



Electricity Markets & Policy
Energy Analysis & Environmental Impacts Division
Lawrence Berkeley National Laboratory

Regulation of Third-Party Aggregation in the MISO and SPP Footprints

Prepared for the Missouri Public Service Commission

Sydney P. Forrester, Cole Triedman, Sam Kozel, Cameron Brooks, and Peter Cappers

April 2023



This work was supported by the Grid Modernization Initiative of the U.S. Department of Energy (DOE) under Lawrence Berkeley National Laboratory Contract No. DE-AC02-05CH11231.

Disclaimer

This document was prepared as an account of work sponsored by the United States Government. While this document is believed to contain correct information, neither the United States Government nor any agency thereof, nor The Regents of the University of California, nor any of their employees, makes any warranty, express or implied, or assumes any legal responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by its trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof, or The Regents of the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof, or The Regents of the University of California.

Ernest Orlando Lawrence Berkeley National Laboratory is an equal opportunity employer.

Copyright Notice

This manuscript has been authored by an author at Lawrence Berkeley National Laboratory under Contract No. DE-AC02-05CH11231 with the U.S. Department of Energy. The U.S. Government retains, and the publisher, by accepting the article for publication, acknowledges, that the U.S. Government retains a non-exclusive, paid-up, irrevocable, worldwide license to publish or reproduce the published form of this manuscript, or allow others to do so, for U.S. Government purposes.

Regulation of Third-Party Aggregation in the MISO and SPP Footprints

Prepared for the Missouri Public Service Commission
Grid Modernization Initiative State Technical Assistance
U.S. Department of Energy

Principal Authors
Sydney P. Forrester
Cole Triedman
Sam Kozel
Cameron Brooks
Peter Cappers

Ernest Orlando Lawrence Berkeley National Laboratory
1 Cyclotron Road, MS 90R4000
Berkeley CA 94720-8136

April 2023

The work described in this study was funded by the U.S. Department of Energy's U.S. Department of Energy's Grid Modernization Initiative under Lawrence Berkeley National Laboratory Contract No. DE-AC02-05CH11231.

Acknowledgements

The work described in this report was funded by the U.S. Department of Energy (US DOE)'s Grid Modernization Laboratory Consortium under Lawrence Berkeley National Laboratory Contract No. DE-AC02-05CH11231.

The authors would like to thank John Borgmeyer, Holly Burton-Aro, Alex Antal, Shelley Brueggemann, and Rodney Massman at the Missouri Public Service Commission (MoPSC) for their contributions, guidance, and review; Kimaya Abreu (Voltus), Sheri Albright (Kansas KCC), Matt Baker (California OCA), Kathy Champion (Oklahoma OCC), Steve Davies (Indiana IURC), Josh Errick (Pennsylvania PUC), Scott Gebhardt (Pennsylvania PUC), Erik Hanser (Michigan PSC), Leo Haynos (Kansas KCC), Dave Johnston (Indiana IURC), Jeff McClanahan (Kansas KCC), Christian McDowell (Pennsylvania PUC), Kevin Mosier (Maryland PSC); Wally Nixon (Arkansas PSC), Jackie Roberts (West Virginia PSC), Staff at the Minnesota PUC, Geoffrey Rush (Oklahoma OCC), Kenneth Schisler (CPower), Morris Schreim (Maryland PSC), Chris Villareal (Plugged In Strategies), Allison Bates Wannop (Voltus) for their valuable time and interviews; Marcus Hawkins (Organization of MISO States), Ted Kelly (Environmental Defense Fund), Frank Lacy (Electric Advisors), Matt McCaffree (FLASH), Tanya Paslawski (National Association of Regulatory Utility Commissioners), and Greg Poulos (Consumer Advocates of the PJM States) for additional information over the phone and email; and Michele Boyd at the U.S. Department of Energy for support of this work.

Any remaining errors or omissions are our own.

Table of Contents

Acknowledgements.....	i
Table of Contents.....	ii
Table of Figures.....	iii
Executive Summary.....	iv
1. Introduction	1
2. Methods.....	3
3. Results.....	5
3.1 General Findings	5
3.1.1 The vast majority of MISO and SPP states opted out of third-party ARCs after FERC Order 719.....	6
3.1.2 Third-party ARCs in MISO and SPP states currently exist in some forms	7
3.1.3 Restructured states outside of MISO and SPP exhibit heterogeneity in how they approach aggregations, but may still offer helpful considerations.....	7
3.1.4 States view some policy topics as higher priority than others.....	8
3.1.5 Many retail regulators have similar questions as the MoPSC, regardless of market footprint and structure	8
3.2 Policy Findings.....	9
3.2.1 Jurisdiction.....	10
3.2.2 Participation	13
3.2.3 Enforcement	18
4. Conclusion.....	23
5. References	24
Appendix A. State profiles.....	28
Appendix B. State DER Aggregation Resources Index.....	29
Appendix C. Interview questions	32
Appendix D. Contact List	35

Table of Figures

Figure ES - 1. Status of organized wholesale market participation rules for aggregators of retail customers in MISO and SPP states	iv
Figure 1: Eight topic categories of focus for document review and interviews, based on clustering several policy questions raised by MoPSC	3
Figure 2: States included for the document review and interviews, separated into those within and those outside of MISO and SPP.....	4
Figure 3: Status of ARC organized wholesale market participation rules in MISO and SPP.....	6
Figure 4: Framework for third-party aggregation rulemaking	9

Executive Summary

This document was prepared for the Missouri Public Service Commission by Lawrence Berkeley National Laboratory (LBNL), supported by the Department of Energy’s Grid Modernization Laboratory Consortium Technical Assistance to State Public Utility Commissions program and in coordination with E9 Insight (E9). The purpose of this document is to highlight key considerations for retail regulators to introduce aggregators of retail customers (ARCs) in states, especially those in the footprints of the Southwest Power Pool (SPP) or Midcontinent Independent System Operator (MISO) that previously opted out under FERC Order 719. This document provides a high-level policy overview of the retail regulator’s role in a selection of processes, rules, and regulations related to FERC Order 2222 implementation and related experience from states that currently allow aggregators. This paper is not a legal analysis nor is it meant to prescribe recommendations for states. Instead, this report summarizes a document review and a series of interviews conducted by the authors to better understand how other states have treated and/or integrated aggregators into wholesale markets in response to FERC Orders 719 and 2222, as well as how states have addressed a set of policy issues relevant to that integration process. This paper focuses specifically on the perspective of state regulators as retail regulators and their Commission-jurisdictional retail electric utilities and the distributed energy resources (DERs) interconnected within their territories, however, the findings may apply to a broader audience.

