

182 FERC ¶ 61,143
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Willie L. Phillips, Acting Chairman;
James P. Danly, Allison Clements,
and Mark C. Christie.

PJM Interconnection, L.L.C.

Docket Nos. ER22-962-000
ER22-962-001

ORDER ON COMPLIANCE FILING

(Issued March 1, 2023)

1. On February 1, 2022, as amended on July 7, 2022, PJM Interconnection, L.L.C. (PJM), submitted proposed revisions to the PJM Open Access Transmission Tariff (Tariff), the Amended and Restated Operating Agreement of PJM (Operating Agreement), and the Reliability Assurance Agreement Among Load Serving Entities in the PJM Region (RAA)¹ in compliance with the requirements of Order No. 2222,² which removes barriers to the participation of distributed energy resource aggregations in the capacity, energy, and ancillary services markets operated by Regional Transmission Organizations and Independent System Operators (RTO/ISO markets). As discussed below, we find that PJM's filing partially complies with the requirements of Order No. 2222. Accordingly, we accept PJM's compliance filing, to become effective July 1, 2023 and February 2, 2026,³ as requested, subject to further compliance filings to be submitted within 30 and 60 days of the date of issuance of this order, as discussed below. Below we also direct PJM to submit an informational filing within 30 days of the date of issuance of this order.

¹ Appendix A lists the Tariff, Operating Agreement, and RAA sections filed by PJM. Capitalized terms that are not defined in this order have the meaning specified in the Tariff, Operating Agreement, and RAA.

² *Participation of Distributed Energy Res. Aggregations in Mkts. Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Order No. 2222, 172 FERC ¶ 61,247 (2020), *order on reh'g*, Order No. 2222-A, 174 FERC ¶ 61,197, *order on reh'g*, Order No. 2222-B, 175 FERC ¶ 61,227 (2021).

³ See app. A.

I. Background

2. In Order No. 2222, the Commission adopted reforms to remove barriers to the participation of distributed energy resource aggregations in the RTO/ISO markets.⁴ The Commission modified section 35.28 of its regulations⁵ pursuant to its authority under Federal Power Act (FPA) section 206⁶ to require each RTO/ISO to revise its tariff to ensure that its market rules facilitate the participation of distributed energy resource aggregations. The Commission found that, by removing barriers to the participation of distributed energy resource aggregations in the RTO/ISO markets, Order No. 2222 will enhance competition and, in turn, help ensure that the RTO/ISO markets produce just and reasonable rates.

3. In Order No. 2222, the Commission amended its regulations to require each RTO/ISO to include tariff provisions addressing distributed energy resource aggregations that: (1) allow distributed energy resource aggregations to participate directly in RTO/ISO markets and establish distributed energy resource aggregators as a type of market participant; (2) allow distributed energy resource aggregators to register distributed energy resource aggregations under one or more participation models that accommodate the physical and operational characteristics of the distributed energy resource aggregations; (3) establish a minimum size requirement for distributed energy resource aggregations that does not exceed 100 kilowatts (kW); (4) address locational requirements for distributed energy resource aggregations; (5) address distribution factors and bidding parameters for distributed energy resource aggregations; (6) address information and data requirements for distributed energy resource aggregations; (7) address metering and telemetry requirements for distributed energy resource aggregations; (8) address coordination between the RTO/ISO, the distributed energy resource aggregator, the distribution utility, and the relevant electric retail regulatory authorities (RERRAs); (9) address modifications to the list of resources in a distributed energy resource aggregation; and (10) address market participation agreements for distributed energy resource aggregators.⁷ Additionally, under Order No. 2222, each RTO/ISO must accept bids from a distributed energy resource aggregator if its aggregation includes distributed energy resources that are customers of utilities that distributed more than 4 million megawatt-hours in the previous fiscal year. An RTO/ISO must not accept bids from a distributed energy resource aggregator if its aggregation includes distributed energy resources that are customers of utilities that distributed 4

⁴ Order No. 2222, 172 FERC ¶ 61,247 at P 1.

⁵ 18 C.F.R. § 35.28 (2021).

⁶ 16 U.S.C. § 824e.

⁷ Order No. 2222, 172 FERC ¶ 61,247 at P 8.

million megawatt-hours (MWh) or less in the previous fiscal year, unless the RERRA permits such customers to be bid into RTO/ISO markets by a distributed energy resource aggregator.

II. Compliance Filing

4. In its February 1, 2022 filing, PJM states that its proposed revisions reflect a compliance approach that allows Distributed Energy Resource (DER) Aggregators⁸ using DER Aggregation Resources⁹ composed of Component DER¹⁰ to access and participate in PJM's markets on a level playing field with other resource types, while recognizing the essential rights of RERRAs and electric distribution companies to ensure safe and reliable operations on the distribution system.¹¹ PJM states that, through coordination with its stakeholders, it has provided a comprehensive Order No. 2222 compliance approach with the following key elements: (1) a new market participation model called the "DER Aggregation Participation Model;"¹² (2) newly defined terms associated with the DER Aggregation Participation Model; (3) pre-registration coordination activities; (4) a 60-day registration review period; (5) locational requirements that are as geographically broad as technically feasible to support reliable operations and energy price formation; (6) provisions enabling retail and wholesale participation while preventing double counting of services; (7) provisions regarding energy market self-scheduling; (8) balanced metering and telemetry requirements; and (9) a coordination framework that balances

⁸ A DER Aggregator is "an entity that is a Market Participant that: (i) uses one or more DER Aggregation Resources to participate in the energy, capacity, and/or ancillary services markets of PJM through the DER Aggregator Participation Model; and (ii) has a fully-executed DER Aggregator Participation Service Agreement." PJM, Intra-PJM Tariffs, OATT, Definitions A-B (17.0.0).

⁹ A DER Aggregation Resource is "comprised of one or more Component DER" and is "used by a DER Aggregator to participate in the energy, capacity, and/or ancillary services markets of PJM through the DER Aggregator Participation Model." Tariff, Definitions A-B.

¹⁰ Component DER means "any resource, within the PJM Region, that is located on a distribution system, any subsystem thereof, or behind a customer meter, and is used in a DER Aggregation Resource by a DER Aggregator to participate in the energy, capacity, and/or ancillary services markets of PJM through the DER Aggregator Participation Model." Tariff, Definitions A-B.

¹¹ PJM February 1, 2022 Compliance Filing, Transmittal at 4 (Transmittal).

¹² DER Aggregator Participation Model is "the participation model described in Tariff, Attachment K-Appendix, section 1.4B." Tariff, Definitions A-B.

market access with safe and reliable distribution system operations.¹³ PJM requests that the Commission grant an effective date of February 2, 2026 for the proposed Tariff, Operating Agreement, and RAA revisions, and an effective date of July 1, 2023 for a limited subset of revisions specific to the participation of DER Aggregation Resources in the 2026/2027 Delivery Year Base Residual Auction.

5. On May 18, 2022, Commission staff issued a data request advising PJM that additional information was necessary to process its compliance filing (Data Request).¹⁴

6. On July 7, 2022, in Docket No. ER22-962-001, PJM filed a response to the Data Request, which amended its compliance filing (Data Request Response).

III. Notices of Filings and Responsive Pleadings

7. Notice of PJM's filing was published in the *Federal Register*, 87 Fed. Reg. 7165 (Feb. 8, 2022), with interventions and protests due on or before February 22, 2022. Pursuant to Rule 212 of the Commission's Rules of Practice and Procedure,¹⁵ in its filing PJM also requested an extension of the standard 21-day comment period, from February 22, 2022 to April 1, 2022, in order to provide PJM stakeholders with additional time to develop their responsive pleadings.¹⁶

8. On February 10, 2022, the Commission extended the comment date to and including April 1, 2022.¹⁷

9. Notice of PJM's Data Request Response was published in the *Federal Register*, 87 Fed. Reg. 41,702 (July 13, 2022), with interventions and protests due on or before July 28, 2022.

¹³ Transmittal at 8-13.

¹⁴ *PJM Interconnection, LLC*, Docket No. ER22-962-000, at 1 (May 18, 2022) (delegated order). On June 3, 2022, the Commission extended the deadline for submitting the response to the Data Request to and including July 28, 2022. PJM Interconnection, L.L.C., Notice of Extension of Time (filed June 3, 2022).

¹⁵ 18 C.F.R. § 385.212 (2021).

¹⁶ Transmittal at 2.

¹⁷ PJM Interconnection, L.L.C., Errata Notice Extending Comment Period (issued Feb. 10, 2022).

10. Advanced Energy Economy (AEE); Advanced Energy Management Alliance (AEMA); American Electric Power Service Corporation (AEP)¹⁸; American Municipal Power, Inc.; American Public Power Association (APPA) ; Buckeye Power, Inc.; Centrica Business Solutions Optimize, LLC; Dayton Power and Light Company; Delaware Division of the Public Advocate; Delaware Municipal Electric Corporation, Inc.; Dominion Energy Services, Inc., on behalf of Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion); Duke Energy Corporation¹⁹; Duquesne Light Company (Duquesne); East Kentucky Power Cooperative, Inc.; Edison Electric Institute; Enel North America, Inc.; Enerwise Global Technologies, LLC; Environmental Defense Fund; Environmental Law & Policy Center; Exelon Corporation²⁰; FirstEnergy Services Company (FirstEnergy)²¹; Independent Market Monitor for PJM (the IMM); Maryland Office of People's Counsel (Maryland OPC); National Rural Electric Cooperative Association (NRECA); Natural Resources Defense Council and Sustainable FERC Project; New Jersey Board of Public Utilities (New Jersey BPU); North Carolina Electric Membership Corporation; Northern Virginia Electric Cooperative, Inc.; Office of the People's Counsel for the District of Columbia (DC OPC); Ohio Consumers' Counsel; Old Dominion Electric Cooperative; Organization of PJM States, Inc. (OPSI); PPL Electric Utilities Corporation; PSEG Companies;²² Resideo Technologies, Inc. (Resideo

¹⁸ AEP moved to intervene 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.

¹⁹ Duke Energy Corporation moved to intervene on behalf of its affiliates, affiliates, Duke Energy Ohio, Inc., Duke Energy Kentucky, Inc., Duke Energy Indiana, LLC, Duke Energy Carolinas, LLC, and Duke Energy Progress, LLC.

²⁰ Exelon states that its motion to intervene is of Exelon and its affiliates, who are Atlantic City Electric Company, Baltimore Gas and Electric Company, Commonwealth Edison Company, Delmarva Power & Light Company, PECO Energy Company, and Potomac Electric Power Company.

²¹ FirstEnergy moved to intervene on behalf of its affiliates, Ohio Edison Company, The Cleveland Electric Illuminating Company, The Toledo Edison Company, West Penn Power Company, Pennsylvania Power Company, Metropolitan Edison Company, Jersey Central Power & Light Company, Pennsylvania Electric Company, Monongahela Power Company and The Potomac Edison Company.

²² PSEG Companies include Public Service Electric and Gas Company, PSEG

Technologies); Rockland Electric Company; Solar Energy Industries Association (SEIA); Southern Maryland Electric Cooperative, Inc.; The Dayton Power and Light Company; Vistra Corp. and Dynegy Energy Marketing and Trade, LLC (together, Vistra); and Voltus, Inc. filed timely motions to intervene. Illinois Commerce Commission (Illinois Commission), Indiana Utility Regulatory Commission (Indiana Commission), Maryland Public Service Commission, Pennsylvania Public Utility Commission (Pennsylvania Commission), Public Service Commission of the District of Columbia, and Public Utilities Commission of Ohio (Ohio Commission) each filed a notice of intervention.

11. Constellation Energy Generation, LLC; Michigan Public Service Commission; and PJM Power Providers Group filed motions to intervene out-of-time.

12. AEE and SEIA (jointly); AEMA; City of Cincinnati, Ohio (City of Cincinnati); Dominion, Environmental Organizations;²³ FirstEnergy; Illinois Commission; the IMM; Indiana Commission; Indicated PJM Utilities (Indicated Utilities);²⁴ Joint Consumer Advocates (JCA);²⁵ Joint Electric Cooperatives (JEC);²⁶ New Jersey BPU; OPSI; Pennsylvania Commission; Ohio Commission; and Resideo Technologies filed timely comments and/or protests. The IMM filed comments out of time.

13. On April 19, 2022, the IMM filed an answer (IMM First Answer). On April 26, 2022, PJM filed an answer. On April 28, 2022, Pennsylvania Commission filed an answer. On April 29, 2022, AEMA filed an answer. On May 2, 2022, Duquesne Light Company filed an answer. On May 2, 2022, Indicated Utilities filed an answer. On

Power LLC, and PSEG Energy Resources & Trade LLC.

²³ Environmental Organizations include Environmental Defense Fund, Environmental Law and Policy Center, Natural Resources Defense Council, and Sustainable FERC Project.

²⁴ Indicated Utilities include: AEP on behalf of its affiliates; Virginia Electric and Power Company dba Dominion Energy Virginia; Duquesne Light Company; Duke Energy Corporation on behalf of its affiliates Duke Energy Ohio, Inc., Duke Energy Kentucky, Inc., and Duke Energy Business Services LLC; Exelon on behalf of its affiliates; FirstEnergy and its affiliates; PPL Electric Utilities Corporation.; Public Service Electric and Gas Company; and Rockland Electric Company.

²⁵ JCA includes the DC OPC, Maryland OPC, and New Jersey DRC.

²⁶ JEC includes East Kentucky Power Cooperative, Inc., Buckeye Power, Inc., North Carolina Electric Membership Corporation, Old Dominion Electric Cooperative, Southern Maryland Electric Cooperative, Inc., and Wolverine Power Supply Cooperative, Inc.

May 6, 2022, Indicated Utilities filed an errata to its answer. On May 19, 2022, the IMM filed an answer (IMM Second Answer).

14. In response to PJM's Data Request Response, Appalachian Voices filed a motion to intervene. AEE and SEIA (jointly); AEMA; APPA & NRECA (jointly); Indicated Utilities; Maryland OPC & DC OPC (jointly); and Public Power Entities²⁷ filed timely comments and/or protests. The IMM filed comments out-of-time.

15. On August 12, 2022, New Jersey Division of Rate Counsel (New Jersey DRC) filed an answer.

16. On August 19, 2022, New Jersey DRC filed a motion to intervene out-of-time.

IV. Discussion

A. Procedural Matters

17. Pursuant to Rule 214 of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214 (2021), the timely, unopposed motions to intervene serve to make the entities that filed them parties to this proceeding.²⁸

18. Pursuant to Rule 214(d) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.214(d), we grant Constellation Energy Generation, LLC's, Michigan Public Service Commission's, PJM Power Providers Group's, and New Jersey DRC's late-filed motions to intervene given their interest in the proceeding, the early stage of the proceeding, and the absence of undue prejudice or delay. We also accept the IMM's out-of-time comments.

²⁷ Public Power Entities includes East Kentucky Power Cooperative, Buckeye Power, Inc., North Carolina Electric Membership Corporation, Old Dominion Electric Cooperative, Southern Maryland Electric Cooperative, Inc., Wolverine Power Supply Cooperative, Inc., and American Municipal Power, Inc.

²⁸ Entities that filed comments and/or protests but did not file a notice of intervention or motion to intervene are not parties to this proceeding. *See* 18 C.F.R. § 385.211(a)(2) (2021) ("The filing of a protest does not make the protestant a party to the proceeding. The protestant must intervene under Rule 214 to become a party."). City of Cincinnati filed comments but did not file a motion to intervene. As part of JEC's comments and as part of the Public Power Entities' comments, Wolverine Power Supply, Inc. filed comments but did not file a motion to intervene. Although we do not grant party status to City of Cincinnati and Wolverine Power Supply, Inc., we address their pleadings in this order.

19. Rule 213(a)(2) of the Commission's Rules of Practice and Procedure, 18 C.F.R. § 385.213(a)(2) (2021), prohibits an answer to a protest or an answer unless otherwise ordered by the decisional authority. We accept the answers filed in this proceeding because they have provided information that assisted us in our decision-making process.

B. Substantive Matters

20. As explained in further detail below, we find that PJM's proposal partially complies with Order No. 2222. Accordingly, we accept PJM's compliance filing, to be effective July 1, 2023 and February 2, 2026,²⁹ as requested, subject to further compliance filings to be submitted within 30 and 60 days of the date of issuance of this order, as discussed below. Below we also direct PJM to submit an informational filing within 30 days of the date of issuance of this order.

21. As a preliminary matter, we find that PJM has complied with the requirements of Order No. 2222 to: (1) propose definitions for distributed energy resource and distributed energy resource aggregator that are consistent in scope and applicability with the Commission's definitions;³⁰ (2) allow a single qualifying distributed energy resource to avail itself of the proposed distributed energy resource aggregation rules by serving as its own distributed energy resource aggregator;³¹ and (3) establish market rules that address market participation agreements for distributed energy resource aggregators.³² PJM's compliance with these requirements is not contested in this proceeding.

²⁹ See app. A.

³⁰ Order No. 2222, 172 FERC ¶ 61,247 at PP 114, 115, 118. See Transmittal at 20-22; see also PJM, Tariff, Definitions C-D (31.0.0).

³¹ Order No. 2222, 172 FERC ¶ 61,247 at P 185. See Transmittal at 45; see also Tariff, Definitions A-B; *id.* Definitions C-D. PJM's definition of DER Aggregator specifically permits that a DER Aggregation Resource may be comprised of a single, i.e., one Component DER.

³² Order No. 2222, 172 FERC ¶ 61,247 at PP 352-356. See Transmittal at 85-86; see also PJM, Tariff, attach. N-4 (0.0.0). We also note that the executed agreements that conform to the DER Aggregator Participation Service Agreement (DAPSA), which we find complies with the requirements of Order No. 2222, should be reported in PJM's Electric Quarterly Reports, retained, and made available for public inspection, consistent with the Commission's requirements. *Revised Pub. Util. Filing Requirements*, Order No. 2001, 99 FERC ¶ 61,107, at P 196 (2002); 18 C.F.R. § 35.1(g) (2021).

22. We address the remaining compliance requirements and comments and protests below.

1. Small Utility Opt-In

23. In Order No. 2222, the Commission added section 35.28(g)(12)(iv) to the Commission's regulations to provide that RTOs/ISOs may not accept bids from distributed energy resource aggregators aggregating customers of small utilities unless the RERRA allows such customers of small utilities to participate in distributed energy resource aggregations (i.e., to opt in).³³ Specifically, the Commission directed each RTO/ISO to amend its market rules as necessary to (1) accept bids from a distributed energy resource aggregator if its aggregation includes distributed energy resources that are customers of utilities that distributed more than 4 million MWh³⁴ in the previous fiscal year, and (2) not accept bids from distributed energy resource aggregators if its aggregation includes distributed energy resources that are customers of utilities that distributed 4 million MWh or less in the previous fiscal year, unless the RERRA permits such customers to be bid into RTO/ISO markets by a distributed energy resource aggregator (small utility opt-in).³⁵ The Commission also required each RTO/ISO to explain how it will implement this small utility opt-in, noting that an RTO/ISO may choose to implement this requirement in a similar manner as it currently implements the small utility opt-in provision under Order No. 719-A.³⁶ In Order No. 2222-A, denying a request for clarification, the Commission found that the small utility opt-in established in Order No. 2222 applies to energy efficiency resources.³⁷

³³ Order No. 2222, 172 FERC ¶ 61,247 at P 56.

³⁴ The 4 million MWh cutoff stems from the Small Business Size Standards component of the North American Industry Classification System, which previously defined a small utility as one that, including its affiliates, is primarily engaged in the generation, transmission, or distribution of electric energy for sale, and whose total electric output for the preceding fiscal year did not exceed 4 million MWh. 13 C.F.R. § 121.201 (2013) (Sector 22, Utilities, North American Industry Classification System (NAICS)). Currently, the number of employees is the basis used to measure whether electric power generation, transmission, and distribution industries are small businesses. 13 C.F.R. § 121.201 (2021) (Sector 22, Utilities, NAICS).

³⁵ Order No. 2222, 172 FERC ¶ 61,247 at P 65; *see* Order No. 2222-A, 174 FERC ¶ 61,197 at PP 34-35 (dismissing arguments on rehearing about the small utility opt-in).

³⁶ Order No. 2222, 172 FERC ¶ 61,247 at P 66.

³⁷ Order No. 2222-A, 174 FERC ¶ 61,197 at P 36.

a. Filing

24. PJM proposes to prohibit a DER Aggregator from participating in the energy, capacity, and/or ancillary services markets through the DER Aggregator Participation Model if the DER Aggregation Resource includes Component DER that are end-use customers of an electric distribution company that distributed 4 million MWh or less in the previous fiscal year, unless the electric distribution company determines that the RERRA permits such end-use customers to participate.³⁸

25. PJM states that it will implement the small utility opt-in through a process by which evidence of RERRA authorization to participate may be presented to PJM.³⁹ Specifically, PJM will permit participation of DER Aggregation Resources including Component DER that are customers of small utilities if, during the course of the registration process, the electric distribution company presents any of the following evidence to PJM: (i) an order, resolution or ordinance of the RERRA permitting or conditionally permitting the end-use customer's participation; (ii) an opinion of the RERRA's legal counsel attesting to the existence of a regulation or law permitting or conditionally permitting the end-use customer's participation; or (iii) an opinion of the state Attorney General, on behalf of the RERRA, attesting to the existence of a regulation or law permitting or conditionally permitting the end-use customer's participation. PJM states that its implementation of the small utility opt-in under Order No. 2222 is similar to its implementation of the small utility opt-in under Order No. 719-A with respect to demand response.⁴⁰

b. Comments/Protests

26. JEC and Pennsylvania Commission support PJM's proposed small utility opt-in mechanism.⁴¹ Resideo Technologies expresses concern that a small utility can qualify as both an electric distribution company and the RERRA, arguing that this could present a barrier to entry or otherwise result in unjust, unreasonable, and unduly discriminatory treatment of DER Aggregators to the extent that conflicts of interest arise with respect to

³⁸ Transmittal at 87; PJM, Tariff, attach. K-app., § 1.4 (0.0.0), § 1.4B(g); PJM, Intra- PJM Tariffs, Operating Agreement, Schedule 1, §1.4 (1.0.0), § 1.4B(g).

³⁹ Transmittal at 87-88; Tariff, attach. K-app., § 1.4B(g); Operating Agreement, Schedule 1, § 1.4B(g).

⁴⁰ Transmittal at 88 (citing to PJM's small utility opt-in provisions related to demand response in PJM, Tariff, attach. K-app., § 1.5. (13.0.0), § 1.5A.3; PJM, Intra-PJM Tariffs, Operating Agreement, Schedule 1, §1.5A (13.0.0), § 1.5A.3).

⁴¹ JEC Comments at 5, 7-9; Pennsylvania Commission Comments at 13-14.

an electric distribution company reviewing a DER Aggregator's registration, particularly as a competitor to the DER Aggregator.⁴²

c. Data Request Response

27. In the Data Request Response, PJM explains that the electric distribution company would be responsible for interpreting the RERRA's local rules regarding the small utility opt-in.⁴³ PJM states that this is appropriate given the electric distribution company's direct interface with the RERRA's regulatory oversight and central role in implementing the RERRA's retail programs. PJM explains that the electric distribution company's determination would be made during the 60-day review process and made available to the RERRA via the software platform PJM develops for Order No. 2222 implementation. PJM also states that this role is identical to the role that electric distribution companies currently play with respect to PJM's demand response model.

28. PJM explains that the electric distribution company understands what qualifies as valid evidence regarding whether the RERRA permits small-utility customer participation under the PJM tariff, and PJM is not aware of any circumstances where a distribution utility has not been forthcoming with the provision of valid RERRA evidence.⁴⁴ PJM states that a DER Aggregator or RERRA can provide this evidence to PJM by coordinating with the electric distribution company. PJM notes that, to the extent an electric distribution company were to withhold such evidence, a DER Aggregator could raise the issue directly with PJM, the RERRA, the IMM, or the Commission.

29. With respect to the issue of potential conflicts of interest that might arise in the context of coordination, implementation, and dispute resolution in circumstances where a RERRA and an electric distribution company are the same entity, PJM states that this would have been more appropriately addressed on rehearing than on compliance.⁴⁵ PJM also states that it is not aware of an instance in which those particular circumstances have, to date, caused concerns or been protested by market participants. PJM explains that the RERRA is typically the city council for a municipality, or Board of Directors for a cooperative, each of which is elected by the residents of the municipality, or the customers of the cooperative. As a result, PJM contends that RERRAs are accountable to the voters, who are also the customers of the municipal utility or cooperative, which provides an appropriate check over any potential conflicts of interest. PJM also notes

⁴² Resideo Technologies Protest at 9-10.

⁴³ Data Request Response at 2.

⁴⁴ *Id.* at 4.

⁴⁵ *Id.* at 3.

that it has implemented an identical opt-in structure for small utilities for demand response under Order No. 719-A.

d. Data Request Response Comments/Protest

30. The IMM argues that the proposed small utility opt-in process may create opportunities for electric distribution companies to erect barriers to entry because electric distribution companies would be interpreting the decisions of the RERRA.⁴⁶ On the other hand, PPEs, APPA, and NRECA support PJM's Data Request Response.⁴⁷ APPA and NRECA dispute any suggestion that there could be conflicts of interest because public power and electric cooperative regulators are accountable to the communities served by their utilities.⁴⁸

e. Commission Determination

31. We find that PJM's proposal partially complies with the small utility opt-in requirements of Order No. 2222. As an initial matter, we find that PJM has complied with the following small utility opt-in requirements of Order No. 2222 that required RTOs/ISOs to: (1) not accept bids from a distributed energy resource aggregator if its aggregation includes distributed energy resources that are customers of utilities that distributed 4 million MWh or less in the previous fiscal year, unless the RERRA permits such customers to be bid into RTO/ISO markets by a distributed energy resource aggregator;⁴⁹ and (2) accept bids from a distributed energy resource aggregator if its aggregation includes distributed energy resources that are customers of utilities that distributed more than 4 million MWh in the previous fiscal year.⁵⁰

⁴⁶ IMM Data Request Response Comments at 5.

⁴⁷ PPE Data Request Response Comments at 5-7; APPA and NRECA Data Request Response Comments at 2-4.

⁴⁸ APPA and NRECA Data Request Response Comments at 3.

⁴⁹ Order No. 2222, 172 FERC ¶ 61,247 at P 65. *See* Tariff, attach. K-app., § 1.4B(g); Operating Agreement, Schedule 1, § 1.4B(g).

⁵⁰ Order No. 2222, 172 FERC ¶ 61,247 at P 65. *See* Tariff, Attachment K-Appendix, section 1.4B(g) (establishing restrictions on participation only for DER Aggregation Resources including Component DER that are end-use customers of small utilities or including Component DER that are demand response and end-use customers of large utilities); Tariff, Operating Agreement, Schedule 1, § 1.4B(g) (establishing same).

32. However, we find that PJM's proposal partially complies with the requirement to explain how it will implement the small utility opt-in.⁵¹ While PJM's proposed tariff permits only the electric distribution company to present evidence of a RERRA's opt-in determination to PJM, PJM states in its Data Request Response that a DER Aggregator or RERRA may also provide to PJM evidence of a RERRA's opt-in determination by coordinating with the electric distribution company.⁵² Moreover, PJM does not explain the process by which an electric distribution company, DER Aggregator, or RERRA may coordinate to present such evidence to PJM. Accordingly, we direct PJM to file, within 60 days of the date of the issuance of this order, a further compliance filing that clarifies the entities that may present evidence of a RERRA's opt-in determination to PJM and the manner in which such evidence may be presented to PJM.

33. We are not persuaded by Resideo Technologies' and the IMM's arguments that municipally-owned utilities or electric cooperatives acting as both the electric distribution company and RERRA present a barrier to entry or would otherwise result in unjust, unreasonable, and unduly discriminatory treatment of DER Aggregators. We are also not persuaded by the IMM's argument that PJM's proposal would amount to having the electric distribution companies "interpret" a RERRA's decision about the small utility opt-in. We find protesters' concerns to be speculative and unsupported. As PJM notes, the electric distribution company directly interfaces with the RERRA's regulatory oversight and has a central role in implementing the RERRA's retail programs.⁵³ As the Commission stated in Order No. 2222, the Commission recognizes the vital role for state and local regulators with respect to retail services and matters related to the distribution system, including design, operations, power quality, reliability, and system costs.⁵⁴ Moreover, these concerns are alleviated given the further compliance directive above and because, as PJM states, "a DER Aggregator . . . can provide evidence [of a RERRA's opt-in determination] to PJM by coordinating with the applicable distribution utility."⁵⁵ Order No. 2222 requires that an electric distribution company's review of the individual DERs that comprise an aggregation be non-discriminatory, timely, and transparent.

⁵¹ See Order No. 2222, 172 FERC ¶ 61,247 at P 66.

⁵² *Compare* Tariff, attach. K-app., § 1.4B(g), with Data Request Response at 4.

⁵³ Data Request Response at 2.

⁵⁴ Order No. 2222, 172 FERC ¶ 61,247 at PP 44, 61.

⁵⁵ See *supra* P 32; Data Request Response at 4.

2. Demand Response Opt-Out

34. In Order No. 2222-B, the Commission stated, “the participation of demand response in distributed energy resource aggregations is subject to the opt-out and opt-in requirements of Order Nos. 719 and 719-A. Therefore, if the relevant electric retail regulatory authority where a demand response resource is located has either chosen to opt out or has not opted in [pursuant to Order Nos. 719 and 719-A], then the demand response resource may not participate in a distributed energy resource aggregation.”⁵⁶

a. Filing

35. PJM proposes to prohibit a DER Aggregator from participating in the DER Aggregator Participation Model if a DER Aggregation Resource includes one or more Component DER that are demand response and that are end-use customers of an electric distribution company that distributed more than 4 million MWh in the previous fiscal year, and the RERRA has prohibited the participation of demand response in the DER Aggregator Participation Model.⁵⁷

b. Data Request Response

36. In the Data Request Response, PJM clarifies that it intends to use the process set forth in its demand response opt-out rules to demonstrate that a RERRA has prohibited the participation of demand response in the DER Aggregator Participation Model.⁵⁸ PJM states that, if the Commission finds it necessary to repeat or cross reference those rules for the DER Aggregator Participation Model, PJM will make the corresponding modifications on compliance.

c. Commission Determination

37. We find that PJM’s proposal partially complies with the requirement in Order No. 2222-B with respect to demand response participation in distributed energy resource aggregations. As an initial matter, we find that PJM has complied with the requirement

⁵⁶ Order No. 2222-B, 175 FERC ¶ 61,227 at P 29 (quoting Order No. 2222, 172 FERC ¶ 61,247 at P 145).

⁵⁷ Transmittal at 88-89; Tariff, attach. K-app., § 1.4B(g); Operating Agreement, Schedule 1, § 1.4B(g).

⁵⁸ Data Request Response at 6 (citing to Tariff, attach. K-app., § 1.5A.3 (1)(a)(i); Operating Agreement, Sched. 1, § 1.5A.3 (1)(a)(i)).

to prohibit the participation of demand response resources if the RERRA has chosen to opt-out or has not opted in pursuant to Order Nos. 719 and 719-A.⁵⁹

38. However, we find that PJM's proposal does not clearly articulate the relationship between the demand response opt-out rules and their application to PJM's DER Aggregator Participation Model. Accordingly, and consistent with PJM's statement in its Data Request Response, we direct PJM to file, within 60 days of the date of the issuance of this order, a further compliance filing clarifying that the demand response opt-out rules set forth in Tariff, Attachment K-Appendix, section 1.5A.3 (1)(a)(i) and Operating Agreement, Schedule 1, section 1.5A.3 (1)(a)(i) will be used to demonstrate that a RERRA has prohibited the participation of demand response in the DER Aggregator Participation Model.

3. Interconnection

39. In Order No. 2222, the Commission declined to exercise its jurisdiction over the interconnections of distributed energy resources to distribution facilities for the purpose of participating in RTO/ISO markets exclusively as part of a distributed energy resource aggregation.⁶⁰ The Commission therefore stated that it will not require standard interconnection procedures and agreements or wholesale distribution tariffs for such interconnections. The Commission also stated that Order No. 2222 does not revise the Commission's jurisdictional approach to the interconnections of Qualifying Facilities (QFs) that participate in distributed energy resource aggregations.⁶¹ In Order No. 2222-A, the Commission clarified that the Commission declined to exercise jurisdiction over the interconnections of distributed energy resources, including the interconnections of

⁵⁹ Order No. 2222-B, 175 FERC ¶ 61,227 at P 29. *See* Tariff, Attachment K-Appendix, section 1.4B(g); Operating Agreement, Schedule 1, section 1.4B(g).

⁶⁰ Order No. 2222, 172 FERC ¶ 61,247 at P 90.

⁶¹ *Id.* P 98 (citing *Standardization of Generator Interconnection Agreements & Procs.*, Order No. 2003, 104 FERC ¶ 61,103, at PP 813-15 (2003), *order on reh'g*, Order No. 2003-A, 106 FERC ¶ 61,220, *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)); *Standardization of Small Generator Interconnection Agreements & Procs.*, Order No. 2006, 111 FERC ¶ 61,220, PP 516-18, *order on reh'g*, Order No. 2006-A, 113 FERC ¶ 61,195 (2005), *order granting clarification*, Order No. 2006-B, 116 FERC ¶ 61,046 (2006); *Reform of Generator Interconnection Procs. & Agreements*, Order No. 845, 163 FERC ¶ 61,043 (2018), *errata notice*, 167 FERC ¶ 61,123, *order on reh'g*, Order No. 845-A, 166 FERC ¶ 61,137, *errata notice*, 167 FERC ¶ 61,124, *order on reh'g*, Order No. 845-B, 168 FERC ¶ 61,092 (2019)).

QFs, to distribution facilities for the purpose of participating in RTO/ISO markets exclusively as part of a distributed energy resource aggregation.⁶²

40. Recognizing that distributed energy resources may already have interconnected pursuant to procedures that were accepted by the Commission prior to the effective date of Order No. 2222, the Commission stated that it is not requiring distributed energy resources that already interconnected under Commission-jurisdictional procedures to convert to state or local interconnection agreements.⁶³ The Commission required each RTO/ISO to make any necessary tariff changes to reflect this guidance.⁶⁴

a. Filing

41. PJM proposes that Component DER interconnecting to distribution facilities for purposes of participating in the energy, capacity, and/or ancillary services markets of PJM exclusively through the DER Aggregator Participation Model will not be subject to Part IV of the Tariff relating to interconnections with the transmission system, and instead will exclusively interconnect to distribution facilities pursuant to applicable state or local law.⁶⁵

42. PJM states that the current Tariff Part IV, Subpart G, section 112A provides that inverter-based energy resources five MW or less are eligible for a fast-track interconnection process where small projects that satisfy the “screens process” may be able to interconnect to the distribution system in an expeditious manner.⁶⁶ PJM explains that projects that do not meet the screens tests for fast-track processing should be studied under the applicable interconnection queue process and may be subject to cost allocation for network impacts. PJM further illustrates this point by stating that five MW is the current level for establishing a contribution to a previously identified upgrade and by extension, if PJM were to set the threshold for Component DER beyond five MW, it

⁶² Order No. 2222-A, 174 FERC ¶ 61,197 at P 43.

⁶³ Order No. 2222, 172 FERC ¶ 61,247 at P 103.

⁶⁴ *Id.* P 104.

⁶⁵ Transmittal at 79-80; Tariff, attach. K-app., § 1.4B(o); Operating Agreement, Schedule 1, § 1.4B(o).

⁶⁶ Transmittal at 44-45. *See also PJM Interconnection, L.L.C.*, 181 FERC ¶ 61,162, at P 81 (2022) (finding that PJM’s proposal to eliminate its fast-track interconnection process accomplishes the purposes of Order Nos. 2006 and 792 by providing entities that would qualify for this process opportunities to accelerate their progress through the interconnection queue).

would create a potential path for larger projects to avoid cost allocation that others in the interconnection queue would be subject to.

b. Comments/Protests

43. Several parties state that PJM's proposal is consistent with the Commission's determinations in Order No. 2222 regarding distribution-level interconnections.⁶⁷

44. The IMM argues that because there is no required interconnection study for individual DER aggregation resources and such resources will be included in the Regional Transmission Expansion Plan process, their impact on the system will be unknown but the costs they impose will be shared by all loads in the zone in which the DERs are located and/or in the entire PJM region.⁶⁸ The IMM argues that if DERs are left unstudied, an increase in DER participation will make it harder to define Capacity Interconnection Rights (CIR) for non-DER aggregation resources, will make queue management even more difficult for non-DER aggregation resources, and could have impacts on the reliability of the transmission system.

c. Data Request Response

45. In the Data Request Response, PJM states that OATT Part VI will not apply to DER Aggregation Resources or Component DER in accordance with the Commission's explicit disclaimer of interconnection jurisdiction in Order Nos. 2222 and 2222-A.⁶⁹ PJM states that Component DER participating in an aggregation will have initially interconnected through local (retail) interconnection processes or have permission to do so, and be required to satisfy state or local-jurisdictional requirements and retail distribution utility requirements to interconnect. PJM states that DERs will continue to have the option to enter the PJM interconnection queue for interconnection rights under the PJM Tariff if they choose. PJM further states that Part VI of the PJM Tariff will not apply to DER Aggregation Resources or Component DER, and therefore these resources will not be awarded CIRs.⁷⁰ PJM states that this is because CIRs are only awarded to

⁶⁷ FirstEnergy Comments at 21, 33; Indicated Utilities Comments at 11; New Jersey BPU Comments at 3; Indiana Commission Comments at 4-5; Pennsylvania Commission Comments at 3.

⁶⁸ IMM Comments at 19-20.

⁶⁹ Data Request Response at 12-13.

⁷⁰ *Id.* at 13-14.

resources that go through the PJM queue study process, which is not the case for any resources under the DER Aggregator Participation Model.

d. Data Request Response Comments/Protests

46. AEE and SEIA assert that PJM's response leaves uncertainty as to whether DER aggregations will be required to obtain CIRs to provide capacity. AEE and SEIA state that the Commission should confirm that PJM will not need to award CIRs to provide capacity because the distribution interconnection process has already demonstrated that they are technically capable of providing such service.⁷¹

47. The IMM contends that all new resources should pay their own costs of interconnection to the PJM grid, whether CIRs are paid for directly by DERs or by the electric distribution companies whose service territory they are located in, and regardless of how the interconnection to the electric distribution company is handled. The IMM avers that because DER Aggregation Resources do not pay for their own interconnection rights to the PJM grid, all transmission customers will pay for those interconnection rights.⁷²

e. Commission Determination

48. We find that PJM's proposal complies with Order No. 2222 with respect to interconnection. PJM's proposal is consistent with the Commission's decision to decline to exercise jurisdiction over the interconnections of distributed energy resources to distribution facilities for the purpose of participating in RTO/ISO markets exclusively as part of a distributed energy resource aggregation.⁷³

49. In response to AEE and SEIA, who raised concerns about information PJM provided in the Data Request Response, we find that the record reflects that Component DER that interconnect pursuant to the state process can participate in the PJM capacity market without obtaining CIRs. As an initial matter, we note that PJM proposed a

⁷¹ AEE and SEIA Data Request Response Protest at 6-7.

⁷² IMM Data Request Response Comments at 5-6. IMM states that PJM has recently made clear in the Planning Committee Special Session: Capacity Interconnection Rights for ELCC Resources, that such costs can be extremely high. According to IMM, in those Special Sessions, PJM has estimated that simply incorporating the CIR costs for the next tranches of intermittent and storage resources into the RTEP will cost other transmission customers about two billion dollars. *Id.* at 5.

⁷³ Order No. 2222, 172 FERC ¶ 61,247 at P 90. *See* Tariff, attach. K-app., § 1.4B(o); Operating Agreement, Schedule 1, § 1.4B(o).

specific term for DER Aggregation Resources participating in PJM’s capacity market—DER Capacity Aggregation Resources—as well as a new participation model specifically for DER Aggregation Resources to participate in PJM’s energy, ancillary services, and *capacity* markets: the DER Aggregator Participation Model.⁷⁴ With respect to CIRs, the PJM Tariff defines them as “the rights to input generation as a *Generation Capacity Resource* into the Transmission System at the Point of Interconnection where the generating facilities connect to the Transmission System.”⁷⁵ In its tariff proposal, PJM clearly distinguishes DER Capacity Aggregation Resources from Generation Capacity Resources,⁷⁶ and thus they will not be required to obtain CIRs if they register and participate in PJM’s markets through the new participation model.⁷⁷

50. In response to the IMM, we find that PJM’s proposal to not require or assign CIRs for DERs seeking to interconnect to the transmission grid does not raise any cost allocation concerns because PJM proposes to limit Component DER to five MWs, and as PJM notes, five MWs is the current level for establishing a contribution to a previously-identified upgrade.⁷⁸

⁷⁴ Transmittal at 21-22, 24, 32-33 (explaining how the capacity value of a DER Capacity Aggregation Resource will be determined, which will set the maximum MW value that can be offered into the Base Residual Auction).

⁷⁵ Tariff, Definitions C-D (emphasis added).

⁷⁶ See, e.g., RAA, Schedule 9.1 (1.0.0) (“PJM will determine the ELCC Class Ratings for an ELCC Class when any one of the following criteria are met: (1) An Existing Generation Capacity Resource or an Existing Component DER as part of a DER Capacity Aggregation Resource is in such class”).

⁷⁷ Data Request Response at 12-13.

⁷⁸ Transmittal at 44-45 (quoting PJM Manual 14A, Attachment B.3.1 (“Network Upgrades are identified to maintain system reliability. Individual Local & Network Upgrades which cost less than \$5,000,000 All New Service Customers with active New Service Requests in an individual New Services Queue will be allocated a cost for these Network Upgrades based upon the following criteria . . . [c]ontingent to the individual New Service Request contributing MW impact being greater than 5 MW AND greater than 1% of the applicable line rating”)).

4. Eligibility to Participate in RTO/ISO Markets through a Distributed Energy Resource Aggregator

a. Participation Model

51. In Order No. 2222, the Commission added section 35.28(g)(12)(i) to the Commission's regulations to require each RTO/ISO to establish distributed energy resource aggregators as a type of market participant and to allow distributed energy resource aggregators to register distributed energy resource aggregations under one or more participation models in the RTO's/ISO's tariff that accommodate the physical and operational characteristics of the distributed energy resource aggregation.⁷⁹ The Commission explained that each RTO/ISO can comply with the requirement to allow distributed energy resource aggregators to participate in its markets by modifying its existing participation models to facilitate the participation of distributed energy resource aggregations, by establishing one or more new participation models for distributed energy resource aggregations, or by adopting a combination of those two approaches.⁸⁰ The Commission stated that it will evaluate each proposal submitted on compliance to determine whether the proposal meets the goals of Order No. 2222 to allow distributed energy resources to provide all services that they are technically capable of providing through aggregation.⁸¹

i. Filing

52. PJM proposes a new section in its tariff to create a new participation model, called the DER Aggregator Participation Model, that contains the rules and procedures through which DER Aggregators may register and participate in PJM's energy, capacity, and/or ancillary services markets.⁸² PJM explains that the DER Aggregator Participation Model is an additional participation model for DERs to participate in PJM and is not meant as a

⁷⁹ Order No. 2222, 172 FERC ¶ 61,247 at P 130.

⁸⁰ *Id.*

⁸¹ *Id.* In Order No. 2222, the Commission clarified that "technically capable" of providing a service means meeting all of the technical, operational, and/or performance requirements that are necessary to reliably provide that service. *Id.* P 3 n.9 (citing *Elec. Storage Participation in Markets Operated by Reg'l Transmission Orgs. & Indep. Sys. Operators*, Order No. 841, 162 FERC ¶ 61,127, at P 78 (2018), *order on reh'g*, Order No. 841-A, 167 FERC ¶ 61,154 (2019), *aff'd sub nom. Nat'l Ass'n of Regul. Util. Comm'rs v. FERC*, 964 F.3d 1177 (D.C. Cir. 2020)).

⁸² Transmittal at 24; Tariff, attach. K-app., § 1.4B; Operating Agreement, Schedule 1, § 1.4B.

replacement to any existing PJM participation models such as Economic Load Response, Emergency Load Response, energy efficiency, and/or the generator model. PJM states that DERs that meet the requirements for participation in other PJM models will be able to participate under those existing rules, and not use the DER Aggregator Participation Model to participate in PJM.⁸³

53. PJM states that the DER Aggregator Participation Model allows DER Aggregators to aggregate one or more Component DER to establish DER Aggregation Resources and DER Capacity Aggregation Resources⁸⁴ to participate in the PJM energy, capacity and/or ancillary services markets, where technically capable of doing so. PJM asserts that the DER Aggregator Participation Model does not place any restrictions on resource or technology type, and permits both homogeneous and heterogeneous Component DER to aggregate to form DER Aggregation Resources and DER Capacity Aggregation Resources for market participation.⁸⁵

(a) Capacity Market Participation

54. PJM states that DER Aggregators will be able to use one or more DER Aggregation Resources within a defined zone or sub-zonal Locational Deliverability Area (LDA) to form a DER Capacity Aggregation Resource.⁸⁶ PJM explains that the capacity value of a DER Capacity Aggregation Resource will be calculated based on the technology type and site configuration of the underlying Component DER within the underlying DER Aggregation Resources using PJM's Effective Load Carrying Capability (ELCC) methodology, and will set the maximum MW value that can be offered into the Base Residual Auction (BRA), Incremental Auction, or used in a Fixed Resource Requirement plan.

⁸³ Transmittal at 24. PJM explains that an aggregation of DER that strictly modifies load (i.e., demand response resources) can continue to provide capacity, energy and/or ancillary services through the demand response participation model.

⁸⁴ For DER Aggregation Resources that seek to provide capacity, PJM proposes a new term called "DER Capacity Aggregation Resource" defined as "...one or more DER Aggregation Resource that participates in the Reliability Pricing Model, capable of satisfying a minimum capacity market offer of 100 kW, or is otherwise treated as capacity in PJM's markets, such as through a Fixed Resource Requirement Capacity Plan, for the 2026/2027 Delivery Year and all subsequent Delivery Years." *Id.* at 21.

⁸⁵ *Id.* at 24-25.

⁸⁶ *Id.* at 32.

