules in the Tariff may or should be modified to address co-location arrangements;

iv. Parties may also address how co-located loads are similar to or disparate from other types of arrangements where load and generation share the same point of interconnection (such as Behind the Meter Generation as defined in PJM's Tariff or non-retail

[273] To the extent that PJM proposes tariff provisions as part of its explanation, it must include any such provisions as non-actionable *pro forma* tariff provisions.

behind the meter generation) and should consider how any proposed replacement rate would interact with these other arrangements.

b. **Transmission Service**

i. Please explain whether and to what extent different configurations of co-located load rely on or otherwise use the transmission system to receive power, directly or indirectly, from the co-located generator;

ii. Please explain whether and to what extent different co-location configurations impose costs on the transmission system or increase transmission costs allocated to other parties. How can those costs be approximated, given that certain co-location configurations may change power flows on the grid and necessitate upgrades to the transmission system? Retail loads typically take service from wholesale entities that pay for Network Integration Transmission Service that allocates these costs; co-located loads may not. Network Loads pay directly for Network Integration Transmission Service. How should PJM estimate the effects that different configurations of co-located load have on the transmission system? Should these costs be passed through to co-location arrangements in some way, and, if so, how?

iii. Please explain whether co-location arrangements are or should be required to take Network Integration Transmission Service or Point-to-Point Transmission Service; or whether a more tailored new category of transmission service is warranted. Please also address any cost allocation implications of your position on this issue;

iv. What changes to the rates, terms, and conditions of Network Integration Transmission Service or Point-to-Point Transmission Service or, alternatively, what new form of transmission service(s) may be necessary for different configurations of co-location to ensure that the Tariff is consistent with cost causation principles and the beneficiary pays principle?

v. Parties may also wish to address how to determine which co-located load configurations should be required to take Network Integration Transmission Service or Point-to-Point Transmission Service or a new form of transmission service (i.e., whether generalized policies or tests, such as a multi-factor test, to be applied case-by-case, may be appropriate), as well as the magnitude (i.e., how the service taken by co-located load compares to service by other types of load). For

example, if a co-located generator is synchronized to the grid but the load can be configured to be wholly isolated from the grid in the event the co-located generator trips offline, what technical and operational factors should determine whether the co-location arrangement still relies on the transmission system in ways that warrant a requirement that the co-located load take Network Integration Transmission Service or Point-to-Point Transmission Service or a new form of transmission service? Are there potential co-located load configurations for which tailored approaches may be appropriate?

vi. With respect to the Guidance Document, please explain what it means to be "electrically connected and synchronized to the PJM Transmission System when consuming power" and how that implicates the use of Network Integration Transmission Service or Point-to-Point Transmission Service or a new form of transmission service;

vii. What operational or commercial factors of a co-location arrangement would result in a co-located load not needing to take any form of transmission service, including what types of special protection schemes or backup arrangements may be necessary to ensure the co-located load never takes any form of transmission service?

c. **Ancillary or other wholesale services**

i. Please explain whether and to what extent different configurations of co-location arrangements rely on or benefit from ancillary services or black start services[274] and, if so, provide specific details about the type of service and how the co-location arrangement relies on it. To what extent are these benefits distinct from the benefits that other Network Integration Transmission Service and Point-to-Point Transmission Service customers derive from ancillary services?

ii. Please explain whether and to what extent co-location arrangements impose costs related to ancillary services or black start services or increase the costs for such services allocated to other parties and how those costs could be approximated;

[274] *See supra* notes 244-245.

iii. Please explain whether and to what extent co-location arrangements use, benefit from, provide, or contribute to the need for transmission system services in a manner that does not fit into a pre-existing category of ancillary services or black start services, and, if so, should new categories of services be created to accommodate that use? Alternatively, please explain whether an alternative mechanism of cost allocation for pre-existing ancillary services would be more appropriate;

iv. What changes to rates, terms, and conditions of ancillary services, including ancillary services procured in PJM's markets, are necessary for different configurations of co-location arrangements to ensure that the Tariff is consistent with cost causation principles and the beneficiary pays principle?