The authors conducted a document review and interviews with 27 individuals across the spectrum of regulators, aggregators, and other industry professionals provide the background for this document. These interviewees represented 11 states outside of Missouri and provided insight on eight topic areas spanning general experience with aggregators, jurisdiction, dispute resolution, registration and licensing, double counting, role of and limitations on aggregators, data protection, and implementation challenges. From this review came five general findings and several more specific policy findings from other states.

1. The vast majority of MISO and SPP states opted out of third-party ARCs after FERC Order 719

Of the 20 states in MISO and SPP, 17 opted out of allowing aggregators to directly bid demand response (DR) into RTO/ISO wholesale markets. Of those that did not opt out, Illinois is an outlier due to being the only state of the 20 with full retail choice. Kansas and Oklahoma did not have active wholesale aggregator participation until recent years. Of the states that did opt out, Michigan and Arkansas facilitated years-long

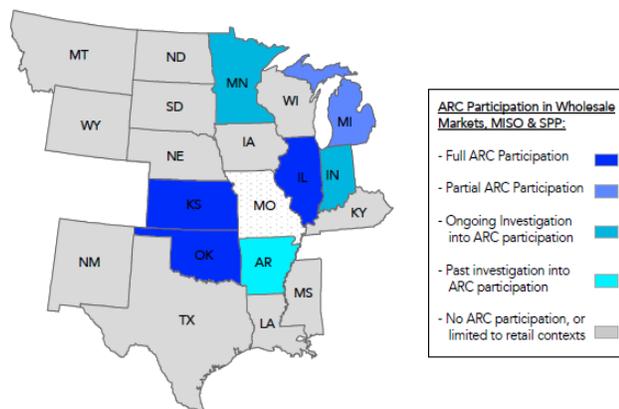


Figure ES - 1. Status of organized wholesale market participation rules for aggregators of retail customers in MISO and SPP states

stakeholder processes. Michigan did loosen the restrictions in 2019 first to allow aggregators of retail choice customer resources, and then again in 2022 to allow aggregators of larger commercial and industrial customer resources in Commission-jurisdictional territories. Arkansas chose not to reverse the opt out. Besides those two states, there have been others outside of Missouri that have initiated investigations into possible pathways to address aggregation issues such as Indiana and Minnesota in late 2022 (Figure ES - 1).

2. Third-party ARCs in MISO and SPP states exist without state-administered rules

Past policy activity among topics of interest have taken place in various, often *ad hoc* rulemakings, frequently building off existing processes, but providing few uniform “best practices.” Two conclusions stem from this finding. First, aggregators may be able to participate in markets without comprehensive rulemaking, as demonstrated in Kansas and Oklahoma.¹ Second, some states are using early experiences in this more *ad hoc* environment as first steps in a more incremental approach to develop a targeted plan for rulemaking in the future, as in Michigan.

3. Restructured states outside of MISO and SPP exhibit heterogeneity in how they approach aggregations, but may still offer helpful considerations

This study considered policies in states outside of MISO and SPP that are restructured and have aggregators that are active in organized wholesale markets. Despite having market structures and footprints that sometimes varied significantly from Missouri, these states provide insight into jurisdiction, oversight, and rulemaking between retail regulators, wholesale market operators, and retail utilities. States with more developed landscapes have also begun to address issues of dual participation and aggregators within the context of Order 2222.

4. States view some policy topics as higher priority than others

Resolving jurisdictional questions, defining the characteristics and eligibility requirements of aggregators, designing a registration process, and ensuring customer data protection tend to be of immediate concern to states and state regulators interested in allowing third-party aggregators. Addressing issues related to double counting and dispute resolution are typically considered next, usually in the context of Order 2222 implementation and within active markets.

5. Many retail regulators have similar questions as the Missouri Public Service Commission, regardless of market footprint and structure

Among the various retail regulatory staff that were interviewed, regardless of market footprint, structure, or whether aggregators were actively participating within their states, there was widespread enthusiasm to better understand the issues surrounding aggregators and the role of retail regulators.

¹ Oklahoma’s largest utility, PSO, has adjusted its tariffs to address issues related to customer participation in third-party aggregations; Evergy Kansas petitioned for tariff changes in January 2023 (Evergy Kansas, 2023) (see Appendix A).

The remainder of the results are grouped under “Policy Findings,” where we dive deeper into examples from other states on how they addressed issues surrounding regulator jurisdiction, aggregator participation requirements, and the enforcement of these rules. Text boxes accompany the main body to offer context and dive deeper into some states’ regulatory processes while tables outline tiered actions that other states have taken. Tiers I, II, and III roughly correspond to the possible level of involvement or possible change necessary by state regulators and/or legislators to implement these actions. The tier level does not indicate any value judgement, as each state has respective regulatory limitations and each decision comes with various tradeoffs. One main tradeoff is between simplicity and quick implementation versus comprehensive and prolonged implementation. In many cases, actions in Tier I could be implemented without significant changes by relying on the use of existing processes for an aggregator context. On the other hand, many actions in Tier III are more narrowly designed to address aggregators specifically, but often require more significant changes including the involvement of additional parties through stakeholder engagement or legislative action. In some cases, these tiers are discrete. However, state regulators may also choose to progress through these various tiers sequentially as they phase in aggregators while learning from their experience. In the section “Policy Findings,” tables include specific examples. Here, Table ES – 1 condenses the multiple tables, topics, and respective tiers into one.