55. PJM explains that DER Capacity Aggregation Resources that have a capacity commitment in PJM will be subject to the following requirements: (1) day-ahead energy market must-offer requirement; (2) annual simultaneous testing requirements; and (3) non-performance assessments, in accordance with the underlying generation and load reductions being provided.⁸⁷ PJM states it will evaluate expected and actual performance of a DER Capacity Aggregation Resource based on the generating Component DER, and load reduction Component DER, in addition to any applicable existing requirements for capacity resources.

56. PJM also explains that DER Aggregators may offer a Planned DER Capacity Aggregation Resource into the PJM capacity market, prior to the Component DER being registered with PJM, provided that the DER Aggregator has a PJM-approved DER Capacity Aggregation Resource Sell Offer Plan.⁸⁸

57. In addition, PJM proposes that DER Capacity Aggregation Resource(s) with Component DER directly connected to distribution facilities not co-located with retail end-use load may be subject to a Minimum Offer Price Rule (MOPR) Floor Offer Price and a Market Seller Offer Cap (MSOC) consistent with the respective applicable tariff provisions.⁸⁹

(b) Energy Market Participation

58. PJM states that under the DER Aggregation Participation Model, DER Aggregators will be able to aggregate Component DER to form DER Aggregation Resources, which will be the resource that participates in the PJM energy market.⁹⁰ According to PJM, DER Aggregators will be able to participate in the PJM energy market as energy-only resources, or participate in the PJM energy market in addition to,

⁸⁷ *Id.* at 34-35. The must offer requirement is based on the Component DER technology as currently described in PJM, Tariff, attach. K-app., § 1.10 (42.0.0), § 1.10.1A(d); PJM, Intra-PJM Tariffs, Operating Agreement, Schedule §1.10 (42.0.0), § 1.10.1A(d).

⁸⁸ *Id.* at 35. PJM states that Planned DER Capacity Aggregation Resources are resources that do not currently have the capability to provide generation or load reduction in PJM through Component DER within the underlying DER Aggregation Resources but are scheduled or planned to be capable of providing generation or load reduction through DER Capacity Aggregation Resources before the start of the Delivery Year.

⁸⁹ *See* Tariff, attach. K-app., § 1.4B(k), (l); Operating Agreement, Schedule 1, § 1.4B(k), (l).

⁹⁰ Transmittal at 35-36.

and in coordination with, the PJM capacity and ancillary services markets. PJM explains that DER Aggregators will need to schedule DER Aggregation Resources into the market with either a fixed MW value or with a dispatchable range because PJM will not make commitment decisions for DER Aggregation Resources.

59. PJM states that DER Aggregators participating in the energy market will be required to submit both price and cost-based offers for DER Aggregation Resources and to follow applicable cost development requirements and guidelines currently enforced in PJM.⁹¹ PJM explains that DER Aggregators wanting to reflect a nonzero cost into the PJM energy market will need to have an approved Fuel Cost Policy on file with PJM. For homogeneous DER Aggregation Resources consisting of Component DER that have the technology type documented in PJM Manual 15 (e.g., combustion turbines, battery, etc.), PJM explains that DER Aggregators should follow the documented cost development guidelines for submitting Fuel Cost Policies. PJM states that heterogeneous DER Aggregation Resources, or homogeneous DER Aggregation Resources that consist of Component DER that do not have the technology type documented in PJM Manual 15 (e.g., demand response), will have a default cost-based offer of \$0/MWh.

60. PJM explains that any DER Aggregator seeking to submit a nonzero cost-based offer would be able to use the PJM Manual 15, section 1.8 cost methodology and approval process to obtain an exception to its cost methodology calculation.⁹² PJM states that it recognizes that a \$0/MWh cost-based offer may not always accurately represent the DER Aggregation Resources' costs and encourages DER Aggregators or other PJM stakeholders to bring a problem statement to the PJM Cost Development Subcommittee to further develop cost methodology for these types of aggregations. PJM notes that after a cost methodology is developed and documented in PJM Manual 15, DER Aggregators operating these type of aggregations (heterogeneous DER Aggregation Resources, or homogeneous DER Aggregation Resources that consist of Component DER that do not have the technology type documented in PJM Manual 15) will have ways to obtain an exception to its cost methodology calculation and develop Fuel Cost Policies and submit nonzero cost-based offers to PJM.⁹³

⁹¹ *Id.* at 36.

⁹² *Id.*

⁹³ *Id.* at 36-37 & n.28.

61. In addition, PJM's proposal requires a DER Aggregator to self-schedule its DER Aggregation Resource into the day-ahead and real-time energy market based on bidding parameters for the applicable technology type, as described in PJM's Manuals.⁹⁴

(c) Ancillary Services Market Participation

62. PJM states that, under the DER Aggregation Participation Model, DER Aggregators will also be able to aggregate Component DER to form DER Aggregation Resources to participate in the PJM regulation or reserves markets, in addition to capacity and energy participation, or as "ancillary services only" resources, participating exclusively in regulation and/or reserve markets.⁹⁵ According to PJM, ancillary services-only DER Aggregation Resources will have the opportunity to aggregate Component DER that interface with multiple pricing nodes, so long as those pricing nodes are in the same state and service territory of a single electric distribution company.⁹⁶ PJM asserts that all DER Aggregation Resources will need to meet existing capacity and performance requirements for the ancillary services markets.

ii. Comments/Protests

(a) Capacity Market Participation

63. The IMM argues that PJM's proposal inappropriately exempts DER Aggregation Resources that are co-located with retail load from the capacity MSOC and MOPR.⁹⁷ The IMM notes that most DERs are likely to be co-located with retail load, and thus, under PJM's proposal, would be exempt from basic market power mitigation rules in the capacity market. The IMM contends there is no reason to exempt DER Capacity Aggregation Resources from basic market power mitigation rules in the capacity market, given the possible interactions between DER Aggregators and sellers of non-DER generation and portfolio and market power possibilities.

⁹⁴ Tariff, attach. K-app., § 1.4B(d).

⁹⁵ Transmittal at 37.

⁹⁶ Tariff, attach. K-app., § 1.4B(c).

⁹⁷ IMM Comments at 14 (citing PJM Filing, attach. B, Revisions to the PJM Open Access Transmission Tariff, Operating Agreement, and Reliability Assurance Agreement, § 1.4B(k), (l)).

64. The IMM also avers that PJM should apply the day-ahead energy market must-offer requirement to DER Aggregation Capacity Resources.⁹⁸ The IMM notes that DER Capacity Aggregation Resources could self-schedule at zero MW, in which case it has not met the must-offer requirement.

65. Resideo Technologies contends that applying the must-offer requirement to DER Aggregation Resources containing demand response would be a barrier to entry for injection resources.⁹⁹ Resideo Technologies notes that adding injection resources to a demand response aggregation would make the DER Aggregator subject to the must-offer requirement, thereby increasing risk to the aggregation without a corresponding increase in compensation.

(b) Energy Market Participation

66. The IMM supports PJM's requirement that DER Aggregation Resources submit cost-based offers, arguing that small resources should not be exempt from market power mitigation.¹⁰⁰ The IMM argues that all resources, including DER Aggregation Resources, can set prices and can have market power, particularly in local areas with limited competition, and that there is no downside to having market power mitigation rules. The IMM states that DER Aggregation Resources are fundamentally different than demand response resources.¹⁰¹

67. However, the IMM states that nonzero cost-based offers for DER Aggregation Resources will require Fuel Cost Policies, but, contrary to PJM's assertions, that is not possible under PJM Manual 15, section 1.8.¹⁰² The IMM argues that Section 1.8 cannot be used by PJM to define exceptions to Operating Agreement Schedule 2 or to define Fuel Cost Policy exceptions, as PJM proposes. Therefore, the IMM asserts that PJM

⁹⁸ *Id.* at 14-15.

⁹⁹ Resideo Technologies Protest at 11.

¹⁰⁰ IMM Comments at 12-13, 15-16.

¹⁰¹ More specifically, IMM states that the two resource types function very differently in the PJM market in that DER Aggregation Resources can inject energy into the grid while demand response resources cannot. IMM notes that energy injection requires complex reliability studies and different market rules while energy withdrawal does not, and therefore, while demand resources offer without cost justification or market power mitigation, DER Aggregation Resources must submit cost-based offers if they wish to inject energy into the grid.

¹⁰² *Id.* at 13 & n.25 (citing Transmittal at 36).

should develop clear cost-based offer rules in Schedule 2 of the Operating Agreement and PJM Manual 15 to clearly define rules for certain resource types without defined cost-based offers and some heterogeneous aggregations. In particular, the IMM argues that PJM should clarify that DER Aggregation Resources should be required to provide detailed supporting data to support their cost-based offers and that all the rules in Schedule 2 of the Operating Agreement apply to DER Aggregation Resources without exception.¹⁰³

68. In contrast to the IMM, AEMA and Resideo Technologies protest PJM's requirement that DER Aggregation Resources must submit both price and cost-based offers in the energy market, asserting that PJM has not carried its burden of showing that requiring cost-based offers for DER Aggregation Resources is just and reasonable, and arguing that default \$0/MWh cost-based offers will impose a significant barrier to participation by exposing DERs to below-cost dispatch.¹⁰⁴ AEMA argues that many DERs will be quite small and will have a negligible, if any, price impact, which undercuts PJM's presumption that they will have market power. AEMA and Resideo Technologies note that PJM Manual 15 does not include guidelines for curtailment-based resources (demand response) because these resources do not have an incentive to raise prices.¹⁰⁵

69. Protesters argue that PJM's cost-based offer rules are inappropriate to apply to DER Aggregation Resources given their characteristics. AEMA argues that the rules in PJM Manual 15 are inappropriate for homogeneous DER Aggregation Resources with Component DER located behind a load meter because the Fuel Cost Policy rules in the PJM Manual will not be adequate to account for all site impacts.¹⁰⁶ Resideo Technologies also states that PJM's proposal would require all DER providing capacity to submit a cost-based offer, even though both intermittent resources and storage resources are generally

¹⁰³ The IMM notes that supporting data will include the operating capabilities of all Component DERs, their fuel consumption, heat rate, emissions rates, emissions allowance costs, taxes, subsidies, and maintenance costs. *Id.* at 13.

¹⁰⁴ AEMA Protest at 13-14; Resideo Technologies Protest at 10-11.

¹⁰⁵ AEMA Protest at 15; Resideo Technologies Protest at 10-11.

¹⁰⁶ AEMA Protest at 14. AEMA states that curtailment of load creates costs which will not be reflected in a Fuel Cost Policy. AEMA posits that, for example, load curtailment may disrupt an industrial production process or take actions that might inconvenience customers or reduce comfort levels, actions whose costs will not be reflected in a Fuel Cost Policy. According to AEMA, such a requirement for a Fuel Cost Policy backed cost offer could force such resources to instead participate in the model which requires \$0/MWh cost-based offers, even if that means below-cost dispatch. *Id.*

categorically exempt.¹⁰⁷ AEMA and Resideo Technologies posit that, as a result, potential facilities with loads and behind-the-meter solar, or batteries, may find the threat of frequent dispatch with inadequate compensation to be a deterrent and elect not to participate.¹⁰⁸ AEMA contends that this proposal should be rejected because it is inconsistent with the Commission's directive to remove "barriers to the participation of new technologies," that "can emerge when the rules governing participation in those markets are designed for traditional resources and in effect limit the services that emerging technologies can provide - barriers that exist due to market rules being designed for traditional resources."¹⁰⁹

70. According to JCA, PJM should be required to regularly evaluate the effectiveness of its DER Aggregator Participation Model and update its filing to account for changing market conditions.¹¹⁰

iii. Answers

(a) Capacity Market Participation

71. The IMM asserts that the Commission has jurisdiction to condition participation by DER Aggregators on their obligation to be subject to rules that mitigate market power in the wholesale power market, including vertical market power.¹¹¹ The IMM states that it is not clear what market power mitigation rules will apply to DER Aggregators.

(b) Energy Market Participation

72. The IMM disagrees with AEMA's contention that DER Aggregation Resources should not be required to submit cost-based offers because small DERs will have a "negligible, if any, price impact" and because PJM Manual 15 does not include

¹⁰⁷ Resideo Technologies Protest at 11.

¹⁰⁸ AEMA Protest at 15.

¹⁰⁹ *Id.* at 2 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 2).

¹¹⁰ JCA Comments and Limited Protest at 23.

¹¹¹ IMM Second Answer at 4-5.

guidelines for demand response resources.¹¹² The IMM argues that all resources, including DER Aggregation Resources, can set prices and can have market power.¹¹³

73. In response to the IMM, AEMA argues that market power is a function of size, and given the small size of DER Aggregation Resources and the Commission's maximum size cap of five MW, it is extremely unlikely that DERs will be capable of exercising market power.¹¹⁴ AEMA further states that the cost-based offer proposal is not tailored to the new resources the Commission is considering in Order No. 2222 as many DERs will have much more diverse and distinct costs than fossil fuel generators or other more traditional resources.¹¹⁵

74. Further, AEMA argues that many market mitigation rules and documentation requirements would be barriers to entry for smaller resources because the administrative burden would be the same as for larger resources.¹¹⁶ AEMA alludes to demand response aggregations and argues that individual site owners of demand response resources, not the aggregators, typically make their own decisions regarding market participation and are not in a position to exert market power.¹¹⁷ AEMA adds that although demand response resources are concentrated in PJM, aggregators are not owners or operators of demand response resources and merely act as the interface with the RTO in executing the owners' wishes to provide services.¹¹⁸

75. In its second answer, the IMM further argues that despite the Commission's finding that market power mitigation rules are outside the scope of this proceeding, some broader market power issues remain in scope to ensure functioning competitive markets. The IMM contends that DER Aggregators, like all other market sellers, should be required to have market-based rates approved by the Commission and subject to Commission defined rules that prevent market power through market power

¹¹² IMM First Answer at 5 (citing AEMA Protest at 13-16); IMM Second Answer at 3 (citing AEMA Answer at 14-18).

¹¹³ IMM First Answer at 5. The IMM states that the PJM test for structural market power appropriately includes all sellers, without exception. IMM Second Answer at 3.

¹¹⁴ AEMA Answer at 14-18.

¹¹⁵ AEMA Answer at 19.

¹¹⁶ *Id.* at 14-15.

¹¹⁷ *Id.* at 15-16.

¹¹⁸ *Id.* at 16.

mitigation.¹¹⁹ The IMM states that AEMA appears to ignore the fact that market power is defined at the parent company level and that a small aggregator or small resource may be owned by a larger company.¹²⁰ The IMM states that it is not clear what market power mitigation rules will apply to DER Aggregators, including electric distribution company aggregators as well as independent aggregators that may have local market power, with structural market power that will participate in the wholesale markets.

iv. Data Request Response

(a) Capacity Market Participation

76. In its Data Request Response, PJM states that DER Aggregation Resources that include Component DER(s) that inject onto the grid and are co-located with retail load will not be subject to the MOPR and MSOC.¹²¹ PJM states that this proposal is consistent with PJM's existing performance requirements for participation in the capacity market because the determination for all resources co-located with retail load to not be subject to MOPR and MSOC was made in light of the current demand response rules for retail load participation. PJM states that these resources are multi-use installations, developed with a purpose to serve retail load, and will have inherent size restrictions due to site loads and distribution interconnection processes, factors which act in concert to minimize market power concerns.

(b) Energy Market Participation

77. In response to the Data Request, PJM states that the only technology type currently participating in PJM's markets that does not have cost-based energy offer rules documented in PJM Manual 15 is demand response.¹²² PJM states that homogeneous

¹¹⁹ IMM Second Answer at 3 (discussing *Market-Based Rates for Wholesale Sales of Electric Energy, Capacity and Ancillary Services by Public Utilities*, Order No. 697, 119 FERC ¶ 61,295, *clarified*, 121 FERC ¶ 61,260 (2007), *order on reh'g*, Order No. 697-A, 123 FERC ¶ 61,055, *clarified*, 124 FERC ¶ 61,055, *order on reh'g*, Order No. 697-B, 125 FERC ¶ 61,326 (2008), *order on reh'g*, Order No. 697-C, 127 FERC ¶ 61,284 (2009), *order on reh'g*, Order No. 697-D, 130 FERC ¶ 61,206 (2010), *aff'd sub nom. Mont. Consumer Counsel v. FERC*, 659 F.3d 910 (9th Cir. 2011), *cert. denied*, 133 S. Ct. 26 (2012), *cert. denied sub nom. Pub. Citizen, Inc. v. FERC*, 567 U.S. 934 (2012)).

¹²⁰ *Id.* at 4-5.

¹²¹ Data Request Response at 11-12.

¹²² *Id.* at 10. PJM states that PJM Manual 15 currently addresses the following technology types: nuclear, fossil steam, combined cycle, combustion turbine, diesel engines, hydro, wind units, solar units, batteries, and flywheels. PJM, *PJM Manual 15*:

technologies not addressed in PJM Manual 15 and heterogeneous aggregations may submit a proposed cost-offer methodology at any time using PJM Manual 15, section 1.8. PJM avers that DER Aggregations containing technology types that have a default cost-based offer of \$0/MWh are not disadvantaged because they have the option to submit a cost offer methodology through PJM Manual 15, section 1.8. PJM notes these resources would only be impacted if they are committed on their cost-based offer.

78. PJM describes the process by which a DER Aggregation Resource that includes technology types that submit a \$0/MWh default cost-based offer could utilize PJM's Manual 15, section 1.8 cost methodology and approval process to obtain an exception to its cost methodology calculation.¹²³ PJM states that a Market Seller can submit a proposed method for estimating their proposed cost calculation in an email to PJM and the IMM. PJM will determine if the proposed method is compliant with PJM Manual 15 and Operating Agreement Schedule 2 and provide a determination to the Market Seller within 30 days of receiving its request. PJM also notes that a DER Aggregator can bring a problem statement to the Cost Development Subcommittee at any time. PJM explains that, if a DER Aggregator proposes a method that is approved by the Cost Development Subcommittee, PJM would update PJM Manual 15 to include this methodology at the next biennial review.

(c) Ancillary Services Market Participation

79. With respect to the ability of DER Aggregation Resources to provide ancillary services, PJM notes that the proposed definition of "DER Aggregation Resource" includes language that indicates the ability to provide ancillary services. PJM states that "if a DER Aggregation Resource contains Component DER that are physically and operationally capable of providing ancillary services, the market participation of the DER Aggregation Resource may include the provision of ancillary services."¹²⁴ PJM states that unit-specific references for the provision of ancillary services are not contained in the Tariff, Operating Agreement, or RAA due to the fact that all resources are required to provide the same service and comply with the same performance requirements, irrespective of resource type. PJM explains that all Component DER in a DER

Cost Development Guidelines (rev. 40, Oct. 28, 2022),
<https://www.pjm.com/~media/documents/manuals/m15.ashx>.

¹²³ Data Request Response at 11.

¹²⁴ *Id.* at 16.

Aggregation Resource do not need to be qualified to provide ancillary services in order for the DER Aggregation Resource to be capable of providing ancillary services.¹²⁵

v. Data Request Response Comments/Protests

80. According to Maryland OPC & DC OPC, PJM should adopt an obligation to regularly evaluate, on a systematic basis, the effectiveness of its DER Aggregator Participation Model.¹²⁶

81. The IMM disagrees with PJM's claims that the exemption from the MSOC for DER Aggregation Resources that include injecting DERs that are co-located with retail load is not a concern.¹²⁷ The IMM argues that the absence of consistently applied market power mitigation rules creates the potential for the exercise of market power and noncompetitive market outcomes. The IMM also states this is inconsistent with PJM's proposal to require cost-based offers in the energy market because PJM recognizes that these resources are capable of injecting energy into the grid, unlike demand response resources. The IMM argues that PJM does not provide any arguments to explain why DER Capacity Aggregation Resources with injecting DERs that are co-located with load are treated differently in the energy market than in the capacity market for purposes of market power mitigation.

vi. Commission Determination

82. We find that PJM's proposal partially complies with the participation eligibility requirements of Order No. 2222. As an initial matter, we find that PJM has complied with the requirement of Order No. 2222 that RTOs/ISOs establish distributed energy resource aggregators as a type of market participant.¹²⁸ We address the remaining compliance requirements and comments and protests below.

83. We find that PJM partially complies with the requirement to allow distributed energy resource aggregators to register distributed energy resource aggregations under one or more participation models in PJM's tariff that accommodate the physical and

¹²⁵ *Id.* at 17 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 142).

¹²⁶ Maryland OPC & DC OPC Data Request Response Comments at 4. *See also* JCA Comments and Limited Protest at 2-3, 23.

¹²⁷ IMM Data Request Response Comments at 4.

¹²⁸ Order No. 2222, 172 FERC ¶ 61,247 at P 130. *See* Transmittal at 5; Tariff, Definitions A-B.

operational characteristics of the distributed energy resource aggregation.¹²⁹ Order No. 2222 gave each RTO/ISO the flexibility to modify its existing participation models to facilitate the participation of distributed energy resource aggregations and/or to establish new participation models, so long as each RTO's/ISO's proposal allows distributed energy resources to provide all services that they are technically capable of providing through aggregation.¹³⁰ With two exceptions discussed below, we find that PJM's DER Aggregator Participation Model satisfies this requirement.

84. We reject JCA's request to require PJM to regularly evaluate the effectiveness of its DER Aggregator Participation Model and update its filing to account for changing market conditions. The Commission in Order No. 2222 did not require RTOs/ISOs to evaluate the effectiveness of their participation models over time.

85. We also disagree with the IMM that PJM's filing fails to address how DER Aggregation Resources that self-schedule will satisfy the day-ahead energy market must-offer requirement. PJM's tariff specifies when DER Aggregation Resources may self-schedule and the associated requirements, applicable to the technology-type of the aggregation.¹³¹ Further, PJM explains that DER Capacity Aggregation Resources that have a capacity commitment in PJM will be subject to the must-offer requirement, based on the Component DER technology as currently described in Tariff, Attachment K-Appendix, section 1.10.1A(d) and Operating Agreement, Schedule 1, section 1.10.1A(d).¹³²

86. With regard to capacity market participation, we find that, with one exception, PJM's proposed tariff revisions relating to capacity market power mitigation of DER Capacity Aggregation Resources comply with Order No. 2222 given that they are necessary "tariff provisions that allow distributed energy resource aggregations to participate directly in RTO/ISO markets."¹³³ With respect to all types of DER Aggregation Resources, except those co-located with retail end-use load, PJM proposes to apply its existing performance requirements to DER Capacity Aggregation Resources for participation in the capacity market, consistent with Order No. 2222. At the same

¹²⁹ Order No. 2222, 172 FERC ¶ 61,247 at P 130.

¹³⁰ *Id.* See also *Cal. Indep. Sys. Operator Corp.*, 179 FERC ¶ 61,197, at P 48 (2022) (CAISO Compliance Order); *N.Y. Indep. Sys. Operator, Inc.*, 179 FERC ¶ 61,198, at P 89 (2022) (NYISO Compliance Order).

¹³¹ See Tariff, attach. K-app., § 1.4B(d); Operating Agreement, Schedule 1, § 1.4B(d).

¹³² Transmittal at 34.

¹³³ Order No. 2222, 172 FERC ¶ 61,247 at P 129.

time, Order No. 2222 stated that “distributed energy resource aggregations must be able to meet the qualification and performance requirements to provide the service that they are offering into RTO/ISO markets.”¹³⁴ We find that comments and protests asserting that PJM should change these existing capacity market requirements as they apply to DER Aggregation Capacity Resources are outside the scope of this proceeding, consistent with the Commission’s finding in Order No. 2222 that revisions to existing capacity market mitigation rules are outside the scope of the rule.¹³⁵

87. However, we find that PJM’s proposed tariff revisions relating to capacity market power mitigation of DER Capacity Aggregation Resources containing Component DER directly connected to distribution facilities co-located with retail end-use load do not comply with Order No. 2222 because they constitute reforms to PJM’s capacity market mitigation rules, which are outside the scope of this proceeding, as discussed above.¹³⁶ Under PJM’s existing capacity market mitigation rules, resources are subject to the MOPR and MSOC based on their resource type.¹³⁷ However, PJM proposes to revise its existing capacity market power mitigation rules as applied to such DER Capacity Aggregation Resources by categorically exempting them from mitigation if any of the constituent Component DER in the aggregation are co-located with retail end-use load, rather than applying PJM’s existing capacity market mitigation rules to them based on the resource types in the aggregation.¹³⁸ Therefore, we reject PJM’s proposed capacity

¹³⁴ *Id.* P 117. *See also* NYISO Compliance Order, 179 FERC ¶ 61,198 at P 112.

¹³⁵ Order No. 2222, 172 FERC ¶ 61,247 at PP 362-363 (explaining that “[t]he NOPR did not propose reforms related to” capacity market mitigation policies); *see also* NYISO Compliance Order, 179 FERC ¶ 61,198 at P 94 (finding protesters’ arguments outside the scope of the proceeding, reasoning that “Order No. 2222 neither addressed buyer-side market power mitigation rules nor required RTOs/ISOs to revise those rules for distributed energy resource aggregations.”).

¹³⁶ *See supra* note 135.

¹³⁷ *See* Tariff, PJM, Tariff, attach. DD, § 5.14 (33.0.0), § 5.14(h-2); PJM, Tariff, attach. DD, § 6.6A (1.0.0); PJM, Tariff, attach. M-app. (23.0.0), §II.E.

¹³⁸ Proposed Tariff sections 1.4B(k) and 1.4B(l) provide that DER Capacity Aggregation Resources containing Component DER directly connected to distribution facilities *not* co-located with retail end-use load other than Station Power may be subject to a MOPR Floor Offer Price and a Market Seller Offer Cap, respectively. However, as PJM explains in the Data Request Response, these provisions effectuate an exemption from the Minimum Offer Price Rule and Market Seller Offer Cap for DER Aggregation Resources that include Component DER that inject onto the grid and *are co-located* with retail load. Data Request Response at 11 (“DER Aggregation Resources that include

market power mitigation rules for such DER Capacity Aggregation Resources. Accordingly, we direct PJM to file, within 30 days of the date of issuance of this order, a further compliance filing that removes its proposed tariff language that exempts DER Capacity Aggregation Resources containing Component DER directly connected to distribution facilities co-located with retail end-use load from capacity market power mitigation rules. However, given that capacity market power mitigation rules are necessary to allow DER Capacity Aggregation Resources to participate directly in PJM's markets,¹³⁹ we also require PJM, as part of its compliance filing, to revise its tariff to apply its existing capacity market mitigation rules to DER Capacity Aggregation Resources based on the composition of the DER Capacity Aggregation Resource and consistent with such requirements applied to all resources in PJM.¹⁴⁰

88. The Commission's focus in this proceeding is compliance with the requirements of Order No. 2222. Our rejection of PJM's proposed tariff language here does not preclude PJM from making a filing pursuant to section 205 of the FPA to modify the market power mitigation rules to be applied to DER Capacity Aggregation Resources.

89. With respect to energy market participation, we find that PJM's proposal to apply both the cost-based offer requirement and the must-offer requirement to DER Aggregation Resources as part of its DER Aggregator Participation Model is compliant with Order No. 2222. The requirement to submit a cost-based offer is an existing performance requirement that resources must meet to be eligible to participate in PJM's energy market. Similarly, the requirement to comply with the must-offer requirement is an existing performance requirement that resources must meet to be eligible to participate in PJM's capacity market. Order No. 2222 explained that "distributed energy resource aggregations must be able to meet the qualification and performance requirements to provide the service that they are offering into RTO/ISO markets."¹⁴¹

90. More specifically, with respect to the cost-based offer requirement, we find that PJM's proposal merely applies its existing cost-based offer requirements to homogeneous and heterogeneous DER Aggregation Resources,¹⁴² which results in a default cost-based

Component DER[] that inject onto the grid and are co-located with retail load will not be subject to the Minimum Offer Price Rule and Market Seller Offer Cap.").

¹³⁹ See *supra* note 133 and accompanying text.

¹⁴⁰ Tariff, attach. K-app., § 1.4B(k); Operating Agreement, Schedule 1, § 1.4B(k).

¹⁴¹ Order No. 2222, 172 FERC ¶ 61,247 at 117. See also NYISO Compliance Order, 179 FERC ¶ 61,198 at P 112.

¹⁴² Operating Agreement, Schedule 1, § 1.10.

offer of \$0/MWh for any resource type outside of the technology types listed in PJM Manual 15. Consistent with those existing requirements, heterogeneous DER Aggregation Resources outside of the technology types listed in PJM Manual 15 would have a default cost-based offer of \$0/MWh.

91. We also note that the existing Fuel Cost Policy requirement in Operating Agreement Schedule 2, which incorporates by reference PJM Manual 15, applies equally to all Market Sellers, including DER Aggregators, irrespective of technology type.¹⁴³ Therefore, we disagree with AEMA and Resideo Technologies that PJM should be required to revise its market rules with respect to cost-based offers for homogeneous DER Aggregation Resources, or with respect to the must-offer requirements for DER Aggregation Resources, respectively. As stated above, Order No. 2222 explained that distributed energy resource aggregations must be able to meet the qualification and performance requirements to provide the service that they are offering into RTO/ISO markets.¹⁴⁴ The concerns raised in AEMA's protest, namely the potential for below cost dispatch, are ameliorated by the fact that any DER Aggregator can obtain an exception to submit a nonzero cost-based offer. As noted above, PJM permits homogeneous technologies not addressed in PJM Manual 15 to submit a proposed cost-offer methodology at any time using the process described in PJM Manual 15, section 1.8.¹⁴⁵

92. We also disagree with the IMM's argument that it is inappropriate for Market Sellers to use the process in PJM Manual 15, section 1.8 to define exceptions to Operating Agreement Schedule 2 or to define a Fuel Cost Policy exception. PJM Manual 15 establishes the ability of any Market Seller to request approval of a cost or methodology set forth in that Manual.¹⁴⁶ PJM explains in its Data Request Response that PJM will then determine if such a request is compliant with PJM Manual 15 and Operating Agreement Schedule 2 and provide a response to the Market Seller within

¹⁴³ PJM, Intra-PJM Tariffs, Operating Agreement, Schedule 2 (4.0.0), § 2.2.

¹⁴⁴ Order No. 2222, 172 FERC ¶ 61,247 at P 117.

¹⁴⁵ See Data Request Response at 11.

¹⁴⁶ PJM, *PJM Manual 15: Cost Development Guidelines*, (Oct. 28, 2022) <https://www.pjm.com/-/media/documents/manuals/m15.ashx>. Section 1.8 Cost Methodology and Approval Process states: "A Market Seller which seeks to obtain an exemption, exception or change to any time frame, process, methodology, calculation or policy set forth in this Manual, or the approval of any cost or methodology that is not specifically permitted by this Manual not related to the Fuel Cost Policy, shall submit a request to PJM and MMU for consideration and determination along with documentation supporting the request."

30 days.¹⁴⁷ According to PJM, PJM and the IMM will bring a Problem Statement to the Cost Development Subcommittee to define a cost development methodology once there is sufficient information regarding the applicable technologies and related costs - an opportunity available to DER Aggregators at any time. We therefore agree with PJM that any resource seeking to develop a nonzero cost-based offer could use this process to do so.

b. Types of Technologies

93. To implement section 35.28(g)(12)(ii)(a) of the Commission's regulations, the Commission required that each RTO's/ISO's rules not prohibit any particular type of distributed energy resource technology from participating in distributed energy resource aggregations.¹⁴⁸ In addition, to implement section 35.28(g)(12)(ii)(a) of the Commission's regulations, the Commission required each RTO/ISO to revise its tariff to allow different types of distributed energy resource technologies to participate in a single distributed energy resource aggregation (i.e., allow heterogeneous distributed energy resource aggregations).¹⁴⁹ The Commission explained that requiring that RTOs/ISOs allow heterogeneous aggregations will further enhance competition in RTO/ISO markets by ensuring that complementary resources, including those with different physical and operational characteristics, can meet qualification and performance requirements such as minimum run times, which will help ensure that RTO/ISO markets produce just and reasonable rates.¹⁵⁰

94. With respect to the participation of demand response resources in distributed energy resource aggregations, the Commission stated that the benefits of allowing heterogeneous aggregations outweigh commenters' preferences to limit the types of resources that can participate in aggregations.¹⁵¹ The Commission stated that the requirements in Order No. 745 would apply to demand response resources participating in heterogeneous aggregations.¹⁵²

¹⁴⁷ Data Request Response at 10-11.

¹⁴⁸ Order No. 2222, 172 FERC ¶ 61,247 at P 141.

¹⁴⁹ *Id.* P 142.

¹⁵⁰ *Id.*

¹⁵¹ *Id.* P 145; *see also* Order No. 2222-A, 174 FERC ¶ 61,197 at P 54.

¹⁵² Order No. 2222, 172 FERC ¶ 61,247 at P 145.

95. In Order No. 2222-B, the Commission stated that only those reductions that meet the definition of demand response in the Commission's regulations and are used to reduce customer load from a validly established baseline pursuant to Order Nos. 745 and 745-A must be compensated consistent with those orders.¹⁵³ In addition, the Commission clarified that, if an individual distributed energy resource is a behind-the-meter generator, it may participate within a distributed energy resource aggregation as a demand response resource or as a different type of distributed energy resource.¹⁵⁴ The Commission stated that, if the distributed energy resource participates as demand response, the requirements in Order No. 745 would apply, and the RTOs/ISOs are required to allow that distributed energy resource to aggregate with other types of distributed energy resources in a heterogeneous distributed energy resource aggregation. The Commission stated that, if the behind-the-meter resource participates as another type of distributed energy resource (i.e., not as a demand response resource), the requirements in Order No. 745 would not apply.

i. Filing

96. PJM states that, to comply with these directives, it has proposed the definition of Component DER to be technology neutral.¹⁵⁵ Further, PJM explains that the DER Aggregator Participation Model is structurally designed to account for the physical and operational characteristics of the DER Aggregation Resource through the identification of the underlying capabilities of the Component DER in the registration process, and through the definition of DER Aggregation Resource. PJM highlights that the definition of DER Aggregation Resource specifically notes that “[t]he market participation eligibility of a DER Aggregation Resource shall be determined in accordance with the physical and operational characteristics of the underlying Component DER that comprise the DER Aggregation Resource,” and also that a DER Aggregation Resource “shall be comprised of one or more Component DER,” thereby ensuring the accommodation of heterogeneous DER Aggregation Resources in PJM. PJM states that resources may continue to participate in PJM's energy, capacity, and ancillary services markets via existing participation models, including the demand response, energy storage resource, or generator models, so long as those resources meet the associated requirements and criteria.

¹⁵³ Order No. 2222-B, 175 FERC ¶ 61,227 at P 42.

¹⁵⁴ *Id.* P 44.

¹⁵⁵ Transmittal at 37-38. *See supra* note 10 for definition of Component DER.

ii. Comments/Protests

97. Several parties argue that PJM's filing lacks a viable participation option for behind-the-meter DERs that can both reduce demand and inject energy to the grid through "continuous" participation.¹⁵⁶ AEE and SEIA note that single resources capable of both injecting energy to the grid and curtailing load must participate under separate participation models in PJM—demand response and generation—and that PJM's existing demand response programs do not give demand response customers credit for injections onto the grid.¹⁵⁷ Commenters argue that this violates Order No. 2222 and creates an insurmountable barrier to entry for certain types of resources, such as fleets of electric school buses and other transit vehicles, energy storage, and electric vehicle supply equipment.¹⁵⁸ AEMA asserts that PJM's approach would undercompensate DER Aggregation Resources for injections and strand thousands of MW of Component DER across PJM if these resources are unable to fully reflect their abilities to reduce load and inject energy, whereas ISO-NE and NYISO appropriately compensate for the facilities' total capacity.¹⁵⁹

98. The IMM contends the tariff should clearly define a distinct set of rules for resources that can both inject energy and reduce load. According to the IMM, for a continuous DER to receive payment for load reduction, it must have "the ability to reduce a measurable and verifiable portion of its load, as metered on an electric distribution company account basis."¹⁶⁰ The IMM avers that if the continuous DER cannot verify its load reduction portion accurately, it should not be eligible for demand response

¹⁵⁶ AEE and SEIA Protest at 11-12; AEMA Protest at 25; City of Cincinnati Comments at 2. These parties refer to continuous participation as a resource's ability to instantaneously switch between load reduction and injection of energy.

¹⁵⁷ AEE and SEIA Protest at 11-12.

¹⁵⁸ *Id.* (citing Order No. 2222, 172 FERC ¶ 61,247 at PP 23-24); City of Cincinnati Comments at 2.

¹⁵⁹ AEMA states that PJM's stakeholder presentations indicate that PJM's preliminary plan is to compensate injecting resources only to the extent the injections are above the maximum load of the facility. *See* AEMA Protest at 24 (citing PJM Staff, DIRS, Order 2222 Design Full Proposal, at slide 123 (Nov. 2021), <https://www.pjm.com/-/media/committees-groups/subcommittees/dirs/2021/20211122/20211122-item-06-updated-pjm-dera-proposal.ashx>).

¹⁶⁰ IMM Comments at 16 (citing PJM, Intra-PJM Tariffs, Operating Agreement, Schedule 1 § 8.2 (4.0.0)).

compensation. The IMM explains that, for example, when calculating the customer baseline, the continuous DER must be able to provide an accurate normal energy usage profile which includes the normal operation of generation. The IMM asserts that the Net Benefits Test should not be applied since the continuous DER is not demand response, and this should be clearly stated in the tariff. The IMM states that to avoid double compensation, the tariff should also ensure that the total compensated MW for load reductions and energy injections from the continuous DER does not exceed the lesser of the economic maximum output limit of the generator or the actual generation output.

99. AEMA contends that the filing's lack of detail regarding compensation for energy for behind-the-meter resources that inject additional electricity into the grid violates the Commission's rule of reason policy as this performance will significantly affect the terms and conditions of the participation of DER Aggregation Resources.¹⁶¹ AEMA requests that the Commission direct PJM to propose tariff revisions that detail how PJM will compensate customers for injection and provides a pathway for customers to receive credit for all injection capabilities.

iii. Answers

100. PJM disagrees with commenters' assertions that the DER Aggregation Participation Model does not allow for all forms of configurations or resources, including "continuous" business models consisting of demand and injection resources.¹⁶² PJM asserts that a single DER Aggregation Resource can reflect both demand capability and injection capability, including reflecting both attributes at a single Component DER site. PJM avers that its definitions of DER Aggregation Resource and Component DER explicitly permit this. PJM also explains that the only separation of capability from the demand side and injection side in a DER Aggregation Resource is in the *settlement* of these resources, whereby PJM will settle demand activities under Order No. 745 business rules, as directed by the Commission.¹⁶³ PJM explains that DER Aggregation Resources will be able to simultaneously offer demand reduction and injection capability into the PJM market under the DER Aggregator Participation Model with the following approach: (1) all reduction MW capability in the capacity market will be evaluated against a site's Peak Load Contribution (PLC); and all reduction MW capability in the energy market will be evaluated against the Customer Baseline Load (CBL); and (2) all injection MW capability in the capacity market will be evaluated against a site's PLC based on the

¹⁶¹ AEMA Protest at 24 -26 (citing *Energy Storage Ass'n v. PJM Interconnection, L.L.C.*, 162 FERC ¶ 61,296, at P 103 (2018)); AEE and SEIA Protest at 13 (citing *ISO New England, Inc.*, 154 FERC ¶ 61,008, at P 32 (2016)).

¹⁶² PJM Answer at 20 (citing AEE and SEIA Protest at 11-13).

¹⁶³ *Id.* at 21 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 145).

characteristics of a customer's load, and all injection MW capability in the energy market will be evaluated against real-time injections.¹⁶⁴

iv. Data Request Response

101. In response to the Data Request, PJM states it will apply the requirements in Order No. 745 to demand response resources participating in PJM's energy market as part of heterogeneous aggregations and will separate the demand response resources within the aggregation to uphold Order No. 745 requirements. According to PJM, the demand response resources in a DER Aggregation Resource will be subject to the Net Benefits Threshold, which will be performed at the DER Aggregation Resource pricing point.¹⁶⁵

102. PJM also explains that it revised its Tariff sections 3.3A.5 and 3.3A.6 because demand resources that are part of a DER Aggregation Resource are not subject to make-whole credits (as a demand response resource operating in the demand response model would potentially be).¹⁶⁶ According to PJM, demand response operating within a DER Aggregation Resource, either of the homogeneous or heterogeneous type, will not be subject to make-whole credits, as defined in Tariff sections 3.3A.5 and 3.3A.6, because the resources in a DER Aggregation Resource are operating under the self-commit model, which is defined for the DER Aggregator Participation Model. PJM explains that the demand response resources will be assessed in aggregate, not individually, in the DER Aggregation Resource, for any potential deviation charges or credits, under the applicable DER Aggregation Resource business rules.

103. PJM states that in accordance with the Commission's explicit clarification in Order No. 2222, DER Aggregation Resources may consist of homogeneous demand response resources, and accordingly, not all DER Aggregation Resources must be able to inject.¹⁶⁷ PJM indicates that it does not propose new tariff provisions for treatment of DER Aggregation Resources that can both inject and curtail demand, including at a single Component DER site. PJM states that this is captured by the explicit cross-reference to tariff provisions related to compensation and settlement of economic load participants in the energy market.¹⁶⁸ PJM states that it is not proposing repetition of this approach in its

¹⁶⁴ *Id.* at 22.

¹⁶⁵ Data Request Response at 18 (citing PJM Manual 11, section 10.3.4).

¹⁶⁶ *Id.* at 18-19.

¹⁶⁷ *Id.* at 19 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 118).

¹⁶⁸ *Id.* at 8. See Tariff, attach. K-app., § 1.4B(n); Operating Agreement, Schedule 1, § 1.4B(n) ("A DER Aggregator's DER Aggregation Resource that contains Component DER that are also load reduction resources shall be accounted for and settled

governing documents, but instead proposes to record these resource-specific details in its manuals.

v. Commission Determination

104. We find that PJM's proposal partially complies with Order No. 2222 with respect to types of technologies. As an initial matter, we find that PJM has complied with the following requirements of Order No. 2222 pertaining to types of technologies that require RTOs/ISOs to: (1) not prohibit any particular type of distributed energy resource technology from participating in distributed energy resource aggregations;¹⁶⁹ and (2) apply the requirements of Order No. 745 to demand response resources participating in heterogeneous aggregations.¹⁷⁰ We address the remaining compliance requirements and comments and protests below.

105. We find that PJM partially complies with the requirement to allow heterogeneous aggregations. Consistent with Order No. 2222, PJM's DER Aggregator Participation Model allows both injecting and demand-curtailling resources to aggregate and participate in PJM's markets as a single DER Aggregation Resource.¹⁷¹ We disagree with parties that argue that PJM's filing lacks a viable participation option for behind-the-meter DERs that can both reduce demand and inject energy into the grid. As PJM states, the DER Aggregation Participation Model allows for all forms of configurations of resources, including those consisting of demand and injection resources, to participate in a heterogeneous DER Aggregation Resource and be compensated for their market activities. We believe that PJM's explanation regarding the ability of DER Aggregation Resources to simultaneously offer demand reduction and injection capability¹⁷² should ameliorate the concerns raised by protesters regarding potential barriers to the participation of heterogeneous DER Aggregation Resources containing both injecting and curtailling Component DER.

in accordance with [PJM] Tariff, Attachment K-Appendix, section 3.3A and Operating Agreement, Schedule 1, section 3.3A.”).

¹⁶⁹ Order No. 2222, 172 FERC ¶ 61,247 at P 141. *See* Transmittal at 38; PJM, Tariff, Definitions, C-D (35.0.0) (“Component DER”).

¹⁷⁰ Order No. 2222, 172 FERC ¶ 61,247 at P 145; Order No. 2222-B, 175 FERC ¶ 61,227 at P 43 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 145). *See* Data Request Response at 18; PJM Manual 11, section 10.3.4.

¹⁷¹ Transmittal at 15.

¹⁷² *See* PJM Answer at 22.

106. However, we agree with parties that PJM's proposal lacks the necessary detail regarding the participation of heterogeneous DER Aggregation Resources. While PJM has demonstrated that its DER Aggregator Participation Model will permit curtailing and injecting Component DER to participate in a heterogeneous aggregation and will compensate them for load reduction and provision of energy in both the energy and capacity markets, PJM's proposal does not include these market rules in the tariff. Proposed section 1.4B(n), which discusses how PJM will account for and settle heterogeneous DER Aggregation Resources, includes only a reference to the section of the tariff that governs the compensation and settlement of economic load participants, i.e., demand response.¹⁷³ We find that this reference is insufficient to comply with the requirement of Order No. 2222 that each RTO/ISO *revise its tariff* to allow heterogeneous aggregations. The provisions referenced do not specify how PJM will account for and settle the energy injecting portion of a heterogeneous DER Aggregation Resource, or how PJM would distinguish the injection and curtailment capability in a heterogeneous DER Aggregation Resource for the purpose of energy market participation. Accordingly, we direct PJM to file, within 60 days of the date of this order, a further compliance filing that specifies market rules in its tariff regarding compensation and settlement of DER Aggregation Resources with both injecting and curtailment capability, including those that can reflect both attributes at a single Component DER site.¹⁷⁴

c. Double Counting of Services

107. To implement section 35.28(g)(12)(ii)(a) of the Commission's regulations, the Commission in Order No. 2222 allowed RTOs/ISOs to limit the participation of resources in RTO/ISO markets through a distributed energy resource aggregator that are receiving compensation for the same services as part of another program.¹⁷⁵ More specifically, the Commission required each RTO/ISO to revise its tariff to: (1) allow distributed energy resources that participate in one or more retail programs to participate in its wholesale markets; (2) allow distributed energy resources to provide multiple wholesale services; and (3) include any appropriate restrictions on the distributed energy resources' participation in RTO/ISO markets through distributed energy resource

¹⁷³ See Tariff, attach. K-app., § 1.4B(n); Operating Agreement, Schedule 1, § 1.4B(n).

¹⁷⁴ Order No. 2222, 172 FERC ¶ 61,247 at P 142.