v. Please explain how PJM should determine which co-located load configurations take ancillary services or black start services (i.e., whether generalized policies or tests, such as a multi-factor test, to be applied case-by-case may be appropriate), as well as the amount of such service (i.e., how the service taken by co-located load compares to service taken by other types of load);

d. **Interconnection Procedures and Cost Allocation**

i. Does the necessary study process adequately address potential impacts caused by a co-location arrangement or is an additional study or new study process warranted, e.g., a system impact study or generator deactivation study? PJM should provide the details regarding the geographic scope of the existing necessary study process, what is studied, and how the results are reported, including what opportunities stakeholders, the interconnected transmission owner, or the PJM IMM have to review the results, if any;

ii. Please explain whether PJM's necessary study process allows a co-location arrangement to demonstrate its capability to flexibly adjust its withdrawals from or injections to the transmission system (e.g., by using secondary backup generation or by curtailing on-site load), and reflect this capability in the operating assumptions PJM considers when estimating the co-location arrangement's impacts on the transmission system? If not, would it be appropriate to establish a new or revised study process that allows for such a demonstration?

iii. What changes to interconnection procedures and agreements may be necessary to ensure that PJM identifies the reliability impact to the transmission system of load co-locating with existing generation including the need for dynamic response models?

iv. To what extent does a co-location arrangement raise potentially distinct cost-allocation issues relative to a deactivating generator that causes the need for transmission upgrades? What principles should the Commission apply to allocate the costs of any transmission upgrades needed to mitigate the impacts of co-locating load? What steps should PJM take to ensure these costs are transparent to all parties?

v. Are changes needed to how PJM allocates the costs of any transmission upgrades needed to mitigate the transmission system impacts of co-locating load, if any, including whether the costs of those upgrades can ever be allocated to a party other than the co-located generator, co-located load, and/or co-location arrangement?

vi. Are changes to the *pro forma* interconnection-related agreements necessary to accommodate the addition of co-located load to existing generation?

vii. Please explain whether changes to interconnection procedures and agreements are necessary to accommodate new generation interconnecting with co-located load, including whether the existing queue process is sufficient for such arrangements?

viii. Please explain whether or not it would be appropriate to establish an interconnection study process outside of PJM's interconnection queue process for newly interconnecting co-location arrangements that do not exchange power with the transmission system and do not require network upgrades?

ix. A generator with a co-located load that is not a party to a transmission service agreement is arguably distinguishable from other generators. To the extent co-located arrangements create costs, or benefit from bulk power system services, but the generator and load are not exposed to these costs because of their contractual relationship, should PJM modify the Tariff and related agreements to allocate those costs to the generator directly?

e. **PJM Capacity Market, Reliability, and Resource Adequacy**

i. What changes to PJM's capacity market rules are necessary to ensure that the Tariff specifies how co-located generation and/or load participates in the capacity market in a way that reflects the potentially unique physical and operational characteristics of the co-location arrangement (e.g., the presence of secondary backup generation, the capability to curtail on-site load or other operational flexibilities, among others) and is otherwise just, reasonable, and not unduly discriminatory or preferential?

ii. What Tariff change or changes to the interconnection service agreement are necessary to ensure that PJM and the interconnected transmission owner have sufficient visibility into the co-located load configuration?

iii. Please explain whether the existing Tariff rules are sufficient to ensure resource adequacy if increasing numbers of large existing generators choose to co-locate with load;

iv. What deactivation or interconnection modification studies should PJM undertake to ensure resource adequacy and/or protect reliability should an existing generator seek to enter into a co-location arrangement? If PJM finds that the co-location would cause reliability standards violations, what remediation techniques would be appropriate (e.g., reliability must-run contracts, delaying the co-location arrangement until the reliability violations are addressed, etc.)?

v. What changes are necessary, if any, to other PJM planning processes to better plan for and address the resource adequacy and reliability impacts of co-location arrangements, including, for example, whether or not the frequency of such processes might be changed? Similarly, should PJM consider changes to load forecasting methods, informational postings, or the reserve margin study process to better plan for and address the resource adequacy and reliability impacts of co-location arrangements?