Table ES - 1. Policy findings and examples from other states as to possible approaches to various aggregator issues:

	Tier	Description
Jurisdiction	I	State regulator defaults to RTO authority over ARCs and completely delegates relevant processes.
	II	State regulator uses existing jurisdiction to regulate certain issues related to interactions between ARCs and regulated retail electric utilities. Such interactions may be associated with jurisdiction over regulated retail electric utilities and their customers at the distribution level.
	III	State regulator coordinates with state legislature to pass legislation explicitly defining the state regulator’s jurisdiction over ARCs or initiating a process to address jurisdictional questions as part of Order 2222 implementation.
Registration and licensing	I	State regulators rely on the RTO’s existing ARC and proposed Order 2222 DER amendments for registration. If required, State regulator directs utilities and/or requests RTOs to provide the state regulator with DER and/or ARC registration data at some specified frequency (e.g. one-time, quarterly, yearly) to ensure compliance with existing and/or amended state regulation.
	II	Initiate a process or issue an order clarifying the separate roles of the state regulator, regulated retail utility, and recognizing the role of the RTO in adapting and facilitating registration processes to accommodate new ARC market access.
	III	Initiate a process or issue an order specifically designed to clarify the retail regulator’s role in developing eligibility requirements for ARCs such as for registration and licensing process. Additionally if required, this process could consider changes to individual DER and/or ARC processes consistent with Order 2222 implementation.
Data governance	I	Leverage existing utility or state customer consent processes, cybersecurity, and/or data protection standards used for DERs, ARCs, and/or retail choice providers.
	II	Establish a proceeding to develop customer data protection standards. ARCs would be required to implement these standards into customer contracts or sales agreements.
	III	Together with relevant stakeholders, regulators can address customer and operational data governance with respect to FERC Order 2222 implementation. This could monitor issues, develop standards, and facilitate the adoption of tools to enable coordination and data sharing processes between all relevant entities.
Double counting	I	Coordinate with retail utilities, RTOs, multi-state groups, and industry working groups to gather and provide feedback on this topic. As FERC rules on RTOs’ Order 2222 compliance filings and finalizes these, utilize RTOs’ proposed double counting guidance.

	Tier	Description
	II	Work with retail utilities and RTOs stakeholder processes to co-develop the definition of double counting and determine information necessary to identify cases. Direct retail utilities to submit updated tariff proposals addressing dual participation and prohibiting double counting.
	III	Address double counting as part of a comprehensive Order 2222 implementation process, considering additional development of statewide rules if required.
Dispute resolution	I	Utilize existing dispute resolution processes to the extent possible for issues involving DERs within retail markets or in wholesale aggregation scenarios.
	II	Adapt processes, frameworks or general principles from existing dispute resolution procedures to specifically address ARCs.
	III	Coordinate with state regulator staff responsible for managing dispute resolution to develop a new process specific to ARC disputes, possibly in the context of Order 2222 implementation.

Several states in MISO and SPP have begun to explore the possibility of allowing direct third-party participation in organized wholesale markets. Despite most states being in early stages, there are examples across states of how retail regulators have weighed different tradeoffs and taken different actions related to legal jurisdiction, participation requirements, and rule enforcement. Most Tier I examples in Table ES – 1 may not require significant changes and seemingly could be implemented more quickly, while Tier III examples do appear to require higher levels of buy-in and codifying language to create more comprehensive and aggregator-specific rulemaking that may offer more clear guidance or customer protection.

With the ability to stack bulk system level services, distributed energy resource aggregations in MISO and SPP could provide various private benefits (e.g., increased value streams to the owner) as well as societally beneficial grid services (e.g., peaking capacity, ancillary services, and other services that increase the grid’s overall operational efficiency). If states begin to loosen restrictions on third-party aggregators and learn from experiences, they should be able to capture these benefits and a resulting series of ‘best practices’ may emerge with time.

There has been much activity in this topic over recent months, and this report represents the regulatory environment through December 2022.

1. Introduction

Distributed energy resources (DERs), including demand response (DR), solar photovoltaic (PV) generation, energy storage, and other demand-side technologies, are becoming increasingly accessible across the country due to declining costs, federal and state policy, and utility programs (Barbose et al., 2022; FERC, 2021; NCCETC, 2022). Customers often adopt DER to provide value in the form of utility bill reduction. Additionally, these resources have the potential to provide larger societal value to the grid itself in the form of energy arbitrage, peak reduction, and other services (Aghaei and Alizadeh, 2013; Castagneto Gisse et al., 2019; Cook et al., 2018; FERC, 2021; Migden-Ostrander et al., 2018). Even so, there have been various barriers limiting or inhibiting participation for these resources, especially at the wholesale market level (EPRI, 2022; Gundlach and Webb, 2018). Consequently, the Federal Energy Regulatory Commission (FERC) issued a series of orders, culminating in Order 2222, issued in September, 2020, to allow these DERs to compete with incumbent wholesale market participants in order to increase market efficiency and reduce costs while maintaining reliability.

In 2008, FERC issued Order 719. The order directed independent system operators (ISOs) and regional transmission organizations (RTOs) to amend their tariffs to improve competition in organized wholesale markets by reducing barriers to participation of DR (FERC, 2008). FERC defined a role for aggregators of retail customers (ARCs) to bid DR services directly into these organized wholesale markets, unless the laws of the relevant electric retail regulatory authority (RERRA) do not allow retail customers to participate. The RERRA may be a state regulator in the case of DERs interconnected within investor-owned utility territories, or could be a Board of Directors or other entity for municipal or rural electric cooperative utilities. In the case of state regulators as RERRAs, the Missouri Public Service Commission (MoPSC), along with regulators from 15 other vertically integrated states,² decided to “opt out” by prohibiting retail customers of Commission-jurisdictional utilities from bidding DR into organized wholesale markets, either directly or via a third-party ARC (MoPSC, 2010).

In 2020, FERC issued Order 2222 (FERC, 2020). This order built upon previous orders, including Order 719, to further improve competition of organized wholesale energy markets by reducing barriers to participation for DERs beyond DR. Unlike Order 719, Order 2222 does not allow states to opt out of DER aggregation. Consequently, the MoPSC is interested in better understanding how other states have implemented (or are considering) wholesale market participation by ARCs, especially states that participate in either the Midcontinent Independent System Operator’s (MISO) or Southwest Power Pool’s (SPP) organized wholesale markets (referred to as “RTOs” throughout this paper). This information will assist the MoPSC in assessing options for moving forward with enabling ARC participation in organized wholesale markets under Order 2222.³

² Arkansas, Iowa, Indiana, Kentucky, Louisiana, Michigan, Minnesota, Missouri, Mississippi, Montana, North Dakota, Nebraska, New Mexico, South Dakota, and Wisconsin.