¹⁷⁵ *Id.* at P 160.

aggregations, if narrowly designed to avoid counting more than once the services provided by distributed energy resources in RTO/ISO markets.¹⁷⁶

108. The Commission in Order No. 2222 found that it is appropriate for RTOs/ISOs to place narrowly designed restrictions on the RTO/ISO market participation of distributed energy resources through aggregations, if necessary to prevent double counting of services.¹⁷⁷ Thus, the Commission found that it is appropriate for RTOs/ISOs to place restrictions on the RTO/ISO market participation of distributed energy resources through aggregations after determining whether a distributed energy resource that is proposing to participate in a distributed energy resource aggregation is (1) registered to provide the same services either individually or as part of another RTO/ISO market participant,¹⁷⁸ or (2) included in a retail program to reduce a utility's or other load serving entity's obligations to purchase services from the RTO/ISO market.¹⁷⁹ The Commission provided RTOs/ISOs with regional flexibility with respect to the restrictions that they propose in their tariffs to minimize market impacts caused by the double counting of services provided by distributed energy resources in RTO/ISO markets.¹⁸⁰

109. In Order No. 2222-A, the Commission clarified that, when the Commission stated that "if a distributed energy resource is offered into an RTO/ISO market and is not added back to a utility's or other load serving entity's load profile, then that resource will be double counted as both load reduction and a supply resource," the Commission was indicating that, for planning purposes, double counting of services would occur if the same distributed energy resource reduces the amount of a service that an RTO/ISO

¹⁷⁶ *Id.*

¹⁷⁷ *Id.* P 161. For instance, the Commission explained that if a distributed energy resource is offered into an RTO/ISO market and is not added back to a utility's or other load serving entity's load profile, then that resource will be double counted as both load reduction and a supply resource. Also, the Commission stated that, if a distributed energy resource is registered to provide the same service twice in an RTO/ISO market (e.g., as part of multiple distributed energy resource aggregations, as part of a distributed energy resource aggregation and a standalone demand response resource, and/or a standalone distributed energy resource), then that resource would also be double counted and double compensated if it clears the market as part of both market participants. *Id.*

¹⁷⁸ For example, as part of another distributed energy resource aggregation, a demand response resource, and/or a standalone distributed energy resource. *Id.* P 161 n.414.

¹⁷⁹ *Id.* P 161.

¹⁸⁰ *Id.* P 164.

procures on a forward-looking basis in a certain time period while also acting as a provider of that same service in that same delivery period.¹⁸¹ Further, the Commission clarified that, to the extent that an RTO/ISO already has restrictions in place to avoid double counting of services, it is not required to propose new restrictions but rather must explain on compliance how these existing restrictions prevent double counting.¹⁸² Such restrictions would only be appropriate “if necessary to prevent double counting of services,”¹⁸³ and each RTO/ISO must otherwise “allow distributed energy resources that participate in one or more retail programs to participate in its wholesale markets.”¹⁸⁴

110. In Order No. 2222-B, the Commission clarified that payment of full locational marginal price (LMP) in the energy market to behind-the-meter distributed energy resources participating as demand response resources in distributed energy resource aggregations does not constitute double counting, so long as the requirements of Order No. 745, including the net benefits test, are satisfied.¹⁸⁵

i. Filing

111. PJM states that its proposed Tariff and Operating Agreement revisions provide that a DER Aggregator may participate in wholesale markets through the DER Aggregator Participation Model using DER Aggregations that contain Component DER that also participate in one or more retail programs.¹⁸⁶ PJM asserts that the Office of Interconnection shall only credit the DER Aggregator for its sale in a wholesale market if that same product is not also credited as part of a retail program, including net energy metering retail programs. PJM states that it will properly account for the different services provided by Component DER through the registration process, verifying applicable retail activities and restricting wholesale participation where needed to avoid compensating Component DER twice for the same product. PJM explains that because of its broad footprint, it is not proposing to identify every specific retail program in its Tariff or Operating Agreement, but will instead evaluate additional retail programs as

¹⁸¹ Order No. 2222-A, 174 FERC ¶ 61,197 at P 63 (quoting Order No. 2222, 172 FERC ¶ 61,247 at P 161).

¹⁸² *Id.* P 64 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 161).

¹⁸³ *Id.* (quoting Order No. 2222, 172 FERC ¶ 61,247 at P 161).

¹⁸⁴ *Id.* (quoting Order No. 2222, 172 FERC ¶ 61,247 at P 160).

¹⁸⁵ Order No. 2222-B, 175 FERC ¶ 61,227 at P 43.

¹⁸⁶ Transmittal at 8-9, 39-40 (citing Tariff, attach. K-app., § 1.4B(h); Operating Agreement, Schedule 1, § 1.4B(h)).

they evolve and provide details in the PJM Manuals, including any appropriate restrictions on the participation of Component DER in PJM markets through DER Aggregation Resources.

112. With respect to net energy metering, PJM's proposed Tariff and Operating Agreement language also provides that Component DER that participate in a net energy metering retail program may only participate with grid injections in the PJM ancillary services markets, and may not participate in the energy and capacity markets unless: (1) the electric distribution company confirms to the Office of Interconnection that participation of the resource will not violate the restrictions on duplicative compensation; and (2) the Office of Interconnection determines that the participation of the resource otherwise meets the requirements for energy or capacity market participation.¹⁸⁷ This provision, as discussed in the record and in this order, is referred to as the "release valve." PJM asserts that under its proposal, it is possible for net energy metering retail programs to be designed in a manner that would allow participation in capacity and energy markets without triggering double compensation concerns.

ii. Comments/Protests

113. Several parties argue that PJM's proposal does not comply with the double counting requirements of Order No. 2222.¹⁸⁸ Specifically, AEMA, AEE and SEIA, and Resideo Technologies state that PJM's proposal is unnecessarily broad and would bar DER participation even when there is no demonstrated double counting of services.¹⁸⁹ AEE and SEIA aver that PJM's broad restriction will lead to lower levels of DER deployment and result in the loss of visibility to PJM and the loss of reliability and market efficiency benefits of these resources, in direct conflict with the goals of Order No. 2222.¹⁹⁰ AEE and SEIA state that PJM's revisions will result in continued barriers to participation of aggregations for a wide swath of DERs, including the vast majority of residential and commercial DERs that may have a component asset participating in popular and widely available programs such as net energy metering.¹⁹¹

¹⁸⁷ *Id.* at 41-42 (citing Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b)).

¹⁸⁸ AEMA Protest at 2; AEE and SEIA Protest at 13; City of Cincinnati Comments at 1; Environmental Organizations Protest at 10; Resideo Technologies Protest at 11-12.

¹⁸⁹ AEMA Protest at 2; AEE and SEIA Protest at 13; Resideo Technologies Protest at 11-12.

¹⁹⁰ AEE and SEIA Protest at 14-15.

¹⁹¹ *Id.* at 13. AEE and SEIA state that PJM estimates approximately 7,000 MW of

114. Several parties protest PJM's double counting provisions related to net energy metering (i.e., PJM's release valve specified in Tariff, Attachment K-Appendix, section 1.4B(b) and Operating Agreement, Schedule 1, section 1.4B(b)).¹⁹² Some parties state that net energy metering retail tariffs do not compensate for capacity, so PJM's release valve is not "narrowly designed," as required by Order No. 2222.¹⁹³ Resideo Technologies asserts that PJM's proposal would effectively bar behind-the-meter resources from participating in the PJM capacity market unless the RERRA excludes compensation for energy from their net energy metering retail tariffs.¹⁹⁴ AEE and SEIA contend that PJM's proposed double-counting provisions include an unreasonable must-offer requirement,¹⁹⁵ which will prohibit DERs on a net energy metering retail tariff from participating in the capacity market regardless of whether those customers receive any capacity compensation from the net energy metering retail program.¹⁹⁶ AEE and SEIA note that PJM's contention that Component DER in a net energy metering retail program are unable to provide energy in PJM and satisfy capacity requirements appears to rest on a belief that market participants cannot offer energy if the energy has already been compensated by the electric distribution company under the net energy metering retail tariff. Parties argue that PJM could develop solutions that only exclude the DERs from being compensated for energy, where the net energy metering retail tariff provides energy

net-metered DERs exist in the region and predicts that capacity from rooftop solar installations will reach nearly 12,000 MW over the next 15 years. *Id.* at 14 (citing PJM Fact Sheets, *Distributed Energy Resources* (Sep. 2022), <https://www.pjm.com/-/media/about-pjm/newsroom/fact-sheets/distributed-energy-resources.ashx>; PJM Inside Lines, *Growth of Solar on PJM's Horizon* (Aug. 2019), <https://insidelines.pjm.com/growth-of-solar-on-pjms-horizon/>).

¹⁹² AEMA Protest at 2; AEE and SEIA Protest at 13-14; City of Cincinnati Comments at 1; Environmental Organizations Protest at 10; Resideo Technologies Protest at 12. *See also supra* note 188 and accompanying text.

¹⁹³ AEMA Protest at 2; AEE and SEIA Protest at 13-14; Environmental Organizations Protest at 10.

¹⁹⁴ Resideo Technologies Protest at 12.

¹⁹⁵ *See* Tariff, attach. K-app., § 1.4B(i); Operating Agreement, Schedule 1, § 1.4B(i). PJM explains that DER Capacity Aggregation Resources that have a capacity commitment in PJM will be subject to the day-ahead energy market must-offer requirement based on the Component DER technology as currently described in Tariff, attach. K-app., § 1.10.1A(d); and Operating Agreement, Schedule 1, § 1.10.1A(d). Transmittal at 34.

¹⁹⁶ AEE and SEIA Protest at 17-19.

compensation, and allow Component DER to offer into the energy market and receive dispatch instructions, but not compensate the Component DER with energy revenue.¹⁹⁷

115. Environmental Organizations assert that double counting would only occur if the electric distribution company or LSE offering the net energy metering retail program registered the resource as a capacity resource, which it claims that no net energy metering retail programs do, or if the resource counted as both supply and a reduction in demand, which would be resolved by measuring capacity from behind the meter DERs relative to the site's peak load contribution, consistent with other demand response resources.¹⁹⁸ City of Cincinnati contends that PJM's proposed restriction for net energy metered DERs will hurt low-income residents that need the additional revenue to support DER adoption, and further exacerbate their energy burden via higher rates for residents due to continued use of fossil fuels that have higher capacity costs.¹⁹⁹

116. AEMA and AEE and SEIA argue that it is unclear how PJM's release valve would be applied to other Component DER located at the same site where a technology participating in a net energy metering retail program is located.²⁰⁰ These parties contend that PJM should revise its proposal to clearly allow Component DER that do not participate in a net energy metering retail program but are co-located with net energy metering retail customers to participate in the PJM capacity market, as well as provide ancillary services where technically capable.²⁰¹ New Jersey BPU supports PJM's proposal with respect to its treatment of DERs located at the same site as net energy

¹⁹⁷ AEMA Protest at 20; AEE and SEIA Protest at 19 & n.42. These protesters explain that New York Independent System Operator (NYISO) allows DERs with a must offer to bid below the Net Benefit Threshold and if they clear the market they are simply not compensated for energy, but NYISO is still able to dispatch them, and certain states in ISO New England Inc. (ISO-NE) require that any wholesale energy revenues earned by certain DERs that are participating in retail-level programs be received by the utility rather than the DER.

¹⁹⁸ Environmental Organizations Protest at 10-12.

¹⁹⁹ City of Cincinnati Comments at 1.

²⁰⁰ AEMA Protest at 21; AEE and SEIA Protest at 20 (quoting Transmittal at 41) ("Specifically, energy market participation would result in explicit double compensation at those sites for the same product (energy).") (emphasis in original).

²⁰¹ AEMA Protest at 25-26; AEE and SEIA Protest at 20.

metered DERs but encourages PJM to continue to explore the possibility of dual participation in the capacity market.²⁰²

117. Further, parties argue that PJM's release valve invades the jurisdiction of state commissions regulating retail rates.²⁰³ AEMA and Resideo Technologies contend that PJM's release valve creates a default situation where all RERRAs have opted-out of allowing net energy metering retail customers to participate in the energy and capacity markets, effectively contradicting the explicit determination by the Commission not to include an opt-out mechanism.²⁰⁴ AEMA argues that PJM's release valve affords the RERRA no flexibility to decide whether a net energy metering retail customer's participation in the wholesale market would constitute double counting because the RERRA's only option would be to re-open its net energy metering retail tariffs and exclude compensation for energy, which is a "non-starter" due to the contentious and time-consuming nature of net energy metering.²⁰⁵ AEMA suggests that the Commission should direct PJM to work with RERRAs to compile a list of jurisdictions, if any, that have net energy metering retail tariffs that already compensate for capacity, and that the default assumption should be that net energy metering retail programs do not provide capacity compensation.²⁰⁶

118. AEE and SEIA state that the release valve inappropriately places electric distribution companies in the role of arbitrating the scope of compensation provided in net energy metering retail programs, rather than the RERRA, and allows electric distribution companies to determine which DERs can access the wholesale markets and which cannot.²⁰⁷ AEE and SEIA suggest that PJM should adopt a proposal similar to that of NYISO, which relies on a self-certification by the aggregator that participation by each DER in the proposed aggregation complies with all applicable rules and regulations of the RERRA. More specifically, AEE and SEIA recommend putting a double counting attestation into the market participation agreement, which appropriately places the risk on DER Aggregators for any misrepresentation as to double counting and provides RERRAs

²⁰² New Jersey BPU Comments at 6-7.

²⁰³ AEMA Protest at 19, 22-24; AEE and SEIA Protest at 16; Resideo Technologies Protest at 12.

²⁰⁴ AEMA Protest at 22-23; Resideo Technologies Protest at 12 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 56).

²⁰⁵ AEMA Protest at 19.

²⁰⁶ *Id.* at 26.

²⁰⁷ AEE and SEIA Protest at 16-17.

appropriate latitude to issue guidance or otherwise establish processes to determine the services compensated by their net energy metering retail programs, without risking potential undue discrimination or arbitrary determinations by electric distribution companies.

119. Some parties support PJM's filing.²⁰⁸ Pennsylvania Commission applauds PJM's approach to avoiding double compensation during the registration process and supports PJM's conclusion about the energy market must offer obligation and the consequence it has on net energy metered DERs' participation in the capacity market.²⁰⁹ Pennsylvania Commission further states that, under a Pennsylvania statute, participants in a net energy metering retail program must receive a fully bundled retail rate, which includes revenues for PJM's wholesale markets, and that PJM correctly prohibits these participants from receiving payments under its double compensation rules in this filing.

120. Indicated Utilities request that PJM clarify that DERs participating in a net energy metering retail program cannot participate in energy, capacity, or ancillary services markets if they are already compensated under a retail tariff for such services.²¹⁰ Indicated Utilities argue that PJM's proposed tariff revisions create confusion because they imply that the ancillary services market is distinct or separate from the other wholesale markets in determining duplicative compensation. Indicated Utilities explain that resources participating in a net energy metering retail program may have opportunities to receive an energy credit or payment equivalent to full retail rates that fully compensate them for energy, capacity, and ancillary services.

121. The IMM states that PJM should bar all resources participating in net energy metering retail programs from participating in the wholesale markets, without exception, because it claims there is no way to avoid double compensation since net energy metering means paying for resources on the distribution system at the full retail rate.²¹¹ The IMM explains that capacity is not a standalone product because capacity resources have a must-offer requirement in the energy market, so resources participating in a net energy metering retail program cannot participate in the capacity market because that would create double counting issues. The IMM states that PJM's filing proposes to allow some exceptions to the restriction of net energy metering retail customers' participation in the energy and capacity markets but fails to specify any decision criteria for approving

²⁰⁸ Illinois Commission Comments at 6-8; New Jersey BPU Comments at 6-7; Pennsylvania Commission Comments at 6-9.

²⁰⁹ Pennsylvania Commission Comments at 6-9.

²¹⁰ Indicated Utilities Comments at 28-30.

²¹¹ IMM Comments at 17-18.

exemptions. The IMM notes that this level of discretion by the electric distribution company and PJM should be avoided, particularly if an electric distribution company can approve its own participation.

iii. Answers

122. PJM reiterates that application of the must-offer requirement is an important component of PJM's overall Order No. 2222 implementation, and an important tool in maintaining reliability and competitive markets.²¹² To support this assertion, PJM points out that the Commission recently found that "exempting resources from the energy market must-offer requirement would significantly impair reliability and provide an opportunity to physically withhold capacity from energy markets, which could result in energy market prices above competitive levels."²¹³ PJM explains that the release valve is specifically designed to account for possible future innovation or scenarios where resources may be able to participate in both the energy and capacity markets while simultaneously respecting the must-offer requirement and the Commission's prohibitions on double counting.²¹⁴

123. Duquesne, Indicated Utilities, and Pennsylvania Commission agree with PJM's proposal and reasoning. Duquesne argues that PJM's approach respects state jurisdiction by preserving RERRA oversight over the determination of compensation associated with retail programs, and that PJM's approach is appropriate because it recognizes that electric distribution companies and RERRAs are in the best position to assess the compensation provided under myriad state-jurisdictional retail programs.²¹⁵ Indicated Utilities argue that PJM's proposal presents a reasonable paradigm for preventing net energy metering retail customers from receiving duplicative compensation for the same services at customer expense, recognizing the varying considerations and structural differences among state net energy metering retail programs.²¹⁶

²¹² PJM Answer at 20.

²¹³ *Id.* (citing *Indep. Mkt. Monitor for PJM v. PJM Interconnection, L.L.C.*, 176 FERC ¶ 61,137, at 74 (2021)).

²¹⁴ *Id.* (citing Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b)).

²¹⁵ Indicated Utilities Answer at 33; Duquesne Answer at 5-6; Pennsylvania Commission Answer at 4-5.

²¹⁶ Indicated Utilities Answer at 10-11, 31-32.

124. With respect to capacity market participation of net energy metered DERs, Pennsylvania Commission disagrees with claims that net energy metering retail programs do not compensate for capacity, contending that it is irrelevant if net energy metering retail programs are compensated on a kWh basis instead of a kW basis because it is up to the RERRA to make the determination on double compensation.²¹⁷ Further, Indicated Utilities explain that there is no such thing as a capacity-only resource because, by selling capacity, a resource commits to support the system with energy consistent with PJM tariff requirements.²¹⁸ Indicated Utilities also state that many net energy metering retail tariffs include a fully-loaded rate that includes capacity in the services that are re-credited to the net energy metering retail customer. Similarly, Indicated Utilities state that services provided to reduce load values should not also be compensated as a supply-side product, which would be a second form of double compensation borne by non-participating customers.²¹⁹

125. In contrast, AEMA argues that resources participating in net energy metering retail programs can in fact participate in the PJM capacity market, and further explains its reasoning for why and how this can be done. AEMA argues that lifting PJM's blanket restriction on net energy metering retail customers would give states the authority to restrict registrations from net energy metering retail customers in the capacity market where there are double counting concerns, and provide net energy metering retail customers in other states the freedom to participate in the capacity market where there are no double counting concerns.²²⁰ Moreover, AEMA argues that net energy metering compensation and capacity payments are distinct, because customers in PJM are typically charged for capacity based on their average kW usage during the five peak hours of the year while net energy metering retail customers are compensated based on their total kWh usage in a given month. With respect to the must offer obligation of DER Capacity Resources in PJM, AEMA argues that a must offer requirement should not be a reason for denying capacity market participation to net energy metering retail customers that do not receive capacity compensation, consistent with other RTOs/ISOs.

iv. Data Request Response

126. In response to Commission staff's question regarding the roles of the electric distribution company and PJM, PJM states that the electric distribution company will assume the role of verifying whether a resource is enrolled in a net energy metering retail

²¹⁷ Pennsylvania Commission Answer at 2-5.

²¹⁸ Indicated Utilities Answer at 33-34.

²¹⁹ *Id.* at 35.

²²⁰ AEMA Answer at 12-14.

program, and will make the determination as to whether or not the resource is already being compensated for energy and/or capacity under the program.²²¹ According to PJM, if the electric distribution company determines that the resource will not violate double counting restrictions and can participate in the energy or capacity markets, PJM will subsequently conduct a separate review to verify that there is no double counting. For capacity market participation, PJM states that it will ensure that there is no double counting of capacity, ensure that the resource is capable of meeting capacity must-offer requirements, and ensure that the resource is not already registered or operating under another PJM participation program. For energy market participation, PJM states that it will ensure that the resource is capable of providing energy without triggering double counting restrictions. Regarding the coordination between the electric distribution company and PJM, PJM clarifies that this will occur primarily through a software program to be constructed by PJM. PJM states that the electric distribution company will communicate its determination in the program along with any applicable evidence. PJM maintains that it will not actively participate in the electric distribution company's interpretation of RERRA rules or regulations.

127. In response to Commission staff's question regarding the process to challenge the double counting determination of an electric distribution company, PJM argues that its proposed tariff revisions are designed to allocate responsibility of reviewing potential conflicts where appropriate.²²² Specifically, PJM states that the electric distribution company is responsible for reviewing potential double counting conflicts under local RERRA rules, while PJM is responsible for reviewing conflicts under its Tariff and Operating Agreement. PJM states that an entity that disagrees with either the electric distribution company's or PJM's determination may seek review with the appropriate regulatory body (i.e., the RERRA for electric distribution companies, and the Commission for PJM).

128. PJM explains that the process to determine whether the "same product is not also credited as part of a retail program" takes place as part of the registration process whereby the electric distribution company will identify and communicate any RERRA-jurisdictional compensation for products sold in PJM's markets.²²³ PJM further states that this determination will subsequently be integrated into its own assessment as to whether the resource violates any double counting restrictions.

129. With respect to DERs participating in a net energy metering retail program co-located with technologies not participating in such a program, PJM states that Tariff,

²²¹ Data Request Response at 20-21.

²²² *Id.* at 21.

²²³ *Id.* at 22.

Attachment K-Appendix, section 1.4B(b) and Operating Agreement, Schedule 1, section 1.4B(b) would apply to a Component DER that does not participate in a net energy metering retail program at the same site as at least one resource that does participate in such a program behind the same retail meter.²²⁴ PJM states that to the extent the Commission feels that this specific configuration needs to be addressed in these sections, PJM could modify the language on compliance to specify that “Component DER that participate at [a] net energy metering retail program site” or modify in another manner that the Commission deems appropriate.

v. Data Request Response Comments/Protests

130. In response to PJM’s data request response regarding DERs participating in a net energy metering retail program co-located with technologies not participating in such a program, AEMA states that PJM’s proposal is an overbroad restriction that is inconsistent with Order No. 2222 and contrary to PJM’s previous position.²²⁵ AEE and SEIA contend that co-located DERs, like energy storage, can be measured and reported at the inverter level separately from the retail meter at the site, which should satisfy the need for direct measurement of the resource’s contribution.²²⁶ AEMA and AEE and SEIA urge the Commission to require PJM to include metering and accounting solutions to distinguish output from resources participating in net energy metering retail programs versus resources not participating in those programs.²²⁷

131. Indicated Utilities argue that PJM’s Tariff, Attachment K-Appendix, section 1.4B(b)a requires changes, claiming that the Tariff should not refer to retail net energy metering programs at all in discussing double compensation because it is impossible for

²²⁴ *Id.* at 8-9.

²²⁵ AEMA Data Request Response Comments at 5-6 (quoting CAISO Compliance Order, 179 FERC ¶ 61,197 at P 109 (“Order No. 2222 does not allow RTOs/ISOs to include in their tariffs broad prohibitions on wholesale market participation for an entire class of distributed energy resources”)); PJM Interconnection, L.L.C., *Board Response to AEE and SEIA and AEMA Letter Regarding PJM’s Proposed Order No. 2222 Compliance Plan*, P 5 (Jan. 31, 2022), <https://www.pjm.com/-/media/about-pjm/who-we-are/public-disclosures/20220131-board-response-to-aee-and-aema-letter-regarding-pjms-proposed-order-no-2222-compliance-plan.ashx>).

²²⁶ AEE and SEIA Data Request Response Protest at 5.

²²⁷ AEMA Data Request Response Comments at 7; AEE and SEIA Data Request Response Protest at 5-6.

PJM to prejudice any net energy metering program.²²⁸ According to Indicated Utilities, the Commission in Order No. 2222 found that it is appropriate for RTOs/ISOs to place restrictions on the RTO/ISO market participation of DERs through aggregations to address double counting but did not state that the RTO/ISO could decide for itself if a DER in a retail program could participate in both the retail program and a DER Aggregation. According to Indicated Utilities, PJM's Attachment K-Appendix, section 1.4B(b) provides that a DER participating in a net energy metering retail program *can* participate in an aggregation, at the very least to sell ancillary services. Indicated Utilities disagree with PJM's position that, if a RERRA program does not *directly* compensate a Component DER for a product that is also sold in the wholesale market, there can be no double compensation. Indicated Utilities also note that this provision may be in conflict with section 1.4B(h), which recognizes that DER participation in net energy metering retail programs and PJM ancillary services sales *could* result in double compensation.

132. AEE and SEIA argue that PJM's proposal to allow electric distribution companies to determine whether duplication compensation will occur creates a potential barrier to entry to DERs and electric distribution companies will play the inappropriate role of gatekeepers to wholesale market access.²²⁹ AEE and SEIA state that some electric distribution companies may have competitive incentives to restrict DERs from participating in the wholesale markets, while others may simply be reticent to take on the risk of making a "duplicative compensation" determination that is not necessarily in their control.²³⁰ To circumvent this restriction, AEE and SEIA request that the Commission require PJM to adopt a similar approach to that of NYISO in its compliance filing to Order No. 2222.²³¹

133. In addition, AEE and SEIA assert that DERs participating in net energy metering retail programs can provide their energy and forecast production on a daily basis, just as it is with grid-scale solar resources, which should satisfy the day-ahead energy must offer

²²⁸ Indicated Utilities Data Request Response Comments at 4, 16-18.

²²⁹ AEE and SEIA Data Request Response Protest at 3.

²³⁰ In addition, AEE and SEIA state that electric distribution utilities may seek state regulator's approval in each instance where a DER seek to join an aggregation, triggering costly and lengthy process that stalls DER access to wholesale markets. *Id.*

²³¹ NYISO's proposal requires a DER aggregator "to attest that resources enrolled in the [a]ggregation are not providing the same service in a retail service or program as they are in the NYISO-administered markets." *See* NYISO Compliance Order, 179 FERC ¶61,198 at PP 136-137.

requirements.²³² AEE and SEIA request that the Commission direct PJM to develop a revised proposal that would allow net metered DERs to provide capacity without forcing them to offer in the day-ahead energy market.

vi. Commission Determination

134. We find that PJM's proposal partially complies with the double counting requirements of Order No. 2222. As an initial matter, we find that PJM has complied with the following requirements of Order No. 2222 pertaining to double counting of services that required RTOs/ISOs to: (1) allow distributed energy resources that participate in one or more retail programs to participate in its wholesale markets;²³³ and (2) allow distributed energy resources to provide multiple wholesale services.²³⁴ We address the remaining compliance requirements and comments and protests below.

135. We find that PJM's proposal partially complies with the requirement to include appropriate restrictions on the participation of distributed energy resources in PJM's markets through distributed energy resource aggregations, if narrowly designed to avoid counting more than once the services provided by distributed energy resources in PJM's markets.²³⁵ PJM's proposal includes two double counting reviews that allow PJM to restrict the participation of Component DER participating in retail programs from participating in PJM's markets. PJM proposes to first provide an opportunity within the 60-day period for the electric distribution company, as part of the proposed registration review of a DER Aggregation Resource,²³⁶ to review and verify participation of Component DER in a retail program during the PJM registration process²³⁷ and, in particular, to assess Component DER participating in a net energy metering retail program.²³⁸ This is followed by a double counting review conducted by the Office of

²³² AEE and SEIA Data Request Response Protest at 4-5.

²³³ Order No. 2222, 172 FERC ¶ 61,247 at P 160. *See* Tariff, attach. K-app., § 1.4B(h); Operating Agreement, Schedule 1, § 1.4B(h).

²³⁴ *Id.*

²³⁵ *Id.* P 160.

²³⁶ *See infra* Part IV.B.9.b.ii (discussing PJM's proposed pre-registration and registration processes).

²³⁷ *See* Tariff, attach. K-app., § 1.4B(b)(iv); Operating Agreement, Schedule 1, § 1.4B(b)(iv), incorporating by reference Tariff, attach. K-app., § 1.4B(h); Operating Agreement, Schedule 1, § 1.4B(h); *see also* Data Request Response at 22.

²³⁸ *See* Tariff, attach. K-app., § 1.4B(b)(iv)(a); Operating Agreement, Schedule 1,

Interconnection.²³⁹ As part of both reviews, the electric distribution company and PJM ensure that PJM “shall only credit a DER Aggregator for the sale of a product in the PJM energy, capacity, and/or ancillary services markets if that same product is not also credited as part of a retail program.”²⁴⁰

136. We agree with PJM that the proposal is narrowly designed because it does not broadly limit or restrict the participation of a Component DER that participates in a retail program from participation in PJM’s markets.²⁴¹ However, PJM’s proposed tariff requires an assessment of whether the “same product is not also credited” rather than whether, as the Commission discussed in Order No. 2222, the *same service is being provided* by the Component DER.²⁴² Being credited for a product may not be the same as providing a service. This difference may be relevant because a Component DER participating in a net energy metering retail program, for example, may be credited for a product or service that it does not actually provide.²⁴³ As a result, it is unclear whether

§ 1.4B(b)(iv)(a).

²³⁹ See Tariff, attach. K-app., § 1.4B(h); Operating Agreement, Schedule 1, § 1.4B(h); *see also* Data Request Response at 22.

²⁴⁰ Tariff, attach. K-app., § 1.4B(h); Operating Agreement, Schedule 1, § 1.4B(h); *see also* Data Request Response at 20-21.

²⁴¹ See CAISO Compliance Order, 179 FERC ¶ 61,197 at P 105 (“we find CAISO’s proposal is narrowly designed because it does not broadly prohibit Distributed Energy Resource Aggregation participation in CAISO’s markets unless the aggregation is providing the same service in a retail program”); NYISO Compliance Order, 179 FERC ¶ 61,198 at P 137 (“we find that this tariff provision is narrowly designed because it does not broadly prohibit an Aggregation’s participation unless the Aggregation is providing the same service in a retail program”).

²⁴² Order No. 2222, 172 FERC ¶ 61,247 at P 159.

²⁴³ According to Ohio Commission, generally net energy metering programs provide compensation for energy but do not provide credit for associated capacity. Ohio Commission Comments at 6-7. However, in Pennsylvania, the Pennsylvania Commission explains that a generator that provides energy as part of a net metering program is compensated through a fully bundled retail rate, which includes compensation for services other than energy, such as capacity and ancillary services. Pennsylvania Commission Comments at 6 (“As it relates to Pennsylvania, the Alternative Energy Portfolio Standards Act, provides that customer-generators in Pennsylvania shall receive ‘full retail value’ for energy produced as part of a net metering program. Interpreting this Act, the PAPUC determined that ‘full retail value’ is the fully bundled retail rate, which includes generation, transmission, capacity, ancillary services and distribution

PJM's proposed tariff fully complies with this requirement. Accordingly, we direct PJM to file, within 60 days of the date of the issuance of this order, a further compliance filing to clarify why Tariff, Attachment K-Appendix, section 1.4B(h) and Operating Agreement, Schedule 1, section 1.4B(h) assesses whether the "same product is not also credited as part of a retail program" rather than whether the same service is not also being provided in a retail program, to include an explanation of how this language as proposed is consistent with Order No. 2222, or alternatively to revise this language such that it is consistent with Order No. 2222.

137. With respect to concerns about Component DER in net energy metering retail programs being unable to provide energy or capacity, PJM persuasively explains that most Component DER participating in net energy metering retail programs are compensated for energy in retail programs.²⁴⁴ Therefore, these Component DER would be double counted for providing energy in both their retail net energy metering program and PJM's energy market. Also, given that resources providing capacity in PJM have a must-offer requirement in PJM's energy market,²⁴⁵ these Component DER would not be technically capable of providing capacity in PJM. Thus, PJM's proposed restriction is narrowly designed because it still allows Component DER that do not provide those services at the retail level the opportunity to participate in wholesale markets after having been screened by the electric distribution company and PJM during PJM's registration process.

138. However, we find that PJM's double counting proposal is unclear with respect to Component DER that wish to provide ancillary services in PJM's markets. PJM states that ancillary services would not be provided by Component DER participating in a net energy metering retail program, and that such Component DER could provide ancillary services in PJM without constituting a double counting concern.²⁴⁶ We note, however,

components as compensation for the electric the customer-generator sends to the distribution grid.").

²⁴⁴ Transmittal at 41.

²⁴⁵ See Tariff, attach. K-app., § 1.4B(i); Operating Agreement, Schedule 1, §1.4B(i). PJM explains that DER Capacity Aggregation Resources that have a capacity commitment in PJM will be subject to the day-ahead energy market must-offer requirement based on the Component DER technology as currently described in Tariff, attach. K-app., § 1.10.1A(d); Operating Agreement, Schedule 1, § 1.10.1A(d). Transmittal at 34.

²⁴⁶ Transmittal at 41. See Tariff, attach. K-app., § 1.4B(iv)(a); Operating Agreement, Schedule 1, § 1.4B(iv)(a).

certain state net metering tariffs currently include compensation for ancillary services.²⁴⁷ So we recognize Indicated Utilities' concern that resources participating in a net energy metering retail program may have "opportunities to receive an energy credit or payment equivalent to full retail rates that fully compensates them for all services that they offer for energy, capacity, and ancillary services...."²⁴⁸ PJM proposes tariff language in section 1.4B(b)(iv)(a) to allow "Component DER that participate in a net energy metering retail program [to] only participate with grid injections in the PJM ancillary services market," and - as discussed above - proposes to not allow for their participation in the energy or capacity market unless the electric distribution company confirms that such participation will not violate the restrictions on duplicative compensation. PJM's proposed tariff language in section 1.4B(h) to avoid double counting requires PJM to only credit a DER Aggregator for the sale of a product in its markets if "that same product is not also credited as part of a retail program" - which, as we noted above, differs from the Commission's discussion about double counting in Order No. 2222 of whether the same service has been provided as part of another program.²⁴⁹ While it appears that a Component DER participating in a net energy metering retail program may be credited for ancillary services as part of a retail rate, and therefore prohibited from being compensated by PJM in accordance with section 1.4B(h) for ancillary services in its market, PJM appears to allow this Component DER to provide ancillary services in its market, in accordance with section 1.4B(b)(iv)(a), and without a clear opportunity for an electric distribution company to raise concerns about double counting. Therefore, we agree with Indicated Utilities that PJM's proposal is ambiguous as to whether Component DER can be precluded from providing ancillary services in PJM markets and being compensated for doing so on the basis of double counting concerns.²⁵⁰ Accordingly, we direct PJM to file, within 60 days of the date of the issuance of this order, a further compliance filing that explains whether, pursuant to Tariff, Attachment K-Appendix, section 1.4B(h) and Operating Agreement, Schedule 1, section 1.4B(h), and consistent

²⁴⁷ See Pennsylvania Commission Comments at 6-9; Duquesne Answer at 6-8.

²⁴⁸ Indicated Utilities Comments at 30 (emphasis omitted).

²⁴⁹ Order No. 2222, 172 FERC ¶ 61,247 at P 159 ("allow[ing] RTOs/ISOs to limit the participation of resources in RTO/ISO markets through a distributed energy resource aggregator that are receiving compensation for the same services as part of another program").

²⁵⁰ Tariff, attach. K-app., § 1.4B(h); Operating Agreement, Schedule 1, § 1.4B(h); *see also* Data Request Response at 20-21 (stating that the distribution utility will "make a determination as to whether or not the customer is already being compensated for energy and/or capacity").

with PJM's further compliance filing discussed above,²⁵¹ Component DER can be precluded by either PJM or an electric distribution company from providing ancillary services in PJM markets due to double counting concerns. Further, we direct PJM to clarify whether, pursuant to Tariff, Attachment K-Appendix, section 1.4B(b)(iv) and Operating Agreement, Schedule 1, section 1.4B(b)(iv), an electric distribution company during its review may raise concerns about whether Component DER should be precluded from providing ancillary services in PJM markets to avoid double counting.

139. Next, we find that PJM's proposal to rely on the electric distribution company to account for different services provided by a Component DER participating in a net energy metering retail program through the registration process complies with the Order No. 2222 requirement "to describe how it will properly account for the different services that [DERs] provide in the RTO/ISO markets."²⁵² We are unpersuaded by arguments that PJM should instead adopt a proposal to rely on an attestation from the DER Aggregator. Order No. 2222 grants RTOs/ISOs regional flexibility with respect to the restrictions that they propose in their tariffs to minimize market impacts caused by the double counting of services provided by distributed energy resources in the RTO/ISO markets.²⁵³ PJM's proposal to include the electric distribution company's double counting review as a clear criterion in Tariff, section 1.4B(b)(iv)(a)(1) provided as part of the registration process²⁵⁴

²⁵¹ See *supra* P 136.

²⁵² Order No. 2222, 172 FERC ¶ 61,247 at P 160; Data Request Response at 22; see CAISO Compliance Order, 179 FERC ¶ 61,197 at P 105 ("Further, we find CAISO's plans to rely on the Distributed Energy Resource registration and distribution utility review processes compliant with the requirement to properly account for the different services that distributed energy resources provide in the RTO/ISO markets.").

²⁵³ Order No. 2222, 172 FERC ¶ 61,247 at P 164.

²⁵⁴ This tariff language provides:

the electric distribution company confirms to the Office of the Interconnection that participation of the Component DER in a net energy metering retail program or tariff approved by the Relevant Electric Retail Regulatory Authority *will not violate the restrictions on duplicative compensation, as described in Tariff, Attachment K-Appendix, section 1.4B(h) and Operating Agreement, Schedule 1, section 1.4B(h)[.]*

(Emphasis added); see also Tariff, attach. K-app., § 1.4B(b) (noting that the electric distribution company may notify PJM of concerns "based on factors (i) through (vii)").

should also alleviate concerns that electric distribution companies may serve as gatekeepers in performing the double counting assessment, and we reiterate that Order No. 2222 requires that the electric distribution company's review of the individual Component DER that comprise an aggregation be non-discriminatory, timely, and transparent.²⁵⁵

140. We disagree with protesters' arguments that PJM's proposal would force RERRAs to change their rules or would constitute a broad opt-out. Rather, the two-part screening focuses on whether a particular Component DER would provide the same service in PJM's markets as it does in retail programs, and appropriately relies on the electric distribution company and PJM to provide that assessment.

141. However, we agree with protesters that PJM's proposed restriction may not be narrowly designed with respect to Component DER that are not participating in a net energy metering retail program and are co-located at a site where at least one resource is participating in a net energy metering retail program. We find that, because PJM clarifies that Attachment K-Appendix, section 1.4B(b) and Operating Agreement, Schedule 1, section 1.4B(b) would apply to such a Component DER,²⁵⁶ PJM's proposed restriction may unnecessarily limit participation of Component DER in the PJM energy and capacity markets solely based on their location and not based on a double counting concern.²⁵⁷ While PJM appropriately supported its proposed general exclusion against participation in its energy and capacity markets as to Component DERs that are participating in a net energy metering retail program because they are compensated for providing energy in retail programs, it is unclear why it is appropriate for PJM to apply that same exclusion to Component DER that are *not* participating in a net energy metering retail program merely because they are co-located at a site where at least one resource is participating in such a retail program. Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing to explain how its proposed general exclusion from the energy and capacity market of Component DER that are not participating in net energy metering retail programs but are located at sites where at least one resource is participating in a net energy metering retail program is narrowly designed, and if necessary, to revise its restriction.

²⁵⁵ Order No. 2222, 172 FERC ¶ 61,247 at PP 292-293. *See also infra* PP 307, 334.

²⁵⁶ Data Request Response at 8-9.

²⁵⁷ *Id.*

d. Minimum and Maximum Size of Aggregation

142. In Order No. 2222, the Commission added section 35.28(g)(12)(iii) to the Commission's regulations to require each RTO/ISO to implement a minimum size requirement not to exceed 100 kW for all distributed energy resource aggregations.²⁵⁸ The Commission stated that it will consider any future post-implementation requests to increase the minimum size requirement above 100 kW if the RTO/ISO demonstrates that it is experiencing difficulty calculating efficient market results and there is not a viable software solution for improving such calculations.²⁵⁹

143. The Commission was not persuaded by commenters to adopt a maximum size requirement for distributed energy resource aggregations that span multiple pricing nodes.²⁶⁰ The Commission stated that it did not see a need to adopt such a requirement because, to the extent that RTOs/ISOs allow for multi-node distributed energy resource aggregations, distribution factors and bidding parameters should provide the RTOs/ISOs with the information from geographically dispersed resources in a distributed energy resource aggregation necessary to reliably operate their systems regardless of the size of the aggregation.

i. Filing

144. PJM explains that the definitions of DER Aggregation Resource and DER Capacity Aggregation Resource provide that such resources are capable of satisfying minimum energy and/or ancillary services or capacity market offers of 100 kW, respectively.²⁶¹

ii. Comments/Protests

145. Indicated Utilities seek clarification from PJM regarding how the requirement that a DER Aggregation Resource must be capable of satisfying a minimum energy and/or ancillary services market offer of 100 kW applies to renewable DER Aggregation Resources that fall below the threshold due to their intermittent nature.²⁶²

²⁵⁸ Order No. 2222, 172 FERC ¶ 61,247 at P 171.

²⁵⁹ *Id.* P 172.

²⁶⁰ *Id.* P 174.

²⁶¹ Transmittal at 42.

²⁶² Indicated Utilities Comments at 35.

146. JCA states that PJM's proposed minimum DER Aggregation Resource size of 100 kW creates an unnecessary barrier to entry for DER participation, especially for residential customers.²⁶³ JCA requests that the Commission direct PJM to provide additional information so that both Commission and stakeholders can properly evaluate this aspect of the proposal.

iii. Commission Determination

147. We find that PJM's proposal that DER Aggregation Resources and DER Capacity Aggregation Resources must satisfy a minimum offer requirement of 100 kW to provide all wholesale services complies with the minimum and maximum size requirements of Order No. 2222.²⁶⁴

148. With respect to Indicated Utilities' request that PJM clarify how the minimum offer of 100 kW applies to renewable DER Aggregation Resources that fall below the threshold due to their intermittent nature, we note that Order No. 2222 requires a minimum size of 100 kW but does not prescribe how DER Aggregation Resources composed of different resources meet this requirement. Under PJM's proposal, each DER Aggregation Resource must meet minimum energy, ancillary service, and/or capacity market offers of 100 kW including those comprised of renewable and/or intermittent Component DER. Additionally, we note that Order No. 2222 requires each RTO/ISO to implement a minimum size requirement not to exceed 100 kW for all distributed energy resource aggregations.

e. Minimum and Maximum Capacity Requirements for Distributed Energy Resources Participating in an Aggregation

149. To implement section 35.28(g)(12)(ii)(a) of the Commission's regulations, the Commission in Order No. 2222 did not establish a minimum or maximum capacity requirement for individual distributed energy resources to participate in RTO/ISO markets through a distributed energy resource aggregation.²⁶⁵ Although the Commission declined to establish a specific maximum capacity requirement for individual distributed energy resources in an aggregation, the Commission directed each RTO/ISO to propose a maximum capacity requirement for individual distributed energy resources participating

²⁶³ JCA Comments and Limited Protest at 5-6.

²⁶⁴ See Tariff, Definitions C-D.

²⁶⁵ Order No. 2222, 172 FERC ¶ 61,247 at P 179.

in its markets through a distributed energy resource aggregation or, alternatively, to explain why such a requirement is not necessary.²⁶⁶

i. Filing

150. PJM proposes to establish a cap of five MW on the maximum capacity of an individual Component DER participating in a DER Aggregation Resource, which is codified in the definition of Component DER.²⁶⁷ PJM contends that a resource larger than five MW requires greater visibility via individual telemetry and greater operational control to maintain reliability. To illustrate this point, PJM points to the fast-track process for inverter-based energy resources five MW or less by which smaller projects that satisfy the “screens process” may be able to interconnect to the distribution system in an expeditious matter. PJM states that five MW is the current level for establishing a contribution to a previously-identified upgrade and by extension, if PJM were to set the threshold for Component DER beyond five MW, it would create a potential path for larger projects to avoid cost allocation that others in the interconnection queue would be subject to. PJM states that Component DER that are greater than the maximum capacity requirement of five MW would be required to participate through a different applicable participation model in PJM markets (e.g., the generator model or the demand response model).²⁶⁸

ii. Comments/Protests

151. FirstEnergy and the IMM support PJM’s proposed five MW limit on Component DER size.²⁶⁹ FirstEnergy states that, given that the interconnection of larger DERs is more complex, it is reasonable to set a cap for each Component DER within DER Aggregation Resources at five MW.²⁷⁰ The IMM argues that a maximum size should be defined so that larger market participants do not evade the market rules that currently apply to them or subvert the purpose of Order No. 2222 by dominating the DER space over the small, local resources that the rule is intended to facilitate.²⁷¹

²⁶⁶ *Id.*

²⁶⁷ Transmittal at 43-45. *See* Tariff, Definitions C-D.

²⁶⁸ Transmittal at 43-44.

²⁶⁹ FirstEnergy Comments and Limited Protest at 18; IMM Comments at 12.

²⁷⁰ FirstEnergy Comments and Limited Protest at 20.

²⁷¹ IMM Comments at 11-12.

152. However, several parties argue that PJM's proposed maximum capacity of five MW for a Component DER presents a barrier to PJM markets.²⁷² For example, AEE and SEIA argue that many demand response assets that exceed five MW in size will be forced to remain in demand response-only aggregations.²⁷³ AEE and SEIA note that other RTOs/ISOs, such as ISO-NE, have provided more flexibility. AEE and SEIA and City of Cincinnati contend that, combined with the limitation on smaller DERs created by PJM's proposed locational requirements, this maximum limit will result in very few DERs being eligible to participate in PJM's wholesale markets.²⁷⁴ AEE and SEIA request that the Commission direct PJM to remove the five MW limit or explore alternatives that would allow for broader and more varied DER participation while maintaining visibility and reliability.²⁷⁵ AEMA suggests that if the Commission finds that PJM can include an upper limit on individual assets included in aggregations, it should be limited only to assets that inject power on to the grid.²⁷⁶

iii. Answers

153. AEMA argues that even if the IMM is correct in stating that large generators will dominate the DER space without a maximum size limit, this outcome would not deter or damage the ability of DERs to participate in wholesale markets.²⁷⁷ Moreover, AEMA argues that an aggregation cap would raise costs for aggregators who would be forced to register multiple small aggregations to stay below an arbitrary cap level, and create a barrier for small, local projects.

iv. Data Request Response

154. In the Data Request Response, PJM states that the determination of the five MW threshold is discussed at length in its compliance filing.²⁷⁸ With respect to resources that do not inject power on to the grid, PJM contends it did not see a compelling reason to

²⁷² AEE and SEIA Protest at 24-25; AEMA Protest at 3 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 263); City of Cincinnati Comments at 2.