vi. Under what circumstances can PJM direct the operators of co-location arrangements to shed such load if deemed necessary to preserve system reliability during a declared emergency?

f. **Other**

i. Are any changes to PJM's energy or ancillary services market rules necessary to address co-location arrangements?

ii. Please discuss whether back-up service can provide benefits to customers or otherwise help minimize system costs, including with specific examples or best practices, if possible;

iii. Parties may also choose to address how co-location arrangements may provide benefits, including potentially reducing required transmission upgrades to interconnect large loads, reducing congestion, or providing operational flexibility during system peaks or emergencies?

iv. Parties may also address whether, and if so, how, the Tariff should be modified to best accommodate or encourage co-location arrangements to be constructed in such a way as to minimize total system costs or otherwise provide certain benefits, including protections for existing customers and allocation of costs consistent with the cost-causation principle;

v. What Tariff provisions, if any, are necessary to ensure clarity regarding the aspects of service to co-located load and generation facilities that may be administered through the Tariff versus state jurisdictional retail tariffs?

vi. We also encourage parties to address any national security implications associated with co-location arrangements, including with respect to the specific issues discussed in this show cause order, and what actions, if any, the Commission should take in response.

vii. Finally, for generation units paid for originally by consumers in base rates prior to restructuring, is it fair and/or just and reasonable if these units are taken out of the system's supply stack and devoted exclusively to serving co-location arrangements with one or a few large customers?

89. In cases where, as here, the Commission institutes a section 206 investigation on its own motion, section 206(b) of the FPA requires that the Commission establish a refund effective date that is no earlier than the date of the publication by the Commission of notice of its intention to initiate such proceeding nor later than five months after the publication date. In such cases, in order to give maximum protection to customers, and consistent with our precedent, we have historically tended to establish the section 206 refund effective date at the earliest date allowed by section 206**,** and we do so here as well.[275] In Docket No. EL25-20-000, that date is November 22, 2024, the date

[275] *See, e.g., Idaho Power Co*., 145 FERC ¶ 61,122 (2013); *Canal Elec. Co*.,

Constellation filed the complaint. In Docket No. EL25-49-000, that date is the date of publication of notice of initiation of the section 206 proceeding in Docket No. EL25-49-000 in the Federal Register**.**

90. Section 206(b) of the FPA also requires that, if no final decision is rendered by the conclusion of the 180-day period commencing upon initiation of the section 206 proceeding, the Commission shall state the reason why it has failed to render such a decision and state its best estimate as to when it reasonably expects to make such a decision. Assuming that PJM and the Transmission Owners file proposed Tariff revisions under FPA section 206, we estimate that we would be able to issue our decision within approximately three months of the filing of Tariff revisions.

The Commission orders:

(A) Pursuant to the authority contained in and subject to the jurisdiction conferred upon the Federal Energy Regulatory Commission by section 402(a) of the Department of Energy Organization Act and by the FPA, particularly section 206 thereof, and pursuant to the Commission's Rules of Practice and Procedure and the regulations under the FPA (18 C.F.R. Chapter I), the Commission hereby institutes a proceeding in Docket No. EL25-49-000, as discussed in the body of this order.

(B) PJM and the Transmission Owners are hereby directed, within 30 days of the date of the order, either: (1) to show cause as to why the Tariff remains just and reasonable and not unduly discriminatory or preferential; or (2) to explain what changes to the Tariff it believes would remedy the identified concerns if the Commission were to determine that the Tariff has in fact become unjust and unreasonable or unduly discriminatory or preferential and, therefore, proceeds to establish a replacement Tariff.