³ The Missouri PSC is already taking steps on the record to evaluate a potential opt-out modification into utility planning. For example, a list of Contemporary Resource Planning Issues issued by the PSC in October 2022 (Docket Nos. EO-2023-0099, EO-2023-0100, EO-2023-0101, EO-2023-0102) includes a requirement that utilities include modeling for participation scenarios of

Indeed, some other states have begun this process, citing the potential for aggregated DERs to alleviate capacity constraints.⁴

RTOs similarly recognize the potential value in addressing capacity concerns. For example, the North American Electric Reliability Corporation (NERC) categorizes MISO as “high risk” and SPP as “elevated risk” with regards to resource adequacy for 2023-2027 (NERC, 2022a). MISO recognizes DR’s ability to improve operational reliability in the short term, offer least-cost resource adequacy in the long term, reduce price volatility and overall costs, and mitigate market power (Potomac Economics, 2022). In one demonstrative event, MISO declared a Maximum Generation Event in June 2021 for which over 400 MW of load reduction was provided by ARCs for the three-hour event, delivering more than their commitment and proving that aggregations can provide reliable and quick responses during high-value events (FERC, 2021). While MISO’s Order 2222 compliance filing proposed an implementation deadline of 2030 (MISO, 2022), the Organization of MISO States “argues that Order 2222 should be implemented sooner than 2030 in order to take advantage of the reliability and economic benefits of DER aggregation.” (OMS, 2022) Existing DERs in MISO and SPP could be a source of untapped potential, and their participation in organized wholesale markets could provide valuable bulk system services.

The purpose of this document is to highlight key considerations and potential options for state regulators⁵ to explore participation by ARCs if they wish to aggregate DERs in regulated retail utility service territories and directly participate in organized wholesale markets, especially those in the footprints of SPP or MISO, that previously opted out under Order 719. This document provides a high-level policy overview of the retail regulator’s role in a selection of processes, rules, and regulations related to Order 2222 implementation and related experience from states that currently allow ARCs. With an aim of providing a starting point for the MoPSC and other state regulators interested in pursuing these questions further, this paper does not provide legal analysis nor is it meant to prescribe recommendations for states. This work was conducted by Lawrence Berkeley National Laboratory (LBNL), supported by the Department of Energy’s Grid Modernization Laboratory Consortium (GMLC) Technical Assistance to State Public Utility Commissions program and in coordination with E9 Insight (E9). Together, this report summarizes a document review and a series of interviews to better understand how a sample of other states have integrated ARCs into organized wholesale markets in response to FERC Orders 719 and 2222 as well as how states have addressed a set of policy issues relevant to that integration process. This paper focuses specifically on the perspective of the MoPSC and its Commission-jurisdictional

C&I customer participation in third-party aggregated DR, and analysis of what impacts aggregated demand response would have on its IRP (MoPSC, 2022).

⁴ In December 2022, the Indiana IURC established an Order 2222 stakeholder working group process; the Michigan PSC issued an order in U-20348 lifting the prohibition of participation in organized wholesale markets for ARCs of resources with enrolled load exceeding 1 MW; and the Minnesota PUC issued a notice in Docket no. 22-600 requesting comments related to potential ARC participation in organized wholesale markets and utility programs and policy considerations related to ARC verification, consumer protection. Michigan’s order notes that, “In light of the tightening capacity market within the MISO footprint and LRZ in particular, the Commission seeks comment on whether the ban on DR aggregation described in the August 8 order should now be lifted,” while Minnesota’s Notice asks, “Should the Commission permit aggregators of retail customers to bid demand response into organized markets?”

⁵ In this paper, “state regulators” is used to broadly refer to the subset of retail regulators that include state public service commissions, public utilities commissions, etc.

utilities and the DERs interconnected within their territories, however, the findings may apply to a broader audience.

2. Methods

Throughout the project, LBNL, E9, and the MoPSC met twice per month to develop a scope for the project in an iterative manner. The MoPSC initially introduced several policy questions, clustered into eight topic categories (Figure 1: Eight topic categories of focus for document review and interviews, based on clustering several policy questions raised by MoPSC).

1: General History	<ul style="list-style-type: none">•How have states’ regulations for DR and/or DER aggregation evolved? What are states’ general experiences with allowing aggregations and are there any “best practices”?
2: Jurisdiction	<ul style="list-style-type: none">•What is the state PUC’s legal jurisdiction, if any, regarding DR/DER aggregators?
3: Dispute resolution	<ul style="list-style-type: none">•What are the processes or rules, if any, related to resolving disputes involving aggregators?
4: Registration and licensing	<ul style="list-style-type: none">•Which authority manages registration/licensing of aggregators and what are the related processes, rules, requirements, or fees?
5: Double counting	<ul style="list-style-type: none">•How is “double counting” defined and prevented? Which entities are responsible for detecting and resolving instances of non-compliance?
6: Role of, limitations on aggregators	<ul style="list-style-type: none">•Are there limitations on aggregators based on customer class, technology type, geographic spread, etc.?
7: Data protection	<ul style="list-style-type: none">•What data is necessary, from whom, and for whom? How are these data points shared, and what are the limitations and protections needed or currently in place?
8: Implementation challenges	<ul style="list-style-type: none">•What are the overall main challenges and considerations?