²⁷³ AEE and SEIA Protest at 24.

²⁷⁴ *Id.* at 25.

²⁷⁵ *Id.*; City of Cincinnati Comments at 2.

²⁷⁶ AEMA Protest at 36.

²⁷⁷ AEMA Answer at 5-6 (citing IMM Comments at 11).

²⁷⁸ Data Requests Response at 23 (citing Transmittal at 39-43).

modify the five MW threshold given the availability of other participation models. Additionally, PJM states the existing rules in the demand response model do not allow for multiple larger resources, above five MW, to aggregate.

v. Commission Determination

155. We find that PJM's proposal complies with the minimum and maximum capacity requirements of Order No. 2222 because PJM proposed a maximum capacity requirement for an individual Component DER participating in markets through a DER Aggregation Resource. We find that PJM has adequately supported its proposed five MW maximum capacity threshold for Component DER. As PJM explains, it needs greater visibility and operational control of Component DER larger than five MW to maintain reliability.²⁷⁹ We find unpersuasive parties' arguments that the proposal creates barriers to entry. Rather, PJM's proposal accords with the Commission's finding that capping the maximum capacity size of an individual distributed energy resource participating in a distributed energy resource aggregation would ensure that larger resources are required to participate individually, thereby allowing RTOs/ISOs to independently model and verify the metering of these larger resources.²⁸⁰ As PJM states, Component DER that are greater than five MW could still participate in PJM's markets through a different applicable participation model (e.g., the generator model or demand response model), provided that the resources meet the applicable requirements and criteria.²⁸¹

5. Locational Requirements

156. In Order No. 2222, the Commission added section 35.28(g)(12)(ii)(b) to the Commission's regulations to require each RTO/ISO to revise its tariff to establish locational requirements for distributed energy resources to participate in a distributed energy resource aggregation that are as geographically broad as technically feasible.²⁸² Given the variety of approaches to locational requirements proposed by commenters, the Commission provided each RTO/ISO with flexibility to determine the locational requirements for its region, as long as it demonstrates that those requirements are as geographically broad as technically feasible. To the extent that an RTO/ISO seeks to continue its currently effective locational requirements for distributed energy resources, it must demonstrate that its approach meets this requirement. The Commission stated that each RTO/ISO must provide a detailed, technical explanation for the geographical scope

²⁷⁹ Transmittal at 43-45.

²⁸⁰ Order No. 2222, 172 FERC ¶ 61,247 at P 181.

²⁸¹ Transmittal at 38, 43-44.

²⁸² Order No. 2222, 172 FERC ¶ 61,247 at P 204.

of its proposed locational requirements.²⁸³ While each RTO/ISO must provide a detailed, technical explanation for the geographical scope of its proposed locational requirements, the Commission provided RTOs/ISOs with a certain degree of flexibility as to the technical aspects of a locational requirement that is as geographically broad as possible.²⁸⁴

a. Filing

157. PJM proposes a single-node model for energy participation, and simultaneously a multi-node model for capacity and ancillary services-only DER Aggregation Resources to ensure that these resources are as geographically broad as technically feasible.²⁸⁵ PJM defines locational requirements based on market participation and explains that it will allow DER to be aggregated up to: (1) primary location in the energy market; (2) zonal or sub-zonal locational deliverability areas in the capacity market; and (3) the electric distribution company or transmission owner zone level in the ancillary services market. Specifically, PJM's tariff²⁸⁶ provides that all Component DER in a DER Aggregation Resource shall interface with the same primary pricing node, except: (1) when a DER Aggregation Resource, less than five MW, provides ancillary services only, the Component DER within the DER Aggregation Resource may interface with multiple primary pricing nodes so long as those primary pricing nodes are in the same state and service territory of a single electric distribution company; and (2) with a DER Capacity Aggregation Resource, the Component DER within the DER Aggregation Resource linked to the DER Capacity DER Aggregation Resource may interface with multiple pricing nodes so long as those primary pricing nodes are within a defined zone or sub-zonal locational deliverability area.²⁸⁷ PJM states that its decision to restrict DER Aggregation Resources participating in the energy market at a single-node, rather than at multi-nodes, is based on PJM's unique system topology, congestion patterns, and operating practices.

²⁸³ *Id.* The Commission stated that this explanation could include, for example, a discussion of the RTO's/ISO's system topology and regional congestion patterns, or any other factors that necessitate its proposed locational requirements.

²⁸⁴ *Id.* P 206.

²⁸⁵ Transmittal at 46.

²⁸⁶ See Tariff, attach. K-app., § 1.4B(c); Operating Agreement, Schedule 1, § 1.4B(c).

²⁸⁷ Transmittal at 47.

158. To determine whether a single-node aggregation model for energy dispatch is as geographically broad as technically feasible, PJM states that it examined three factors, which include: (1) a comparison with the existing demand response model; (2) an evaluation of a significant penetration of DER Aggregation Resources; and (3) an analysis of the accuracy and viability of distribution factors.²⁸⁸ First, PJM states that its existing demand response market allows for multi-node aggregation of load reduction resources, which are primarily mapped and dispatched at the zonal pricing node.²⁸⁹ However, PJM states that it cannot rely upon this model for accurate constraint control,²⁹⁰ and the model would not be extendable to injection resources under the DER Aggregator Participation Model because of the inability of real-time security-constraint economic dispatch to calculate the amount of constraint control accurately across multiple pricing nodes.²⁹¹ PJM adds that, consistent with NERC's standards, it uses generation dispatch for constraint relief to maintain operating limits, so including resources on the PJM system that cannot be used for constraint control would constitute removing a critical tool for PJM Dispatch.²⁹²

159. Second, PJM notes that it operates under the assumption that a significant number of DER Aggregation Resources will use the DER Aggregator Participation Model in the coming years, and these resources will have a significant impact on PJM dispatch and operations.²⁹³ PJM argues that as generation technologies shift to more renewable and distributed generation options, some of the fundamental assumptions about load will

²⁸⁸ *Id.* at 51.

²⁸⁹ PJM states that this is a supportable model for demand response, given the exclusive load reduction activity that occurs when these resources are dispatched. *Id.*

²⁹⁰ PJM states that North American Electric Reliability Corporation's (NERC) reliability standards (TOP-001, R1, R2, R3, R4, R12, R14, and IRO-009) require PJM to maintain, through its Energy Management System, System Operating Limits (SOL) and Interconnection Reliability Operating Limits (IROL) at all times to manage constraint control. *Id.* at 49.

²⁹¹ PJM states that the demand response model can account for capacity without any real-time telemetry requirements, and provides a flexible solution for many small resources. PJM adds that as long as there is offsetting load, a demand response resource can aggregate across wide areas of PJM, and its only limitation is the need to be composed solely of non-injecting resources. *Id.* at 51 (citing Attachment E, Affidavit of Donald Bielak (Bielak Aff.) ¶ 21).

²⁹² Transmittal at 49.

²⁹³ *Id.* at 51-53.

change. PJM explains that distribution-connected generation and load reduction technologies create non-homogeneous load response across transmission zones, which increases the risk of forecast error and undermines the assumptions behind scheduling generation and not scheduling load for constraint control. PJM asserts that its proposed approach of a nodal framework for energy market participation will ensure that resources on the distribution system will respond to wholesale prices more directly, clarifying the distinction between supply and demand and protecting PJM's ability to perform constraint control. In addition, PJM asserts that single-node aggregations will also allow for adjusting locational marginal pricing at a single-node level, and by extension create a predictable impact on transmission constraints. According to PJM, this direct correlation between adjusting price and constraint relief is a fundamental requirement of wholesale markets and will be reinforced by the adoption of a single-node model for energy market participation.

160. Third, PJM states that a multi-node aggregation would require PJM's dispatchers to have comparable visibility of the underlying nodes in a DER Aggregation Resource, which would be accomplished through distribution factors.²⁹⁴ However, PJM states that, based on its assessment, the application of distribution factors would be a complex undertaking, and would raise questions regarding implementation. Further, PJM adds that the information and control it would require could be burdensome. Specifically, PJM states that distribution factors would be required to be sent for each of the Component DER within a DER Aggregation Resource. In addition, PJM asserts that to identify the impact on each of the applicable nodes, it would also need additional exploration to dispatch one part of the DER Aggregation Resource, but not the others. PJM states that, although this approach would allow accurate constraint control, it would remove the ability of a DER Aggregator to use the entire DER Aggregation Resource for performance. Further, PJM adds that distribution factors would also be required in the day-ahead energy market to allow DER Aggregators, ahead of time, to determine how the underlying Component DER will operate against PJM dispatch. PJM states that DER Aggregators would have limited ability to change those distribution factors in real-time to minimize market manipulation. PJM states that, after considering these factors, its proposed participation model will allow for multi-node aggregations for capacity and ancillary service-only participation, because these kinds of aggregations do not raise the same system reliability or market pricing concerns as in the energy market.

161. PJM states that its analyses show that if DERs were aggregated across multiple nodes in the energy market, PJM could not rely on DER Aggregation Resources to manage constraints effectively in its system. PJM states that having a resource that it cannot use to manage constraints may affect PJM's ability to comply with NERC's standards and may lead to degradation in accurate market pricing and operational

²⁹⁴ *Id.* at 53-54.

constraint control.²⁹⁵ PJM explains because of its size and complexity, its transmission system almost always experiences constraints on Bulk Electric System (BES) facilities. As described in the Bielak Affidavit, PJM states that the primary tool PJM dispatchers will use to relieve these constraints is off-cost “constraint control.”²⁹⁶ PJM states that a DER Aggregation Resource would not fit into any of these categories for non-cost action because DER Aggregation Resources are aggregations of resources that may inject back onto the electrical system, and in order to assist in constraint control, PJM would require those resources to be re-dispatched off-cost. Further, PJM adds that the off-cost actions it uses to control system operating limits and interconnection reliability operating limits on the PJM system are contingency operations and normal/actual overload. Under contingency operations, PJM states that it will initiate off-cost actions if reasonable controlling actions are available with an effect generally greater than five percent on a dollar per megawatt. For normal/actual overload, PJM initiates off-cost and uses controlling actions greater than five percent.²⁹⁷

162. During the constraint control process, PJM states that its real-time security constrained economic dispatch engine will analyze system conditions and determine the most cost-effective dispatch scenario for relieving a constraint. PJM states that an essential component of the real-time security constrained economic dispatch’s analysis is the unique distribution factor of each pricing node on the Transmission System, which provides the dispatcher with an accurate reading of the precise amount of constraint control that can be provided from a pricing node.²⁹⁸ In addition, PJM asserts that under a multi-nodal model, real-time security constrained economic dispatch could not accurately assess which specific Component DER interface with which specific pricing node. As a result, the case presented to the dispatcher would provide dramatically less accurate information regarding the amount of constraint control that could be relied upon from a given DER Aggregation Resource. Lastly, PJM states that it examined the impact of allowing DER Aggregation Resources to be distributed among multiple pricing nodes on: (1) energy market pricing and dispatch; and (2) operational constraint control. PJM states that it found that, even in geographically close locations, there is a strong disparity between pricing and constraint impacts at different pricing nodes. PJM states that it

²⁹⁵ *Id.* at 47-48.

²⁹⁶ According to PJM, the off-cost action for constraint control is the most common controlling action to manage system operating limits and interconnection reliability operating limits. Off-cost actions are contingency operations and normal/actual overload. Bielak Aff. ¶¶ 14-15.

²⁹⁷ *Id.* PP 13-14.

²⁹⁸ Transmittal at 48.

analyzed the impact of constraints across the PJM footprint, using thermal constraints on branches in Northern Maryland and Virginia. PJM states that its analysis shows that close pricing nodes are not electrically equivalent, and therefore cannot be aggregated together as a single resource for energy market participation.²⁹⁹

b. Comments/Protests

163. The IMM and FirstEnergy support PJM's single-node proposal, arguing that PJM's single-node approach ensures reliability and appropriate market signals. The IMM states that locational marginal pricing based on the nodal market model is fundamental to the success of the PJM markets and that allowing DER aggregation across nodes is unnecessary and would distort market signals.³⁰⁰ The IMM contends that PJM should be required to routinely review and modify the pricing node assignments and modeling impact factors due to the dynamic nature of the grid.³⁰¹ FirstEnergy also states that requiring PJM to adopt a multi-nodal approach in the energy and ancillary markets could cause an individual Component DER responding to the LMP Dispatch signal to create excessive distribution system line congestion that will cause reliability problems and could also lead to thermal line overloading.³⁰² OPSI and NJBPU do not oppose PJM's proposed locational requirements but also view allowing multi-node DER aggregations as an important next step in the implementation of Order No. 2222.³⁰³

²⁹⁹ PJM states that its staff presented an example of nodes that are geographically in the same town but have different electrical impact on the PJM system. PJM explains that for a real-time constraint, there are two nodes that help the constraint (i.e., increase generation to alleviate constraint), and two nodes that hurt the constraint (i.e., decrease generation to alleviate constraint). PJM states that if it were to dispatch this resource in aggregate, it would be suboptimal and may exacerbate the constraint. *Id.* at 49-50. See slides PJM Staff, Order 2222 Design Discussion, at 30-35 (Mar. 31, 2021): <https://www.pjm.com/-/media/committees-groups/subcommittees/dirs/2021/20210331/20210331-item-06-dera-proposal.ashx>.

³⁰⁰ IMM Comments at 8.

³⁰¹ *Id.* at 9.

³⁰² FirstEnergy Comments and Limited Protest at 18.

³⁰³ OPSI Comments at 3; New Jersey BPU Comments at 5-6.

164. However, several protesters argue against PJM's proposed use of a single-node aggregation model in the energy market.³⁰⁴ AEMA argues that PJM's proposal to limit aggregation to a single node for energy market participation is inconsistent with the Commission's directive to make aggregations that are as geographically broad as technically feasible³⁰⁵ and this limit is extended to capacity market participation as well because aggregations must first be formed at a single pricing node.³⁰⁶ Resideo Technologies states that PJM's proposal represents the narrowest, most restrictive approach to aggregations possible, and is inconsistent with the Commission's directive to create geographically broad aggregations.³⁰⁷

165. First, several protesters argue that it will be difficult for DERs to form DER Aggregations at small pricing nodes that meet PJM's minimum size requirements. AEE and SEIA contend that PJM's proposal will substantially limit the ability of many residential and commercial DERs to participate in wholesale markets because of the eligibility, cost, and logistical constraints that will make it challenging if not impossible for DER Aggregators to form aggregations that meet minimum size requirements.³⁰⁸ AEE and SEIA contrast PJM's single-node proposal to the California Independent System Operator's (CAISO) approach that allows aggregations within a sub-LAP (Load Aggregation Point), which each serve about 1 GW of load.³⁰⁹ AEMA notes that an analysis of PJM's pricing nodes shows that 50% of those pricing nodes represent 7 MW or less, making it difficult for mass market customers to participate at small pricing nodes.³¹⁰ Likewise, JCA avers that small DERs will require significant aggregation that may be difficult to achieve at nodes that represent small amounts of load or otherwise

³⁰⁴ AEMA Protest at 6-7; AEE and SEIA Protest at 7-11; City of Cincinnati Comments at 2; Environmental Organizations Protest at 3-4; Resideo Technologies Protest at 4-7; JCA Comments and Limited Protest at 6-14.

³⁰⁵ AEMA Protest at 2 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 188).

³⁰⁶ *Id.* at 6, 13.

³⁰⁷ Resideo Technologies Protest at 6.

³⁰⁸ AEE and SEIA Protest at 7-8.

³⁰⁹ *Id.* at 8.

³¹⁰ AEMA Protest at 7. AEMA specifically identifies smart thermostats, electric vehicles, and residential storage as examples of mass market applications that provide between 0.5 kW and 2 kW of controllable load which would be limited by the single pricing node requirement.

present challenging circumstances for DERs.³¹¹ Environmental Organizations propose to resolve minimum size concerns by allowing DERs to aggregate beyond a pricing node if, and only if, the quantity at each pricing node is less than 100kW and could not otherwise participate in PJM's energy market, which Environmental Organizations contend is similar to PJM's approach to demand response aggregation.³¹² AEMA contends that PJM has not demonstrated that the cost impacts of a potentially inefficient dispatch exceed the potential savings to load that will result from additional resource availability through multi-nodal aggregation.³¹³

166. Second, several protesters claim that PJM has not adequately demonstrated that aggregation beyond a single node for energy market participation is not technically feasible and propose alternative approaches. AEE and SEIA contend that PJM did not fully examine how and where multi-node aggregation could be implemented in a technically feasible manner such as implementing appropriate restrictions that recognize historical transmission constraints.³¹⁴ AEE and SEIA state that available information suggests that the vast majority of congestion occurs at a relatively small handful of PJM's 10,000 pricing nodes.³¹⁵ Likewise, AEMA avers that these constraints tend to be concentrated at specific nodes, leaving the majority of the BES free of constraints.³¹⁶ AEMA argues that this suggests aggregations could be limited to the same state and service territory of a single electric distribution company, and further bounded by identified congestion points that could be managed for multi-nodal aggregations.³¹⁷ According to JCA, PJM's analysis of the impact of a multi-node model is flawed because

³¹¹ JCA Comments and Limited Protest at 7 (citing Exhibit 2, Affidavit of Matthew J. King ¶¶ 10-11 (King Aff.)).

³¹² Environmental Organizations Protest at 4 (citing *PJM Manual 11: Energy & Ancillary Services Market Operations* (Feb.9, 2023), Section 10.5, <https://www.pjm.com/-/media/documents/manuals/m11.ashx>).

³¹³ AEMA Protest at 11.

³¹⁴ AEE and SEIA Protest at 8 (citing Transmittal at 48).

³¹⁵ *Id.* at 9.

³¹⁶ AEMA states that IMM's finding that 43% of all congestion occurs at 25 facilities means that the other 9,975 nodes rarely see congestion. AEMA Protest at 8 (citing Monitoring Analytics, State of the Market Report for PJM, at 553, http://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2020/2020-som-pjm-sec11.pdf).

³¹⁷ *Id.* at 9.

it is limited to two examples that do not meet the requirement of Order No. 2222 to provide a detailed technical explanation for the locational requirements.³¹⁸ JCA contends that PJM should demonstrate that it has performed analysis which shows that single-node aggregation is as broad as technically possible or study to what extent of aggregation beyond the single-node level is feasible.³¹⁹

167. Several commenters assert that PJM has not considered the approach of identifying regions within PJM that are unlikely to experience transmission constraints and allowing multi-node aggregation across those areas. AEE and SEIA add that it is likely that major load centers such as cities that make up the core of each transmission zone have no substantive history of congestion and could enable multi-node aggregations without impacting accurate pricing or reliability. Similarly, City of Cincinnati states that it is not aware of any analyses to determine whether multi-node aggregations may be feasible in specific regions or load centers like Cincinnati that have no history of congestion.³²⁰ AEE and SEIA state that they have encouraged PJM to conduct a study that would identify groups of nodes with little or no chance of congestion that could form the basis for aggregation.³²¹ AEE and SEIA argue that PJM should also consider allowing multi-node aggregation for energy-only resources because there is no deliverability requirement for such resources, and therefore there is less concern about the location of the assets on the grid.³²²

168. AEMA also requests that the Commission direct PJM to identify major transmission constraints and adopt an approach similar to CAISO or NYISO to allow aggregations across a sub-load aggregation point (or equivalent).³²³ AEMA states that, unlike NYISO and CAISO, PJM has not addressed whether it could accomplish multi-nodal aggregation by identifying transmission constraints.³²⁴ AEMA acknowledges PJM's example where two pricing nodes at the same substation had differing impacts on constraint relief, but argues that PJM has provided no analysis of the overall costs involved or the prevalence of such situations and thus the example does not validate

³¹⁸ JCA Comments and Limited Protest at 10.

³¹⁹ *Id.* at 11 (citing King Aff. ¶ 19).

³²⁰ City of Cincinnati Comments at 2.

³²¹ AEE and SEIA Protest at 9.

³²² *Id.* at 10.

³²³ AEMA Protest at 10.

³²⁴ *Id.* at 9-10.

PJM's point.³²⁵ According to JCA, the large difference in the ratio of peak load per aggregation area between PJM and CAISO suggests that further aggregation in PJM may be possible.³²⁶ Resideo Technologies requests that the Commission direct PJM to determine a solution to allow multi-nodal aggregations for market participants like Resideo Technologies who utilize residential demand response across a broad geographical footprint.³²⁷

169. Third, several commenters raise concerns that PJM's single-node requirements will slow the adoption of DERs and reduce the potential of utility programs. For instance, City of Cincinnati suggests PJM's proposal could hinder the ability of DERs to participate in wholesale markets and curtail community-wide adoption of DERs. JCA argues that PJM's single-node proposal undermines state programs designed to encourage utility customers' participation in the market.³²⁸ Resideo Technologies assert that PJM's proposal would create a barrier to entry for residential demand response providers.³²⁹

170. Fourth, some commenters assert that PJM should adopt its model for demand response participation in the energy market. AEE and SEIA and JCA explain that PJM already allows multi-node aggregation for demand response resources and argues that PJM should leverage the existing rules to develop a similar proposal for DERs in general.³³⁰

171. AEMA points out that PJM already calculates and uses a synthesized distribution factor value across multiple pricing nodes in its demand response model, where demand response resources can be aggregated within a transmission zone and are dispatched and compensated on the basis of the "[a]ppropriate five minute real-time zonal or aggregate LMP."³³¹ AEMA states that PJM's proposal will force smaller assets to continue to use

³²⁵ *Id.* at 10 (citing Transmittal at 50).

³²⁶ JCA Comments and Limited Protest at 10.

³²⁷ Resideo Technologies Protest at 7.

³²⁸ JCA Comments and Limited Protest at 7-8.

³²⁹ Resideo Technologies Protest at 4-6.

³³⁰ AEE and SEIA Protest at 10; JCA Comments and Limited Protest at 11-12 (citing King Aff. ¶ 13).

³³¹ AEMA Protest at 11-12 (citing PJM Manual 28 at 11.2, <https://pjm.com/directory/manuals/m28/index.html#Sections/112%20PJM%20Load%20Response%20Programs%20Accounting%20Procedures.html>).

the demand response model where they find the nodal requirement problematic, which AEMA claims will prevent those resources from accessing some services allowed to DER but not demand response, contrary to Order No. 2222's requirements that PJM remove barriers to DER participation.³³²

c. Answers

172. PJM argues that criticisms of its nodal framework are misinformed, and states that it disagrees with AEMA's assertion that constraints tend to be concentrated at specific nodes, "leaving the majority of the BES free of constraints."³³³ PJM clarifies that grid constraints do not exist at "nodes" as AEMA suggests, but instead along "branches" connecting between multiple nodes.³³⁴ PJM states that these branches may include lines, transformers, series devices, phase angle regulators, or flow devices.

173. PJM refutes assertions that the "majority of the BES" is "free of constraints." According to PJM's affiant, constraints affect LMP via congestion prices that manifest across the PJM footprint by determining a bus's effect on any and all PJM thermal constraints; one cannot divide the grid into zones "adjacent to congestion" and more permissive zones.³³⁵ PJM's affiant contends that all buses also would likely have differing distribution factors and congestion costs, rendering them not electrically equivalent and thereby ineffective for purposes of relieving operational constraint control in aggregation, even though the nodes are not "adjacent to congestion" as AEMA states.³³⁶

174. PJM also concurs with the IMM's refutation of AEMA's analysis, arguing AEMA incorrectly used the top 25 most frequently binding constraints from the State of the Market Report for PJM.³³⁷ Beyond AEMA's specific points, PJM takes issue with

³³² *Id.* at 12.

³³³ PJM Answer at 13 (citing AEMA Protest at 7-10).

³³⁴ *Id.* at 14 (citing Bielak Aff. ¶¶ 7-8).

³³⁵ *Id.* at 14.

³³⁶ *Id.* (citing Bielak Aff. ¶ 9). PJM cites an example of a thermal constraint on a branch in Northern Maryland impacting congestion pricing in Southern Illinois. PJM also cites an example where a constraint in northern Virginia may have opposing effects on two nearby pricing nodes. PJM argues these complications refute AEMA's proposed aggregation scheme. *Id.* at 15-16 (citing AEMA Protest at 8-9).

³³⁷ *Id.* at 16 (citing IMM First Answer at 7).

comparisons to non-PJM systems, noting that the Commission explicitly declined to impose a uniform locational requirement across all RTOs/ISOs.³³⁸ PJM states that the Commission allowed for regional flexibility and that specific references to congestion patterns and reliability impacts in Order No. 2222 are evidence of Commission acknowledgement of the differences between RTOs/ISOs.³³⁹

175. PJM reaffirms its single nodal proposal for energy market participation, but states that it may consider transitioning to a multi-nodal approach only after it is able to examine operational impacts of DER Aggregations following implementation of its Order No. 2222 participation model.³⁴⁰ PJM avers that data from a study conducted now would be stale by the time of implementation in 2026, given numerous changes in generator installations and retirements, transmission system upgrades, and shifts in load patterns.³⁴¹

176. Indicated Utilities argue that PJM's proposed single node aggregation is prudent given that many of these concepts are novel and safety and reliability are crucial in the beginning stages of implementation.³⁴² Indicated Utilities also state that there is no requirement for PJM to conduct a study, and it cannot reasonably be presumed that such a study would adequately project and encompass the issues that will arise under the new operating conditions presented by DER Aggregations.³⁴³

177. The IMM argues that AEE and SEIA's concern that DER Aggregators will struggle to aggregate 100 to 200 or more customers at a single pricing node is unsupported.³⁴⁴ The IMM references a PJM presentation that shows the average PJM load pricing node interconnects load that varies from 5 to 15 MW. According to the IMM, there could be thousands of DERs at the average load pricing node.³⁴⁵ Therefore, the IMM states that there are sufficient potential DERs for competition and aggregation

³³⁸ *Id.* at 17.

³³⁹ *Id.* (citing Order No. 2222, 172 FERC ¶ 61,247 at P 206).

³⁴⁰ *Id.* at 17.

³⁴¹ *Id.* at 17-18.

³⁴² Indicated Utilities Answer at 38.

³⁴³ *Id.* at 39.

³⁴⁴ IMM First Answer at 5-6.

³⁴⁵ *Id.* (citing "Locational Requirements: Enode, Pnode and electrical location education," PJM Presentation to the DIRS (April 27, 2021) at 5).

at a single node, and that single node aggregation does not prevent market entry or undermine competition.

178. The IMM disagrees with AEE and SEIA and AEMA that congestion happens only in a limited area and that PJM should allow multi-nodal aggregation in rarely congested areas.³⁴⁶ The IMM explains that it is impossible to know when constraints will bind ahead of time, and it is impossible to define what “rarely” means. The IMM further explains that constraints are dynamic and often simultaneous, and a single constraint affects many pricing nodes at the same time. The IMM also explains that constraints vary from year to year and quarter to quarter and change in unexpected ways, especially given the dynamics that DER Aggregation Resources will bring to the grid. The IMM argues that using historical data to identify constraints would lead to inaccuracy in real time dispatch and settlement and result in an inefficient wholesale market.

179. AEMA urges the Commission to establish a third, multi-node, participation model for all aggregations of DERs, based on the demand response aggregation model, that contains: (1) no commitment and PJM dispatch available; (2) no cost-based offer, and price-based offers are capped at \$1000/MWh; (3) PJM dispatch and settlement based on residual zonal price; and (4) uplift payments if settlements do not cover the committed dispatch curve.³⁴⁷ AEMA argues that a multi-nodal aggregation model would greatly diffuse the ability of any single resource to exercise market power.³⁴⁸

d. Data Request Response

180. In the Data Request Response, PJM states that incorporating resources on its system that cannot be used for constraint control would remove a critical tool for its dispatch.³⁴⁹ However, PJM states that while a multi-node model would raise concerns (e.g., degradation in accurate market pricing and operational constraint control) regarding NERC reliability standards, this does not mean that a multi-node model will, by itself, automatically cause PJM to violate these requirements.³⁵⁰ PJM also states that future enhancements in technological infrastructure, which may occur after DER Aggregator Participation Model being implemented in 2026, may facilitate a more efficient transmission of data between the transmission and distribution functions, which by

³⁴⁶ *Id.* at 6-8.

³⁴⁷ AEMA Answer at 20.

³⁴⁸ *Id.* at 16.

³⁴⁹ Data Request Response at 26.

³⁵⁰ *Id.* at 27.

extension may mitigate the pricing node/real-time security constraints economic dispatch (RT-SCED) accuracy concerns. PJM states that it anticipates examining this issue through its stakeholder process.³⁵¹ Regarding the basis for the proposed limitation that a Component DER can only interface with multiple pricing nodes if those pricing nodes are in the same state and service territory of the electric distribution company, PJM explains that this is because of the coordination between multiple electric distribution companies for separate distribution modeling and study review, which potentially occur under separate RERRAs.³⁵²

e. Data Request Response Comments/Protests

181. Maryland OPC & DC OPC argue that the Commission should require PJM to adopt a larger geographic scope for DER aggregation, noting the disparity between PJM's and other ISOs'/RTOs' approaches and the challenges of meeting the minimum size requirements under PJM's proposal.³⁵³ New Jersey DRC similarly contends that PJM should evaluate allowing DER Aggregations within a greater geographical scope.³⁵⁴ AEE and SEIA reiterate that PJM's proposal makes no attempt to offer even limited alternatives that would allow for broader aggregation while guarding against the violation of reliability standards.³⁵⁵

182. In contrast, the IMM advocates for maintaining PJM as a nodal market with no exceptions for some resources to be priced or dispatched based on aggregations.³⁵⁶ The IMM states the fact that some existing rules undercut nodal design is not a justification for allowing DER aggregations to do so, and the failures of other multi-node markets only bolster arguments for maintaining the nodal design for DER aggregations. The IMM argues that, related to the Commission's question asking PJM to explain how to transition to a multi-node model for DER in the future, the goal of a multi-node model is unclear.

³⁵¹ *Id.* at 28.

³⁵² *Id.* at 24.

³⁵³ Maryland OPC & DC OPC Data Request Response Comments at 2-3.

³⁵⁴ New Jersey DRC Answer to Data Request Response at 2-3.

³⁵⁵ Regarding PJM's reliability concerns with multi-node aggregation, AEE and SEIA highlight the need for a technical conference to discuss this issue across the RTOs/ISOs. AEE and SEIA Data Request Response Protest at 8-9.

³⁵⁶ IMM Data Request Response Comments at 2-3.

f. Commission Determination

183. We find that PJM's proposal partially complies with the locational requirements of Order No. 2222, namely (1) to establish locational requirements for distributed energy resources to participate in a distributed energy resource aggregation that are as geographically broad as technically feasible; and (2) to provide a detailed, technical explanation for the geographical scope of the proposed locational requirements.³⁵⁷

184. With respect to PJM's proposed multi-node model for capacity and ancillary services-only DER Aggregation Resources, we find that PJM has complied with the requirement to revise its tariff to establish locational requirements for distributed energy resources to participate in a distributed energy resource aggregation that are as geographically broad as technically feasible.³⁵⁸ Under PJM's proposal, DER Capacity Aggregation Resources will be able to aggregate within a defined zone or sub-zonal LDA, consistent with the manner in which PJM's capacity market currently clears resources in these areas. We also find that, with respect to its proposed locational requirements for capacity and ancillary services-only DER Aggregation Resources, PJM complies with the requirement to provide a detailed, technical explanation for the geographical scope of its proposed locational requirements.³⁵⁹ As PJM explains, for Component DER seeking to form DER Aggregation Resources to participate in PJM's ancillary services markets, which have broad market pricing on an RTO-wide basis or reserve zone basis, Component DER may span a defined utility footprint to form DER Aggregation Resources. We disagree with AEMA's assertion that PJM's single-node proposal for energy market participation extends the limitations on energy aggregation to the capacity market because, as PJM explains, its capacity market currently clears resources in these defined zones or sub-zonal LDAs and therefore will permit DER Aggregation Resources to aggregate across those areas.³⁶⁰

185. However, with respect to PJM's proposed single-node model for DER Aggregation Resources participating in the energy market, we agree with commenters that PJM has not demonstrated that its proposed locational requirements for distributed energy resources to participate in a distributed energy resource aggregation are as geographically broad as technically feasible.³⁶¹ PJM asserts that its proposed requirement

³⁵⁷ Order No. 2222, 172 FERC ¶ 61,247 at P 204.

³⁵⁸ *Id.*

³⁵⁹ *Id.*

³⁶⁰ *See* Transmittal at 53-54.

³⁶¹ Order No. 2222, 172 FERC ¶ 61,247 at P 204.

for DER Aggregation Resources to participate in the energy market at a single node, rather than across multiple nodes, is based on PJM's unique system topology, congestion patterns, and operating practices.³⁶² Therefore, because of its consequent operational concerns, PJM explains that it may not be feasible for Component DER to aggregate across certain nodes without further examination of the operational impacts after the DER Aggregator Participation Model is implemented in 2026.³⁶³

186. We acknowledge that it may not be feasible for Component DER to aggregate across certain nodes where such nodes have different and opposing impacts on transmission constraints.³⁶⁴ We understand PJM's concern that allowing Component DER to aggregate across such nodes could raise operational challenges. However, we find that, while PJM has provided its assessment that allowing Component DER to aggregate across multiple nodes could raise operational or reliability challenges or concerns, PJM has not demonstrated that it is not technically feasible for Component DER to aggregate across a broader geographic area than a single node, at least for some nodes or groupings of electrical facilities, for energy market participation. As commenters note, PJM does not explain whether broader aggregation could be technically feasible for DER Aggregation Resources participating in the energy market by, for example, identifying, prior to implementation, transmission constraints or examining regions or areas with historically minimal congestion.³⁶⁵ Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further

³⁶² In its Data Request Response, PJM acknowledges that a multi-node model will not, by itself, automatically cause PJM to violate NERC reliability standards. *See* Data Request Response at 27.

³⁶³ PJM states that it analyzed two pricing nodes at the same substation that had differing impacts on real-time constraint. One node had a 20% "help" on the constraint (i.e., increase generation to alleviate the constraint), while the other node had a 12% "help" on the constraint. PJM states that this difference is significant to operations because PJM Dispatchers rely on accurate constraint control from each specific pricing node to use off-cost constraint and maintain SOLs and IROLs. Transmittal at 50.

³⁶⁴ *See* Data Request Response at 27 ("In this example, [n]odes A and B represent resources PJM has historically used to help control this thermal constraint in Northern Virginia. The constraint is localized to the Northern Virginia area, and has nodes, geographically close, with opposing impacts to the constraint."); *see supra* note 299.

³⁶⁵ *See, e.g.*, AEE and SEIA Protest at 8-9; AEE and SEIA Protest of Data Request Response at 7-9; AEMA Protest at 9-11; City of Cincinnati Comments at 2; Environmental Organizations Protest at 3; JCA Comments and Limited Protest at 10-11; Resideo Technologies Protest at 6.

compliance filing to either: (1) provide a detailed technical explanation as required by Order No. 2222 to demonstrate that it is not technically feasible for any Component DER to aggregate more broadly than a single-node, as proposed, for energy market participation;³⁶⁶ or (2) propose alternative locational requirements for energy market participation that are as geographically broad as technically feasible, as well as a detailed technical explanation for the geographical scope of these alternative locational requirements.³⁶⁷ If PJM elects to propose alternative locational requirements for DER Aggregation Resources participating in the energy markets, it should implement its DER Aggregation Participation Model on February 2, 2026, as proposed, and, if necessary, file a further compliance filing proposing a reasonable effective date for such alternative locational requirements for energy market participation.

6. Distribution Factors and Bidding Parameters

187. In Order No. 2222, the Commission added section 35.28(g)(12)(ii)(c) to the Commission's regulations to require each RTO/ISO to establish market rules that address distribution factors and bidding parameters for distributed energy resource aggregations.³⁶⁸ Specifically, the Commission required each RTO/ISO that allows multi-node aggregations to revise its tariff to (1) require that distributed energy resource aggregators give to the RTO/ISO the total distributed energy resource aggregation response that would be provided from each pricing node, where applicable, when they initially register their aggregation, and to update these distribution factors if they change; and (2) incorporate appropriate bidding parameters into its participation models as necessary to account for the physical and operational characteristics of distributed energy resource aggregations.

188. The Commission stated that, in meeting the requirement to incorporate appropriate bidding parameters into its participation models as necessary to account for the physical and operational characteristics of distributed energy resource aggregations, each RTO/ISO must either (1) incorporate appropriate bidding parameters that account for the physical and operational characteristics of distributed energy resource aggregations into its one or more new participation models for such aggregations; and/or (2) adjust the

³⁶⁶ Order No. 2222, 172 FERC ¶ 61,247 at P 204.

³⁶⁷ We note that several RTOs/ISOs have adopted geographically broader locational requirements for distributed energy resource aggregations participating in energy markets. *See* NYISO Compliance Order, 179 FERC ¶ 61,198 at PP 141, 152; CAISO Compliance Order, 179 FERC ¶ 61,197, at PP 132, 137-139; *ISO New England Inc. and New England Power Pool Participants Committee*, 182 FERC ¶ 61,137, at P 16 & n.20 (2023).

³⁶⁸ Order No. 2222, 172 FERC ¶ 61,247 at P 225.

bidding parameters of the existing participation models to account for the physical and operational characteristics of distributed energy resource aggregations.³⁶⁹ The Commission noted that bidding parameters could include, for example, response rates, ramp rates, and upper and lower operating limits.³⁷⁰

189. The Commission stated that, in meeting the requirement to account for distribution factors and bidding parameters, each RTO/ISO may revise its tariff to manage the locational attributes of distributed energy resource aggregations in a manner that reflects the RTO's/ISO's unique network configuration, infrastructure, and existing operational processes.³⁷¹ The Commission stated that it would evaluate each RTO's/ISO's proposal to ensure that it will provide the RTO/ISO with sufficient information from resources in a multi-node distributed energy resource aggregation that is necessary to reliably operate its systems without imposing undue burden on individual distributed energy resources or utility distribution companies. The Commission stated that RTOs/ISOs that allow multi-node aggregations must, at a minimum, propose clear protocols explaining how a distributed energy resource aggregation can provide the required information and update that information when needed.

a. Filing

190. PJM states that it will not require distribution factors for DER Aggregation Resources given its proposed single-node dispatch for energy. Regarding the bidding parameters for DER Aggregation Resources, PJM states that it will allow DER Aggregators to self-schedule their resources in the day-ahead and real-time energy markets based on the bidding parameters for the applicable technology-type as described in the PJM Manuals.³⁷² PJM states that market resources reflect their capability to PJM via market parameters, economic minimum,³⁷³ economic maximum,³⁷⁴ and ramp rate.

³⁶⁹ *Id.* P 227.

³⁷⁰ *Id.* P 225 n.558.

³⁷¹ *Id.* P 229.

³⁷² Transmittal at 55. *See* Tariff, attach. K-app., § 1.4B(d) (22.0.0); Operating Agreement, Schedule 1, § 1.4B(d).

³⁷³ Economic minimum means “the lowest incremental MW output level, submitted to PJM market systems by a Market Participant, that a unit can achieve while following economic dispatch.” *See* Tariff, Definitions E-F.

³⁷⁴ Economic maximum means “the highest incremental MW output level, submitted to PJM market systems by a Market Participant, that a unit can achieve while

PJM adds that because a Component DER is defined in part as “any resource, within the PJM Region, that is on a distribution system, any subsystem thereof, or behind a customer meter . . .” the specific bidding parameters for each conceivable technology type are not “realistically susceptible to specification” in the Tariff’s text and Operating Agreement, and accordingly are better suited for the PJM Manuals under the Commission’s Rule of Reason.³⁷⁵

b. Comments/Protests

191. JCA asserts that PJM’s argument that the application of distribution factors would be a complex undertaking is neither acceptable nor accurate. JCA states that although distribution factors necessarily add a degree of complexity, it believes distribution factors also help to enable multi-node aggregations which provide DER Aggregators flexibility in meeting both minimum size requirements and market performance standards.³⁷⁶

192. JCA argues that PJM provides no evidence for its concern that the ability to change distribution factors could lead to market manipulation.³⁷⁷ JCA adds that if one assumes that DER Aggregators will operate with good faith and only utilize multi-nodal aggregations when the benefit outweighs the burden, then PJM’s arguments against distribution factors as part of its justification for its nodal approach are lessened.³⁷⁸ Additionally, JCA maintains that the IMM, the Commission, and state commissions have various tools to address market manipulation and that PJM and its market monitor can take corrective action, on an individual DER Aggregator basis or more broadly by revising its market rules, if necessary.

193. The IMM argues that PJM’s filing includes inconsistent market rules because the tariff changes address market power mitigation in the energy market but do not include market power mitigation rules addressing offer parameters.³⁷⁹ The IMM contends that use of such parameters is subject to the rules in the Operating Agreement requiring

following economic dispatch.” See Tariff, Definitions E-F.

³⁷⁵ Transmittal at 55 (citing *City of Cleveland v. FERC*, 773 F.2d 1368, 1376 (D.C. Cir. 1985)).

³⁷⁶ JCA Comments and Limited Protest at 12-13 (citing King Aff. ¶ 21).

³⁷⁷ *Id.* at 13.

³⁷⁸ *Id.* at 13-14 (citing King Aff. ¶ 24).

³⁷⁹ IMM Comments at 14 (citing PJM Filing at attach. B, Operating Agreement, Schedule 1, Section 1.2 and Section 1.4B(j)).

accurate ramp rates and defined use of emergency operating limits, including the unit specific parameter process in Operating Agreement, Schedule 1, Section 6.6 and all other rules for parameter mitigation.

c. Answers

194. The IMM states that the roles and responsibilities of the IMM also need to be clearly defined and that market monitoring requires access to data and communication with all involved entities.³⁸⁰ The IMM disagrees with JCA that market monitoring alone provides adequate protection from market power issues associated with participation of DERs. The IMM argues that marketing monitoring in the absence of clear rules cannot be effective.

d. Data Request Response

195. In response to the Data Request, PJM states that DER Aggregators will have access to all of the general operating parameters in Markets Gateway for operations, which include status, emergency minimum and maximum MW, economic minimum and maximum MW, and ramp rate. PJM adds that its Markets Gateway User Guide will contain more information regarding these parameters and their availability to DER Aggregation Resources.³⁸¹

e. Commission Determination

196. We find that PJM's proposal partially complies with the requirement of Order No. 2222 to establish market rules that address distribution factors and bidding parameters for distributed energy resource aggregations.³⁸² As an initial matter, we find that PJM has complied with the following requirements of Order No. 2222 pertaining to distribution factors and bidding parameters that required RTOs/ISOs to: (1) incorporate appropriate bidding parameters into its participation models as necessary to account for the physical and operational characteristics of distributed energy resource aggregations;³⁸³ and (2) propose clear protocols explaining how a distributed energy resource aggregation can

³⁸⁰ IMM First Answer at 4.

³⁸¹ Data Request Response at 29.

³⁸² Order No. 2222, 172 FERC ¶ 61,247 at P 225.

³⁸³ *Id.* P 227. See Transmittal at 55-56; Data Request Response at 29; Tariff, attach. K-app., § 1.4B(d); Operating Agreement, Schedule 1, § 1.4B(d).

provide the required information and update that information when needed.³⁸⁴ We address the remaining compliance requirements and comments and protests below.

197. We are not able to evaluate at this time whether PJM's proposal to not require distribution factors complies with the requirement of Order No. 2222 to establish market rules that address distribution factors for distributed energy resource aggregations.³⁸⁵

PJM states that the single-node framework that it proposes for energy market participation will not require distribution factors. As discussed above in Part IV.5.f of this order, we find that PJM has not demonstrated that its proposed locational requirements for DER Aggregation Resources participating in the energy market are as geographically broad as technically feasible.³⁸⁶ Because the need for distribution factors is closely tied to an RTO's/ISO's locational requirements, we find that it is necessary to assess PJM's compliance proposal with respect to distribution factors concurrently with its further compliance filing regarding its proposed locational requirements.

Accordingly, to the extent that PJM proposes alternative locational requirements for energy market participation that necessitate the use of distribution factors, we direct PJM to also address this Order No. 2222 requirement in the further compliance filing.

Specifically, we require PJM to revise its tariff as needed to require that distributed energy resource aggregators give to the RTO/ISO the total distributed energy resource aggregation response that would be provided from each pricing node, where applicable, when they initially register their aggregation, and to update these distribution factors if they change.³⁸⁷

198. Finally, given that we are making no findings with respect to PJM's proposal regarding distribution factors, we need not address here JCA's argument regarding the benefits of distribution factors to multi-node aggregations. In addition, we find that the IMM's request to require PJM to revise its bidding parameters to address market power mitigation rules for DER Aggregation Resources is outside the scope of this proceeding, consistent with the explicit finding of Order No. 2222 that reforms to capacity market mitigation rules are outside the scope of the rule.³⁸⁸

³⁸⁴ Order No. 2222, 172 FERC ¶ 61,247 at P 227. *See* Transmittal at 73; Tariff, attach. K-app., § 1.4B(f); Operating Agreement, Schedule 1, § 1.4B(f).

³⁸⁵ Order No. 2222, 172 FERC ¶ 61,247 at P 225.

³⁸⁶ *See* discussion *supra* pt. IV.5.f.

³⁸⁷ Order No. 2222, 172 FERC ¶ 61,247 at P 225.

³⁸⁸ *Id.* PP 362-363. *See also* NYISO Compliance Order, 179 FERC ¶ 61,198 at P 94. The Commission found protesters' arguments outside the scope of the proceeding, reasoning that "Order No. 2222 neither addressed buyer-side market power mitigation

7. Information and Data Requirements

199. In Order No. 2222, the Commission added section 35.28(g)(12)(ii)(d) to the Commission's regulations to require each RTO/ISO to establish market rules that address information requirements and data requirements for distributed energy resource aggregations.³⁸⁹ As discussed in more detail below, the Commission required each RTO/ISO to revise its tariff to (1) include any requirements for distributed energy resource aggregators that establish the information and data that a distributed energy resource aggregator must provide about the physical and operational characteristics of its aggregation; (2) require distributed energy resource aggregators to provide a list of the individual resources in their aggregations; and (3) establish any necessary information that must be submitted for the individual distributed energy resources. The Commission also required each RTO/ISO to revise its tariff to require distributed energy resource aggregators to provide aggregate settlement data for the distributed energy resource aggregation and to retain performance data for individual distributed energy resources in a distributed energy resource aggregation for auditing purposes.