(C) Any interested person desiring to be heard in Docket No. EL25-49-000 must file a notice of intervention or motion to intervene, as appropriate, with the Federal Energy Regulatory Commission, 888 First Street, NE, Washington, DC 20426, in accordance with Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2024), within 21 days of the date of issuance of this order. The Commission encourages electronic submission of interventions in lieu of paper using the "eFiling" link at http://www.ferc.gov. Persons unable to file electronically may file by U.S. mail addressed to Federal Energy Regulatory Commission, Secretary of the Commission, 888 First Street, N.E., Washington, DC 20426, or by hand (including courier) delivery to Federal Energy Regulatory Commission, 12225 Wilkins Avenue, Rockville, MD 20852.

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46 FERC ¶ 61,153, *order on reh'g*, 47 FERC ¶ 61,275 (1989).

(D) Interested entities may respond within 30 days of PJM's filing, addressing either or both of: (1) whether the Tariff remains just and reasonable and not unduly discriminatory or preferential; and (2) if not, what changes to the Tariff should be implemented as a replacement rate.

(E) The Secretary shall promptly publish in the *Federal Register* a notice of the Commission's initiation of the proceeding under section 206 of the FPA in Docket No. EL25-49-000.

(F) The refund effective date in Docket No. EL25-20-000, established pursuant to section 206(b) of the FPA, is November 22, 2024, the date Constellation filed the complaint. The refund effective date in Docket No. EL25-49-000 pursuant to section 206 of the FPA shall be the date of publication in the *Federal Register* of the notice discussed in Ordering Paragraph (E) above.

(G) Docket Nos. EL25-49-000, AD24-11-000, and EL25-20-000 are hereby consolidated, as discussed in the body of this order.

By the Commission. Commissioner Chang is not participating.

(S E A L)

Debbie-Anne A. Reese,
Secretary.

Commenters in Docket No. AD24-11-000

Aaron Tinjum on behalf of the Data Center Coalition +
Advocates for Consumer Regulated Electricity (A4CRE)
American Clean Power Association (ACP)
American Council on Renewable Energy (ACORE)
Advanced Energy United
Amazon Energy LLC (Amazon)
American Electric Power Service Corporation (AEP)
Antora Energy LLC (Antora)
Aubrey Johnson on behalf of Midcontinent Independent System Operator, Inc. +
Buckeye Power, Inc. (Buckeye)
Calpine Corporation (Calpine)
Chairman Stephen M. DeFrank on behalf of Pennsylvania Public Utility Commission +
Clean Energy Buyers Association (CEBA) +
Cole Muller on behalf of Talen Energy Corporation +
Commonwealth of Virginia Governor Glenn Youngkin +
Constellation Energy Generation, LLC (Constellation)
Data Center Coalition (DCC)
Dave Weaver on behalf of Exelon Utilities +
Digital Energy Council (DEC)
Digital Power Network (DPN)
Dominion Energy Services, Inc. (Dominion)
Electric Power Supply Association (EPSA)
Enchanted Rock, LLC (Enchanted Rock)
Google LLC (Google)
Howard Gugel on behalf of North American Electric Reliability Corporation +
Industrial Energy Consumers of America (IECA)
International Transmission Company (ITC)[276]
Intersect Power, LLC (Intersect)
James F Wilson (Wilson Energy Economics)
Joint Electricity Customer Alliance[277] +
Joint Public Service Parties (Joint Parties)[278]

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[276] Joint comments were filed by International Transmission Company; Michigan Electric Transmission Company, LLC; ITC Midwest LLC; ITC Great Plains, LLC; Alliant Energy Corporate Services, Inc.; and Consumers Energy Company.

[277] Joint Electricity Customer Alliance includes Electricity Customer Alliance, Energy Buyers Association, Data Center Coalition, Electricity Consumers Resource Council, and Consumer Advocates of PJM States.