Figure 1: Eight topic categories of focus for document review and interviews, based on clustering several policy questions raised by MoPSC

Initially, the MoPSC was primarily interested in states similar to Missouri— namely, vertically integrated states in the MISO and/or SPP footprints— that currently allow ARCs to directly participate in organized wholesale markets. For each state selected, LBNL and E9 had originally planned to conduct a thorough, focused review to address each of the eight topic categories, where available. However, many states that were identified as being in a similar position to Missouri were in the early stages of investigating similar questions and thus had limited relevant procedural history or policy implementation experience to reference. Additionally, the few vertically integrated MISO and SPP states where ARCs participate in organized wholesale markets

have rules and regulations that are more *ad hoc* than previously assumed (e.g., Kansas, Oklahoma) or have limitations on participation of all customer classes and are in the process of finalizing rules to allow for full participation (e.g., Michigan). These dynamics prompted an adjustment to the investigation methodology by broadening the scope to include MISO and SPP states that did not opt out, as well as states outside of MISO’s and SPP’s footprints that may provide key insights regardless of geography, market footprint, or market structure. This included Northeast and Mid-Atlantic states as well as California (see Figure 2). Furthermore, since states vary widely in the existence and characteristics of their implemented policies in each category, the review refocused from deep, state-centered case studies to holistic investigations of each topic category, incorporating material from 11 states. Additionally, document review and interviews yielded few responses towards the final topic category focused on implementation challenges independent of the other seven categories in Figure 1. As such, summary profiles for each of the 11 states on the first seven topic categories are available in Appendix A with an index of state-specific resources in Appendix B.

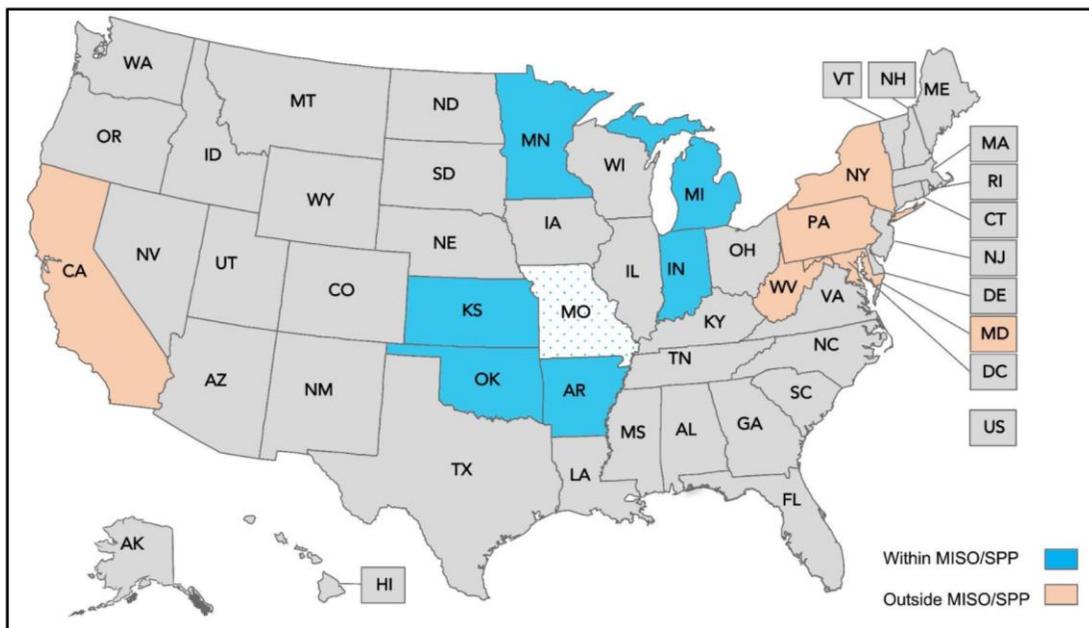


Figure 2: States included for the document review and interviews, separated into those within and those outside of MISO and SPP.

First, LBNL and E9 conducted a regulatory document review, supplemented with interviews of key stakeholders. Initial document review focused on identifying key documents and forming procedural histories for states in MISO or SPP footprints that had implemented policies for ARCs or that had considered reversing an Order 719 opt out. This initial review found that state regulators in 17 of 19 vertically integrated states in MISO and SPP opted out of allowing third-party ARCs to participate in organized wholesale markets, while Kansas and Oklahoma did not opt out but have not comprehensively developed policies to support ARC participation. Within the states that did opt out, some have allowed regulator-approved third-party aggregation in

specific retail markets or programs,⁶ while others took (as in the case of Arkansas (AR PSC, 2018)) or are currently taking steps (as in the case of Indiana (IURC, 2022), Michigan (MI PSC, 2022), and Minnesota (MN PUC, 2022a)) towards investigating and phasing in third-party wholesale market aggregators.

LBNL and E9 supplemented this document review with interviews of retail regulatory staff and experts from industry, advisory, and national research organizations to better understand the historical and current policy landscape more broadly. Interviews were crucial to gain awareness of additional important material on the record in state commissions, as well as better understand state experiences both in considering and implementing policy across these topic categories. LBNL and E9 co-developed the contact list and interview questions with the MoPSC to ensure alignment. Initial interviews were conducted in the Fall of 2022. They lasted between 30 and 45 minutes with follow-ups from LBNL and E9 via email or phone where necessary. The interview questions focused on MoPSC’s topic categories (see Appendix C), and subsets of these questions were selected depending on the stakeholder and region.

In total, LBNL and E9 conducted nine interviews with 18 state regulatory staff, one interview with a state consumers’ advocate, and eight interviews with officials from industry, advisory, and national research organizations. LBNL and E9 reached out to regulatory staff in seven additional states who either declined to schedule an interview, responded via email in lieu of a formal interview, or did not respond. In the interviews conducted by LBNL and E9, engagement was high and all interviewees were interested in maintaining a connection with this topic and with the MoPSC. All retail regulator staff interviewees consented to share their contact information with the MoPSC for future updates and conversations that may occur after the end of this technical assistance effort (see Appendix D). Note that there has been much activity in this topic over recent months, and this report represents the regulatory environment through December 2022. For example, the Michigan Public Service Commission (MI PSC) filed No. U-20348-0044 clarifying matters related to the PSC’s December 2022 Order permitting large customers to participate in third-party aggregations (MI PSC, 2023), and Evergy’s application to the Kansas Corporation Commission (Tracking No. 2300305) proposed to implement tariff changes related to customer participation in third-party aggregations (Evergy Kansas, 2023).

3. Results

Results from the document review and interviews are summarized here as “General Findings,” highlighting commonalities between many of the documents and interviewees, and “Policy Findings,” focusing on the topic categories and a framework for state regulators that are interested in modifying restrictions on direct third-party ARC participation in organized wholesale markets.