200. First, the Commission required each RTO/ISO to revise its tariff to include any requirements for distributed energy resource aggregators that establish the information and data that a distributed energy resource aggregator must provide about the physical and operational characteristics of its aggregation. The Commission required each RTO/ISO to revise its tariff to establish any necessary physical parameters that distributed energy resource aggregators must submit as part of their registration process only to the extent these parameters are not already represented in general registration requirements or bidding parameters applicable to distributed energy resource aggregations.³⁹⁰

201. Next, the Commission directed each RTO/ISO to revise its tariff to require distributed energy resource aggregators to provide a list of the individual distributed energy resources participating in their aggregations to the RTO/ISO.³⁹¹ The Commission stated that, if an RTO/ISO needs additional information beyond this list, the RTO/ISO should identify and explain in its compliance filing what additional specific information about the individual distributed energy resources within an aggregation the RTO/ISO needs. The Commission stated that each RTO/ISO should also propose how the

rules nor required RTOs/ISOs to revise those rules for distributed energy resource aggregations.” *See supra* PP 86-87.

³⁸⁹ Order No. 2222, 172 FERC ¶ 61,247 at P 236.

³⁹⁰ *Id.* P 237.

³⁹¹ *Id.* P 238.

information requested must be shared with the RTO/ISO and affected distribution utilities. As part of these tariff revisions, the Commission stated that each RTO/ISO must also require that the distributed energy resource aggregator update that list of individual resources and associated information as it changes.³⁹² The Commission also found that the distributed energy resource aggregator, not an individual distributed energy resource in the aggregation, is the single point of contact with the RTO/ISO, and that the aggregator would be responsible for managing, dispatching, metering, and settling the individual distributed energy resources in its aggregation.³⁹³

202. The Commission found that aggregate settlement data for a distributed energy resource aggregation, as well as performance data for individual distributed energy resources in a distributed energy resource aggregation are necessary for the participation of any type of resource in RTO/ISO markets and to enable the RTOs/ISOs to perform necessary audit functions.³⁹⁴ Therefore, the Commission required each RTO/ISO to revise its tariff to require each distributed energy resource aggregator to maintain and submit aggregate settlement data for the distributed energy resource aggregation, so that the RTO/ISO can regularly settle with the distributed energy resource aggregator for its market participation. The Commission also required each RTO/ISO to revise its tariff to require each distributed energy resource aggregator to provide, upon request from the RTO/ISO, performance data for individual resources in a distributed energy resource aggregation for auditing purposes.

203. The Commission stated that the requirements for settlement and performance data should be consistent with the settlement and auditing data requirements for other market participants.³⁹⁵ To reduce the burden on distributed energy resource aggregators and the RTOs/ISOs, the Commission found that distributed energy resource aggregators should only be required to retain that performance data for individual distributed energy resources in an aggregation that the RTO/ISO deems necessary for auditing purposes. The Commission stated that, to the extent that an RTO/ISO does not need certain performance data from individual distributed energy resources in a distributed energy resource aggregation for auditing purposes, it should not require a distributed energy resource aggregator to retain that information for individual distributed energy resources participating in a distributed energy resource aggregation.

³⁹² *Id.* (referring to discussion concerning modifications to list of resources in aggregation); *see id.* P 336.

³⁹³ *Id.* P 239.

³⁹⁴ *Id.* P 240.

³⁹⁵ *Id.*

a. Filing

204. PJM states that it complies with Order No. 2222's information and data requirements through its proposed pre-registration and registration processes.³⁹⁶ PJM explains that the proposed provisions in Section 1.4B(b) of the Tariff and Operating Agreement describe in detail the types of information and data that a DER Aggregator must provide regarding the physical and operational characteristics of its DER Aggregation Resource and the underlying Component DER.

205. PJM proposes that prior to the initiation of the registration review process by the Office of the Interconnection, a DER Aggregator shall obtain and verify, through good faith efforts and in coordination with the applicable electric distribution company, and, if necessary, any relevant Transmission Owner, location and data components including certain location and data information, such as the customer account number, associated physical and transmission system electrical location information, compliance with applicable metering and telemetry requirements, evidence of approval to interconnect, and identification of participation in an electric distribution utility program that recognizes grid withdrawals and/or injections.³⁹⁷

206. With respect to the registration process, PJM proposes that it will review the registration and data submitted therein for completeness and, upon receipt of notification by the Office of Interconnection, the electric distribution company may review and verify the registration information such as operational and physical characteristics, the specific markets in which the DER Aggregation Resource intends to participate, the electric distribution company customer account number(s), participation in an electric distribution company's retail program (including certain provisions governing Component DER that participate in a net energy metering retail program), compliance with the rules and regulations of any applicable RERRA, whether the relevant RERRA allows the participation of any applicable Component DER that are also end-use customers of an electric distribution company, and that participation of Component DER in PJM's markets does not pose a threat to the reliable and safe operation of the distribution system, the public, or electric distribution company personnel.³⁹⁸

³⁹⁶ Transmittal at 57; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

³⁹⁷ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

³⁹⁸ *Id.*

207. Regarding information sharing between PJM and affected distribution utilities,³⁹⁹ PJM explains that it has developed an operational framework that facilitates communication between parties (PJM, DER Aggregator, and electric distribution company) for day-ahead, real-time, and emergency (override) scenarios.⁴⁰⁰

208. PJM explains that the proposed tariff revisions mandate that a DER Aggregator report to PJM any proposed update to the inventory of the individual Component DER within the DER Aggregation Resource identified in the DER Aggregator's registration, to reflect any proposed addition or subtraction of a Component DER, and any applicable information or data associated with the Component DER.⁴⁰¹

209. PJM also proposes to require DER Aggregators to provide all individual Component DER meter data necessary to facilitate the settlement of the DER Aggregator's DER Aggregation Resource, and that a DER Aggregator shall retain performance data for individual Component DER in a DER Aggregation Resource for auditing purposes, in accordance with the PJM Manuals.⁴⁰² PJM's proposed tariff language requires that DER Aggregators provide all individual Component DER meter data necessary to facilitate the settlement of the DER Aggregator's DER Aggregation Resource, in accordance with the existing standard metering requirements under section 14 of the Operating Agreement, but specifies that DER Aggregation Resources containing Component DER that are mass market customers will only be required to provide *aggregated* meter data for the settlement of the DER Aggregator's DER Aggregation Resource, thereby relieving DER Aggregators of the burden of having to assemble meter data for every individual mass market customer.

b. Comments/Protests

210. FirstEnergy and Indicated Utilities support PJM's pre-registration process including the information and data requirements.⁴⁰³ Indicated Utilities assert that the pre-registration process facilitates the exchange of necessary information to evaluate and

³⁹⁹ Order No. 2222, 172 FERC ¶ 61,247 at P 238.

⁴⁰⁰ Transmittal at 74-75; Tariff, attach. K-app., § 1.4B(f); Operating Agreement, Schedule 1, § 1.4B(f).

⁴⁰¹ Transmittal at 86; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁴⁰² Tariff, attach. K-app., § 1.4B(e); Operating Agreement, Schedule 1, § 1.4B(e).

⁴⁰³ FirstEnergy Comments and Limited Protest at 13-14; Indicated Utilities Comments at 5.

confirm that a proposed DER Aggregation is consistent with the regulations of the applicable RERRA, and other relevant electric distribution company and RERRA standards, processes, and requirements.

211. Several parties protest aspects of PJM's information and data requirements. AEE and SEIA contend that many of the data components required by PJM in the pre-registration process are redundant and already provided as part of the full 60-day registration and review process, with the exception of the electrical location of the Component DER, which they argue should be simple to identify if appropriately outlined in the business practice manuals.⁴⁰⁴ AEMA recognizes that some form of pre-registration activity may be appropriate to verify data but recommends the Commission direct PJM to create the necessary centralized databases and process for maintaining data currency.⁴⁰⁵

212. Environmental Organizations state that PJM's proposal inappropriately requires the electric distribution company to verify compliance with applicable PJM and electric distribution company metering and telemetry requirements.⁴⁰⁶ Environmental Organizations argue that this is PJM's role, and there are no electric distribution company metering and telemetry requirements that can apply to wholesale market participation. With respect to the requirement that a DER Aggregator identify the physical and transmission system electrical location of the DERs, Environmental Organizations also argue that, because the RTO/ISO registration process can only begin after a Component DER is properly interconnected under an electric distribution company tariff, it defies credibility that an electric distribution company could have completed the studies involved in an interconnection application without first identifying the location of a DER and the transmission buses it feeds into.

213. JCA argues that, while PJM requires the DER Aggregator to obtain evidence of approval to interconnect with the applicable Component DER to the distribution system, it is not clear whether this requirement references the interconnection agreement between the electric distribution company and the individual Component DER, or instead refers to an additional interconnection agreement between the DER Aggregator and the electric distribution company that addresses the DER Aggregator's right to control the Component DER.⁴⁰⁷

⁴⁰⁴ AEE and SEIA Protest at 22-23.

⁴⁰⁵ AEMA Protest at 30.

⁴⁰⁶ Environmental Organizations Protest at 6-7.

⁴⁰⁷ JCA Comments and Limited Protest at 14-15.

214. JCA contends that PJM should be required to amend its registration process to include the individual addresses of the Component DER so that PJM can review and report DER aggregation participation and performance both from an electrical perspective (i.e., pricing node configurations, utility footprints, capacity zones, etc.) as well as geographically (e.g., individual states, zip code, etc.) to ensure that the market rules are just and reasonable and that DER participation is robust and equitable.⁴⁰⁸

215. JCA also argues that PJM's proposal would benefit from clearer guidelines regarding the necessary retail tariff requirements for pre-registration and subsequent participation in PJM.⁴⁰⁹ According to JCA, PJM assumes that such rules and regulations exist and are in place for the RERRA to utilize in helping oversee the pre-registration requirement, but does not contain any information on such rules and regulations. JCA contends that although PJM cites to CAISO's DER Participation Guide in support of its proposal, CAISO's tariff and pre-registration process includes rules that promote transparency and nondiscriminatory treatment, which are absent from the PJM filing.⁴¹⁰ JCA suggests that one potential solution to addressing this ambiguity would be to remove the distribution-level certifications from the pre-registration process and allow the distribution utility to confirm whether requirements contemplated at the retail level have been met during the 60-day registration process.⁴¹¹

216. The IMM argues that PJM must have all the data it needs for its interconnection studies, its reliability studies and for real-time operations to facilitate the efficient planning and operation of the grid.⁴¹² The IMM argues that the Commission should require that PJM include clear language about the data requirements for DER aggregation resources, relevant roles and responsibilities, and timing and details for providing such data.

⁴⁰⁸ *Id.* at 23.

⁴⁰⁹ *Id.* at 15 (citing Exhibit 1, Affidavit of Paul S. Kelly (Kelly Aff.) ¶ 11).

⁴¹⁰ *Id.* JCA states that under the CAISO model, it is the distribution company that confirms whether the retail tariff and regulatory requirements are met when commenting or deciding to sign the DER Aggregator's Concurrence Letter. *Id.* (citing Kelly Aff. ¶ 14).

⁴¹¹ *Id.* at 16.

⁴¹² IMM Comments at 19.

c. Data Request Response

217. In the Data Request Response, PJM states that the specific physical and electrical information has not yet been explicitly defined but that such information is necessary for the electric distribution company, the load-serving entity, and PJM to appropriately map the Component DER participating through a DER Aggregation Resource to an individual pricing node.⁴¹³ With regard to additional information that PJM requires about individual distributed energy resources within an aggregation, PJM notes that it will require additional work and coordination to identify the specific information that will be required for each individual electric distribution company across PJM's 14 distinct state jurisdictions and sub-jurisdictions. PJM maintains that, because it lacks a centralized model that directly correlates distribution circuits to transmission buses, this data must be obtained before submission of a registration to determine which facilities may be physically aggregated on a registration.⁴¹⁴

d. Commission Determination

218. We find that PJM's proposal partially complies with the information and data requirements of Order No. 2222. As an initial matter, we find that PJM has complied with the following information and data requirements of Order No. 2222 that required RTOs/ISOs to: (1) require DER aggregators to provide a list of the individual resources in their DER Aggregation Resource(s);⁴¹⁵ (2) require the distributed energy resource aggregator to update the list of individual resources and associated information as it changes;⁴¹⁶ (3) require the distributed energy resource aggregator to maintain and submit aggregate settlement data for the distributed energy resource aggregation and provide, upon the RTO's/ISO's request, performance data for individual resources in a distributed energy resource aggregation for auditing purposes;⁴¹⁷ (4) establish requirements for settlement and performance data that are consistent with the settlement and auditing data requirements for other market participants;⁴¹⁸ (5) establish the necessary physical

⁴¹³ Data Request Response at 30.

⁴¹⁴ *Id.* at 41.

⁴¹⁵ Order No. 2222, 172 FERC ¶ 61,247 at PP 236, 238. *See* Tariff, attach. K-app., § 1.4B(b)(i); Operating Agreement, Schedule 1, § 1.4B(i).

⁴¹⁶ Order No. 2222, 172 FERC ¶ 61,247 at P 238. *See* Transmittal at 86; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁴¹⁷ Order No. 2222, 172 FERC ¶ 61,247 at PP 236, 240. *See* Transmittal at 57; Tariff, attach. K-app., § 1.4B(e); Operating Agreement, Schedule 1, § 1.4B(e).

⁴¹⁸ Order No. 2222, 172 FERC ¶ 61,247 at P 240. *See* Transmittal at 58-60;

parameters that distributed energy resource aggregators must submit as part of their registration process to the extent these parameters are not already represented in general registration requirements or bidding parameters applicable to distributed energy resource aggregations;⁴¹⁹ and (6) propose how any information regarding individual distributed energy resources within an aggregation the RTO/ISO requests must be shared with the RTO/ISO and affected distribution utilities.⁴²⁰ We address the remaining compliance requirements and comments and protests below.

219. We find that PJM partially complies with the requirements of Order No. 2222 to revise its tariff to (1) include any requirements for distributed energy resource aggregators that establish the information and data that a distributed energy resource aggregator must provide about the physical and operational characteristics of its aggregation; and (2) establish any necessary information that must be submitted for the individual distributed energy resources.⁴²¹

220. PJM revised its tariff to require DER Aggregators to provide the following information: the electric distribution company customer account number, the associated physical and transmission system electrical location information, compliance with applicable PJM and electric distribution company metering and telemetry requirements, evidence of approval to interconnect, and the identification of participation in an electric distribution company program that recognizes grid withdrawals and/or injections, including but not limited to a net energy metering program. However, as discussed below, we find that PJM has not sufficiently identified and explained the specific information that it proposes to require the DER Aggregator to provide about the individual distributed resources within an aggregation, as Order No. 2222 requires.⁴²²

221. First, while it may be necessary for PJM to require the DER Aggregator to provide evidence of approval to interconnect, we agree with JCA that PJM has not clearly identified or explained the information that it requires, as required by Order No. 2222.⁴²³

Tariff, attach. K-app., § 1.4B(e); Operating Agreement, Schedule 1, § 1.4B(e).

⁴¹⁹ Order No. 2222, 172 FERC ¶ 61,247 at P 237. *See, e.g.*, Tariff, attach. K-app., § 1.4B(b)(i).

⁴²⁰ Order No. 2222, 172 FERC ¶ 61,247 at P 238. *See* Data Request Response at 31-32.

⁴²¹ Order No. 2222, 172 FERC ¶ 61,247 at P 236.

⁴²² *Id.* P 238.

⁴²³ PJM proposes that a DER Aggregator shall obtain and verify “evidence of approval to interconnect, including but not limited to a finalized interconnection

PJM's proposal requires "[e]vidence of approval to interconnect, including *but not limited to* a finalized interconnection agreement, with the applicable Component DER," but the phrase "not limited to" introduces ambiguity as to what evidence PJM is requiring. Further, PJM should explain whether the required interconnection agreement should be between the electric distribution company and the Component DER, or the electric distribution company and the DER Aggregator.

222. Second, PJM's proposed tariff language requiring the DER Aggregator to provide "associated physical and transmission system electrical location information of the applicable Component DER" is also unclear.⁴²⁴ While we believe that PJM has generally explained the need for this electrical location information, in that it enables PJM to map the Component DER participating in a DER Aggregation Resource to an individual node, PJM has not identified the specific information that the DER Aggregator is required to provide. Therefore, we find that PJM must identify what specific information it requires related to the physical and transmission system electrical location of the Component DER and explain why the specific information is necessary, consistent with Order No. 2222.

223. Third, PJM has not identified or explained the specific information that the DER Aggregator is required to obtain and verify in coordination with the electric distribution company regarding "compliance with applicable PJM and electric distribution company metering and telemetry requirements." Therefore, we find that PJM must clearly identify and explain this requirement, consistent with Order No. 2222. We note that electric distribution companies are not responsible for evaluating PJM's metering and telemetry requirements for DER Aggregation Resources. We also note that electric distribution companies' metering and telemetry requirements may not all be the same.

224. Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing identifying and explaining the proposed information requirements for the individual distributed energy resources with respect to: (1) evidence of approval to interconnect, and (2) associated physical and transmission system electrical location information of the applicable Component DER, including compliance with applicable PJM and electric distribution company metering and telemetry requirements, for the reasons discussed above.

agreement, with the applicable Component DER, in accordance with any applicable tariffs, agreements, and operating procedures of the electric distribution company, and/or the rules and regulations of any Relevant Electric Retail Regulatory Authority [...].
Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁴²⁴ Tariff, attach. K-app., § 1.4B(b)(i); Operating Agreement, Schedule 1, § 1.4B(b)(i).

8. Metering and Telemetry System Requirements

225. In Order No. 2222, the Commission added section 35.28(g)(12)(ii)(f) to the Commission's regulations to require each RTO/ISO to revise its tariff to establish market rules that address metering and telemetry hardware and software requirements necessary for distributed energy resource aggregations to participate in RTO/ISO markets.⁴²⁵ The Commission explained that it understood the need to balance, on one hand, the RTO's/ISO's need for metering and telemetry data for settlement and operational purposes, and, on the other hand, not imposing unnecessary burdens on distributed energy resource aggregators.⁴²⁶ Therefore, the Commission stated that it would not prescribe the specific metering and telemetry requirements that each RTO/ISO must adopt; rather, the Commission provided the RTOs/ISOs with flexibility to establish the necessary metering and telemetry requirements for distributed energy resource aggregations, and required each RTO/ISO to explain in its compliance filing why such requirements are just and reasonable and do not pose an unnecessary and undue barrier to individual distributed energy resources joining a distributed energy resource aggregation.

226. To implement this requirement, the Commission directed each RTO/ISO to explain, in its compliance filing, why its proposed metering and telemetry requirements are necessary.⁴²⁷ The Commission stated that this explanation should include a discussion about whether, for example, the proposed requirements are similar to requirements already in existence for other resources and steps contemplated to avoid imposing unnecessarily burdensome costs on the distributed energy resource aggregators and individual resources in distributed energy resource aggregations that may create an undue barrier to their participation in RTO/ISO markets.

227. In Order No. 2222, the Commission stated that the distributed energy resource aggregator is the single point of contact with the RTO/ISO, responsible for managing,

⁴²⁵ Order No. 2222, 172 FERC ¶ 61,247 at P 262.

⁴²⁶ *Id.* P 263.

⁴²⁷ *Id.* P 264. For example, the Commission indicated that metering requirements could be necessary for the distributed energy resource aggregator to provide the settlement and performance data to the RTO/ISO, or to prevent double counting of services. *Id.* (referring to discussions on provision of such data and double counting); *see also id.* PP 159-64 (discussing requirements concerning double counting), 240 (discussing requirements concerning settlement and performance data). The Commission indicated that telemetry requirements could be necessary for the RTO/ISO to have sufficient situational awareness to dispatch the aggregation and the rest of the system efficiently. *Id.* P 264.

dispatching, metering, and settling the individual distributed energy resources in its aggregation.⁴²⁸ The Commission further found that the distributed energy resource aggregator is the entity responsible for providing any required metering and telemetry information to the RTO/ISO.

228. The Commission stated that it would not require uniform metering requirements across all RTOs/ISOs, nor would it require each RTO/ISO to impose uniform metering requirements on individual distributed energy resources.⁴²⁹ Rather, the Commission provided flexibility to RTOs/ISOs to propose specific metering requirements, including any that may apply to individual distributed energy resources that the RTO/ISO demonstrates are needed to obtain any required performance data for auditing purposes and to address double compensation concerns. Similarly, the Commission provided flexibility to the RTO/ISO as to whether to propose specific telemetry requirements for individual distributed energy resources in an aggregation. The Commission stated that the need for such requirements may depend, for example, on whether the RTO/ISO allows multi-node aggregations or how multi-node aggregations are implemented.

229. The Commission stated that it would not require RTOs/ISOs to establish metering and telemetry hardware and software requirements for distributed energy resource aggregations that are identical to those placed on existing resources, or to establish different or additional metering and telemetry requirements for distributed energy resource aggregations.⁴³⁰ Rather, the Commission expected that RTOs/ISOs will base any proposed metering and telemetry hardware and software requirements for distributed energy resource aggregations on the information needed by the RTO/ISO while avoiding unnecessary requirements that may act as a barrier to individual distributed energy resources joining distributed energy resource aggregations or to distributed energy resource aggregations participating in the wholesale markets. However, the Commission required that metering data for settlement purposes at the distributed energy resource aggregation level be consistent with settlement data requirements for other resource types.

230. The Commission stated that each RTO's/ISO's proposed metering requirements should rely on meter data obtained through compliance with distribution utility or local regulatory authority metering system requirements whenever possible for settlement and auditing purposes.⁴³¹ The Commission further found that this requirement also applies to

⁴²⁸ *Id.* P 266; *see id.* P 239.

⁴²⁹ *Id.* P 267.

⁴³⁰ *Id.* P 268.

⁴³¹ *Id.* P 269.

existing telemetry infrastructure. With respect to jurisdictional concerns raised by some commenters, the Commission noted that any additional RTO/ISO metering and telemetry requirements would not change those required by state or local regulatory authorities and would be required solely to assist with settlements and audits of activity in RTO/ISO markets, or to provide RTOs/ISOs with the real-time information needed to reliably and efficiently dispatch their systems.

231. In response to concerns about potential costs and burdens that could be imposed on distribution utilities as a result of the requirement that RTOs/ISOs rely on metering and telemetry data obtained through compliance with distribution utility or local regulatory authority metering system requirements whenever possible, the Commission stated that it expected that, in general, this information will be provided by individual distributed energy resources to distributed energy resource aggregators, and from distributed energy resource aggregators to RTOs/ISOs.⁴³² However, to the extent that the RTO/ISO proposes that such information come from or flow through distribution utilities, the Commission required that RTOs/ISOs coordinate with distribution utilities and RERRAs to establish protocols for sharing metering and telemetry data, and that such protocols minimize costs and other burdens and address concerns raised with respect to privacy and cybersecurity.

232. Finally, the Commission found that the RTO/ISO tariffs should include a basic description of the metering and telemetry practices for distributed energy resource aggregations as well as references to specific documents that will contain further technical details.⁴³³

a. Filing

233. PJM states that its proposed metering and telemetry requirements for DER Aggregation Resources are necessary for PJM settlement and operations, and that its requirements are mindful of avoiding unnecessary burdens for DER Aggregators.⁴³⁴ PJM acknowledges that for both metering and telemetry, its Tariff and Operating Agreement language reserves a sufficient amount of detail to the PJM Manuals, stating that this is appropriate in light of its broad definition of Component DER and multitude of configurations that may exist across its geographically diverse footprint.

⁴³² *Id.* P 270.

⁴³³ *Id.* P 271.

⁴³⁴ Transmittal at 59-61.

234. PJM asserts that it will require telemetry values for a DER Aggregation Resource, but it will not require telemetry at the individual Component DER level.⁴³⁵ PJM explains that the telemetry values for the DER Aggregation Resource can either be an aggregate of telemetry from the individual resources, or calculated values for resource operations. PJM explains that DER Aggregation Resource telemetry will be required at a 1-minute scan rate, except for energy resources smaller than 10 MW (no real-time telemetry required) and regulation resources (2/10 second).

235. PJM states that it will require DER Aggregators to provide all individual Component DER meter data necessary to facilitate the settlement of their DER Aggregation Resource, in accordance with the existing standard metering requirements under section 14 of its Operating Agreement.⁴³⁶ PJM states that each DER Aggregator must ensure that Component DER within each DER Aggregation Resource must have metering equipment that provides integrated hourly kWh values on an electric distribution company account basis. For non-interval metered residential DER Aggregation Resources, PJM states that the DER Aggregator must ensure that a representative sample of Component DER have metering equipment that provides integrated hourly kWh values. PJM asserts that its proposed tariff language relieves DER Aggregators of the burden of assembling metering data for individual mass market Component DER.

b. Comments/Protests

236. Several commenters ask the Commission to require PJM to clarify the details of its metering and telemetry provisions.⁴³⁷ Indicated Utilities claim that PJM's compliance filing appears to be internally inconsistent. For example, both FirstEnergy and Indicated Utilities state that while telemetry is required at the individual Component DER level, DER Aggregators are required to provide aggregated, not Component DER meter data for settlement.⁴³⁸ Further, FirstEnergy and Indicated Utilities state that PJM fails to address the nuances of how DER Aggregators are to comply with the distribution utility's metering and telemetry requirements. Indicated Utilities propose that PJM specify that distribution utilities may submit all settlement data to the market for DER Aggregation participants as they already do for some PJM generation resources, and that

⁴³⁵ *Id.* at 59-60.

⁴³⁶ *Id.* at 60-61.

⁴³⁷ FirstEnergy Comments and Limited Protest at 30; Illinois Commission Comments at 6-7; Indicated Utilities Comments at 31-34.

⁴³⁸ FirstEnergy Comments and Limited Protest at 31; Indicated Utilities Comments at 31-32.

responsibilities for settlement data submission should remain flexible as specified in the interconnection agreement for DER Aggregation participants.⁴³⁹ FirstEnergy adds that there is no reason to treat DER Aggregation Resources differently than generators regarding metering and telemetry provisions, particularly when doing so could have significant adverse reliability and safety impacts.⁴⁴⁰ FirstEnergy and Indicated Utilities urge PJM and its stakeholders to parse through the specifics of more complex use cases to determine what additional detail is needed in the tariff and/or PJM Manuals, as these will affect distribution utilities' reliability and safety requirements.⁴⁴¹ Moreover, FirstEnergy urges the Commission to require PJM to provide a framework complete with penalty provisions in the PJM tariff to ensure that a DER Aggregator will adhere its metering and telemetry practices with the PJM Manuals.⁴⁴²

237. Other commenters support PJM's proposed metering and telemetry provisions but suggest several additional options.⁴⁴³ AEE and SEIA suggest that the PJM tariff should enable Component DER to settle with certified "device-level data" so that performance could be measured from the meter embedded in the Component DER. AEE and SEIA posit that doing so would allow DER Aggregators to provide data for all resources rather than just a representative sample, improving visibility and accuracy for PJM while allowing aggregators flexibility to use data they already have on hand.⁴⁴⁴ AEE and SEIA suggest that the sampling model proposed by PJM may be burdensome because a DER Aggregator would need to submit a sample within each electric distribution company territory (the geographic footprint for a Synchronized Reserve Market aggregation). AEE and SEIA state that accepting device-level data removes further barriers and could broaden participation for other DERs at solar net energy metered sites. AEE and SEIA acknowledge that it may be the case that current embedded metering does not meet PJM's data quality standards, but the rules should be written so that technology can be integrated into the market as quickly and reliably as possible once it is developed.

238. Other commenters point to the cost and expertise needed to make the necessary investments in software and systems for better visibility on the distribution system to

⁴³⁹ Indicated Utilities Comments at 33-34.

⁴⁴⁰ FirstEnergy Comments and Limited Protest at 31-32.

⁴⁴¹ *Id.* at 32; Indicated Utilities Comments at 33.

⁴⁴² FirstEnergy Comments and Limited Protest at 32, 37.

⁴⁴³ AEE and SEIA Protest at 25-26; Pennsylvania Commission Comments at 11.

⁴⁴⁴ AEE and SEIA Protest at 26-27. AEE and SEIA note that PJM currently accepts device-level data for regulation reserves.

handle the increased data flows associated with DER Aggregation Resources.⁴⁴⁵ Pennsylvania Commission states that its smart meter deployment, required by state law for large distribution utilities, should already satisfy PJM's requirements.⁴⁴⁶ However, Pennsylvania Commission states that it will continue to monitor whether its deployed smart meters for smaller distribution utilities will support DER Aggregation Resource participation in PJM markets without harming retail programs or the distribution system, or whether greater functionality or additional metering will be required. Ohio Commission states that it has approached infrastructure modernization iteratively to better incorporate new and emerging technologies and apply knowledge acquired.⁴⁴⁷ Ohio Commission also states that while PJM's filing addresses how direct costs associated with implementing metering and telemetry changes will be recovered, cost allocation for the significant indirect costs is unclear.⁴⁴⁸

239. Several commenters assert that PJM's filing lacks sufficient detail on ensuring cybersecurity related to DER Aggregation Resource participation and that the Commission should direct PJM to develop appropriate cybersecurity requirements for DER Aggregation Resource participation.⁴⁴⁹ Illinois Commission argues that without a coordinated effort to consider cybersecurity in the design stage, jurisdictions will inevitably diverge in their approaches over time, which will lead to unnecessary cost increases that may reduce the benefits and efficiencies of DER Aggregation Resources.⁴⁵⁰ Illinois Commission also states that PJM's filing lacks clear assignment of responsibility for addressing emerging cyber threats that affect the individual Component DER level assets.⁴⁵¹ Illinois Commission adds that the disparity between cybersecurity requirements among different jurisdictions could put different system operators at risk as not all DER Aggregators will have the same level of cybersecurity. As such, Illinois Commission urges the Commission to require stringent cybersecurity protections in the design phase

⁴⁴⁵ Pennsylvania Commission Comments at 12; Ohio Commission Comments at 5-6.

⁴⁴⁶ Pennsylvania Commission Comments at 12.

⁴⁴⁷ Ohio Commission Comments at 5.

⁴⁴⁸ *Id.* at 9.

⁴⁴⁹ Illinois Commission Comments at 10; Indicated Utilities Comments at 34; Ohio Commission Comments at 15.

⁴⁵⁰ Illinois Commission Comments at 11-12.

⁴⁵¹ *Id.* at 12-13.

to ensure secure and reliable operations and markets and consider meaningful enforcement penalties for breaches.⁴⁵²

c. Answers

240. PJM acknowledges the increased cybersecurity risk associated with Order No. 2222 implementation as noted by commenters and states that it is willing to serve as a coordinating body for stakeholders addressing these issues.⁴⁵³

241. AEMA argues that cybersecurity is explicitly beyond the scope of Order No. 2222.⁴⁵⁴ Nevertheless, AEMA argues that fulsome and clear cybersecurity rules should be developed in due time. AEMA argues that simply applying existing cybersecurity standards designed for large, centralized resources may present a barrier to market participation for “small DERs” without improving the security or reliability of the transmission system.

d. Data Request Response

242. Regarding the Tariff and Operating Agreement language that sets forth telemetry scan rates and metering accuracy, PJM states that these details are contained in PJM Manuals 01, 14D, and 03A, and that this is a longstanding practice that applies for all resources in PJM.⁴⁵⁵ Regarding whether metering and telemetry requirements differ depending on market activity, PJM states that the specific rules are established in PJM Manuals 01 and 14D, and recounts a chart of telemetry requirements by market type included in its original filing.⁴⁵⁶

243. PJM clarifies that the DER Aggregator is the entity ultimately responsible for providing metering and telemetry information to PJM, but that the DER Aggregator may

⁴⁵² *Id.* at 15 (citing attach. B (James T. Harmening Testimony, at 7)).

⁴⁵³ PJM Answer at 23 (citing Illinois Commission Comments at 10-15; Indicated Utilities Comments at 34-35).

⁴⁵⁴ AEMA Answer at 6-7 (citing to Order No. 2222, 172 FERC ¶ 61,247 at P 362).

⁴⁵⁵ Data Request Response at 34.

⁴⁵⁶ *Id.* at 34-35. This chart is located on page 60 of PJM’s Transmittal.

coordinate with the applicable electric distribution company depending on the arrangement they agree to and any applicable local operating procedures.⁴⁵⁷

244. PJM also clarifies, that in situations where the electric distribution company is the entity responsible for physically operating or dispatching a DER Aggregation Resource, those specific protocols should be arranged between the DER Aggregator and the electric distribution company.⁴⁵⁸ PJM explains that it has not proposed specific provisions in order to provide electric distribution company and RERRA flexibility in terms of data sharing protocols, given that electric distribution companies are non-jurisdictional and that its footprint comprises many different RERRA rules across its fourteen-state footprint. Despite this, PJM states that it is willing to provide a forum to facilitate discussions on data sharing issues and suggests that a third party, such as IEEE, may be more appropriate to develop data protocols to ensure uniformity across the nation.

245. PJM states that its proposed DER Aggregator Participation Model does not explicitly rely on meter data obtained through compliance with distribution utility or local regulatory authority requirements, but similar to the current practice for distribution-connected resources, PJM states that DER Aggregators have the option to rely on existing distribution utility infrastructure whereby they would comply with applicable local rules.⁴⁵⁹ PJM explains that it allows for flexibility to minimize the burden on both resources and distribution utilities.

246. PJM explains that the details of the requirements for providing the representative sample will be documented in the PJM Manuals, and that the approach is the same as PJM's demand response model today.⁴⁶⁰

e. Data Request Response Comments/Protests

247. AEE and SEIA state that PJM's proposal to allow DER aggregators to meter a representative sample of Component DER for non-interval metered residential DER Aggregation Resources is productive and compliant with Order No. 2222. However, AEE and SEIA disagree with PJM's proposal to not allow sub-metering, including use of device-level metering located at a behind-the-meter DER, outside of the provision of

⁴⁵⁷ *Id.* at 35.

⁴⁵⁸ *Id.*

⁴⁵⁹ *Id.* at 36.

⁴⁶⁰ *Id.* at 36-37.

regulation service.⁴⁶¹ AEE and SEIA ask the Commission to direct PJM to submit a compliance filing to allow device-level metering as an additional alternative.

f. Commission Determination

248. We find that PJM's proposal partially complies with the metering and telemetry system requirements of Order No. 2222. As an initial matter, we find that PJM has complied with the metering and telemetry requirements of Order No. 2222 that require RTOs/ISOs to establish that: (1) the DER aggregator is the entity responsible for providing any required metering and telemetry information to the RTO/ISO;⁴⁶² (2) metering requirements should rely on meter data obtained through compliance with the electric distribution company's or local regulatory authority's metering system requirements whenever possible for settlement and auditing purposes;⁴⁶³ and (3) proposed telemetry requirements should rely on existing telemetry infrastructure whenever possible.⁴⁶⁴ We address the remaining compliance requirements and comments and protests below.

249. With respect to metering, we find that PJM's proposal partially complies with the requirement to revise its tariff to establish market rules that address metering requirements necessary for distributed energy resource aggregations to participate in RTO/ISO markets and to explain why its proposed metering requirements are just and reasonable and do not pose an unnecessary and undue barrier to individual distributed energy resources joining a distributed energy resource aggregation.⁴⁶⁵ We find that PJM's basic description of its metering practices for DER Aggregation Resources in its tariff is incomplete because it lacks the deadline for meter data submission for settlements.⁴⁶⁶ In Order No. 2222, the Commission found that metering and telemetry requirements significantly affect the terms and conditions of the participation of distributed energy resource aggregations in RTO/ISO markets and, therefore, these

⁴⁶¹ AEE and SEIA Data Request Response Protest at 9-10.

⁴⁶² Order No. 2222, 172 FERC ¶ 61,247 at P 266. *See* Data Request Response at 35.

⁴⁶³ Order No. 2222, 172 FERC ¶ 61,247 at P 269. *See* Data Request Response at 36.

⁴⁶⁴ Order No. 2222, 172 FERC ¶ 61,247 at P 269. *See* Data Request Response at 36.

⁴⁶⁵ Order No. 2222, 172 FERC ¶ 61,247 at P 262.

⁴⁶⁶ *See* NYISO Compliance Order, 179 FERC ¶ 61,198 at P 205.

requirements must be included in the RTO/ISO tariffs.⁴⁶⁷ Further, the Commission found that RTO/ISO tariffs should include a basic description of the metering and telemetry practices for distributed energy resource aggregations as well as references to any specific documents that will contain further technical details.⁴⁶⁸ We find that the meter data submission deadline is a key component of metering practices for DER Aggregators and therefore should be included in the tariff, as part of the basic description Order No. 2222 requires.⁴⁶⁹ Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing to revise PJM's tariff to include the meter data submission deadline for settlement.

250. AEE and SEIA argue that PJM should adopt an additional option for DER Aggregation Resources to utilize device-level meter data. As AEE and SEIA acknowledge, PJM has proposed metering options for DER Aggregation Resources, including the use of a representative sample of Component DER for non-interval metered residential DER Aggregation Resources. We find that PJM has demonstrated that its proposed metering requirements do not pose an unnecessary and undue barrier to distributed energy resources, as Order No. 2222 requires, with the narrow exception discussed further above. However, we encourage PJM to continue to work with its stakeholders to consider additional metering options in the future, including for DER Aggregation Resources to utilize device-level meter data.

251. With respect to telemetry, we find that PJM partially complies with the requirement to revise its tariff to establish market rules that address telemetry requirements necessary for distributed energy resource aggregations to participate in RTO/ISO markets and to explain why its proposed telemetry requirements for distributed energy resource aggregations are just and reasonable and do not pose an unnecessary and undue barrier to individual distributed energy resources joining a distributed energy resource aggregation. In particular, we find that the basic description of PJM's telemetry practices in its tariff is incomplete because, unlike PJM's Transmittal and Data Request Response,⁴⁷⁰ it does not indicate that a DER Aggregation Resource under 10 MW that is only participating in the energy market is exempted from telemetry requirements.⁴⁷¹

⁴⁶⁷ Order No. 2222, 172 FERC ¶ 61,247 at P 271.

⁴⁶⁸ *Id.*

⁴⁶⁹ *Id.* (“[W]e find that the RTO/ISO tariffs should include a basic description of the metering and telemetry practices for distributed energy resource aggregations as well as references to specific documents that will contain further technical details.”).

⁴⁷⁰ Transmittal at 60; Data Request Response at 35.

⁴⁷¹ “A DER Aggregator or the entity responsible for physically operating the Component DER within a DER Aggregation Resource and/or dispatching a DER

Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing to revise PJM's tariff to clarify, consistent with PJM's representations, that a DER Aggregation Resource under 10 MW that is only participating in the energy market is exempted from telemetry requirements.

252. With the exception of the specific pieces of information that we direct PJM to include in its tariff above, we find that PJM's tariff contains a basic description of the metering and telemetry practices for distributed energy resource aggregations and points to specific documents that contain further technical details. Therefore, we decline to require PJM to include additional details that commenters request about its metering and telemetry requirements in its tariff.

253. Finally, given that PJM does not propose that metering and telemetry data will come from or flow through distribution utilities, we need not address the requirement of Order No. 2222, that, to the extent that metering and telemetry data comes from or flows through distribution utilities, RTOs/ISOs must coordinate with distribution utilities and the relevant electric retail regulatory authorities to establish protocols for sharing metering and telemetry data that minimize costs and other burdens and address concerns raised with respect to customer privacy and cybersecurity.⁴⁷² With respect to the commenters' concerns regarding cybersecurity and privacy, Order No. 2222 found that privacy and cybersecurity concerns, in general, were outside the scope of the proceeding.⁴⁷³ Nevertheless, we acknowledge PJM's willingness to serve as a coordinating body for addressing critical cybersecurity issues with regional stakeholders.⁴⁷⁴

Aggregation Resource shall provide telemetry for each DER Aggregation Resource participating in the energy, capacity, and/or ancillary services markets of PJM through the DER Aggregator Participation Model, in accordance with the technical specifications described in the PJM Manuals" (emphasis added). Tariff, attach. K-app., § 1.4B(e); Operating Agreement, Schedule 1, § 1.4B(e).

⁴⁷² Order No. 2222, 172 FERC ¶ 61,247 at P 271.

⁴⁷³ *Id.* PP 362-363.

⁴⁷⁴ PJM Answer at 23; Data Request Response at 35.

9. Coordination between the RTO/ISO, Aggregator, and Distribution Utility

a. Market Rules on Coordination

254. In Order No. 2222, the Commission added section 35.28(g)(12)(ii)(g) to the Commission's regulations to require each RTO/ISO to revise its tariff to establish market rules that address coordination between the RTO/ISO, the distributed energy resource aggregator, the distribution utility, and the RERRAs.⁴⁷⁵ The Commission stated that coordination requirements should not create undue barriers to entry for distributed energy resource aggregations but must also consider the substantial role of distribution utilities and state and local regulators in ensuring the safety and reliability of the distribution system.⁴⁷⁶

i. Filing

255. PJM's proposed market rules on coordination comprise processes and procedures relating to the role of distribution utilities, ongoing operational coordination, and the role of the RERRA.⁴⁷⁷ PJM states that it coordinated with distribution utilities, DER Aggregators, RERRAs, and other PJM stakeholders in development of its coordination processes and procedures.

ii. Commission Determination

256. We find that PJM's proposal partially complies with the coordination requirements of Order No. 2222. While PJM proposes market rules on coordination as required by Order No. 2222, we find that PJM does not comply with certain coordination requirements, as discussed further below.

b. Role of Distribution Utilities

257. To implement section 35.28(g)(12)(ii)(g) of the Commission's regulations, the Commission in Order No. 2222 required each RTO/ISO to modify its tariff to incorporate a comprehensive and non-discriminatory process for timely review by a distribution utility of the individual distributed energy resources that comprise a distributed energy resource aggregation, which is triggered by initial registration of the distributed energy resource aggregation or incremental changes to a distributed energy resource aggregation

⁴⁷⁵ Order No. 2222, 172 FERC ¶ 61,247 at P 278.

⁴⁷⁶ *Id.* P 279.

⁴⁷⁷ Transmittal at 62-82.

already participating in the markets.⁴⁷⁸ The Commission required each RTO/ISO to demonstrate on compliance that its proposed distribution utility review process is transparent, provides specific review criteria that the distribution utilities should use, and provides adequate and reasonable time for distribution utility review.⁴⁷⁹

258. More specifically, the Commission stated that each RTO/ISO must coordinate with distribution utilities to develop a distribution utility review process that includes criteria by which the distribution utilities would determine whether (1) each proposed distributed energy resource is capable of participation in a distributed energy resource aggregation; and (2) the participation of each proposed distributed energy resource in a distributed energy resource aggregation will not pose significant risks to the reliable and safe operation of the distribution system.⁴⁸⁰ In Order No. 2222-A, the Commission clarified that, although it is providing each RTO/ISO with the flexibility to develop review procedures and criteria appropriate for its region, the Commission expects that the criteria proposed on compliance will require that an RTO/ISO decision to deny wholesale market access to a distributed energy resource for reliability reasons be supported by a showing that the distributed energy resource presents significant risks to the reliable and safe operation of the distribution system.⁴⁸¹ In addition, the Commission clarified that only the distribution utility hosting a distributed energy resource (i.e., the utility that owns and/or operates the distribution system to which the resource is interconnected) should be given an opportunity to review the addition of that resource to a distributed energy resource aggregation.⁴⁸²

259. To support this distribution utility review process, the Commission stated that RTOs/ISOs must share with distribution utilities any necessary information and data about the individual distributed energy resources participating in a distributed energy resource aggregation.⁴⁸³ In Order No. 2222-A, the Commission clarified that the specific

⁴⁷⁸ Order No. 2222, 172 FERC ¶ 61,247 at P 292.

⁴⁷⁹ *Id.* P 293.

⁴⁸⁰ *Id.* P 292.

⁴⁸¹ Order No. 2222-A, 174 FERC ¶ 61,197 at P 76 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 292) (referencing the criteria by which the distribution utilities will determine whether a proposed distributed energy resource will pose “significant risks to the reliable and safe operation of the distribution system”).

⁴⁸² *Id.* P 70.

⁴⁸³ Order No. 2222, 172 FERC ¶ 61,247 at P 292; *see id.* PP 236-40.

information regarding a distributed energy resource that is provided by a distribution utility to an RTO/ISO as part of the distribution utility review process should be shared

with the distributed energy resource aggregator.⁴⁸⁴ The Commission explained that such information could include whether a resource: (1) affects the safety and reliability of the distribution system; or (2) is capable of participating in an aggregation.⁴⁸⁵ To the extent that a distribution utility declines to provide distributed energy resources with the information that they need to participate in RTO/ISO markets via an aggregation, the Commission stated that it expects that RTOs/ISOs will provide an avenue to facilitate those resources' participation, including, where appropriate, the use of the RTO/ISO dispute resolution procedures.⁴⁸⁶

260. In addition, in Order No. 2222, the Commission stated that the results of a distribution utility's review must be incorporated into the distributed energy resource aggregation registration process.⁴⁸⁷

261. The Commission also required each RTO/ISO to revise its tariff to specify the time that a distribution utility has to identify any concerns regarding a distributed energy resource seeking to participate in the RTO/ISO markets through an aggregation.⁴⁸⁸ The Commission stated that each RTO/ISO should propose a timeline that reflects its regional needs.⁴⁸⁹ In Order No. 2222-A, the Commission limited the length of distribution utility review to no more than 60 days.⁴⁹⁰ The Commission stated that, if an RTO/ISO believes unusual circumstances could give rise to the need for additional distribution utility review time, the RTO/ISO may propose provisions for certain exceptional circumstances that

⁴⁸⁴ Order No. 2222-A, 174 FERC ¶ 61,197 at P 75 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 292).