[278] Joint Parties include: Exelon Corporation, East Kentucky Power Cooperative,

Kent Chandler on behalf of R Street Institute +
Kyle Hannah on behalf of Dominion Energy, Inc. +
LS Power Development, LLC (LS Power)
Mainspring Energy (Mainspring)
Maryland State Senator Katie Fry Hester +
Midcontinent Independent System Operator, Inc. (MISO)
Mike Kormos +
Monitoring Analytics LLC, acting in its capacity as the Independent Market Monitor for PJM (PJM IMM)
National Grid Renewables Development, LLC (National Grid)
National Rural Electric Cooperative Association (NRECA)
New York State Reliability Council (NYSRC)
Northeastern Rural Electric Membership Corporation (NREMC)
Organization of PJM States, Inc. (OPSI)
Potomac Economics, Ltd. (Potomac Economics)
PPL Electric Utilities Corporation (PPL)
RMI
Solar Energy Industries Association (SEIA)
Soluna Holdings, Inc. (Soluna)
Stacey Burbure on behalf of AEP +
Stu Bresler on behalf of PJM Interconnection, L.L.C. +
Suzanne Glatz and Abraham Silverman (Glatz/Silverman)
Talen Energy Corporation (Talen) +
U.S. Representative Dan Meuser +
U.S. Representative John Joyce
U.S. Senator Chris Van Hollen
U.S. Senator Cory A. Booker
U.S. Senator Mark Kelly
U.S. Senator Tim Kaine
Vincent Duane (Duane) +
Vistra Corp. (Vistra)

+ pre-conference statements/comments

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and Southern Maryland Electric Cooperative.

Intervenors in Docket No. EL25-20-000

American Electric Power Service Corporation[279]
American Municipal Power, Inc.
Bloom Energy Corporation
Boston Energy Trading and Marketing LLC
Buckeye Power, Inc.
Calpine Corporation (Calpine) +
Consolidated Edison Company of New York, Inc.
Crete Energy Venture, LLC
Data Center Coalition
Dominion Energy Service
Electric Power Supply Association (EPSA) +
East Kentucky Power Cooperative, Inc. (EKPC) +
Exelon Corporation (Exelon) +
FirstEnergy Service Company[280]
Illinois Attorney General's Office +
Invenergy Renewables LLC
Lincoln Generating Facility, LLC
LS Power Development, LLC
Maryland Public Service Commission
Monitoring Analytics LLC, acting in its capacity as the Independent Market Monitor for PJM (PJM IMM)
National Rural Electric Cooperative Association
New Jersey Board of Public Utilities
New Jersey Division of Rate Counsel
NextEra Energy, Inc.
North Carolina Electric Membership Corporation

[279] American Electric Power Service Corporation intervened on behalf of its affiliates Appalachian Power Company, Indiana Michigan Power Company, Kentucky Power Company, Kingsport Power Company, Ohio Power Company, Wheeling Power Company, AEP Appalachian Transmission Company, Inc., AEP Indiana Michigan Transmission Company, Inc., AEP Kentucky Transmission Company, Inc., AEP Ohio Transmission Company, Inc., and AEP West Virginia Transmission Company, Inc., and AEP Energy Partners, Inc.

[280] FirstEnergy intervened as agent for its affiliates American Transmission Systems, Inc., Jersey Central Power & Light Company, Mid-Atlantic Interstate Transmission LLC, Keystone Appalachian Transmission Company, The Potomac Edison Company, Monongahela Power Company, and Trans-Allegheny Interstate Line Company.

Northeastern Rural Electric Membership Corporation
Northern Virginia Electric Cooperative, Inc. (NOVEC) #
Old Dominion Electric Cooperative (ODEC) +
Organization of PJM States, Inc.
Orange and Rockland Utilities, Inc.
Pacific Gas and Electric Company
Pennsylvania Public Utility Commission
PJM Industrial Customer Coalition
PPL Electric Utilities Corporation (PPL)
PSEG Companies[281]
Public Citizen, Inc.
Solar Energy Industries Association (SEIA)
Southern California Edison Company (SCE) *#
Southern Maryland Electric Cooperative, Inc.
Talen Energy Corporation (Talen)
The Dayton Power and Light Company
The PJM Power Providers Group (P3) +
Vistra Corp. (Vistra) +
Xcel Energy Services Inc.

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* motions to intervene out-of-time
\+ comments/protest
\# out of time comments/protest

[281] PSEG Companies include Public Service Electric and Gas Company, PSEG Power LLC and PSEG Energy Resources & Trade LLC ("PSEG ER&T").