3.1 General Findings

⁶ At least Indiana, Louisiana, Minnesota, Mississippi, Montana, North Dakota, South Dakota have allowed utilities to contract third party aggregators to facilitate aspects of retail DR programs.

Though there are many differences among states, five general findings emerged through the documents and interviews with those states.

3.1.1 The vast majority of MISO and SPP states opted out of third-party ARCs after FERC Order 719

While states within MISO and SPP offer few templates for the MoPSC that demonstrate how to possibly structure rules governing ARCs, several states began to actively explore the topic in recent months. After FERC issued Order 719, 17 of the 20 states in MISO and SPP opted out of allowing ARCs to directly bid DR into organized wholesale markets. Of the three that did not opt out, Illinois is considered an outlier as the only state of the 20 with full retail choice (as opposed to vertical integration).⁷ The remaining two states, Kansas and Oklahoma, did not host active wholesale ARC participation until the introduction of commercial and industrial (C&I) DR aggregation in recent years (Champion and Rush, 2022; McClanahan et al., 2022).

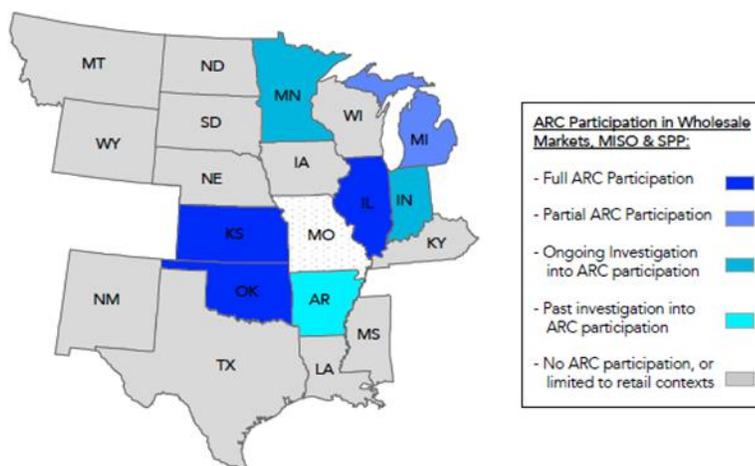


Figure 3: Status of ARC organized wholesale market participation rules in MISO and SPP

In the years since the issuance of Order 719 and the subsequent state decisions to opt out, only state regulators in Michigan, Arkansas, Minnesota, and Indiana have formally explored the possibility of reversing or modifying their opt-out orders – with preliminary activity in Minnesota and Indiana occurring only recently, in December 2022 (AR PSC, 2018; IURC, 2022; MI PSC, 2019; MN PUC, 2022a). Michigan and Arkansas each facilitated years-long stakeholder processes, but the Arkansas PSC chose not to reverse its opt out despite recommendations to do so in a report commissioned by the Arkansas PSC and attached to an order in the Arkansas PSC’s Investigation into Policies Related to Distributed Energy Resources (AR PSC, 2018). In the case of Michigan, the state regulators partially reversed the opt out for all retail choice customers who made up 10 percent of the state’s electricity market (MI PSC, 2019). They then sought comments in October 2020 on whether to lift the ban citing a “tightening capacity market within the MISO footprint” (MI PSC, 2020). Most recently in December 2022, the Michigan PSC lifted the ban “on DR aggregation for bundled commercial and industrial customers with enrolled load of 1 MW or higher” (MI PSC, 2022). Nevertheless, due to concerns surrounding customer protections and a desire to propose a licensing process before seeking authority, the ban remains in effect for non-

⁷ This was laid out in the RAP report for the Arkansas PSC on page 30 (AR PSC, 2018).

retail choice residential and other small customers for the time being. Consequently, while Michigan has made preliminary policy changes towards enabling ARC participation in organized wholesale markets and remains the only state thus far in MISO or SPP footprints to codify a partial lifting of its previous ban, the opt out established after Order 719 has yet to be fully reversed.

3.1.2 Third-party ARCs in MISO and SPP states currently exist in some forms

Past policy activity among MoPSC's eight topic categories (see Figure 1) rulemakings and rarely pertain specifically to ARCs, providing few uniform "best practices" for the MoPSC to pursue. Several topic categories, such as dispute resolution (No. 3), registration and licensing (No. 4) and data governance (No. 7) are often relevant to third-party activity beyond the context of ARCs. To this end, states in MISO and SPP have borrowed or built procedures on top of existing RTO ARC processes, state statutes, and state regulator rules such as those related to registration, interconnection, dispute resolution, metering and telemetry requirements, and customer data transfer. For example, officials interviewed in Kansas and Oklahoma indicated that there have been no disputes resulting from ARC activity in organized wholesale markets for which a dedicated process would be necessary, nor instances of grid reliability issues associated with the absence of more established market rules (Champion and Rush, 2022; McClanahan et al., 2022). In Michigan, the retail regulator is leveraging existing MISO registration and licensing processes to accommodate new large commercial and industrial customer access to organized wholesale markets, while it explores developing its own process.

The incremental process taken by the Michigan PSC is described further in the "Policy Findings" section. Their 2022 Order states: "As experience is gained with DR aggregation among bundled C&I customers, the Commission anticipates that problem areas and issues will be identified with greater specificity as to how the Commission, with utility, aggregator, and customer involvement, can improve DR aggregation" (MI PSC, 2022). Similarly, Minnesota and Indiana have both initiated more comprehensive processes moving the states towards ARC participation, each following lessons learned by ARC engagement in retail utility programs (IURC, 2022; MN PUC, 2022a).

Two conclusions stem from this. The first is that ARCs may be able to participate in organized wholesale markets without comprehensive rulemaking. Often, processes from retail utilities and RTOs can be applied to ARCs, such that specific rulemaking may not be necessary. Secondly, an incremental approach to reversing an Order 719 opt out may offer an opportunity for states to more quickly implement a selection of rules or processes while developing more comprehensive rulemaking in parallel.