⁴⁸⁵ *Id.*

⁴⁸⁶ *Id.*

⁴⁸⁷ Order No. 2222, 172 FERC ¶ 61,247 at P 292.

⁴⁸⁸ *Id.* P 295.

⁴⁸⁹ *Id.* The Commission stated that any distribution utility review must be completed within a limited but reasonable amount of time and that it expects a reasonable amount of time may vary among RTOs/ISOs but should not exceed 60 days.

⁴⁹⁰ Order No. 2222-A, 174 FERC ¶ 61,197 at P 72 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 295).

may justify additional review time.⁴⁹¹ The Commission encouraged shorter review periods for smaller aggregations and resources to the maximum extent practicable, and reiterated that any proposed review period must be shown to be reasonable based on what is being reviewed.⁴⁹²

262. In Order No. 2222, the Commission stated that the RTOs/ISOs must include potential impacts on distribution system reliability as a criterion in the distribution utility review process.⁴⁹³ The Commission clarified in Order No. 2222-A that, when the Commission found that RTOs/ISOs must include potential impacts on distribution system reliability as a criterion in the distribution utility review process, the Commission was referring specifically to any incremental impacts from a resource's participation in a distributed energy resource aggregation that were not previously considered by the distribution utility during the interconnection study process for that resource.⁴⁹⁴

263. In addition, the Commission found that the distribution utility should have the opportunity to request that the RTO/ISO place operational limitations on an aggregation or the removal of a distributed energy resource from an aggregation based on specific significant reliability or safety concerns that the distribution utility clearly demonstrates to the RTO/ISO and distributed energy resource aggregator on a case-by-case basis.⁴⁹⁵ The Commission clarified in Order No. 2222-A that, to the extent a distribution utility recommends the removal of a distributed energy resource from an aggregation due to a reliability concern, an RTO/ISO should not remove the resource without a demonstration by the distribution utility that the resource's market participation presents a threat to distribution system reliability.⁴⁹⁶

⁴⁹¹ *Id.*

⁴⁹² *Id.*

⁴⁹³ Order No. 2222, 172 FERC ¶ 61,247 at P 297.

⁴⁹⁴ Order No. 2222-A, 174 FERC ¶ 61,197 at P 79 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 297).

⁴⁹⁵ Order No. 2222, 172 FERC ¶ 61,247 at P 297. For example, the Commission stated that the RTOs/ISOs may consider requiring a signed affidavit or other evidence from the distribution utility that a distributed energy resource's participation in RTO/ISO markets would pose a significant risk to the safe and reliable operation of the distribution system, and processes to contest the distribution utility's recommendation for removal or for operational limitations to be placed on the aggregation. *Id.*

⁴⁹⁶ Order No. 2222-A, 174 FERC ¶ 61,197 at P 76 (citing Order No. 2222,

264. In Order No. 2222, the Commission declined to provide a larger and decision-making role for the distribution utilities and stated that requiring or permitting distribution utilities to authorize the participation of distributed energy resources in RTO/ISO markets directly or as part of an aggregation could create a barrier to distributed energy resource aggregation.⁴⁹⁷

265. Finally, the Commission required each RTO/ISO to revise its tariff to incorporate dispute resolution provisions as part of its proposed distribution utility review process.⁴⁹⁸ The Commission stated that each RTO/ISO should describe how existing dispute resolution procedures are sufficient or, alternatively, propose amendments to its procedures or new dispute resolution procedures specific to this subject.⁴⁹⁹ In Order No. 2222-A, the Commission stated that disputes regarding the distribution utility review process—including those between non-host distribution utilities and a host distribution utility or the RTO/ISO—may be resolved through the RTO's/ISO's dispute resolution process, the Commission's Dispute Resolution Service, or complaints filed pursuant to FPA section 206 at any time.⁵⁰⁰

i. Filing

266. PJM proposes to establish a pre-registration process as a prerequisite for eligibility to use the DER Aggregator Participation Model.⁵⁰¹ During pre-registration, PJM proposes to require that a DER Aggregator “obtain and verify, through good faith efforts and in coordination with the applicable electric distribution company, and, if necessary, any relevant Transmission Owner” certain location and data information, such as the customer account number, associated physical and transmission system electrical location information, compliance with applicable metering and telemetry requirements, evidence

172 FERC ¶ 61,247 at P 297).

⁴⁹⁷ Order No. 2222, 172 FERC ¶ 61,247 at P 298.

⁴⁹⁸ *Id.* P 299.

⁴⁹⁹ *Id.*

⁵⁰⁰ Order No. 2222-A, 174 FERC ¶ 61,197 at P 70 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 299).

⁵⁰¹ Transmittal at 25; Tariff, Attachment K-Appendix, section 1.4B(b); Operating Agreement, Schedule 1, section 1.4B(b).

of approval to interconnect, and identification of participation in an electric distribution utility program that recognizes grid withdrawals and/or injections.⁵⁰²

267. PJM explains that this pre-registration coordination is necessary to ensure these locational and data components are confirmed prior to initiation of the 60-day review timeframe so that the applicable electric distribution company may complete the necessary reliability studies in a manner that will ensure safe and reliable operations on applicable distribution facilities.⁵⁰³ According to PJM, without the provision of these locational and data components during pre-registration, electric distribution companies risk recommending rejection of an aggregation to PJM, solely on the basis of an inability to complete these essential activities within the 60-day timeframe.⁵⁰⁴ PJM states that this process is necessary to avoid such a discriminatory outcome and simultaneously ensure that electric distribution companies can maintain safe and reliable operations of their distribution facilities. PJM further states that the need for pre-registration is supported by the fact that distribution system topology is extraordinarily diverse and complex and there is no centralized model that directly correlates distribution circuits to transmission buses.

268. PJM also proposes that disputes over pre-registration coordination be addressed with the RERRA, or otherwise in accordance with state and local law, but not using PJM's dispute resolution processes, because bilateral discussions between the DER Aggregator and the electric distribution company will focus on subject matter that is generally outside of PJM's core competency.⁵⁰⁵ Following pre-registration, PJM explains that it will review the registration and data submitted for completeness and verify the DER Aggregator meets relevant eligibility criteria.⁵⁰⁶ PJM states that it will then notify the relevant electric distribution company to initiate the 60-day review process. PJM explains that the registration review process formally begins after: (1) PJM has an executed DER Aggregator Participation Service Agreement (DAPSA) on file, to be used for all DER Aggregation Resources associated with the DER Aggregator; (2) PJM has

⁵⁰² Tariff, Attachment K-Appendix, section 1.4B(b); Operating Agreement, Schedule 1, section 1.4B(b).

⁵⁰³ Transmittal at 25.

⁵⁰⁴ *Id.* at 25-26.

⁵⁰⁵ *Id.* at 27 (citing Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b)).

⁵⁰⁶ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

received a complete registration from the DER Aggregator, in a form specified in the PJM Manuals; and (3) the pre-registration activities have been completed.⁵⁰⁷

269. PJM's proposed tariff language states that the applicable electric distribution company can review and verify the following information during the review timeframe:

- i. Operational and physical characteristics, including an inventory of the individual Component DER location-specific capability to reduce load and/or produce electricity;
- ii. The specific PJM markets in which the DER Aggregation Resource plans to participate and, if applicable, the effective and termination dates for participation;
- iii. The electric distribution company customer account number(s) which represent Component DER location(s) and related information, as defined in the PJM Manuals;
- iv. Participation of the Component DER in an electric distribution company's retail program at the time of registration, and whether such participation precludes participation of the Component DER in the energy, capacity, and/or ancillary services markets of PJM, and as defined in the PJM Manuals;
 - a. Component DER that participate in a net energy metering retail program may only participate with grid injections in the PJM ancillary services markets, and may not participate in PJM energy or capacity markets, unless:
 1. the electric distribution company confirms to the Office of the Interconnection that participation of the Component DER in a net energy metering retail program or tariff approved by the Relevant Electric Retail Regulatory Authority will not violate the restrictions on duplicative compensation, as described in Tariff, Attachment K-Appendix, section 1.4B(h) and Operating Agreement, Schedule 1, section 1.4B(h); and
 2. the Office of the Interconnection determines that the participation of the Component DER otherwise meets the

⁵⁰⁷ Transmittal at 27-28; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

applicable requirements for energy market or capacity market participation.

v. The DER Aggregator's participation in the PJM energy, capacity, and/or ancillary service[s] markets complies with the rules and regulations of any applicable Relevant Electric Retail Regulatory Authority;

vi. The Relevant Electric Retail Regulatory Authority allows the participation of any applicable Component DER that are also end-use customers of an electric distribution company, in accordance with the provisions of Tariff, Attachment K-Appendix, section 1.4B(g), and Operating Agreement, Schedule 1, section 1.4B(g).

vii. The participation of the Component DER in the PJM energy, capacity, and/or ancillary service[s] markets do not pose a threat to the reliable and safe operation of the distribution system, the public, or electric distribution company personnel.⁵⁰⁸

270. PJM explains that, within the 60-calendar day review period, if an electric distribution company identifies concerns based on factors set forth in the review criteria, it may notify PJM and the DER Aggregator.⁵⁰⁹ PJM explains that any concerns identified by the electric distribution company based on these factors may be resolved between the electric distribution company and the DER Aggregator bilaterally, or through the applicable RERRA, prior to seeking initiation of the dispute resolution process described in Operating Agreement, Schedule 5.⁵¹⁰ PJM further states that disputes arising under electric distribution company tariffs, agreements, and operating procedures and/or RERRA rules and regulations must be resolved in accordance with state or local law and not through Operating Agreement, Schedule 5.

271. PJM's tariff states that if such concerns are resolved during the 60-day review period, an electric distribution company may recommend that PJM approve the registration; if not, the electric distribution company may recommend that PJM: (1) reject the registration; (2) approve the registration with certain operational limitations on the DER Aggregation Resource identified in the registration; or (3) approve the registration with the removal of one or more specific Component DER from the DER Aggregation

⁵⁰⁸ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵⁰⁹ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵¹⁰ Transmittal at 30; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

Resource identified in the registration.⁵¹¹ PJM states that it will automatically approve a DER Aggregator's registration in the event that the electric distribution company does not provide any comments or recommendations within the 60-day review period. PJM states that it will apply the applicable pricing points to the Component DER, and either approve or deny the DER Aggregator's registration within 15 days of the conclusion of the 60-day distribution utility review period with deference given to the electric distribution company's assessment of the impact of the DER Aggregator's registration on the safety and reliability of distribution facilities.⁵¹² Once the registration process is complete, the DER Aggregator will be permitted to participate in the PJM capacity, energy and ancillary services markets through the DER Aggregator Participation Model.⁵¹³

272. PJM further states that during the registration process, the responsibility for physically operating the Component DER and/or dispatching the DER Aggregation Resources may be required to be assigned to an entity other than the DER Aggregator, to comply with applicable tariffs, agreements, and operating procedures of the electric distribution company, and/or the rules and regulations of any RERRA.⁵¹⁴ Therefore, PJM explains that this responsibility will be assigned to the electric distribution company, the DER Aggregator, or another entity as appropriate.

ii. Substantive Issues

273. We find that PJM's proposal partially complies with the requirements in Order Nos. 2222 and 2222-A with respect to the role of distribution utilities. As an initial matter, we find that PJM developed its distribution utility review process through consultation with distribution utilities, consistent with the requirement of Order No. 2222.⁵¹⁵ We direct PJM to continue to coordinate with distribution utilities in developing the further compliance filing that we direct below.

⁵¹¹ Transmittal at 30; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵¹² Transmittal at 30-31, 70-71; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵¹³ Transmittal at 32.

⁵¹⁴ *Id.* at 71 (citing Tariff, attach. K-app., § 1.4B(b) and Operating Agreement, Schedule 1, § 1.4B(b)).

⁵¹⁵ Order No. 2222, 172 FERC ¶ 61,247 at P 292; Transmittal at 25-26.

(a) Pre-Registration and Registration Process

(1) Comments/Protests

274. FirstEnergy, Dominion, Ohio Commission, and Indicated Utilities support PJM's pre-registration process. FirstEnergy states that this process is necessary to ensure that required data is provided to, and can be verified by, electric distribution companies and that there is sufficient time to study the safety and reliability impacts of each proposed DER Aggregation Resource.⁵¹⁶ FirstEnergy also notes that electric distribution companies may be faced with timing challenges during periods where registration applications peak at certain times during a year for participation in certain programs such as the base residual auction. FirstEnergy also argues that it is impossible to model the impact of a DER Aggregation until the underlying data for each Component DER is validated during the pre-registration stage, and that the collective participation and synchronized load changes in an aggregation may raise new concerns. Indicated Utilities argue that the pre-registration process promotes operational efficiencies and minimizes backlogs resulting from review of untenable DER Aggregations by allowing electric distribution companies to validate Component DER information before the aggregation study begins.⁵¹⁷ They also argue that additional time is needed because of regulatory, policy, and technical issues associated with complex aggregations.

275. However, several protesters argue that PJM's proposed pre-registration process does not comply with Order No. 2222.⁵¹⁸ They emphasize that Order No. 2222 contemplates that distribution utility review does "not exceed 60 days," and that PJM violates the Commission's instruction by proposing no deadline for this process.⁵¹⁹ Environmental Organizations argue that identifying where a DER is located on the electrical system is an implied part of determining the impact of a DER on a distribution system, and thus should be performed within the mandated 60-day review window.⁵²⁰

⁵¹⁶ FirstEnergy Comments and Limited Protest at 10-14.

⁵¹⁷ Indicated Utilities Comments at 6.

⁵¹⁸ AEE and SEIA Protest at 20-23; AEMA Protest at 26-32; Resideo Technologies Protest at 7-10; JCA Comments and Limited Protest at 15-18 (citing Kelly Aff. ¶¶ 11-15); Environmental Organizations Protest at 5-7; City of Cincinnati Comments at 3; IMM Comments at 7.

⁵¹⁹ AEE and SEIA Protest at 20-21 (citing Order No. 2222, 172 FERC ¶ 61,247 at PP 292-295); AEMA Protest at 3; Resideo Technologies Protest at 8-9; JCA Comments and Limited Protest at 16, 26; Environmental Organizations Protest at 5-6.

⁵²⁰ Environmental Organizations Protest at 5-6.

Environmental Organizations also note that the RTO registration process can only begin after a DER is properly interconnected under an electric distribution company tariff, which would presumably require the electric distribution company to have already identified the location of a DER and the transmission buses it feeds into.⁵²¹ Some protesters are concerned that PJM's pre-registration process allows an electric distribution company to serve as a gatekeeper to DER registration, for instance, by simply not providing the necessary information.⁵²² Protesters also disagree with PJM's assertion that PJM's proposed pre-registration process is similar to that of CAISO.⁵²³

276. With regard to the 60-day triggering event for modifications, FirstEnergy requests that the 60-day review period begin when the electric distribution company confirms it has received and was able to verify the data necessary to assess the safety and reliability impacts to ensure the safety and reliability of the system is maintained over time as DER Aggregations make modifications.⁵²⁴

277. In addition, with respect to the registration process, several parties raise concerns with PJM's proposal to automatically approve a DER Aggregator's registration if an electric distribution company has failed to provide comments or recommendations within the 60-day review period.⁵²⁵ Indicated Utilities, Indiana Commission, Dominion, and FirstEnergy argue that the automatic approval mechanism could potentially introduce safety and reliability issues into the system, and Indicated Utilities contend that it contradicts the Commission's directive that "the result of a distribution utility's review must be incorporated" into the registration process.⁵²⁶ In lieu of automatic approval, some parties argue that PJM should allow for additional distribution utility review

⁵²¹ *Id.* at 6.

⁵²² Resideo Technologies Protest at 9.

⁵²³ AEMA Protest at 29-30; AEE and SEIA Protest at 21; JCA Comments and Limited Protest at 15 (citing Kelly Aff. ¶ 14).

⁵²⁴ FirstEnergy Comments and Limited Protest at 30.

⁵²⁵ Indicated Utilities Comments at 18-21; Dominion Comments at 5; JCA Comments and Limited Protest at 21-22 (citing Kelly Aff. ¶¶ 19-20); Indiana Commission Comments at 9-10; FirstEnergy Comments and Limited Protest at 14-16; New Jersey BPU Comments at 7-8.

⁵²⁶ Indicated Utilities Comments at 19-20 (citing to Order No. 2222, 172 FERC ¶ 61,247 at P 292); Dominion Comments at 5; FirstEnergy Comments and Limited Protest at 14 & n.26; Indiana Commission Comments at 10.

time.⁵²⁷ Additionally, Indiana Commission states that it is concerned that PJM's auto-approval provision may result in an aggregation being automatically approved that would have otherwise been rejected for violating restrictions on double-counting.⁵²⁸ Indicated Utilities also argue that the proposed tariff language, which provides that PJM will have 15 days to approve or deny a DER Aggregator's registration, does not clearly specify when that 15 day period commences.⁵²⁹

278. JCA explains that the proposed tariff language allows an electric distribution company too much discretion in delaying or disarming the auto-approval by simply providing some comments during the 60-day review period. JCA avers that the Commission should direct PJM to properly define what comments are required within 60 days to support an electric distribution company's recommendation that PJM modify or reject a DER Aggregator's registration.⁵³⁰

279. Several parties protest PJM's proposal to allow the RERRA to assign authority to physically operate and/or dispatch Component DER.⁵³¹ AEMA contends that allowing the electric distribution company to dispatch DER Aggregation Resources would be inconsistent with the Commission's directive that the RTO/ISO should be interacting with the distributed energy resource aggregator as the critical market participant.⁵³² Environmental Organizations express concern that PJM's proposal may result in undue discrimination against Component DER owned by independent aggregators.⁵³³

280. AEMA argues that proposed tariff can be interpreted as making the assignment of the party that can physically operate the Component DER contingent upon the rules defined in electric distribution company operating procedures.⁵³⁴ AEMA states that

⁵²⁷ Indicated Utilities Comments at 20; New Jersey BPU Comments at 7-8; Dominion Comments at 5.

⁵²⁸ Indiana Commission Comments at 10.

⁵²⁹ Indicated Utilities Comments at 19 n.31.

⁵³⁰ JCA Comments and Limited Protest at 22.

⁵³¹ AEE and SEIA Protest at 23-24; AEMA Protest at 3, 33-35; Environmental Organizations Protest at 13-14.

⁵³² AEMA Protest at 34 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 143).

⁵³³ Environmental Organizations Protest at 14.

⁵³⁴ AEMA Protest at 34-35.

neither PJM nor the Commission have the jurisdiction to grant such authority, especially to a non-Commission jurisdictional entity. Moreover, AEMA and Environmental Organizations conclude that any RERRA rule asserting control over Component DER that participate in RTO/ISO markets would be an extra-jurisdictional attempt to set terms and conditions of Commission-jurisdictional markets.⁵³⁵

281. To remedy this concern, AEMA requests that the Commission require PJM to revise its tariff language to clarify that the assignment of authority to operate or dispatch Component DER is not subject to the “operating procedures of the [electric distribution company].”⁵³⁶ AEE and SEIA recommend that the DER Aggregator have sole responsibility and discretion to designate the dispatch agent at the time of registration.⁵³⁷

282. In contrast, Indiana Commission states that the flexibility afforded in PJM’s proposed tariff language regarding operational oversight and control of Component DER seems appropriate in light of the relevant parties’ respective obligations as to distribution system reliability.⁵³⁸

(2) Answers

283. PJM argues that its Order No. 2222 framework acknowledges and respects the jurisdictional authority and technical competency of distribution utilities and RERRAs regarding pre-registration activities and physical operation of local distribution facilities.⁵³⁹ PJM states that it should not be tasked with second guessing the propriety of distribution utility and RERRA pre-registration decisions or operational decisions involving local distribution facilities because these activities are alien to PJM’s Commission-approved governing documents and it does not have the necessary technical expertise. PJM rejects arguments that its proposal is overly deferential to electric distribution companies. Indicated Utilities agree that PJM’s pre-registration and registration process is reasonable, will help facilitate DER Aggregation Resources, and adheres to jurisdictional boundaries.⁵⁴⁰ They argue that discrimination will not occur because electric distribution companies are subject to RERRA rules and regulations.

⁵³⁵ Environmental Organizations Protest at 14; AEMA Protest at 34-35.

⁵³⁶ AEMA Protest at 35.

⁵³⁷ AEE and SEIA Protest at 23-24.

⁵³⁸ Indiana Commission Comments at 7.

⁵³⁹ PJM Answer at 6.

⁵⁴⁰ Indicated Utilities Answer at 10-12.

Indicated Utilities state that pre-registration will allow DER Aggregators to, among other things, fix incomplete or deficient applications, which may actually speed up the review process as it will help prevent denials that would require registration resubmissions.⁵⁴¹ Indicated Utilities argue that Order No. 2222 grants RTOs/ISOs wide discretion to establish a workable process for implementation.⁵⁴²

284. With respect to the timing of pre-registration, PJM and Indicated Utilities disagree with protesters that the pre-registration activities run afoul of the Commission's 60-day distribution utility review requirement because they occur prior to submission of the initial registration to PJM.⁵⁴³ PJM asserts that the pre-registration activities help avoid rejection of a registration based solely on the absence of the required information.⁵⁴⁴ Indicated Utilities argue that neither the Commission nor PJM has the authority to place timelines or other restrictions upon electric distribution companies to perform activities during the pre-registration process.⁵⁴⁵ However, other parties reiterate that PJM's proposal with respect to the timing of pre-registration does not comply with Order No. 2222, arguing that a deadline is needed and that the Indicated Utilities overstate the work involved in their review.⁵⁴⁶

285. PJM states that the automatic approval process is merely a component of the broader framework designed to balance distribution utility and RERRA reliability concerns with a DER Aggregator's need for market access.⁵⁴⁷ PJM asserts that electric distribution companies and RERRAs have a number of tools to ensure their reliability concerns are addressed. PJM notes that its tariff language provides deference to the distribution utility's review and recommendation(s) and also explicitly requires that, prior to auto-approval of a registration, it provides final notice to the distribution utility of the expiration of the 60-day calendar review period.

⁵⁴¹ *Id.* at 12, 18.

⁵⁴² *Id.* at 12 (citing to Order No. 2222, 172 FERC ¶ 61,247 at P 7).

⁵⁴³ PJM Answer at 7 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 292 (noting that the distribution utility review process "is triggered by initial registration of the distributed energy resource aggregation"))).

⁵⁴⁴ *Id.* at 8.

⁵⁴⁵ Indicated Utilities Answer at 13.

⁵⁴⁶ AEMA Answer at 2-3; IMM Answer at 2-3.

⁵⁴⁷ PJM Answer at 10-11.

286. With respect to its proposal to allow the RERRA to assign authority to physically operate and/or dispatch Component DER, PJM states that it simply acknowledges that DER Aggregators will be required to comply with RERRA- and distribution utility-rules—whether they relate to physical dispatch or otherwise.⁵⁴⁸ PJM contends that this is a logical outgrowth of the Commission’s statement in Order No. 2222 that “nothing in this final rule preempts the right of states and local authorities to regulate the safety and reliability of the distribution system and that *all distributed energy resources must comply with any applicable interconnection and operating requirements.*”⁵⁴⁹ In response to AEMA, PJM states that compliance with a distribution utility’s operating procedures is not a requirement of PJM—it is a requirement of the Commission, and one that the DER Aggregator is required by law to attest compliance with prior to participation.⁵⁵⁰

287. Similarly, Indicated Utilities argue that PJM’s proposal to allow RERRAs to assign authority to physically operate and dispatch DERs is appropriate because dispatch control is not about wholesale market participation or conditions, but rather is about protecting the specific RERRA-jurisdictional facilities through which each DER interconnects.⁵⁵¹ Indicated Utilities state that as a matter of law, the assignment authority over operation and dispatch must lie with a RERRA.

(3) Data Request Response

288. PJM argues that pre-registration coordination is necessary because PJM does not currently have a centralized model that directly correlates distribution circuits to transmission buses.⁵⁵² Therefore, PJM asserts that this data must be obtained before the 60-day distribution utility review period begins so that it can determine which facilities may be physically aggregated on a registration.

289. PJM explains that the 60-day registration review process formally begins after: (1) PJM has an executed DAPSA on file, to be used for all DER Aggregation Resources associated with the DER Aggregator; (2) PJM has received a complete registration from the DER Aggregator, in a form specified in the PJM Manuals; and (3) the pre-registration activities have been completed. Once a registration is submitted, PJM will verify that

⁵⁴⁸ *Id.* at 9-10.

⁵⁴⁹ *Id.* at 10 (quoting Order No. 2222, 172 FERC ¶ 61,247 at P 44).

⁵⁵⁰ *Id.* at 8-9 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 352).

⁵⁵¹ Indicated Utilities Answer at 25-26.

⁵⁵² Data Request Response at 41-42.

these additional steps have been completed and notify the relevant distribution utility through a software program which will initiate the 60-day review process.

290. PJM explains that there will be no time limit for PJM to review a DER Aggregator's registration for completeness and to notify the relevant distribution utility, but that PJM intends to have its software system automatically check for completeness and notify the DER Aggregator of missing information.

291. PJM states that its proposal does not contemplate any circumstances that would pause or extend the 60-day distribution utility review period and forestall automatic approval of a DER Aggregator's recommendation if the distribution utility does not provide comments or a recommendation.⁵⁵³ PJM explains that if a dispute cannot be resolved in the 60-day window, the distribution utility or PJM would recommend rejection, and once the issue is resolved, a DER Aggregator may resubmit its registration to restart the 60-day window. PJM avers that it is critical to have clear timelines to automate the registration process as much as possible for all parties. PJM emphasizes that the 60-day review period is a ceiling, and thus a resubmitted registration will not necessarily take a subsequent full 60 days for the distribution utility to review.⁵⁵⁴

292. PJM states that there is no circumstance under which PJM would approve a DER Aggregator's registration if a distribution utility had raised concerns over the safety and reliability of distribution facilities that could not be resolved.⁵⁵⁵ However, PJM notes that the distribution utility will need to provide supporting information regarding such concerns. PJM also explains that, assuming all other applicable requirements are met, PJM is not aware of any circumstances where PJM would deny a registration when the distribution utility failed to provide comments or a recommendation.

(4) Data Request Response Comments/Protests

293. Indicated Utilities reiterate their support for the pre-registration process and contend that PJM's pre-registration process bears many similarities to NYISO's Commission-accepted process.⁵⁵⁶ However, Indicated Utilities contend that the

⁵⁵³ *Id.* at 43-44, 49.

⁵⁵⁴ *Id.* at 43-44.

⁵⁵⁵ *Id.* at 44-45.

⁵⁵⁶ Indicated Utilities Data Request Response Comments at 8-9 (citing NYISO Compliance Order, 179 FERC ¶ 61,198 at PP 163, 165). Indicated Utilities state that the Commission's findings in the NYISO Compliance Order support a fulsome pre-registration process. *Id.* at 9 (citing NYISO Compliance Order, 179 FERC ¶ 61,198 at

Commission should require PJM to adopt tariff provisions specifying that determinations about eligibility of DER Components to participate in a retail program should be made in the pre-registration process so that their studies only occur after they have validated the Component DER in an aggregation.⁵⁵⁷

294. AEMA urges the Commission to find PJM's proposed pre-registration process unjust and unreasonable and require PJM to build the necessary centralized database it says it needs as part of its compliance effort.⁵⁵⁸

295. In addition, AEE and SEIA protest that PJM proposes no time limit for its review of a DER aggregator's pre-registration for completeness before the start of the actual 60-day review process. AEE and SEIA also state that PJM offers no further explanation as requested by Commission staff as to why the particular data components are necessary or why this information is not collected and analyzed as part of that 60-day review process. AEE and SEIA argue that requiring DER aggregators to resubmit and restart the clock in all circumstances - including those in which they may lack information due to delay or non-response of a distribution utility - is at best inefficient, and at worse could allow for the exclusion of DERs from the wholesale market simply through delay or inaction.⁵⁵⁹

(5) Commission Determination

296. As an initial matter, we find that PJM complies with the requirement of Order No. 2222 that the results of a distribution utility's review must be incorporated into the distributed energy resource aggregation registration process.⁵⁶⁰

P 261).

⁵⁵⁷ *Id.* at 4.

⁵⁵⁸ AEMA Data Request Response Comments at 5.

⁵⁵⁹ AEE and SEIA Data Request Response Protest at 12.

⁵⁶⁰ Order No. 2222, 172 FERC ¶ 61,247 at P 292; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b) (“[PJM] shall either approve or deny the DER Aggregator’s registration *based on [PJM’s] review of the registration and receipt and review of the electric distribution company’s comments and recommendation*, with deference given to the electric distribution company’s assessment of the impact of the DER Aggregator’s registration on the safety and reliability of distribution facilities.”) (emphasis added).

297. We find that PJM's proposal partially complies with the requirement of Order No. 2222 to include a distribution utility review process that is triggered by initial registration of the distributed energy resource aggregation or incremental changes to a distributed energy resource aggregation already participating in the markets.⁵⁶¹ Pursuant to PJM's proposed tariff revisions, a DER Aggregator is required to provide information to PJM regarding its DER Aggregation Resource in order to initially register with PJM, and must provide notice of any proposed update to the inventory of Component DER or proposed additional market services provided by the DER Aggregation Resource.⁵⁶² With respect to initial registration, PJM explains that it will review the information submitted for completeness, verify that the DER Aggregator meets the eligibility criteria for participation in the DER Aggregator Participation Model, and notify the electric distribution company of the DER Aggregator's initial registration.⁵⁶³ Accordingly, PJM's proposed 60-day distribution utility review period commences upon the electric distribution company's receipt of such notice from PJM.⁵⁶⁴

298. However, we find that PJM's proposed triggering event with respect to incremental changes to a DER Aggregation Resource does not comply with Order No. 2222. Under PJM's proposal, the distribution utility review period commences for incremental changes upon a DER Aggregator's notice to PJM of a proposed update.⁵⁶⁵ We agree with FirstEnergy that this could result in the 60-day review period commencing before the electric distribution company has received the data necessary to perform its assessment, given that the triggering event could occur before PJM transmits the necessary information to the electric distribution company. The electric distribution company's 60-day review period should not commence until it has been provided the information required.⁵⁶⁶ Accordingly, we direct PJM to file, within 60 days of the date of

⁵⁶¹ Order No. 2222, 172 FERC ¶ 61,247 at P 292.

⁵⁶² Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵⁶³ Data Request Response at 42; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵⁶⁴ Data Request Response at 42.

⁵⁶⁵ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵⁶⁶ *See also* NYISO Compliance Order, 179 FERC ¶ 61,198 at P 260 ("the 60-day Distribution Utility review period for initial registrants and for modifications begins 'on the date [NYISO] transmits [DER's] operating and physical information to the Distribution Utility.'"); CAISO Compliance Order, 179 FERC ¶ 61,197 at P 201 ("CAISO confers with the applicable Utility Distribution Company regarding the information provided, thereby commencing the distribution utility review process").

the issuance of this order, a further compliance filing that revises its distribution utility review process such that the 60-day distribution utility review period for incremental changes occurs upon PJM transmitting the necessary information to review such incremental changes to the electric distribution company.⁵⁶⁷

299. In addition, we find that PJM partially complies with the requirement that only the distribution utility hosting a distributed energy resource has the opportunity to review the addition of that resource to a distributed energy resource aggregation.⁵⁶⁸ While PJM's proposed tariff revisions specify that a DER Aggregator must coordinate with "the *applicable* electric distribution company" during pre-registration,⁵⁶⁹ it refers only to "the electric distribution company" in the context of the review process related to incremental changes.⁵⁷⁰ Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing that revises its tariff to clarify that only the distribution utility hosting a Component DER has the opportunity to review the addition of that resource to a DER Aggregation Resource.

300. We also find that PJM's proposed registration review period partially complies with the requirement to provide adequate and reasonable time for distribution utility review that does not exceed 60 days.⁵⁷¹ Pursuant to PJM's proposed tariff revisions, the 60-day electric distribution company registration review process may commence only after a DER Aggregator completes a pre-registration process, unbounded by any deadlines or timeframes, which requires the DER Aggregator to "obtain and verify" certain location and data information in coordination with the applicable electric

⁵⁶⁷ See also *infra* PP 384-390 (additional findings regarding Modifications to List of Resources in Aggregation).

⁵⁶⁸ Order No. 2222-A, 174 FERC ¶ 61,197 at P 70.

⁵⁶⁹ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵⁷⁰ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b). See CAISO Compliance Order, 179 FERC ¶ 61,197 at P 201 (finding that by conferring with the *applicable* Utility Distribution Company, CAISO complies with the requirement that only the distribution utility hosting a distributed energy resource has the opportunity to review the addition of that resource to a distributed energy resource aggregation); NYISO Compliance Order, 179 FERC ¶ 61,198 at P 262 (finding that NYISO complies with this requirement by specifically providing that the electric distribution company may only conduct a review of a DER connecting "to its facilities").

⁵⁷¹ Order No. 2222-A, 174 FERC ¶ 61,197 at P 72 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 295).

distribution company and Transmission Owner.⁵⁷² Because PJM's proposed pre-registration process is mandatory but contains no deadline or obligation for timely coordination and review by the electric distribution company, an electric distribution company could unduly delay or erect barriers to distributed energy resource aggregation participation in the wholesale markets by failing to verify the necessary information in a timely manner or simply through inaction. As a result, the unbounded timeframe for distribution utilities to verify information during the pre-registration process may create undue barriers to entry for distributed energy resource aggregations, in contravention of Order No. 2222.⁵⁷³ We find that any distribution utility review, to include verification of information provided by the DER Aggregator, should be completed as part of the 60-day process as set forth in Order No. 2222 through which the distribution utility determines whether the proposed distributed energy resource is capable of participation in the DER aggregation.⁵⁷⁴ Accordingly, we direct PJM to file, within 60 days of the date of the issuance of this order, a further compliance filing that revises its distribution utility review process to comply with the requirement to provide adequate and reasonable time for distribution utility review that does not exceed 60 days, and that incorporates any distribution utility verification into the 60-day process, consistent with the discussion above.⁵⁷⁵

301. Also, with respect to PJM's proposed registration review process, we disagree with parties who protest PJM's auto-approval mechanism as either affording electric distribution companies too much discretion or jeopardizing safety and reliability on the distribution system. In establishing requirements for a distribution utility review period, the Commission explained in Order No. 2222 that it balanced protecting distribution system reliability against removing barriers to aggregations in the wholesale markets.⁵⁷⁶ We believe that PJM's proposal, together with its representations in its Data Request Response addressing protocols for incorporating electric distribution company recommendations, automatic approval of registration in the absence of electric distribution company comments, and restarting electric distribution company review once

⁵⁷² Data Request Response at 42; Tariff, attach. K-app, § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵⁷³ Order No. 2222, 172 FERC ¶ 61,247 at P 279.

⁵⁷⁴ *Id.* P 292. PJM may consider a pre-registration process that is voluntary for a DER Aggregator to undergo in order to facilitate the required registration process.

⁵⁷⁵ We note that this order additionally finds that the pre-registration process is not fully compliant with information and data requirements of Order No. 2222. *See supra* PP 219-224.

⁵⁷⁶ Order No. 2222, 172 FERC ¶ 61,247 at P 298.

disputes are resolved, if parties are unable to resolve issues within the 60-day window, strikes a reasonable balance required by Order No. 2222 to remove barriers to wholesale market participation while protecting distribution system reliability. Specifically, PJM's proposal to automatically approve a DER Aggregator's registration if an electric distribution company fails to provide a recommendation or comments by the conclusion of the 60-day review window prevents undue delay in a DER Aggregator's participation in PJM's markets.⁵⁷⁷ Moreover, in response to Indicated Utilities, we find that PJM's proposed 15-day period to approve or deny a DER Aggregator's registration commences upon PJM's receipt of the electric distribution company's comments and recommendations as specified in the tariff.⁵⁷⁸ Importantly, PJM's proposal also provides an electric distribution company with a full opportunity to raise concerns about distribution system reliability if, as PJM notes, the distribution utility provides supporting information regarding such concerns.⁵⁷⁹

302. As for PJM's proposal to allow the RERRA to assign authority to physically operate and/or dispatch Component DER during the registration process, we find that PJM's filing does not appear to comply with the plain language of Order No. 2222, which states that the "distributed energy resource aggregator would be responsible for . . . dispatching . . . the individual distributed energy resources in its aggregation."⁵⁸⁰ We find that PJM's proposal⁵⁸¹ does not account for the Commission's requirement that a distributed energy resource aggregator is responsible for dispatching the distributed energy resources in its aggregation in response to RTO/ISO direction. While Order No. 2222 contemplated certain roles for the RERRA,⁵⁸² it did not identify assignment of

⁵⁷⁷ See NYISO Compliance Order, 179 FERC ¶ 61,198 at P 271 ("We agree with NYISO that, if a positive response from a Distribution Utility were required, then the Distribution Utility could indefinitely toll expiration of the 60-day review period by being non-responsive.").

⁵⁷⁸ Tariff, attach. K-app., § 1.4B(b) and Operating Agreement, Schedule 1, § 1.4B(b).

⁵⁷⁹ Data Request Response at 44; *see infra* P 312.

⁵⁸⁰ Order No. 2222, 172 FERC ¶ 61,247 at P 239.

⁵⁸¹ Tariff, attach. K-app., § 1.4B(b) and Operating Agreement, Schedule 1, § 1.4B(b).

⁵⁸² Order No. 2222, 172 FERC ¶ 61,247 at P 324 (noting that these roles "may include, but are not limited to: developing interconnection agreements and rules; developing local rules to ensure distribution system safety and reliability, data sharing, and/or metering and telemetry requirements; overseeing distribution utility review of distributed energy resource participation in aggregations; establishing rules for multi-use

dispatch responsibility for the distributed energy resource aggregation as one of those possible roles.⁵⁸³ We note that the assignment of dispatch responsibility to the DER Aggregator was not challenged on rehearing of Order No. 2222 and emphasize that the assignment of responsibility to the DER Aggregator does not conflict with the ability of the RERRA or distribution utility to maintain distribution system reliability. For example, Order No. 2222 specifically reserved rights for the distribution utility to override RTO/ISO dispatch if needed to maintain reliable and safe operation of the distribution system,⁵⁸⁴ which should alleviate concerns raised by commenters regarding the role of the distribution utility in maintaining distribution system reliability. Therefore, we direct PJM to submit, within 60 days of the date of issuance of this order, a further compliance filing that revises its tariff to designate the DER Aggregator as responsible for dispatching the Component DER in its aggregation or to explain how its proposed tariff language is consistent with this requirement.

303. In addition, we find that PJM's proposed registration review process is partially compliant with the information sharing requirements of Order No. 2222.⁵⁸⁵ We find that PJM's proposal complies with the requirement that RTOs/ISOs share with electric distribution companies any necessary information and data collected about individual DERs participating in an aggregation. However, we find that PJM's proposal does not comply with the requirement that the specific information regarding a distributed energy resource that is provided by a distribution utility to an RTO/ISO as part of the distribution utility review process be shared with the distributed energy resource aggregator.⁵⁸⁶ In its Data Request Response, PJM explains that it will construct a software program to facilitate coordination and communication between PJM, the DER Aggregator, and the electric distribution company. PJM also states that the DER Aggregator will be required to provide information and data from each Component DER during the registration process and that such information will be available to all parties. However, the requirement of Order No. 2222-A to share information is not limited to the DER

applications; and resolving disputes between distributed energy resource aggregators and distribution utilities over issues such as access to individual distributed energy resource data").

⁵⁸³ This order addresses below requirements related to the role of the RERRA. *See infra* P 372.

⁵⁸⁴ Order No. 2222, 172 FERC ¶ 61,247 at P 310.

⁵⁸⁵ *Id.* P 292; Order No. 2222-A, 174 FERC ¶ 61,197 at P 75.

⁵⁸⁶ Order No. 2222, 172 FERC ¶ 61,247 at P 292; Order No. 2222-A, 174 FERC ¶ 61,197 at P 75.

Aggregator sharing information with the electric distribution company and PJM; it also requires that specific information regarding a Component DER that is provided by an electric distribution company to PJM also be shared with the DER Aggregator. Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing that requires PJM to share with the DER Aggregator any information regarding a Component DER that is provided by a distribution utility to PJM as part of the distribution utility review process.

(b) Capability Criteria

(1) Comments/Protests

304. Environmental Organizations argue that several of PJM's proposed factors in the electric distribution company review process give electric distribution companies excessive or inappropriate discretion to block DER registrations.⁵⁸⁷

(2) Commission Determination

305. We find that PJM's proposal partially complies with the requirement to include criteria in its tariff by which the distribution utilities will determine whether each proposed distributed energy resource is capable of participating in a distributed energy resource aggregation.⁵⁸⁸ PJM's proposed tariff language states that the electric distribution company can review and verify the DER Aggregator's registration and information contained therein, pursuant to seven factors.⁵⁸⁹ We find the fourth and sixth factors⁵⁹⁰ proposed by PJM constitute transparent capability criteria and generally meet the requirements of Order No. 2222.⁵⁹¹ These criteria are appropriate as they relate directly to wholesale market participation of distributed energy resource aggregations as discussed in Order No. 2222, specifically, the RERRA's decision whether to permit participation of customers of small utilities, or the RERRA's authority to condition

⁵⁸⁷ Environmental Organizations Protest at 7-9.

⁵⁸⁸ Order No. 2222, 172 FERC ¶ 61,247 at PP 292, 296.

⁵⁸⁹ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵⁹⁰ As discussed *supra*, we find that the fourth criterion, which also contains PJM's double counting proposal with respect to Component DER that participate in a net energy metering retail program, partially complies with the requirements in Order No. 2222 regarding double counting. *See supra* PP 134-141.

⁵⁹¹ We discuss the seventh factor below, as it is a reliability criterion. *See infra* PP 313-314.

participation in a retail program on a resource not participating in the wholesale markets.⁵⁹²

306. However, we find that the first three factors as well as the fifth factor identified in PJM's tariff do not comply with the requirements of Order No. 2222. With respect to the fifth factor, the proposal addresses whether "participation" in PJM's markets complies with rules of any applicable RERRA.⁵⁹³ However, the Commission has exclusive jurisdiction over the wholesale markets and the criteria for participation in those markets.⁵⁹⁴ Nonetheless, we continue to recognize the important role that state and local authorities play with respect to distributed energy resources and their potential aggregation.⁵⁹⁵ Therefore, this criterion could be compliant if it were revised to address *whether the aggregation complies* with rules of any applicable RERRA.⁵⁹⁶ PJM may propose such a criterion on further compliance. Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing that either removes or revises this criterion in its tariff consistent with the discussion above.

307. Turning to the first three factors, these do not constitute capability *criteria* because they do not include a principle or standard by which an electric distribution company would determine whether each proposed Component DER is capable of participation in a DER aggregation. These factors implicate operational characteristics (the first factor), the PJM market where the DER Aggregator will participate (the second factor), and customer account numbers (the third factor), and arguably this is just information that an electric distribution company could review and verify.⁵⁹⁷ It is unclear how the electric

⁵⁹² Order No. 2222, 172 FERC ¶ 61,247 at PP 65, 296.

⁵⁹³ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵⁹⁴ Order No. 2222, 172 FERC ¶ 61,247 at P 57.

⁵⁹⁵ *Id.* P 61.

⁵⁹⁶ See CAISO Compliance Order, 179 FERC ¶ 61,197 at P 205 (finding compliant CAISO's proposed distribution utility review criterion whether the distributed energy resources "do not comply with applicable Utility Distribution Company tariffs or requirements of the Local Regulatory Authority").

⁵⁹⁷ The first three factors, as proposed in full, are:

- i. Operational and physical characteristics, including an inventory of the individual Component DER location-specific capability to reduce load and/or produce electricity;

distribution company will use this information in its review, and we therefore find that inclusion of these factors is inconsistent with the requirement of Order No. 2222 that the review process be transparent with specific criteria for the electric distribution companies to use when reviewing Component DER.⁵⁹⁸ More specifically, we find that the “operational and physical characteristics” that an electric distribution company should be reviewing, and what should comprise the referenced “inventory of the individual Component DER location-specific capability to reduce load and/or produce electricity,” are inappropriately vague. It is likewise unclear what “related information” the electric distribution company should be reviewing with respect to customer account numbers and Component DER locations. As a result, these provisions are inconsistent with the requirement of Order No. 2222 that the distribution utility review process be transparent and provide specific review criteria.⁵⁹⁹ Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing that revises its tariff to include specific, transparent criteria by which an electric distribution company will determine during its review whether each proposed Component DER is capable of participating in a DER Aggregation Resource and to explain why these criteria are appropriate for the PJM region, as required by Order No. 2222.

(c) Reliability Criteria

(1) Comments/Protests

308. Several parties support PJM’s proposed tariff language regarding reliability review.⁶⁰⁰ Indicated Utilities support PJM’s recognition of the importance of deferring to

ii. The specific PJM markets in which the DER Aggregation Resource plans to participate and, if applicable, the effective and termination dates for participation;

iii. The electric distribution company customer account number(s) which represent Component DER location(s) and related information, as defined in the PJM Manuals;

Tariff, attach K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁵⁹⁸ Order No. 2222, 172 FERC ¶ 61,247 at P 293.

⁵⁹⁹ *Id.*

⁶⁰⁰ Environmental Organizations Protest at 9; FirstEnergy Comments and Limited Protest at 14-15; Indicated Utilities Comments at 12; Ohio Commission Comments at 11.

the electric distribution company's assessment of a DER Aggregation's impact on the safety and reliability of distribution facilities.⁶⁰¹

309. However, Dominion argues that PJM should not approve a registration that the electric distribution company has recommended rejecting for safety and reliability.⁶⁰² Dominion notes that the proposed tariff language appears to give PJM discretion to approve a registration even if the electric distribution company recommends rejection. JCA is concerned that PJM provides great deference to the recommendation of electric distribution companies and recommends that they be required to produce a report detailing reliability concerns with an attestation.⁶⁰³ The IMM also argues that electric distribution companies should be required to provide concrete evidence when they reject a DER Aggregator's registration.⁶⁰⁴

(2) Answers

310. Indicated Utilities disagree with JCA and argue that circumventing electric distribution company review jeopardizes safety and reliability.⁶⁰⁵

(3) Data Request Response

311. In its Data Request Response, PJM states that it is not possible for PJM to identify the specific criteria or metrics that a distribution utility may use in conducting its reliability review.⁶⁰⁶ PJM further states that it will develop a software tool to implement the DER Aggregator Participation Model, through which the applicable distribution utility may submit information and documentation to support its reliability assessment.