3.1.3 Restructured states outside of MISO and SPP exhibit heterogeneity in how they approach aggregations, but may still offer helpful considerations

This study considered policies outside of MISO and SPP in restructured states with active ARCs. Among these states, policy landscapes related to MoPSC's eight topic categories are varied. These states were included in LBNL's and E9's review because, despite having market structures and footprints that sometimes varied significantly from Missouri, most have taken steps to address the eight topic categories core to this report.

Restructured states provide insight into what areas of jurisdiction, oversight, and rulemaking are delegated to ARCs, state regulators, RTOs, and retail utilities. For example, Pennsylvania’s state regulator has jurisdiction to regulate ARCs⁸ when they interact with jurisdictional retail utilities (PA PUC, 2015). As a prerequisite for market participation, ARCs are required to register as CSPs by completing application forms designed by the retail regulator. As described in Finding 3.1.2, further market facilitation and enforcement (in that case, dispute resolution) is often delegated to the RTO.

Finally, it is important to note that rules in many states, including those outside of MISO and SPP, are very much in flux as they make changes to implement Order 2222. For example, in September 2022, New York retail electric utilities submitted to the New York PSC proposed tariff updates that consider Order 2222 implementation, the approval of which would implement new compensation mechanisms enabling dual participation and addressing double counting issues (Central Hudson, 2022; ConEdison, 2022; National Grid, 2022; NYSEG and RG&E, 2022; O&R, 2022). In addition, California has begun to explore the impacts of heterogeneous, aggregated DERs participating not only in organized wholesale markets, but dually across both retail and organized wholesale markets (Baker, 2022).

3.1.4 States view some policy topics as higher priority than others

Exploring jurisdictional questions, defining the characteristics and eligibility requirements of ARCs, designing a registration process, and ensuring customer data protection tend to be of immediate concern to states interested in allowing third-party ARCs. On the other hand, addressing issues related to double counting and dispute resolution are typically considered next, usually within organized wholesale or retail markets (e.g., as part of registration processes or utility tariffs), or more recently in the context of Order 2222 implementation.

Importantly, the relative prioritization of policy issues may not reflect their overall importance as much as their temporal role in enabling markets. Registration processes, for example, integrate retail regulators’ role in DER and ARC aggregation and will equip state regulators with core information about the ARCs active in their state. By contrast, designing ARC-specific dispute resolution processes may be of lower priority considering several states’ experience that disputes have been limited and existing processes may be adaptable (Mosier et al., 2022; Gebhardt et al., 2022). This topic is described further in the next section, “Policy Findings.”

3.1.5 Many retail regulators have similar questions as the MoPSC, regardless of market footprint and structure

Among the various state regulatory staff that were interviewed, regardless of market footprint, structure, or whether ARCs were actively participating within their states, there was widespread enthusiasm to better understand the issues surrounding aggregations, ARCs, and the role of retail regulators. In particular, they are interested in learning more about Order 2222 implementation experience and in continuing this conversation with regulators in Missouri and other states.⁹

⁸ In this case, the ARCs are encompassed by “Conservation Service Providers” or “Curtailed Service Providers”, defined by PJM

⁹ In addition, staff with the National Association of Regulatory Utility Commissions (NARUC) indicated that they are coordinating various efforts related to these questions.

3.2 Policy Findings

MISO and SPP both submitted their Order 2222 compliance filings to FERC in April 2022 (MISO, 2022; SPP, 2022). However, as of this report’s publication, FERC has ruled on neither MISO’s nor SPP’s compliance plan and has requested further information from both RTOs. This introduces some uncertainty because specific details may change. Regardless, it is helpful to understand the similarities between the MISO and SPP filings and to understand the direction that the RTOs may take in implementing Order 2222. The role of the RERRA, which includes the state regulator for DERs interconnected within regulated retail utility service territories, is outlined in both preliminary compliance filings. Relevant processes over regulated retail utilities and the DERs interconnected in their territories such as interconnection tariffs, data reporting requirements, and other rules and oversight requirements, still apply to the individual DERs within an aggregation participating at the wholesale level.

Within the context of Order 2222 implementation, the MoPSC is interested in state regulatory practices regarding these processes and rules. Specifically in cases where changes to rules or tariffs may be necessary to ensure safe and adequate distribution service, protect consumers and fairly allocate costs as ARCs and retail customers participate in the organized wholesale markets. The MoPSC is also interested in how these practices may be prioritized: what is needed in the near term, versus medium or long term?

Here we introduce a framework that organizes policy findings based on temporal prioritization, as described in General Finding No. 4 “States view some policy topics as higher priority than others.” Figure 4 shows the progression through three topical steps: jurisdiction, participation, and enforcement.

This section describes the issues associated with jurisdiction, participation, and enforcement, with text box call-outs that describe specific cases and regulatory context in greater detail. In addition, this section groups examples of what other states have done into potential actions for state regulators. These actions are categorized in summary tables for each subsection within Tiers I, II, and III, which roughly correspond to our perception of the level of involvement or change necessary by state regulators and/or legislators to implement these actions. The tier level does not indicate any value judgement, as each state has respective regulatory limitations and each decision reflects various tradeoffs. One clear tradeoff would be between simplicity and quick implementation versus a more comprehensive, but lengthy approach. In many cases, actions in Tier I could possibly be implemented without significant changes, but rely on the use

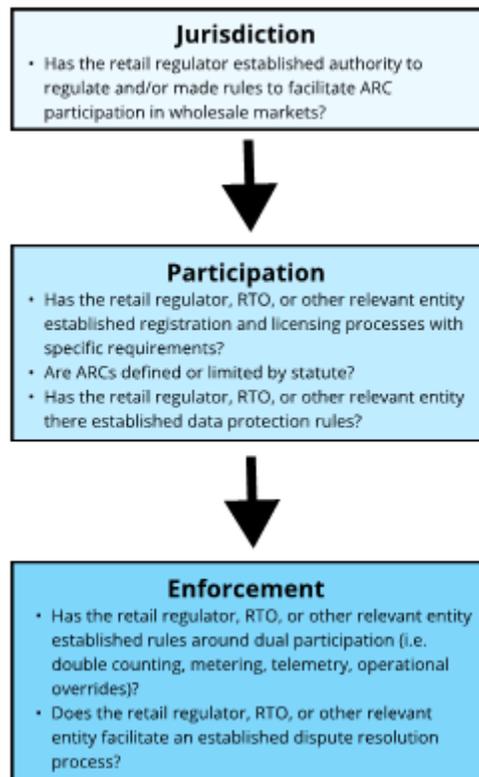


Figure 4: Framework for third-party aggregation rulemaking

of existing processes applied to an ARC context. On the other hand, many actions in Tier III are specifically designed to address ARC participation in organized wholesale markets, but often require more significant changes including the involvement of additional parties through stakeholder engagement or legislative action.