(4) Commission Determination

312. As an initial matter, we find that PJM complies with the requirement in Order No. 2222 that the RTO/ISO must allow the distribution utility the opportunity to request that the RTO/ISO place operational limitations on an aggregation, or removal of a distributed

⁶⁰¹ Indicated Utilities Comments at 12.

⁶⁰² Dominion Comments at 4.

⁶⁰³ JCA Comments and Limited Protest at 16-19.

⁶⁰⁴ IMM Comments at 7.

⁶⁰⁵ Indicated Utilities Answer at 17.

⁶⁰⁶ Data Request Response at 46.

energy resource from an aggregation based on specific significant reliability or safety concerns that it clearly demonstrates to the RTO/ISO and distributed energy resource aggregator, on a case-by-case basis, and the related requirement that the distribution utility provide a showing that explains any reliability findings.⁶⁰⁷ PJM complies with the first requirement because PJM permits an electric distribution company to “recommend that [PJM]: (i) reject the registration, (ii) approve the registration with certain operational limitations on the DER Aggregation Resource identified in the registration, or (iii) approve the registration with the removal of one or more specific Component DER from the DER Aggregation Resource identified in the registration.”⁶⁰⁸ PJM complies with the second requirement because PJM proposes that its decision to deny wholesale market access to a Component DER be “based on the [PJM’s] review of the registration and receipt and review of the electric distribution company’s comments and recommendation, with deference given to the electric distribution company’s assessment of the impact of the DER Aggregator’s registration on the safety and reliability of distribution facilities.”⁶⁰⁹ As clarified in PJM’s Data Request Response, the electric distribution company’s assessment of the impact of the DER Aggregator’s registration on the safety and reliability of distribution facilities “would include information and documentation necessary to support the determination, which will be able to be submitted via the software tool that PJM will ultimately develop to implement the DER Aggregator Participation Model.”⁶¹⁰

313. We find that PJM’s proposal partially complies with the requirement of Order No. 2222 to develop a distribution utility review process that includes criteria by which the distribution utilities will determine whether the participation of each proposed distributed

⁶⁰⁷ Order No. 2222, 172 FERC ¶ 61,247 at P 297; Order No. 2222-A, 174 FERC ¶ 61,197 at P 76.

⁶⁰⁸ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁶⁰⁹ Order No. 2222-A, 174 FERC ¶ 61,197 at P 76 (stating that the Commission expects that criteria proposed on compliance will require that an RTO/ISO decision to deny wholesale market access to a distributed energy resource for reliability reasons be supported by a showing that the resource presents significant risks to the reliable and safe operation of the distribution system); Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b) (“[PJM] . . . shall either approve or deny the DER Aggregator’s registration based on the [PJM’s] review of the registration and receipt and review of the electric distribution company’s comments and recommendation, with deference given to the electric distribution company’s assessment of the impact of the DER Aggregator’s registration on the safety and reliability of distribution facilities”).

⁶¹⁰ Data Request Response at 46.

energy resource in a distributed energy resource aggregation will not pose significant risks to the reliable and safe operation of the distribution system.⁶¹¹ PJM's proposed tariff revisions allow the electric distribution company to review and verify whether the participation of Component DER in the PJM energy, capacity, and/or ancillary services markets would pose a threat to the reliable and safe operation of the distribution system, the public, or electric distribution company personnel. We find that PJM's proposal sufficiently allows distribution utilities to determine whether the participation of each proposed Component DER in a DER Aggregation Resource will pose significant risks to the reliable and safe operation of the distribution system. Consistent with our findings in CAISO's and NYISO's Order No. 2222 compliance proceedings, we find that Order No. 2222 recognizes that there are sufficient differences among regions to warrant flexibility in determining specific standardized criteria.⁶¹² Based on the record, we believe that PJM does not have the expertise and jurisdiction to set distribution utility safety and reliability criteria, and we thus find PJM's proposal provides appropriate deference to the electric distribution company's assessment of the impact of the DER Aggregator's registration on the safety and reliability of distribution facilities. We encourage PJM to coordinate with stakeholders to develop guidance documents that could include a list of illustrative review criteria or Component DER operating parameters.

314. However, we find that PJM does not address the scope of such review criteria. The Commission clarified in Order No. 2222-A that the potential impacts on distribution system reliability specifically refer to any incremental impacts from a resource's participation in a distributed energy resource aggregation that were not previously considered by the distribution utility during the interconnection study process for that resource.⁶¹³ We find that, to demonstrate compliance with this requirement, PJM must propose in its tariff that the scope of distribution utility review is limited to any incremental impacts that the utility has not previously considered. Section 1.4B(b) of PJM's Tariff and Operating Agreement contain no provision that limits the scope of the utility's reliability review as the Commission required.⁶¹⁴ Accordingly, we direct PJM to

⁶¹¹ Order No. 2222, 172 FERC ¶ 61,247 at P 292.

⁶¹² CAISO Compliance Order, 179 FERC ¶ 61,197 at P 207; NYISO Compliance Order, 179 FERC ¶ 61,198 at P 267.

⁶¹³ Order No. 2222-A, 174 FERC ¶ 61,197 at P 79 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 297).

⁶¹⁴ See Data Request Response at 46 ("Under PJM's proposal, PJM provides the applicable distribution utility with a defined time period and stated criteria by which it may review the proposed registration. PJM cannot speak to how each individual distribution utility in its footprint will conduct that review, and how that review interacts

file, within 60 days of the date of issuance of this order, a further compliance filing that revises its tariff to clarify that the scope of the distribution utility review of distribution system reliability impacts is limited to any incremental impacts from a resource's participation in a distributed energy resource aggregation that were not previously considered by the distribution utility during the interconnection study process for that resource.

(d) Dispute Resolution

(1) Comments/Protests

315. Indiana Commission states that it generally agrees with PJM that disputes between electric distribution companies and DER Aggregators as to key locational and data components would necessarily regard knowledge and information specific to state-regulated distribution systems and should be addressed with the RERRA.⁶¹⁵ FirstEnergy states that PJM correctly incorporates a role for RERRAs in dispute resolution.⁶¹⁶

316. However, several parties protest PJM's proposed dispute resolution process for pre-registration.⁶¹⁷ AEMA states that the pre-registration process transfers responsibility for resolving disputes to the RERRA, thereby absolving PJM itself of any need to ensure barriers are removed and DER Aggregations can access wholesale markets.⁶¹⁸ AEMA also notes that delay may be caused by the Transmission Owner, who is not subject to the authority of the RERRA, in which case action by the Commission will be required.

317. Environmental Organizations state that PJM's proposal that disputes during the pre-registration coordination shall not be resolved by PJM is inconsistent with Order No. 2222, which mandates that procedures for resolving disputes over the distribution utility review process be in the RTO/ISO tariff.⁶¹⁹

with the studies conducted during the RERRA-jurisdictional interconnection process.”).

⁶¹⁵ Indiana Commission Comments at 5-6.

⁶¹⁶ FirstEnergy Comments and Limited Protest at 33.

⁶¹⁷ AEE and SEIA Protest at 21; AEMA Protest at 28-32; Resideo Technologies Protest at 9-10; Environmental Organizations Protest at 6-7.

⁶¹⁸ AEMA Protest at 28, 31.

⁶¹⁹ Environmental Organizations Protest at 6.

(2) Answers

318. Indicated Utilities state that PJM's proposal ensures DER Aggregators will have recourse to raise issues with the RERRA in the event of any undue delays or discrimination.⁶²⁰ The IMM states that the jurisdictional boundaries between the Commission and state and local authorities with respect to dispute resolution should be made clear so that the wholesale market can operate efficiently.⁶²¹

(3) Data Request Response

319. PJM explains that it does not intend to resolve disputes in the pre-registration process, including where the electric distribution company fails to coordinate with the DER Aggregator in a timely manner; instead, the RERRA would resolve such disputes.⁶²² PJM also states that to the extent the DER Aggregator believes the dispute may implicate matters within the Commission's jurisdiction, the DER Aggregator could file a complaint with the Commission pursuant to FPA section 206.

**(4) Data Request Response
Comments/Protests**

320. AEE and SEIA contend that PJM's responses do not provide assurance that the pre-registration process will be adequately monitored or have suitable safeguards to address concerns that the process is overly burdensome or could allow for distribution utilities to effectively block DERs from the wholesale market.⁶²³

(5) Commission Determination

321. We find that PJM's proposal partially complies with the requirement to revise its tariff to incorporate dispute resolution provisions as part of its proposed distribution utility review process.⁶²⁴ PJM proposes in its tariff that disputes relating to the location and data components under pre-registration would not be arbitrated or in any way resolved by PJM or through the dispute resolution provisions of Operating Agreement,

⁶²⁰ Indicated Utilities Answer at 16.

⁶²¹ IMM First Answer at 3.

⁶²² Data Request Response at 41.

⁶²³ AEE and SEIA Data Request Response Protest at 11.

⁶²⁴ Order No. 2222, 172 FERC ¶ 61,247 at P 299.

Schedule 5.⁶²⁵ Rather, such disputes must be resolved in accordance with applicable state or local law, including if a distribution utility refuses to coordinate.⁶²⁶ In its Data Request Response, PJM states that, to the extent a DER Aggregator's dispute may implicate matters within the Commission's jurisdiction, the DER Aggregator may file a complaint with the Commission.⁶²⁷ We decline at this time to address protests regarding PJM's proposed dispute resolution process with respect to pre-registration, but note that in Order No. 2222, the Commission found that any disputes over the application of coordination and distribution utility review processes between the RTO/ISO, the distribution utilities, and the distributed energy resource aggregators must be subject to a process for resolving disputes in the RTO/ISO tariff.⁶²⁸ Because of concerns we identified above with respect to the pre-registration proposal, we directed PJM to revise its distribution utility review process to comply with the requirement to provide adequate and reasonable time for distribution utility review that does not exceed 60 days, and that incorporates any distribution utility verification into the 60-day process.⁶²⁹ We will evaluate PJM's revised proposal with respect to pre-registration on further compliance, including whether it complies with the requirements of Order No. 2222 with respect to dispute resolution.⁶³⁰

322. As for disputes during registration, PJM's tariff would allow a DER Aggregator or electric distribution company to initiate the dispute resolution process described in Operating Agreement, Schedule 5; however, any disputes arising under "any applicable tariffs, agreements, and operating procedures of the [electric distribution company], and/or the rules and regulations of any [RERRA]" shall be resolved in accordance with applicable state or local law, and not by PJM.⁶³¹ We find that prohibiting the use of PJM's dispute resolution procedures in those instances is inconsistent with the requirements of Order No. 2222 because it does not provide a formal mechanism for interested parties to attempt to resolve issues related to the distribution utility review

⁶²⁵ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁶²⁶ Data Request Response at 41; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁶²⁷ Data Request Response at 41.

⁶²⁸ Order No. 2222, 172 FERC ¶ 61,247 at P 299.

⁶²⁹ *See supra* P 300.

⁶³⁰ *See* Order No. 2222, 172 FERC ¶ 61,247 at P 299.

⁶³¹ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

process with PJM, where appropriate, as required by Order No. 2222.⁶³² For example, some disputes may fall within PJM's authority, such as timing of review, the transparency of the process, or incorporation of electric distribution company review results into the registration process.⁶³³ In addition, Order No. 2222-A noted specifically that there could be disputes about information sharing during distribution utility review that could be appropriately resolved using RTO/ISO dispute resolution procedures.⁶³⁴ However, PJM's tariff appears to focus on resolution of concerns based on the electric distribution company's review criteria⁶³⁵ and does not address instances where PJM's dispute resolution procedures may be appropriate. While we do not expect PJM to resolve issues that are beyond its authority, and while we do not intend to deprive state commissions of the opportunity to resolve disputes within their authority,⁶³⁶ we are concerned that PJM's proposal may inappropriately bar entities from bringing applicable disputes to PJM.

323. We also find that PJM's proposal to prohibit the use of its dispute resolution procedures during the 60-day review period for disputes "*arising* under any applicable tariffs, agreements, and operating procedures of the electric distribution company, and/or the rules and regulations of any [RERRA]" is an overly broad and vague carve out that unreasonably restricts a DER Aggregator's use of PJM's dispute resolution procedures when those procedures may be appropriate. While recognizing that state commissions may adjudicate disputes appropriately within their authority that distributed energy resource aggregators may seek to bring before them, we are concerned that PJM's proposed phrase "disputes arising under" EDC or RERRA rules is so broad that it may

⁶³² Order No. 2222, 172 FERC ¶ 61,247 at P 299.

⁶³³ *Id.* PP 292, 295; Order No. 2222-A, 174 FERC ¶ 61,197 at P 75.

⁶³⁴ Order No. 2222-A, 174 FERC ¶ 61,197 at P 75.

⁶³⁵ Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b) ("*If the electric distribution company identifies concerns based on factors (i) through (vii) within the 60 calendar day review period, the electric distribution company may notify the Office of the Interconnection and the DER Aggregator, and the electric distribution company and the DER Aggregator may first attempt to resolve those concerns bilaterally, or in accordance with applicable state or local law, prior to seeking initiation of the dispute resolution process described in Operating Agreement, Schedule 5.*") (emphasis added).

⁶³⁶ *See, e.g.,* NYISO Compliance Order, 179 FERC ¶ 61,198 at P 274 ("as to disputes over the substantive determinations that Distribution Utilities make about reliability and safety on the distribution system, parties must resolve such specific disputes before the state or local regulator, not before NYISO.").

allow for disputes to be inappropriately brought to a state or local regulator when PJM should resolve them. Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing that addresses how PJM will resolve disputes that it determines are within its authority and subject to its tariff.

(e) Role of the Electric Distribution Company

(1) Comments/Protests

324. FirstEnergy and Indicated Utilities contend that PJM's proposal should include a definition of "electric distribution company" due to the significant expectations and burdens placed upon them by Order No. 2222.⁶³⁷ FirstEnergy and Indicated Utilities acknowledge that PJM's current Operating Agreement includes a definition of "Electric Distributor,"⁶³⁸ but argue that this term is not appropriate given the expanded roles and responsibilities of electric distribution companies envisioned by Order No. 2222.

325. In addition, some parties protest PJM's proposal to allow electric distribution companies to serve as DER Aggregators.⁶³⁹ AEMA and Resideo Technologies argue that monopoly distribution utilities are potentially direct competitors of independent third-party aggregation companies, which creates a conflict of interest with and barrier to entry for independent third party aggregators, particularly during the registration and review process and dispute resolution.⁶⁴⁰ The IMM argues that the review process cannot be nondiscriminatory if the electric distribution company is comparing its own DER proposals to the proposals of competitive market participants. Further, the IMM argues there is no satisfactory way to mitigate the market power of electric distribution

⁶³⁷ FirstEnergy Comments and Limited Protest at 8, 23-26; Indicated Utilities Comments at 13-18.

⁶³⁸ Operating Agreement, Definitions E-F ("Electric Distributor shall mean a Member that: (1) owns or leases with rights equivalent to ownership electric distribution facilities that are used to provide electric distribution service to electric load within the PJM Region; or (2) is a generation and transmission cooperative or a joint municipal agency that has a member that owns electric distribution facilities used to provide electric distribution service to electric load within the PJM Region").

⁶³⁹ AEMA Protest at 26-27; IMM Comments at 4-7; Ohio Commission Comments at 15-16; Resideo Technologies Protest at 7-8.

⁶⁴⁰ AEMA Protest at 26-27; Resideo Technologies Protest at 8.

companies if they are allowed to participate as both DER Aggregators and as distribution system operators.⁶⁴¹

326. To address these concerns, AEMA and Resideo Technologies urge the Commission to ensure that any registration and review process conducted by the distribution utility must contain sufficient protections to ensure the prevention of abuse due to inherent conflicts of interest.⁶⁴² In contrast, the IMM states that the most efficient solution is to prevent electric distribution companies from participating as DER Aggregators.

(2) Answers

327. With respect to the definition of electric distribution company, PJM asserts that the Commission has already found the use of the term “electric distribution company” to be just and reasonable in the context of PJM’s demand response rules and believes that this continues to apply in the context of Order No. 2222; however, PJM states it is open to considering different definitions following input from stakeholders.⁶⁴³

328. Duquesne and Indicated Utilities argue the Commission should preserve electric distribution companies’ ability to serve as DER Aggregators.⁶⁴⁴

329. AEMA argues that electric distribution companies have an unfair competitive advantage in the market because they can rely on rate-based funded systems to gather information about potential customers’ consumption data and contact information.⁶⁴⁵ AEMA recommends that the Commission direct PJM to create oversight guidelines and processes that will prevent electric distribution companies from abusing their proprietary data, influence during registration, or override authority. AEMA also argues that, to the extent electric distribution companies conduct any competitive activities, they should be required to act through an affiliate that is subject to a corporate separation agreement.⁶⁴⁶

⁶⁴¹ IMM Comments at 4.

⁶⁴² AEMA Protest at 27; Resideo Technologies Protest at 8.

⁶⁴³ PJM Answer at 22.

⁶⁴⁴ Duquesne Answer at 2; Indicated Utilities Answer at 29-30.

⁶⁴⁵ AEMA Answer at 8.

⁶⁴⁶ *Id.* at 8, 10.

AEMA also argues that the affiliate should not receive undue preference during dispatches or registration.⁶⁴⁷

330. AEMA alleges that electric distribution companies will discriminate if they are market participants because they would be incentivized to reject competitors' resources.⁶⁴⁸ AEMA argues that the Commission could mitigate these risks of discrimination by directing PJM to create transparency requirements to increase accountability during registration and require electric distribution companies to disclose auditable grounds for rejecting a registration and how such a resource could be cured.

(3) Data Request Response

331. PJM states the term "electric distribution company" as used for purposes of its demand response rules is "interpreted the same way that an Electric Distributor is defined in the Operating Agreement."⁶⁴⁹ PJM argues that this existing application of the term under the demand response model will work well for the purposes of the DER Aggregator Participation Model.

**(4) Data Request Response
Comments/Protests**

332. Indicated Utilities reiterate that the lack of clarity with respect to the definition of the electric distribution company may create confusion and future disputes as to the entity from which information should be obtained pursuant to the PJM tariff.⁶⁵⁰

(5) Commission Determination

333. With respect to the role of the distribution utility, we find that PJM's lack of a definition of electric distribution company does not comply with the requirements of Order No. 2222 that coordination requirements should not create undue barriers to entry for distributed energy resource aggregations⁶⁵¹ or that the distribution utility review

⁶⁴⁷ *Id.* at 9-10.

⁶⁴⁸ *Id.* at 9.

⁶⁴⁹ Data Request Response at 40.

⁶⁵⁰ Indicated Utilities Data Request Response Comments at 3.

⁶⁵¹ Order No. 2222 172 FERC ¶ 61,247 at P 279.

process be transparent.⁶⁵² We agree with commenters that the lack of a definition creates uncertainty as to the precise entity responsible for the significant roles ascribed to the electric distribution company in PJM's proposed coordination-related tariff revisions, including the electric distribution company review process. Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing to revise its tariff to include a definition of electric distribution company.

334. In addition, we find that PJM's proposal to allow electric distribution companies to serve as DER Aggregators is consistent with the requirement in Order No. 2222 that RTOs/ISOs not limit the business models under which distributed energy resources aggregators can operate.⁶⁵³ PJM broadly defines DER Aggregator as "an entity that is a Market Participant that: (i) uses one or more DER Aggregation Resources to participate in the energy, capacity, and/or ancillary services markets of PJM through the DER Aggregator Participation Model; and (ii) has a fully-executed DER Aggregator Participation Service Agreement." The Commission in Order No. 2222 did not expressly prohibit or disallow distribution utilities from serving as distributed energy resource aggregators. Rather, the Commission noted that allowing the inclusion of distributed energy resource aggregators with varying business models should increase the ability of distributed energy resource aggregators, and resources within such aggregations, to participate in RTO/ISO markets.⁶⁵⁴ Therefore, we find that PJM's proposal not to restrict electric distribution companies from serving as DER Aggregators is consistent with Order No. 2222. However, we reiterate that Order No. 2222 requires that the electric distribution company's review of the individual Component DER that comprise an aggregation be non-discriminatory, timely, and transparent.⁶⁵⁵ Thus, as we stated above, any distribution utility review, to include verification of information provided by the DER Aggregator, should be completed as part of the 60-day process as set forth in Order No. 2222 through which the distribution utility determines whether the proposed distributed energy resource is capable of participation in the DER aggregation.⁶⁵⁶ Also as discussed above, while distribution utilities have the opportunity to request that the RTO/ISO place operational limitations on an aggregation, or removal of a distributed energy resource from an aggregation, such request is based on specific significant reliability or safety concerns that it clearly demonstrates to the RTO/ISO and distributed

⁶⁵² *Id.* P 293.

⁶⁵³ *Id.* P 353.

⁶⁵⁴ *Id.*

⁶⁵⁵ *Id.* PP 292-293.

⁶⁵⁶ *See supra* note 574 and accompanying text.

energy resource aggregator.⁶⁵⁷ The Commission may revisit this issue in the future, should we discover evidence of undue discrimination regarding the participation of distributed energy resource aggregations in RTO/ISO markets.

c. Ongoing Operational Coordination

335. To implement section 35.28(g)(12)(ii)(g) of the Commission's regulations, in Order No. 2222, the Commission required each RTO/ISO to revise its tariff to (1) establish a process for ongoing coordination, including operational coordination, that addresses data flows and communication among itself, the distributed energy resource aggregator, and the distribution utility; and (2) require the distributed energy resource aggregator to report to the RTO/ISO any changes to its offered quantity and related distribution factors that result from distribution line faults or outages.⁶⁵⁸ In addition, the Commission required each RTO/ISO to revise its tariff to include coordination protocols and processes for the operating day that allow distribution utilities to override RTO/ISO dispatch of a distributed energy resource aggregation in circumstances where such override is needed to maintain the reliable and safe operation of the distribution system.⁶⁵⁹ To account for different regional approaches and to provide flexibility, the Commission did not prescribe specific protocols or processes for the RTOs/ISOs to adopt as part of the operational coordination requirements but rather allowed each RTO/ISO to develop an approach to ongoing operational coordination.⁶⁶⁰

336. In Order No. 2222, the Commission also required each RTO/ISO to revise its tariff to apply any existing resource non-performance penalties to a distributed energy resource aggregation when the aggregation does not perform because a distribution utility overrides the RTO's/ISO's dispatch.⁶⁶¹ In addition, the Commission declined to establish a generic requirement for RTOs/ISOs with respect to liability provisions, stating that it was not persuaded that all distribution providers face similar liability concerns, and that these concerns should be addressed through standardized liability provisions in RTO/ISO tariffs.⁶⁶²

⁶⁵⁷ See *supra* P 312.

⁶⁵⁸ Order No. 2222, 172 FERC ¶ 61,247 at P 310.

⁶⁵⁹ *Id.*

⁶⁶⁰ *Id.* P 311.

⁶⁶¹ *Id.* P 312.

⁶⁶² *Id.* P 313.

i. Filing

337. PJM states that it has devised an operational framework to facilitate communication between parties where applicable, and uphold distribution utility operations for safety and reliability.⁶⁶³ PJM explains that this communication framework is designed to account for day-ahead, real-time, and emergency (override) scenarios.

338. With regard to day-ahead scenarios, PJM states that ongoing and initial communication can take place between the distribution utility and the DER Aggregator, prior to day-ahead energy market submission; specifically, distribution utilities will communicate to DER Aggregators any system constraints to maintain safe distribution operations.⁶⁶⁴ According to PJM, an operating range not supported by the utility, for safety and reliability concerns, should not be represented by the DER Aggregator in the market offer or reflected in the economic minimum or economic maximum of the DER Aggregation Resource. PJM also states that if the distribution utility notifies the DER Aggregator of a modified operating range for the DER Aggregation Resource and/or underlying Component DER, the DER Aggregator is required to update its bidding parameters and capability in the PJM Day-ahead energy market submission.

339. With respect to real-time coordination, PJM states that distribution utilities will communicate with the DER Aggregator or the DER Aggregation Resource dispatch agent to inform them of any distribution activities that may require Component DER to have modified operations.⁶⁶⁵ PJM explains that this includes activities such as distribution switching work for a pole hit or tree falling, which need to occur in real-time. PJM also states that, in the event that the distribution utility notifies the DER Aggregator of a modified operating range for the DER Aggregation Resource and/or underlying Component DER, the DER Aggregator is expected to update its bidding parameters and capability in the PJM Real-time energy market.

340. With respect to emergency scenarios, PJM asserts that it will not define how a distribution utility will override a DER Aggregation Resource or underlying Component DER; and the distribution utility can use their defined procedures and processes to do so.⁶⁶⁶ However, PJM notes that to the extent overrides are necessary, the utility should

⁶⁶³ Transmittal at 73; Tariff, attach. K-app., § 1.4B(f); Operating Agreement, Schedule 1, § 1.4B(f).

⁶⁶⁴ Transmittal at 73.

⁶⁶⁵ *Id.* at 74.

⁶⁶⁶ *Id.* at 75.

have a documented explanation as to the reason for action for auditing purposes, which will ensure transparency for the DER Aggregator on utility override and operations.

341. PJM states that, to the extent that a DER Aggregation Resource's capability changes for any reason, the DER Aggregator should reflect those updates to PJM in its market availability and parameters; and PJM will then re-dispatch the DER Aggregation Resource. PJM notes that, if a DER Aggregation Resource cannot perform due to a utility override for safety and reliability, PJM will not excuse penalties or deviations for the DER Aggregation Resource for not meeting its market commitment, including, but not limited to, day-ahead energy deviations, performance assessment penalties, and regulation performance scores.⁶⁶⁷

342. PJM states that, while a number of details of its operational framework will be memorialized in the PJM Manuals during implementation, PJM has included the core elements in Tariff, Attachment K-Appendix, section 1.4B(f) and Operating Agreement, Schedule 1, section 1.4B(f). PJM asserts that, as many aspects of local distribution facilities are outside of the Commission's jurisdiction, comprehensively listing in the tariff and operating agreement the specific scenarios under which a distribution utility may override PJM's dispatch is infeasible, and not realistically susceptible to specification.⁶⁶⁸ PJM therefore proposes to incorporate by reference in its proposed tariff language the means through which a distribution utility may initiate override as provided in the applicable tariffs, agreements, and operating procedures of the electric distribution company and/or the rules and regulations of any RERRA. PJM also argues that this approach should address transparency concerns for DER Aggregators, as they are required to attest in their DER Aggregator Participation Service Agreement that they are in compliance with any applicable tariffs, agreements, and operating procedures of the electric distribution company, and/or the rules and regulations of any RERRA.

ii. Comments/Protests

343. FirstEnergy supports PJM's proposal to ensure that electric distribution companies retain the ability to override the operation of a DER Aggregation Resource.⁶⁶⁹ Dominion states that PJM's proposal appropriately affords the electric distribution companies

⁶⁶⁷ *Id.* at 76.

⁶⁶⁸ *Id.* at 76-77 (citing *City of Cleveland v. FERC*, 773 F.2d at 1376).

⁶⁶⁹ FirstEnergy Comments and Limited Protest at 16-18.

opportunities throughout the PJM market cycle to communicate system constraints, and the Commission should approve it.⁶⁷⁰

344. Illinois Commission states that, while it supports PJM's commitment to deepen communication between the parties involved in DER Aggregation Resource and the dispatch of Component DER, it believes more work is needed in areas such as cybersecurity standards or the development of a more robust technical framework between PJM and distribution utilities.⁶⁷¹ The Illinois Commission argues that the Commission should require PJM to formalize ongoing coordination and communication between relevant parties and to provide RERRAs with any needed technical assistance that would be helpful to facilitate the smooth implementation of DER Aggregation Resource participation in wholesale markets.

345. In contrast, the IMM and JCA argue that PJM's filing inappropriately grants too much authority to the electric distribution company and RERRA.⁶⁷² The IMM argues that PJM's filing fails to establish any principles to define appropriate situations for overrides. The IMM asserts that such an override process cannot be nondiscriminatory or transparent because an electric distribution company can refuse the PJM dispatch instruction of its competitors for any reason and there is no process to verify whether that override is legitimate. Similarly, JCA contends that PJM's proposal does not explain what it means "to maintain safe and reliable operations of the distribution system" and the lack of specificity creates opportunities for electric distribution companies to engage in gaming and to override DER Aggregation Resources for their own purposes.⁶⁷³ JCA states that the Commission should require PJM to revise its dispatch override provisions so that that the interest of market accessibility for DER Aggregators is balanced along with all parties' interest in safe and reliable grid operations.

346. With respect to disputes related to ongoing operational coordination, Indiana Commission states that, as the Commission and PJM have previously disavowed any expertise or jurisdictional authority regarding the planning and operation of distribution facilities, the RERRAs are inherently the best suited to conduct reviews and adjudicate disputes regarding electric distribution company overrides.⁶⁷⁴

⁶⁷⁰ Dominion Comments at 5-6.

⁶⁷¹ Illinois Commission Comments at 8-10.

⁶⁷² IMM Comments at 7-8; JCA Comments and Limited Protest at 21.

⁶⁷³ JCA Comments and Limited Protest at 20-21.

⁶⁷⁴ Indiana Commission Comments at 7-8.

347. In contrast, the IMM and JCA assert that the dispute resolution provisions are unjust and reasonable.⁶⁷⁵ JCA further argues that DER Aggregators should be able to access dispute resolution with either PJM or the IMM, which are best positioned to determine whether the override instructions were reasonable and appropriate.⁶⁷⁶

iii. Answers

348. Regarding real-time operations, specifically commenters' concerns with the ability of the distribution utility to initiate an override,⁶⁷⁷ PJM states that compliance with a distribution utility's operating procedures is outside its purview because it is a requirement of Order No. 2222, and one that the DER Aggregator must attest compliance with prior to participation in PJM's markets.⁶⁷⁸ PJM states that the purpose of its proposed tariff language regarding real-time operations is to simply acknowledge that RERRAs and distribution utilities may formulate different non-jurisdictional rules regarding the physical operation of Component DER and/or DER Aggregation Resources, and that DER Aggregators will be required to comply with those rules whether they relate to physical dispatch or otherwise.⁶⁷⁹

349. In response to JCA's argument that PJM's lack of a dispute resolution process to determine whether an electric distribution company's override instruction was reasonable and appropriate is contrary to Order No. 2222, Pennsylvania Commission argues that PJM and the IMM have no role in adjudicating what actions of an electric distribution company are needed for the safe and reliable operation of the distribution system.⁶⁸⁰ Pennsylvania Commission argues that PJM, the IMM, and the Commission do not have jurisdiction over facilities used in local distribution, and that RERRAs have plenary jurisdiction to determine whether the actions of their electric distribution companies are

⁶⁷⁵ IMM Comments at 7-8; JCA Comments and Limited Protest at 21.

⁶⁷⁶ JCA Comments and Limited Protest at 21.

⁶⁷⁷ PJM Answer at 8-9 (citing AEMA Protest at 32-25; AEE and SEIA Protest at 23-24; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b)).

⁶⁷⁸ *Id.* at 9 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 352).

⁶⁷⁹ *Id.* at 10. PJM states this is a logical outgrowth of Order No. 2222, 172 FERC ¶ 61,247 at P 44 (emphasis added): "nothing in this final rule preempts the right of states and local authorities to regulate the safety and reliability of the distribution system and that *all distributed energy resources must comply with any applicable interconnection and operating requirements.*"

⁶⁸⁰ Pennsylvania Commission Answer at 5-6.

reasonable and consistent with the safe and reliable operation of the distribution system. Indicated Utilities also argue that RERRAs are uniquely situated to adjudicate override disputes, which involve matters within their specific state jurisdictions and expertise.⁶⁸¹

350. Maryland OPC & DC OPC state that PJM did not address JCA's concerns regarding dispute resolution with respect to dispatch override by the electric distribution companies.⁶⁸²

iv. Data Request Response

351. In its Data Request Response, PJM states that when a distribution utility determines that there are distribution activities that may require a Component DER to have modified operations, either planned or unplanned, they will communicate this to the dispatch and market agents.⁶⁸³ PJM notes that it has existing software for this type of interaction, and a similar type of software will exist for DER Aggregation Resources. PJM also explains that, if the distribution utility determines that an override needs to be applied, they will be responsible for determining the new operating range and making the appropriate communication, which will ultimately need to be reflected in the market parameters provided to PJM by the market agent.

v. Commission Determination

352. We find that PJM's proposal partially complies with the operational coordination requirements of Order No. 2222. First, we find that PJM's proposal complies with the requirement to require the distributed energy resource aggregator to report to the RTO/ISO any changes to its offered quantity and related distribution factors that result from distribution line faults or outages.⁶⁸⁴

353. We also find that PJM's proposal partially complies with the requirement to revise its tariff to include coordination protocols and processes for the operating day that allow distribution utilities to override RTO/ISO dispatch of a distributed energy resource aggregation in circumstances where such override is needed to maintain the reliable and

⁶⁸¹ Indicated Utilities Answer at 27-29.

⁶⁸² Maryland OPC & DC OPC Data Request Response Comments at 4.

⁶⁸³ Data Request Response at 48.

⁶⁸⁴ Order No. 2222, 172 FERC ¶ 61,247 at P 310. *See* Transmittal at 73; Tariff, attach. K-app., § 1.4B(f); Operating Agreement, Schedule 1, § 1.4B(f).

safe operation of the distribution system.⁶⁸⁵ We find that PJM's proposal is consistent with the requirement in Order No. 2222 to allow distribution utilities to override RTO/ISO dispatch of a distributed energy resource aggregation in circumstances where such override is needed to maintain the reliable and safe operation of the distribution system.⁶⁸⁶

354. We agree with protesters, however, that PJM's tariff does not contain the required coordination protocols and processes for the operating day that allow distribution utilities to override PJM's dispatch. PJM proposes to incorporate by reference in its proposed tariff language the means through which a distribution utility may initiate override as provided in the applicable tariffs, agreements, and operating procedures of the electric distribution company and/or the rules and regulations of any RERRA; however, Order No. 2222 requires that each RTO/ISO tariff include any such protocols and processes.⁶⁸⁷ Contrary to PJM's statements, these protocols and processes need not specify the scenarios under which a distribution utility may override PJM's dispatch, which may be contained in applicable tariffs, agreements, and operating procedures of the electric distribution company, and/or the rules and regulations of any RERRA. However, PJM's tariff should include further details on PJM's approach to ongoing operational coordination with respect to overrides to ensure the protocols and processes are non-discriminatory and transparent, similar to how PJM describes other operational coordination protocols and processes in Tariff, Attachment K-Appendix, section 1.4B(f); Operating Agreement, Schedule 1, section 1.4B(f).⁶⁸⁸ Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing that revises its tariff to include the coordination protocols and processes for the operating day that allow distribution utilities to override PJM's dispatch.

355. However, we disagree with the IMM and JCA that PJM's filing inappropriately grants too much authority to the electric distribution company and RERRA. RERRA rules and electric distribution company operating procedures concern matters that are outside of the jurisdiction of the Commission. We find that it is sufficient that override instructions be coordinated in a non-discriminatory and transparent manner.⁶⁸⁹ We believe that requiring PJM to include in its tariff coordination protocols and processes for

⁶⁸⁵ Order No. 2222, 172 FERC ¶ 61,247 at P 310.

⁶⁸⁶ *Id.*

⁶⁸⁷ *Id.*

⁶⁸⁸ *See also infra* P 357.

⁶⁸⁹ Order No. 2222, 172 FERC ¶ 61,247 at P 310.

the operating day that allow distribution utilities to override PJM's dispatch, as discussed above, should alleviate protesters' concerns.

356. With respect to disputes related to ongoing operational coordination, and in particular with respect to overrides, we agree with PJM's proposal that such disputes arising under "any applicable tariffs, agreements, and operating procedures of the electric distribution company, and/or the rules and regulations of any Relevant Electric Retail Regulatory Authority, shall be addressed in accordance with applicable state or local law."⁶⁹⁰ We disagree with parties that suggest that PJM or the IMM should resolve such disputes. The appropriate entity to adjudicate disputes regarding whether an override instruction was reasonable and appropriate to ensure the safety and reliability of the distribution system is the RERRA, not PJM or the IMM.

357. In addition, we find that PJM's proposal partially complies with the requirement to revise its tariff to apply existing resource non-performance penalties to a distributed energy resource aggregation when the aggregation does not perform because a distribution utility overrides RTO/ISO dispatch.⁶⁹¹ As PJM notes, if a DER Aggregation Resource cannot perform due to a utility override for safety and reliability, PJM will not excuse penalties or deviations for the DER Aggregation Resource for not meeting its market commitment.⁶⁹² However, we find that PJM's proposal does not include this requirement in its tariff and lacks specificity regarding the existing resource non-performance penalties that would apply to a DER Aggregation Resource when an electric distribution company overrides PJM's dispatch. Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing that revises its tariff to specify the existing non-performance penalties that will apply to a DER Aggregation Resource when the DER Aggregation Resource does not perform because an electric distribution utility overrides PJM's dispatch.

358. We also find that PJM's proposal partially complies with the requirement to revise its tariff to establish a process for ongoing coordination, including operational coordination, that addresses data flows and communication among itself, the distributed energy resource aggregator, and the distribution utility.⁶⁹³ In the day-ahead market, PJM's proposal requires the distribution utilities to communicate to DER Aggregators any system constraints to maintain safe distribution operations.⁶⁹⁴ The DER Aggregator

⁶⁹⁰ Tariff, attach. K-app., § 1.4B(f); Operating Agreement, Schedule 1, § 1.4B(f).

⁶⁹¹ Order No. 2222, 172 FERC ¶ 61,247 at P 312.

⁶⁹² Transmittal at 76.

⁶⁹³ Order No. 2222, 172 FERC ¶ 61,247 at P 310.

⁶⁹⁴ Transmittal at 73; Tariff, attach. K-app., § 1.4B(f); Operating Agreement,

then communicates these constraints to PJM by updating its bidding parameters and capability in the PJM day-ahead energy market submission.⁶⁹⁵ In real-time and emergency conditions, PJM states that the distribution utilities will communicate a modified operating range, using software similar to existing software for other communications, with the DER Aggregator or its designated dispatch agent.⁶⁹⁶ The DER Aggregator then communicates these constraints to PJM by updating its bidding parameters and capability in the PJM real-time energy market.⁶⁹⁷

359. We find that, while PJM's proposal addresses ongoing coordination between: (1) PJM and the DER Aggregator; and (2) the distribution utility and the DER Aggregator, as discussed above, PJM does not sufficiently address ongoing coordination, including operational coordination, such as data flows and communication between PJM and the distribution utility.⁶⁹⁸ Moreover, while PJM discusses data flows and communication between the distribution utility and the DER Aggregator with respect to overriding DER Aggregation Resources or underlying Component DER under PJM dispatch in its filing, PJM does not include this process in its tariff, as required by Order No. 2222. Accordingly, we direct PJM to file, within 60 days of the date of issuance of this order, a further compliance filing that revises its tariff to establish a process for ongoing coordination, including operational coordination, that addresses data flows and communication between: (1) the distribution utility and the DER Aggregator, with respect to overrides during the Operating Day; and (2) PJM and the distribution utility in both day-ahead and real-time markets.

360. We decline to provide guidance on a more formal, established framework to allow for direct communication around overrides, dispatch issues, or other concerns; or to require PJM to further formalize ongoing coordination and communication between

Schedule 1, § 1.4B(f); *see* Data Request Response at 48 (“When a distribution utility determines that there is activity, either planned or unplanned, they will communicate this to the dispatch and market agents. The market agent will need to update the market parameters accordingly to PJM. PJM has existing software for this type of interaction and a similar type of software will exist for DER Aggregation Resources.”).

⁶⁹⁵ Transmittal at 73; Tariff, attach. K-app., § 1.4B(f); Operating Agreement, Schedule 1, § 1.4B(f).

⁶⁹⁶ Transmittal at 74; Data Request Response at 48; Tariff, attach. K-app., § 1.4B(f); Operating Agreement, Schedule 1, § 1.4B(f).

⁶⁹⁷ Transmittal at 74; Tariff, attach. K-app., § 1.4B(f); Operating Agreement, Schedule 1, § 1.4B(f).

⁶⁹⁸ Order No. 2222, 172 FERC ¶ 61,247 at P 310.

relevant parties, as requested by Illinois Commission. The Commission declined to prescribe specific protocols or processes for the RTOs/ISOs to adopt as part of the operational coordination requirements in Order No. 2222, and we will not do so here.⁶⁹⁹ However, we encourage PJM to work with stakeholders as it develops its protocols and processes for ongoing operational coordination for inclusion in the tariff and PJM Manuals.

d. Role of Relevant Electric Retail Regulatory Authorities

361. To implement section 35.28(g)(12)(ii)(g) of the Commission's regulations, in Order No. 2222, the Commission required each RTO/ISO to specify in its tariff, as part of the market rules on coordination between the RTO/ISO, the distributed energy resource aggregator, and the distribution utility, how each RTO/ISO will accommodate and incorporate voluntary RERRA involvement in coordinating the participation of aggregated distributed energy resources in RTO/ISO markets.⁷⁰⁰ The Commission noted that possible roles and responsibilities of RERRAs in coordinating the participation of distributed energy resource aggregations in RTO/ISO markets may include, but are not limited to: developing interconnection agreements and rules; developing local rules to ensure distribution system safety and reliability, data sharing, and/or metering and telemetry requirements; overseeing distribution utility review of distributed energy resource participation in aggregations; establishing rules for multi-use applications; and resolving disputes between distributed energy resource aggregators and distribution utilities over issues such as access to individual distributed energy resource data.⁷⁰¹ The Commission required that any such role for RERRAs in coordinating the participation of distributed energy resource aggregations in RTO/ISO markets be included in the RTO/ISO tariffs and developed in consultation with the RERRAs.⁷⁰²

362. Further, the Commission stated that, to the extent that metering and telemetry data comes from or flows through distribution utilities, the Commission required that RTOs/ISOs coordinate with distribution utilities and the RERRAs to establish protocols

⁶⁹⁹ *Id.* P 311.

⁷⁰⁰ *Id.* P 322.

⁷⁰¹ *Id.* P 324. The Commission also noted that the roles delineated in CAISO's Distributed Energy Resource Provider tariff provisions may provide an example of how RERRAs could be involved in coordinating the participation of distributed energy resource aggregations in RTO/ISO markets. *Id.* P 323.

⁷⁰² *Id.* P 324.

for sharing metering and telemetry data that minimize costs and other burdens and address concerns raised with respect to customer privacy and cybersecurity.⁷⁰³

363. In Order No. 2222-A, the Commission explained that, consistent with the goals of Order No. 2222, the Commission will evaluate on compliance whether an RTO's/ISO's proposal delineates a role for RERRAs that would result in unjust and unreasonable limits on the participation of distributed energy resource aggregators in wholesale markets.⁷⁰⁴

i. Filing

364. PJM states that its DER Aggregator Participation Model incorporates significant roles for RERRA involvement.⁷⁰⁵ PJM explains that RERRAs will oversee physical interconnection of Component DER to distribution facilities, and will play a role in overseeing and settling certain disputes between DER Aggregators and distribution utilities.⁷⁰⁶ During the registration process, PJM also notes that RERRAs will have the option to directly influence and oversee the operational relationship between the distribution utility, the DER Aggregator, and the Component DER. Finally, PJM states that RERRAs will have the option to oversee the conditions under which a distribution utility may override PJM's dispatch for purposes of preserving distribution system reliability, and will have exclusive jurisdiction to adjudicate disputes arising under that oversight.⁷⁰⁷

ii. Comments/Protests

365. New Jersey BPU states that it supports PJM's respect of RERRA involvement in the interconnection of Component DER, pre-registration coordination, dispute resolution, operational oversight of dispatch, and oversight of the distribution utility's override

⁷⁰³ *Id.*

⁷⁰⁴ Order No. 2222-A, 174 FERC ¶ 61,197 at P 83 (citing Order No. 2222, 172 FERC ¶ 61,247 at PP 130, 279).

⁷⁰⁵ Transmittal at 79.

⁷⁰⁶ *Id.* at 79-80; Tariff, attach. K-app., § 1.4B(b); Operating Agreement, Schedule 1, § 1.4B(b).

⁷⁰⁷ Transmittal at 81; Tariff, attach. K-app., §. 1.4B(f); Operating Agreement, Schedule 1, § 1.4B(f).

ability.⁷⁰⁸ Indiana Commission states that disputes resulting from an electric distribution company's assessment of the impact of an aggregation on its system are rightly heard before the appropriate RERRA.⁷⁰⁹ JCA argues that PJM's pre-registration and registration processes would benefit with additional placeholders for RERRAs to utilize state administrative, legislative, or executive action under their retail jurisdictional authority.⁷¹⁰ OPSI urges the Commission to clarify that neither the Commission nor PJM be allowed to impose deadlines or assign responsibilities to state commissions in the implementation of Commission-jurisdictional tariffs.⁷¹¹

366. FirstEnergy states that, while PJM correctly incorporates a role for RERRAs in several areas, there are numerous other aspects of the DER program design (e.g., metering and telemetry and cybersecurity) that explicitly require RERRA coordination and deference to maintain system safety and reliability.⁷¹² FirstEnergy urges the Commission to direct PJM to submit a compliance filing with additional provisions that more fully articulate the role of the RERRA in these areas to ensure that the DER program can be implemented smoothly.⁷¹³

iii. Answers

367. PJM disagrees with comments that its proposal is overly deferential to RERRAs thereby constituting a "barrier to entry."⁷¹⁴ PJM states that Order No. 2222 identified RTO/ISO market rules as the specific barrier to entry that this exercise of jurisdiction applied to.⁷¹⁵ PJM contends that the legal framework adopted by the Commission in Order No. 2222 acknowledged that the Commission's authority to remediate barriers *within* its jurisdiction must simultaneously coexist with factors *outside* of its jurisdiction

⁷⁰⁸ New Jersey BPU Comments at 2-4.

⁷⁰⁹ Indiana Commission Comments at 6.

⁷¹⁰ JCA Comments and Limited Protest at 18.

⁷¹¹ OPSI Comments at 3-4.

⁷¹² FirstEnergy Comments and Limited Protest at 33.

⁷¹³ *Id.* at 34-35.

⁷¹⁴ PJM Answer at 2-3 (citing JCA Comments and Limited Protest at 16-21; AEMA Protest at 26-35; Environmental Organizations Protest at 5-9, 13-15).

⁷¹⁵ *Id.* at 3-4 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 26).

that may nonetheless impact participation in PJM's markets—such as distribution system operations, and RERRA rules and regulations.

368. PJM states that the roles and activities reserved for distribution utilities and RERRAs within its Order No. 2222 compliance filing are not legally cognizable “barriers to entry” as contemplated by Part II of the FPA, and they are not “aimed directly at matters in FERC’s jurisdiction.” PJM contends that instead its filing appropriately acknowledges the lawful fulfillment of non-jurisdictional activities that these are engaged in within the framework of cooperative federalism envisioned by Order No. 2222.

369. The Indicated Utilities argue that PJM’s filing necessarily defers to electric distribution companies and RERRAs in matters related to distribution system safety and reliability.⁷¹⁶ Indicated Utilities state that electric distribution companies are subject to state laws, regulations, practices, and procedures of their respective states and RERRAs which belie claims that there can be discriminatory motives or that such motives would go unchecked by the RERRAs or the state.⁷¹⁷ Indicated Utilities state that PJM’s proposal appropriately respects the prescribed jurisdictional delineations between roles of the Commission and RTOs and those of states, RERRAs, electric distribution companies, as well as the subject matter expertise of electric distribution companies and RERRAs.⁷¹⁸

370. The IMM argues that the jurisdictional boundaries between the Commission and state and local authorities need to be clearly defined, especially regarding preregistration, registration, dispatch overrides, and dispute resolution.⁷¹⁹

iv. Data Request Response

371. In response to the Data Request, PJM explains that if an element of a registration is submitted to a RERRA for dispute resolution, the 60-day distribution utility review process does not pause.⁷²⁰ In the event that the dispute cannot be resolved during the 60-day review window, PJM would reject the registration and the DER Aggregator could resubmit its registration once the issue is resolved.

⁷¹⁶ Indicated Utilities Answer at 6.

⁷¹⁷ *Id.* at 8.

⁷¹⁸ *Id.* at 10.

⁷¹⁹ IMM First Answer at 3.

⁷²⁰ Data Request Response at 49.

v. Commission Determination

372. We find that PJM’s proposal partially complies with the Order No. 2222 requirements regarding the role of RERRAs. PJM’s proposal requires the DER Aggregator to comply with RERRA rules and regulations, establishes a role for RERRAs with respect to interconnection and coordination, and therefore complies with the requirement to specify how each RTO/ISO will accommodate and incorporate voluntary RERRA involvement in coordinating the participation of aggregated distributed energy resources in RTO/ISO markets.⁷²¹ As PJM explains, its Tariff requires all DER Aggregators to execute a DER Aggregator Participation Service Agreement that includes an explicit attestation that the DER Aggregator is currently, and will remain, in full compliance the rules and regulations of any RERRA.⁷²² In addition, PJM’s proposal provides a role for RERRAs to oversee and settle disputes between DER Aggregators and electric distribution companies.⁷²³ However, we note that, as discussed *supra*, we require further compliance regarding PJM’s proposed role for the RERRA with respect to (1) resolution of disputes during the registration process, and (2) dispatch authority during the registration process.⁷²⁴

10. Modifications to List of Resources in Aggregation

373. In Order No. 2222, the Commission added section 35.28(g)(12)(ii)(e) to the Commission’s regulations to require each RTO/ISO to establish market rules that address

⁷²¹ Order No. 2222, 172 FERC ¶ 61,247 at P 322; NYISO Compliance Order, 179 FERC ¶ 61,198 at P 302 (“More specifically, we find that NYISO’s proposal, which requires the Aggregator to comply with RERRA requirements, establishes a role for RERRAs and therefore complies with the requirement to specify how each RTO/ISO will accommodate and incorporate voluntary RERRA involvement in coordinating the participation of aggregated distributed energy resources in RTO/ISO markets.”); CAISO Compliance Order, 179 FERC ¶ 61,197 at P 235 (“More specifically, we find that CAISO’s proposal, which requires the Distributed Energy Resource Provider to comply with Local Regulatory Authority requirements, establishes a role for RERRAs and therefore complies with the requirement to specify how each RTO/ISO will accommodate and incorporate voluntary RERRA involvement in coordinating the participation of aggregated distributed energy resources in RTO/ISO markets.”).

⁷²² Transmittal at 85-86; Tariff, attach. N-4.

⁷²³ See *supra* PP 321-322.

⁷²⁴ See *supra* PP 321-323, 302.

modification to the list of resources in a distributed energy resource aggregation.⁷²⁵ The Commission required each RTO/ISO to revise its tariff to specify that distributed energy resource aggregators must update their lists of distributed energy resources in each aggregation (i.e., reflect additions and subtractions from the list) and any associated information and data, but that, when doing so, distributed energy resource aggregators will not be required to re-register or re-qualify the entire distributed energy resource aggregation.⁷²⁶ The Commission noted that any modification triggers the distribution utility review process.

374. However, the Commission stated that it may be appropriate for each RTO/ISO to abbreviate the distribution utility's review of modifications to the distributed energy resource aggregations.⁷²⁷ The Commission explained that, because the impacts of modifications may often be minimal, an abbreviated review process should be sufficient for the distribution utility to identify the cases where an addition to the list of resources might pose a safety or reliability concern. The Commission further explained that modifications to the list of resources in a distributed energy resource aggregation, and the resulting distribution utility and RTO/ISO review of those changes, could occasionally indicate changes to the electrical characteristics of the distributed energy resource aggregation that are significant enough to potentially adversely impact the reliability of the distribution or transmission systems and justify restudy of the full distributed energy resource aggregation. However, the Commission stated, it did not believe that, even in such circumstances, participation of the distributed energy resource aggregation would need to be paused during the review of modifications or restudy. The Commission stated that aggregators should be able to continue to bid the unmodified portion of their aggregation into RTO/ISO markets.

375. To the extent that an RTO/ISO requires distributed energy resource aggregators to provide information on the physical or operational characteristics of its distributed energy resource aggregation, the Commission required each RTO/ISO to revise its tariff to ensure that distributed energy resource aggregators must update such information if any modification to the list of resources participating in the aggregation results in a change to the aggregation's performance.⁷²⁸ The Commission found that this requirement will ensure that the RTOs/ISOs have accurate and current information about the physical and

⁷²⁵ Order No. 2222, 172 FERC ¶ 61,247 at P 335.

⁷²⁶ *Id.* P 336.

⁷²⁷ *Id.* P 337.

⁷²⁸ *Id.* P 338.

operational characteristics of the distributed energy resource aggregations that are participating in their markets, with minimal administrative burden.

376. In Order No. 2222-A, the Commission explained that, occasionally, the removal of a distributed energy resource, particularly a large resource, from an aggregation could drastically change the operation and configuration of an aggregation on the distribution system and would need to be examined by a distribution utility.⁷²⁹ However, the Commission stated, because such drastic impacts will likely be the exception more than the rule, the Commission encouraged RTOs/ISOs to propose abbreviated distribution utility review processes for modifications to existing aggregations. For example, the Commission noted, an RTO/ISO may propose an abbreviated distribution utility review process as a default when an existing aggregation is modified but allow for a more fulsome review when a modification surpasses some materiality threshold or meets certain criteria.

a. Filing

377. PJM states that it proposes to add language to new Tariff, Attachment K-Appendix, section 1.4B(b) and Operating Agreement, Schedule 1, section 1.4B(b) addressing modifications.⁷³⁰ PJM states that its proposal mandates that a DER Aggregator report to PJM any proposed update to the inventory of the individual Component DER within the DER Aggregation Resource identified in the DER Aggregator's registration and to reflect any proposed addition or subtraction of a Component DER, including any applicable information or data associated with the Component DER.⁷³¹ In addition, PJM states, its proposal provides an opportunity for a distribution utility to review the proposed modification for 60 calendar days, while simultaneously not inhibiting the participation of the DER Aggregation Resource while that review is pending. PJM argues that it expects that, in many instances, the modifications will not require a full 60-day review process. Regarding the capacity market, PJM states that its proposal provides that an inventory of the individual Component DER within a DER Aggregation Resource registration that is linked to a DER Capacity Aggregation Resource may not be changed during an applicable Delivery Year.

⁷²⁹ Order No. 2222-A, 174 FERC ¶ 61,197 at P 71 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 337).

⁷³⁰ Transmittal at 83-84.

⁷³¹ *Id.* at 84.

b. Comments/Protests

378. Dominion supports the proposed process for reviewing modifications to the list of resources, including the 60-day review window for the distribution company.⁷³²

379. Indicated Utilities argue that PJM must impose limits on DER aggregation updates to ensure that distribution utilities are not unduly burdened by reviewing endless updates and request more express detail in the tariff regarding what type of inventory update triggers what type of review.⁷³³ Indicated Utilities explain that changing a Component DER creates a new aggregation that may require complicated analysis. Indicated Utilities contend that specifying certain parameters around inventory updates would provide beneficial clarity to ensure electric distribution company resources are prioritized towards new registration review. Indicated Utilities suggest, for example, that PJM limit inventory updates to an annual capacity delivery period.

380. FirstEnergy argues that PJM's proposal includes scant details and places undue risk on system reliability and safety, and that PJM does not adequately support its position that the 60-day period is appropriate.⁷³⁴ FirstEnergy expresses concern that there is no accommodation for additional time beyond 60 days, if needed, to procure and verify required data. To ensure that the safety and reliability of the system is maintained over time as DER Aggregations make modifications, FirstEnergy requests that PJM defer to an electric distribution company's determination that a modification not be accepted.

c. Answers

381. AEMA states that limiting the frequency with which DER aggregation updates are allowed would significantly hinder the ability for DER aggregations to reflect underlying information with sufficient accuracy.⁷³⁵ AEMA states that it is likely that a DER aggregation would become outdated based on natural customer movement more frequently than on an annual basis.

⁷³² Dominion Comments at 6.

⁷³³ Indicated Utilities Comments at 22-23. Indicated Utilities argue that limitless inventory updates counter the Commission's goal of ensuring minimal administrative burden and avoiding unintended consequences. *Id.* at 23 (citing Order No. 2222, 172 FERC ¶ 61,247 at P 336).

⁷³⁴ FirstEnergy Comments and Limited Protest at 27-30.

⁷³⁵ AEMA Answer at 20-21.

382. AEMA also takes issue with PJM's proposal that "[a]n inventory of the individual Component DER within a DER Aggregation Resource registration that is linked to a DER Capacity Aggregation Resource may not be modified during the course of an applicable Delivery Year."⁷³⁶ AEMA encourages the Commission to clarify that DER Aggregation Resources should be able to be updated at least monthly for all resources, including DER Capacity Aggregation Resources, as this is critical to most accurately reflect its underlying composition without freezing customer enrollment. AEMA expresses concern that PJM is being overly prescriptive by treating resource composition on a component-by-component basis, not a customer-by-customer basis.

d. Data Request Response

383. In the Data Request Response, PJM explains that provision of additional market services will require certification but that PJM does not need a formal report for a DER Aggregator who is no longer participating in a market.⁷³⁷ PJM states that pre-registration is necessary for a Component DER that is added, but not if it is removed. PJM adds that it will apply the same deference regarding distribution system reliability to a distribution utility's review of a modification.

e. Commission Determination

384. We find that PJM's proposal partially complies with the requirements of Order No. 2222 that address modifications to the list of resources in a distributed energy resource aggregation. As an initial matter, we find that PJM has complied with the modifications requirements of Order No. 2222 that require RTOs/ISOs to: (1) specify that distributed energy resource aggregators must update their lists of distributed energy resources in each aggregation and any associated information and data, but that, when doing so, distributed energy resource aggregators will not be required to re-register or re-qualify the entire distributed energy resource aggregation;⁷³⁸ and (2) ensure that distributed energy resource aggregators must update information on the physical and operational characteristics of its aggregation if any modification to the list of resources participating in the aggregation results in a change to the aggregation's performance.⁷³⁹ We address the comments and protests below.

⁷³⁶ *Id.* at 22.

⁷³⁷ Data Request Response at 50.

⁷³⁸ Order No. 2222, 172 FERC ¶ 61,247 at P 336. *See* Tariff, attach. K-app., § 1.4B(b).

⁷³⁹ Order No. 2222, 172 FERC ¶ 61,247 at P 338. *See* Tariff, attach. K-app., §

385. Based on the record, PJM's proposed 60-day review period is reasonable because it will ensure that distribution utilities have an adequate opportunity to review modifications to aggregations.⁷⁴⁰ We disagree with FirstEnergy that PJM does not support its proposal. PJM states that "in many instances the modifications will not require a full 60-day review process," but 60 days "is appropriate, given the diversity of operational configurations and issues that may arise now or in the future, and the breadth of resource types that may be Component DER."⁷⁴¹ PJM proposes the maximum amount of time for distribution utility review provided by the Commission in Order No. 2222, given the complexities and challenges that distribution utilities may face in assessing modifications.⁷⁴²

386. While FirstEnergy expresses concern that PJM does not provide additional review time beyond 60 days, we note that the Commission did not require that RTOs/ISOs provide such an opportunity. Rather, the Commission stated in Order No. 2222-A that: "We expect that 60 days should be the maximum time needed for most distribution utility reviews. If an RTO/ISO believes unusual circumstances could give rise to the need for additional distribution utility review time, it may propose provisions for certain exceptional circumstances that may justify additional review time."⁷⁴³ PJM does not propose any extended review period, and FirstEnergy has not persuaded us that exceptional circumstances warrant additional review time. We note that, as discussed above, PJM must revise its distribution utility review process such that the 60-day distribution utility review period for incremental changes begins once PJM transmits the necessary information to review such incremental changes to the electric distribution company.⁷⁴⁴ We believe that this compliance directive is responsive to FirstEnergy's concerns that it be able to ensure the reliability of the distribution system.

1.4B(b).

⁷⁴⁰ Order No. 2222-A, 174 FERC ¶ 61,197 at P 72 ("[We] reiterate that any proposed review period must be shown to be reasonable based on what is being reviewed."). *See also* NYISO Compliance Order, 179 FERC ¶ 61,198 at P 324.

⁷⁴¹ Transmittal at 84.

⁷⁴² As discussed above, PJM must revise its pre-registration process, which applies to modifications as well as initial registrations. *See* Data Request Response at 50; *see supra* P 300.

⁷⁴³ Order No. 2222-A, 174 FERC ¶ 61,197 at P 72.

⁷⁴⁴ *See supra* P 298.

387. We are also not persuaded by Indicated Utilities' argument that limits on updates are necessary to ensure that distribution utilities are not unduly burdened. While we agree with Indicated Utilities that review of modifications may involve complicated analysis, PJM has provided distribution utilities with the maximum review period for that reason.

388. We deny Indicated Utilities' request that PJM's tariff contain more detail regarding what type of inventory update triggers different types of review because PJM proposes a 60-day review period for all modifications.

389. We are unpersuaded by AEMA's concern about PJM's proposal to restrict updates to DER Capacity Aggregation Resources during a Delivery Year. AEMA contends that PJM is being overly prescriptive by treating resource composition on a component-by-component basis, not a customer-by-customer basis. However, the Commission was clear in Order No. 2222 that each RTO/ISO must establish market rules that address modification to the list of *resources* in a distributed energy resource aggregation, not customers within an aggregation.⁷⁴⁵

390. Consistent with FirstEnergy's request, PJM explained in its Data Request Response that it will apply the same deference to a distribution utility's assessment of the reliability impacts of a modification that it applies to initial registrations.⁷⁴⁶

11. Effective Date

391. In Order No. 2222, the Commission required each RTO/ISO to propose a reasonable implementation date, together with adequate support explaining how the proposal is appropriately tailored for its region and implements Order No. 2222 in a timely manner.⁷⁴⁷ The Commission stated that it will establish on compliance the effective date for each RTO's/ISO's compliance filing.

⁷⁴⁵ Order No. 2222, 172 FERC ¶ 61,247 at P 335.

⁷⁴⁶ Data Request Response at 50; *see* Tariff, attach. K-app., § 1.4B(b) (“[PJM] . . . shall either approve or deny the DER Aggregator's registration based on [PJM's] review of the registration and receipt and review of the electric distribution company's comments and recommendation, with deference given to the electric distribution company's assessment of the impact of the DER Aggregator's registration on the safety and reliability of distribution facilities”).

⁷⁴⁷ Order No. 2222, 172 FERC ¶ 61,247 at P 361.

a. Filing

392. PJM proposes an effective date of February 2, 2026 for the Tariff, Operating Agreement, and RAA revisions in its filing.⁷⁴⁸ PJM requests an effective date of July 1, 2023 for the proposed revisions specific to a DER Aggregator offering a Planned DER Capacity Aggregation Resource to allow for their participation in the 2026/2027 Delivery Year BRA.⁷⁴⁹ In support of its proposal PJM states that it will need to plan and budget for software and application changes to support the DER Aggregator Participation Model, which include changes to the PJM Day-ahead and Real-time Energy Market clearing engines and PJM's Market Gateway platform, to support the bidding and operations of DER Aggregation Resources. PJM states that it will also need to develop a database and system to support the registration process and data management around DER Aggregation Resources.

393. Additionally, PJM contends there is a larger coordination effort remaining for business practice changes before implementation, including but not limited to RERRA readiness, utility readiness, and PJM readiness. PJM explains that RERRAs and utilities will have work activities to evaluate for Component DER and support wholesale participation, including but not limited to processes, resources, costs for interconnection, dispute resolution, utility reviews, and metering and settlements. PJM adds that it will have a number of implementation activities to complete as well, including but not limited to, locational mapping processing, planning study processes for DER Aggregation Resources in the Regional Transmission Expansion Plan, and updated market procedures for the registration and operation of DER Aggregation Resources. Lastly, PJM states that it will require coordination of implementation of the DER Aggregator Participation Model with the nGEM software, and that current timelines for implementation of nGEM software is 2025. According to PJM, the best allocation of its resources is to implement the DER Aggregator Participation Model only on the nGEM system which avoids replicating work since those changes would otherwise need to be developed, tested, and implemented in both legacy Day-ahead and Real-time market systems and nGEM.

b. Comments/Protests

394. Several parties raise several concerns with PJM's proposed February 2, 2026 effective date. AEE and SEIA contend that PJM's proposed implementation date unreasonably delays the opportunity for DER aggregations to participate in the PJM markets and enhance market competition, leaving unjust and unreasonable rates in

⁷⁴⁸ Transmittal at 89-90.

⁷⁴⁹ *Id.* at 90-91.

place.⁷⁵⁰ AEE and SEIA argue that the Commission should require PJM and other RTOs/ISOs proposing lengthy implementation timeframes to consider pursuing near-term actions that allow DERs to participate in aggregations to provide at least some services while these software and platform upgrades are underway, or explain more fully why such interim steps are not possible.

395. Indicated Utilities state that PJM's compliance filing does not specify the necessary process development and timelines for electric distribution companies, DER Aggregators, and PJM prior to the BRA and up to the 2026-2027 Delivery Year.⁷⁵¹ They contend that without certainty regarding the deliverables and timeline, it is impossible to assess whether PJM's requested effective dates are achievable. Indicated Utilities state that PJM should make clear that DER Aggregators would participate in the BRA for 2026-2027 Delivery Year at their own risk, that there is no guarantee that the necessary precursors for wholesale market participation of aggregations will be complete by that time, and that electric distribution companies must be held harmless from any potential claims arising from a DER Aggregator's inability to timely participate with Component DER.⁷⁵² Ohio Commission expresses concern about the amount of regulatory groundwork for Ohio Commission to develop the state regulations that are contemplated through the PJM Compliance Filing.⁷⁵³ Ohio Commission avers that state-jurisdictional initiatives and associated timeframes cannot and should not be dictated by the Commission or PJM.

396. Dominion supports PJM's proposed effective dates and argues that the Commission should reject any requests to make PJM's requested implementation dates earlier because the amount of preparatory work needed for implementation is considerable and will require all of the time requested by PJM.⁷⁵⁴ OPSI requests that the Commission reaffirm that PJM's governing documents can in no way impose requirements or deadlines on state commissions or other state governmental entities that are subject to state law and will not interfere with any matter under state jurisdiction.⁷⁵⁵ OPSI explains that it seeks this affirmation because PJM's compliance filing would establish tariffs that rely on compliance with rules and regulations of state commissions

⁷⁵⁰ AEE and SEIA Protest at 28.

⁷⁵¹ Indicated Utilities Comments at 27.

⁷⁵² *Id.* at 24, 28.

⁷⁵³ Ohio Commission Comments at 9.

⁷⁵⁴ Dominion Comments at 7.

⁷⁵⁵ OPSI Comments at 3 (citing Transmittal at 69-70).

or other similar regulatory authorities, as well as their involvement in the process,⁷⁵⁶ and would include effective dates for tariff changes of July 1, 2023, and February 2, 2026.

397. Several parties also raise concerns with PJM's July 1, 2023 effective date. Ohio Commission points out that the tariff revisions associated with this effective date lack important provisions, such as registration, dispute resolution, and other issues that may involve state jurisdictional matters. FirstEnergy asserts that the filing lacks a process or timeline to determine whether there will be double counting of resources.⁷⁵⁷ Pennsylvania Commission requests delaying the capacity market effective date from 2023 to one which would become effective for the 2028/2029 Base Residual Auction at the earliest.⁷⁵⁸ It argues that a 2023 effective date may harm state and electric distribution company readiness with little benefit.

398. Pennsylvania Commission notes that PJM's capacity market provisions that take effect in 2023 lack necessary statements enforcing its double counting restrictions, which the Pennsylvania Commission says are otherwise reflected in the tariff provisions taking effect in 2026. Because DER Aggregation Resources can participate in PJM's capacity market before 2026, the Pennsylvania Commission recommends requiring revisions to the provisions effective 2023 to prevent double compensation.

399. City of Cincinnati states that there is a disconnect between PJM's implementation timeline and the availability of federal funding through the infrastructure law.⁷⁵⁹

c. Answers

400. PJM clarifies that the tariff revisions with a 2023 effective date represent the ability for a DER Aggregator to provide a plan necessary to preserve the opportunity for capacity market participation.⁷⁶⁰ PJM explains that these revisions will neither trigger the registration process nor imply expectations on RERRAs or electric distribution companies to complete interconnection, review aggregations for reliability, or review viability of the DER Aggregator for wholesale participation. PJM notes that in 2026,

⁷⁵⁶ *Id.* (citing Tariff, Attachment K-Appendix, section 1.4B(b); Operating Agreement, Schedule 1, section 1.4B(b)).

⁷⁵⁷ FirstEnergy Comments and Limited Protest at 36.

⁷⁵⁸ Pennsylvania Commission Comments at 19-20.

⁷⁵⁹ City of Cincinnati Comments at 3.

⁷⁶⁰ PJM Answer at 23-24.

DER Aggregators will be required to complete the registration process and meet their capacity commitments for the applicable Delivery Year(s).

401. The IMM contends that, to ensure successful integration of aggregations in the wholesale markets, states should have sufficient time to develop rules and regulations for DERs and should be ready to accommodate DER's participation in the wholesale market.⁷⁶¹

d. Data Request Response

402. PJM explains that it will pursue a number of major software and application upgrades, including (1) modifications to Markets Gateway to develop new screens within the application, (2) creating the software tool necessary to facilitate the DER Aggregator Participation Model prior to February 2, 2026, (3) modifying PJM's day-ahead and real-time market engines to effectuate the DER Aggregator Participation Model and implementing applicable business rules, (4) implementing a new modeling structure for Component DER, to facilitate locational mapping of the resources nodally while protecting the integrity of system performance, and (5) modifying the markets settlement systems and underlying supporting databases so that PJM can properly uphold the Commission's directives regarding aggregate settlements, Order No. 745 rules, and double-counting.⁷⁶² PJM notes that as of July 2022, it is unable to specify the particular milestones necessary to effectuate needed changes given the prospective outlook spanning multiple fiscal years, the uncertainty surrounding the outcome of this proceeding, and the inability to presently identify future Commission action that may warrant intervening changes between 2022 and 2026.

403. PJM notes that planned DER Capacity Aggregation Resource participation in the 2026/2027 BRA does not require participation from the RERRAs or distribution utilities because the provisions taking effect in 2023 represent the ability for a DER Aggregator to provide a plan necessary to preserve the opportunity for capacity market participation.

404. PJM states there is not a risk of double compensation for the staggered implementation of Planned DER Capacity Aggregation Resources. PJM explains that this is due to the evaluation of double counting that is performed in the registration process prior to a DER Aggregation Resource participating in PJM's markets.

⁷⁶¹ IMM First Answer at 4.

⁷⁶² Data Request Response at 52-53.

e. Commission Determination

405. We find that PJM's proposed implementation timeline complies with the effective date requirements of Order No. 2222. PJM proposes two effective dates: (1) July 1, 2023 for the limited purpose of allowing Planned DER Capacity Aggregation Resources to participate in the 2026/2027 Delivery Year BRA, and (2) February 2, 2026 for the Tariff, Operating Agreement, and RAA revisions effectuating the balance of the proposal including energy and ancillary services markets participation. We find that PJM's proposed implementation dates are reasonable, and that PJM has provided adequate support to explain how the proposal is appropriately tailored for its region and implements Order No. 2222 in a timely manner.⁷⁶³ Specifically, the July 1, 2023 effective date allows for DER Capacity Aggregations Resources to plan to participate in the 2026/2027 Delivery Year BRA.

406. We recognize that states and distribution utilities raise concerns about PJM's proposed July 1, 2023 implementation date for capacity market participation and whether they can accomplish necessary changes to their own rules and procedures associated with DER Aggregation wholesale participation. However, we find that PJM persuasively rebuts concerns that the 2023 effective date may harm state and distribution utility readiness because, as PJM explains, in 2023, DER Aggregators would merely submit plans to participate, and states and utilities need not act prior to this date.⁷⁶⁴ We also agree with PJM that there is no risk of double compensation for the staggered implementation of Planned DER Capacity Aggregation Resources due to the evaluation of double counting that is performed in the registration process prior to a DER Aggregation Resource participating in PJM's markets.⁷⁶⁵

407. We agree with PJM that implementation of the tariff provisions for 2026 requires significant implementation activities, in addition to a larger coordination effort remaining for business practice changes before implementation.⁷⁶⁶ We believe that PJM's proposal to align the effective date of energy and ancillary services market participation of DER Aggregation Resources with the 2026/2027 Delivery Year BRA is appropriately tailored to PJM's market design while also providing a reasonable amount of time for these implementation needs. We thus disagree with AEE and SEIA that PJM's proposal

⁷⁶³ Order No. 2222, 172 FERC ¶ 61,247 at P 361.

⁷⁶⁴ PJM Answer at 23-24.

⁷⁶⁵ Data Request Response at 53.

⁷⁶⁶ Transmittal at 90-91 (discussing coordination and implementation activities of PJM, RERRAs and electric distribution companies); Data Request Response at 52 (discussing several major software and application upgrades PJM must pursue).

unduly delays wholesale participation of distributed energy resource aggregations and decline their request to direct PJM to implement near-term actions to facilitate the participation of these resources. While we recognize that earlier implementation could provide benefits for market participants, such an approach is unreasonable in this proceeding because the benefits would likely be outweighed by the complications and burdens involved for PJM and the staff of other coordinating organizations. As for Ohio Commission's and Indicated Utilities' concerns about whether PJM's timeline is achievable, we recognize that PJM was not able to specify milestones at the time of the filing.⁷⁶⁷ Nonetheless, we also acknowledge that the rules and processes that state commissions and electric distribution companies may need to revise as a result of Order No. 2222, and the associated timing of those changes, are outside the scope of the Commission's jurisdiction.⁷⁶⁸ In response to OPSI, we note that PJM's proposal does not impose requirements or deadlines on RERRAs to make changes to their rules and regulations.

408. However, to ensure PJM continues working towards implementing Order No. 2222 in its energy, capacity, and ancillary services markets in a timely manner as proposed,⁷⁶⁹ we direct PJM to file an informational filing within 30 days of the date of the issuance of this order to provide an update on implementation timeline milestones associated with meeting the July 1, 2023 and February 2, 2026 effective dates for participation in its markets.

The Commission orders:

(A) PJM's compliance filing is hereby accepted, subject to a further compliance filing, as discussed in the body of this order.

⁷⁶⁷ Data Request Response at 52.

⁷⁶⁸ Indicated Utilities Comments at 25 ("Further, electric distribution companies must revise their retail tariffs, with RERRA approval, to facilitate DER Aggregation participation, and changes will be necessary to the interconnection process, state licensing, financial security, data access, communications processes, and metering and telemetry requirements, among other things."); Ohio Commission Comments at 8 ("Also, modification of Ohio's existing net metering and PURPA rules may be important to ensure there is no double compensation created by new wholesale market opportunities for DER aggregations.").

⁷⁶⁹ Order No. 2222, 172 FERC ¶ 61,247 at P 361 ("require[ing] each RTO/ISO to propose a reasonable implementation date, together with adequate support explaining how the proposal is appropriately tailored for its region and implements this final rule in a timely manner").

(B) PJM is hereby directed to submit a further compliance filing, within 60 days of the date of issuance of this order, as discussed in the body of this order.

(C) PJM is hereby directed to submit a further compliance filing, within 30 days of the date of issuance of this order, as discussed in the body of this order.

(D) PJM is hereby directed to submit an informational filing, within 30 days of the date of issuance of this order, as discussed in the body of this order.

By the Commission. Commissioner Danly is concurring with a separate statement attached.

Commissioner Christie is concurring with a separate statement attached.

(S E A L)

Debbie-Anne A. Reese,
Deputy Secretary.

Appendix A**Tariff Records Filed****PJM Interconnection, LLC****FERC FPA Electric Tariff****PJM Tariffs****Docket No. ER22-962-000**

Effective July 1, 2023

[ATTACHMENT Q, OATT ATTACHMENT Q \(48.0.0\)](#)

[RAA ARTICLE 1, RAA ARTICLE 1 -- DEFINITIONS \(37.0.0\)](#)

[RAA SCHEDULE 6.2, RAA SCHEDULE 6.2 \(0.0.0\)](#)

Effective February 2, 2026

[A-B, OATT Definitions A - B \(17.0.0\)](#)

[C-D, OATT Definitions C-D \(31.0.0\)](#)

[OATT ATT K APPX Sec 1.2, OATT Attachment K Appendix Sec 1.2 Cost-based Offers \(2.0.0\)](#)

[OATT ATT K APPX Sec 1.4B, OATT Attachment K Appendix Sec 1.4B DER Aggregator Participa \(0.0.0\)](#)

[OATT ATT K APPX Sec 1.10, OATT Attachment K Appendix Sec 1.10 - Scheduling \(42.0.0\)](#)

[OATT ATT K APPX Sec 3.3A, OATT Attachment K Appendix Sec 3.3A Economic Load Response \(14.0.0\)](#)

[OATT ATT K APPX Sec 6.4, OATT Attachment K Appendix Sec 6.4 Offer Price Caps \(14.0.0\)](#)

[ATTACHMENT N-4, ATTACHMENT N-4 FORM DER AGGREGATOR PARTICIPATION SERVICE AGR \(0.0.0\)](#)

Docket Nos. ER22-962-000 and ER22-962-001

- 170 -

[OATT ATT DD.5.14, OATT ATTACHMENT DD.5.14 Clearing Prices and Charges \(33.0.0\)](#)

[OATT ATT DD.6.6A, OATT ATTACHMENT DD.6.6A Offer Requirement for Capacity Perfo \(1.0.0\)](#)

[ATTACHMENT DD.10A, OATT ATTACHMENT DD.10A CHARGES FOR NON-PERFORMANCE AND CREDI \(10.0.0\)](#)

[ATTACHMENT DD.11B, OATT ATTACHMENT DD.11B DER CAPACITY AGGREGATION RESOURCE TES \(0.0.0\)](#)

[OA Schedule 1 Sec 1.2, OA Schedule 1 Sec 1.2 Cost-based Offers \(2.0.0\)](#)

[OA Schedule 1 Sec 1.4B, OA Schedule 1 Sec 1.4B DER Aggregator Participation Model \(0.0.0\)](#)

[OA Schedule 1 Sec 1.10, OA Schedule 1 Sec 1.10 - Scheduling \(42.0.0\)](#)

[OA Schedule 1 Sec 3.3A, OA Schedule 1 Sec 3.3A - Economic Load Response Participants \(14.0.0\)](#)

[OA Schedule 1 Sec 6.4, OA Schedule 1 Sec 6.4 Offer Price Caps. \(14.0.0\)](#)

[RAA ARTICLE 1, RAA ARTICLE 1 -- DEFINITIONS \(37.1.0\)](#)

[RAA SCHEDULE 9.1, RAA SCHEDULE 9.1 \(1.0.0\)](#)

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.

Docket Nos. ER22-962-000
ER22-962-001

(Issued March 1, 2023)

DANLY, Commissioner, *concurring*:

1. I concur with this order on the compliance filing¹ submitted by PJM Interconnection, L.L.C., in response to Order No. 2222.² I dissented from Order No. 2222 because I disagreed that the Commission should exercise jurisdiction over the participation of Distributed Energy Resources in markets administered by Regional Transmission Organizations or Independent System Operators (collectively, RTOs).³ My concern was that the Commission should not be in the business of micro-managing RTO activities that primarily affect the distribution system which is itself primarily within the jurisdiction of the states.

2. While I continue to disagree with Order No. 2222 itself, I agree that PJM failed to fully comply with its scores of dictates. I do not envy PJM the compliance task we imposed upon it. One hundred percent compliance probably is impossible in a first, or perhaps even second, attempt. We shall see.

3. This underscores my original concern about the Commission's intrusive interference into the administration of RTO markets and distribution-level systems. Order No. 2222 not only took over many state powers but also—as confirmed today—

¹ *PJM Interconnection, L.L.C.*, 182 FERC ¶ 61,143 (2023).

² *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 2222, 172 FERC ¶ 61,247 (2020), *order on reh'g*, Order No. 2222-A, 174 FERC ¶ 61,197, *order on reh'g*, Order No. 2222-B, 175 FERC ¶ 61,227 (2021).

³ *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 2222, 172 FERC ¶ 61,247 (2020) (Danly, Comm'r, *dissenting*); *see also Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*, Order No. 2222-A, 174 FERC ¶ 61,197 (2021) (Danly, Comm'r, *dissenting*).

Docket No. ER22-962-000, -001

- 2 -

permits RTOs extremely limited discretion to do anything other than step in line with the Commission's directives for how every little thing should work.

For these reasons, I respectfully concur.

James P. Danly
Commissioner

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

PJM Interconnection, L.L.C.

Docket Nos. ER22-962-000
ER22-962-001

(Issued March 1, 2023)

CHRISTIE, Commissioner, *concurring*:

1. I concur in today's order, although I remain concerned with the Order No. 2222 compliance process as it relates to PJM. It is important to my decision to concur that the Organization of PJM States, Inc. (OPSI) did not express opposition to this compliance filing by PJM, although it did express several concerns regarding the practical realities and potential challenges facing the states as PJM's Order No. 2222 compliance process continues to unfold.¹ As this complicated compliance process continues — as it will by necessity — I urge PJM to give the concerns of the OPSI states the highest priority. For example, while today's order appears literally responsive to comments in this docket by OPSI and states, it fails in my view to adequately consider that the actions taken here necessarily implicate state laws, rules and deadlines. States may even require new legislation to implement Order No. 2222's requirements and, at a minimum, these practical challenges facing the individual states will take time to resolve.² Today's order recognizes that this Commission cannot direct the states in the timing of their actions and responses related to Order No. 2222; nonetheless, it appears to do so indirectly anyway by setting an effective date that essentially would require the states to be ready on that deadline as well. Even though I concur, I note this important issue for future attention.

2. As I have noted before, I would have voted against Order No. 2222.³ So in a more general sense, this order illustrates exactly what I said in my dissent to Order No.

¹ OPSI Apr.1, 2022 Comments at 2-4.

² See, e.g., *infra* at P 8.

³ See, e.g., *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 174 FERC ¶ 61,197 (2021) (Christie, Comm'r, concurring in part and dissenting in part at P 3) (Christie 2222-B Statement) ("I would have voted against Order No. 2222 had I been a member of the Commission at that time and I did vote against Order No. 2222-A.") (available at <https://staging.ferc.gov/news-events/news/item-e-4-commissioner-mark-c-christie-partial-concurrence-and-partial-dissent>).

2222- A.⁴ Among its many examples of fundamentally flawed reasoning, Order No. 2222 and its progeny blithely ignore the fact that resources on the distribution grid are matters first and foremost of *state* jurisdiction, *state* responsibility and *state* rate regulation. So Order No. 2222 was and remains fundamentally in conflict with state regulations and policies in an area — retail rate and distribution grid regulation — that has always been dedicated to state authority.

3. Let me emphasize *I do not blame PJM* in any way for this complex and complicated compliance process.⁵ PJM did not ask for Order No. 2222 and has devoted enormous amounts of time and effort to try to implement it, as have other RTOs. It is indeed ironic that almost simultaneous with this order, PJM has just announced that it faces the prospect of losing nearly 40 gigawatts of dispatchable generation by 2030, a loss of essential resources that will clearly threaten reliability.⁶

4. That the costs associated with Order No. 2222 compliance will be enormous and paid by the consumer cannot be denied. Equally obvious to me is that these costs will be driven by the very complexities of the resulting grid upgrades *required by this Commission* in that order:

[T]he majority also sides against the consumers who for years to come will almost surely pay billions of dollars for grid expenditures likely to be rate-based in the name of “Order 2222 compliance.” . . . A rapid concentration of behind-the-meter aggregated DERs at various locations on the local grid will inevitably require costly upgrades to a distribution grid that has largely

⁴ *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 174 FERC ¶ 61,197 (2021) (Christie, Comm’r, dissenting) (Christie 2222-A Dissent) (available at <https://www.ferc.gov/news-events/news/item-e-1-commissioner-mark-c-christie-dissent-regarding-participation-distributed>).

⁵ See *infra* at P 5.

⁶ See, e.g., PJM, *ENERGY TRANSITION IN PJM: RESOURCE RETIREMENTS, REPLACEMENTS & RISKS*, at 2 (Feb. 24, 2023) (“The analysis shows that 40 GW of existing generation are at risk of retirement by 2030. This figure is composed of: 6 GW of 2022 deactivations, 6 GW of announced retirements, 25 GW of potential policy-driven retirements and 3 GW of potential economic retirements. Combined, this represents 21% of PJM’s current installed capacity.”) (available at <https://www.pjm.com/-/media/library/reports-notice/special-reports/2023/energy-transition-in-pjm-resource-retirements-replacements-and-risks.ashx>). See also *id.* at 3 (Executive Summary at “Balance Sheet Summary (2022-2030)”).

been engineered to deliver power *from* the substation *to* end-user retail customers. Meeting the technological challenges of this re-engineering of the local grid are not insuperable but there are substantial costs and we all know these costs will ultimately be imposed on retail consumers.⁷

5. In my concurrence to the letter order granting PJM's motion to extend the time in which it had to make its Order No. 2222 compliance filing,⁸ I noted:

*These motions offer a preview of what's coming in terms of the complications and impacts on reliability caused by these orders and the substantial costs that will have to be expended not only to address those threats but to address the complexity of the requirements these orders impose, costs that will be piled on consumers.*⁹

⁷ Christie 2222-A Dissent at PP 1, 4 (emphasis in original) (footnote omitted). I also note with great interest that the Public Utilities Commission of Ohio (PUCO) specifically raised in its comments, "concerns regarding state-jurisdictional matters in the context of the PJM Compliance Filing and *whether clarity is needed on cost allocation for significant indirect costs associated with implementation of FERC Order 2222.*" PUCO Apr. 1, 2022 Comments (PUCO Comments) at 3 (emphasis added); *see id.* at 9 ("It's also unclear to the PUCO how all the costs associated with implementing the changes will be recovered. While PJM's Compliance Filing addresses direct costs associated with metering and telemetry requirements for DER Aggregations, there will also be significant indirect costs that are more challenging to allocate.").

⁸ PJM, Extension Motion, Docket No. RM18-9-000 (filed Feb. 26, 2021).

⁹ *Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators*, 175 FERC ¶ 61,013 (2021) (granting extensions to PJM, MISO and SPP for Order No. 2222 compliance filings) (Christie, Comm'r, concurring at P 7) (emphasis added) (available at <https://www.ferc.gov/news-events/news/commissioner-mark-c-christie-concurrence-regarding-order-granting-compliance>); *see also, e.g., id.* P 3 (footnotes omitted) ("The motions filed by each of MISO, SPP and PJM illustrate the daunting complexities, potential negative impacts on reliability, and certain increased costs to consumers, all of which I referenced in my dissent to Order No. 2222-A and which apply equally to its forebear, Order No. 2222. The problems and complexities of compliance described in these motions is further evidence that implementing Order Nos. 2222 and 2222-A will be far more complicated, far more costly to consumers and far more burdensome to states, public and municipal power authorities, and electric co-operatives, than these orders and many of their supporters acknowledge.").

6. That my prediction was correct is demonstrated alone by the order's girth: 169 pages. It is further supported by the fact that the order repeatedly admonishes PJM — 34 times, per a word search — that it only “*partially* complies” or is only “*partially* compliant” in its attempts to meet Order No. 2222 standards, leading to who knows how many more compliance filings resulting from today's order and any future attempts by PJM to comply. Complexity does not even begin to describe the hard spot these RTOs, states and market participants are in.

7. As I mentioned at the outset of this statement, I remain concerned that the absolute import of the jurisdictional concerns for state commissions has not really remained at the forefront here. In its comments in this proceeding, OPSI specifically asked that the Commission:

reaffirm that PJM's governing documents can in no way impose requirements or deadlines on state commissions or other state governmental entities that are subject to state law and will not interfere with any matter under state jurisdiction. The reason for this request is that the PJM Compliance Filing would establish tariffs that rely on compliance with rules and regulations of state commissions or other similar regulatory authorities, as well as their involvement in the process, and would include effective dates for tariff changes of July 1, 2023, and February 2, 2026. As such, OPSI requests FERC clarify that neither FERC nor PJM may impose deadlines or assign responsibilities to state commissions in the implementation of any tariffs. *State commissions and agencies alone, pursuant to applicable state law, determine when and how any rules or protocols that may be relied upon by PJM to implement its proposal within their states may be promulgated.*¹⁰

8. Similarly, today's order states that PUCO “expresses concern about the amount of regulatory groundwork for [PUCO] to develop the state regulations that are contemplated through the PJM Compliance Filing. [PUCO] avers that state-jurisdictional initiatives and associated timeframes cannot and should not be dictated by the Commission or PJM.”¹¹ But PUCO's concerns appear to go a little further than this. PUCO also notes, for example, that:

The Order and PJM's Compliance Filing create significant needs in Ohio, to augment our retail interconnection process to address resources including

¹⁰ OPSI Comments at 3-4 (emphasis added) (footnotes omitted).

¹¹ *PJM Interconnection, LLC*, 182 FERC ¶ 61,143 (2023) at P 395 (Order) (citing PUCO Comments at 9).

some forms of battery storage and electric vehicle charging, and to change related state-level rules and tariffs. *Those processes may take more time than proscribed in PJM's filing, and neither PJM nor FERC can dictate deadlines for the state to act.* Ohio's role in dispute resolution also needs to be clarified, and all states deserve the option to be involved in that process.¹²

9. When it comes to implementing PJM's effective dates, today's order literally recognizes OPSI, certain individual states and certain utilities' concerns:

As for Ohio Commission's and Indicated Utilities' concerns about whether PJM's timeline is achievable, we recognize that PJM was not able to specify milestones at the time of the filing. Nonetheless, we also acknowledge that the rules and processes that state commissions and electric distribution companies may need to revise as a result of Order No. 2222, and the associated timing of those changes, are outside the scope of the Commission's jurisdiction. In response to OPSI, we note that PJM's proposal does not impose requirements or deadlines on RERRAs to make changes to their rules and regulations.¹³

10. However, what the order does not answer is the problem PUCO and others appear to identify: given all of the complexities of Order No. 2222, and the state's own

¹² PUCO Comments at 20-21. *See also id.* at 2-3 (emphasis added) ("The PUCO supports FERC's Order 2222 to modify wholesale markets to enable full participation of DER Aggregations. . . . But *the PUCO cautions that the adoption of new policies for DER Aggregations will require significant changes on the state and distribution system level that may take longer than the Commission anticipates in its order and the proposed PJM Compliance Filing may seem to allow.*"). *See also* Order at P 397 (footnote omitted) (citing Pennsylvania Public Utility Commission (PAPUC) March 31, 2022 Comments at 19-20) ("[PAPUC] requests delaying the capacity market effective date from 2023 to one which would become effective for the 2028/2029 Base Residual Auction at the earliest. It argues that a 2023 effective date may harm state and electric distribution company readiness with little benefit.").

¹³ Order at P 407. The Order defines Indicated Utilities to include: AEP on behalf of its affiliates; Virginia Electric and Power Company dba Dominion Energy Virginia; Duquesne Light Company; Duke Energy Corporation on behalf of its affiliates Duke Energy Ohio, Inc., Duke Energy Kentucky, Inc., and Duke Energy Business Services LLC; Exelon on behalf of its affiliates; FirstEnergy and its affiliates; PPL Electric Utilities Corporation.; Public Service Electric and Gas Company; and Rockland Electric Company. *Id.* at n.24

processes and jurisdictional charges, the states may not be on the same timeline as the one approved by the Commission today, nor are they required to be. This issue is the inevitable result of the tension that Order No. 2222 has created with jurisdictional boundaries and the burden that this process imposes on the states, public and municipal power authorities, and electric co-operatives.

11. I want to be clear, as I have said before: “*encouraging the development of DERs is a good thing.*”¹⁴ I just don’t think Order No. 2222, which “*eviscerat[es] the states’ historic authority in the name of encouraging DER development,*” was the right vehicle.¹⁵ I believe that the complexities that Order No. 2222 creates will haunt the RTOs and RERRAs — let alone the reliability of the grid and the pocketbooks of consumers — for a very long time. This compliance filing by PJM is only one example.

For these reasons, I respectfully concur.

Mark C. Christie
Commissioner

¹⁴ Christie 2222-A Dissent at P 8 (emphasis in original).

¹⁵ *Id.* (emphasis in original).

Document Content(s)

ER22-962 -000.docx.....1