Although in some cases these tiers are discrete, state regulators may also choose to progress through various tiers sequentially as they phase in ARCs while learning from their experience. For example, Michigan phased the reversal of its opt out with minimal near-term changes to existing rules for retail customers and larger C&I customers, while recognizing that more stakeholder engagement and ARC-specific legislation will be needed before progressing to a full reversal that would include smaller customers (MI PSC, 2022). In general, a phased approach may allow state regulators who previously opted out to gain experience with ARCs and begin implementation of Order 2222 ahead of RTO compliance. Addressing the topic categories of jurisdiction, dispute resolution, registration and licensing, and data protection earlier in the implementation process may allow the MoPSC or other state regulators to spend more time on complex issues such as those related to other topic categories such as those pertaining to dual participation (e.g., double counting rule enforcement, metering and telemetry, operational overrides). Additionally, a phased approach may allow the MoPSC to gain insight into third-party ARC participation in organized wholesale markets and develop best practices along the way. Ultimately, MoPSC and other state regulators could use these tiers as a starting point; however, state regulators must understand and contextualize these options within their unique landscape before deciding which actions to take. Additionally, within the context of Order 2222, state regulators should consider MISO and SPP implementation plans and determine how to align with them as they are finalized and approved by FERC.

3.2.1 Jurisdiction

In their preliminary compliance filings, both MISO and SPP acknowledge local jurisdiction over retail utilities and DERs connected at the distribution level. For state regulators, this jurisdiction includes that over investor-owned utilities and the DERs interconnected within their service territories. The RTOs have accepted FERC’s list of possible roles and responsibilities of retail regulators that 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 retail utility review of DER participation in aggregations; establishing rules for multi-use applications; and resolving disputes between DER aggregators and retail utilities over issues such as access to individual DER data (FERC, 2020). MISO specifies that these roles also include the voluntary participation in pre-enrollment, enrollment, modification, and dispute resolution (MISO, 2022).¹⁰ SPP similarly explains that

¹⁰ Specifically, MISO’s compliance filing states that “DER interconnections to the distribution system are based on [relevant electric retail regulatory authority] rules, and as mentioned previously, [relevant electric retail regulatory authority] may choose to develop and oversee [distributed energy aggregated resource] Technical Review processes, including any [relevant electric retail regulatory authority]-defined DER interconnection rules. Under the proposal, [relevant electric retail regulatory authorities] may also put rules in place governing operational overrides of [distributed energy aggregated resource]. Additionally, during the registration and modification of registration processes, the [relevant electric retail regulatory authority] will confirm that the DER is eligible to participate in a wholesale program. This process includes confirmation by the [relevant

states can exercise influence via interconnection processes as well as local rules and oversight regarding distribution system operation and DER integration (SPP, 2022).¹¹ Both MISO and SPP (as well as FERC) recognize the inherent jurisdiction of retail regulators over retail utilities and interconnection processes as well as generally resources connected to their system(s). Moreover, a recent report by the aggregator CPower Energy cites the Opt-Out/Opt-In under Order 719 and a 2010 clarification from FERC to PJM as acknowledging retail regulators’ jurisdiction over certain issues related to ARCs as well such as that over regulated retail utilities and the customers within those service territories (Dotson-Westphalen and Schisler, 2022).

Beyond the context of FERC Orders, it is important to analyze states with existing aggregations and identify which entities have regulatory jurisdiction over ARCs and their activity, as well as how this jurisdiction was established (see Summary Table 1). Vertically integrated states have generally taken one of two paths towards asserting jurisdiction. They have either established explicit authority to regulate ARCs via existing statutes made by their state legislature, or state regulators have exercised implicit authority over certain issues via jurisdiction over regulated retail utilities and the DERs interconnected within those service territories.¹²

Summary Table 1: Actions taken in other states related to state regulator jurisdiction

Tier & Description	Example	Source
<p>Tier I: State regulator defaults to RTO authority over ARCs and completely delegates relevant processes.</p>	<p>“The Commission is limited by statutory constraints.... While the Commission has broad authority over rate-regulated utilities and more limited authority over other entities such as municipally owned utilities, cooperatives, and alternative energy suppliers, that legislatively granted authority does not extend to third-party DR aggregators. For instance, the Commission has licensing authority over alternative energy suppliers, but the Commission does not have licensing, registration, or other statutorily defined authority over DR aggregators directly. However, MISO and PJM maintain authority through FERC-approved tariffs over DR aggregators, as market participants and have detailed registration processes and requirements outlined in the tariffs applicable to ARCs or CSPs as well as additional procedures set out in MISO’s Business Practice Manuals and PJM’s Manuals.”</p>	<p>Michigan PSC 2022 order permitting demand response aggregation among resources exceeding 1 MW. (MI PSC, 2022)</p>
<p>Tier II: State regulator uses existing jurisdiction to regulate certain issues related to interactions between ARCs and regulated retail electric utilities. Such interactions may be associated with jurisdiction</p>	<p>“Respondent Utilities should investigate whether the provision of cost-effective demand response offerings could be enhanced by working with an aggregator, but note that any such agreements should be presented to the Commission for approval.”</p>	<p>Indiana IURC 2010 order prohibiting direct participation of third-party demand response providers in organized wholesale markets. (IURC, 2010)</p>

electric retail regulatory authority] that the DER is not participating in a retail program that would result in double counting or double compensation if the DER also participates in a wholesale aggregation.”

¹¹ Specifically, SPP’s compliance filing states that “the role of the relevant electric retail regulatory authority is important in coordinating the participation of DER Aggregations in the Energy and Operating Reserve Markets. That role may include voluntary actions such as: Development of interconnection agreements and rules; Development of local rules to ensure distribution system safety and reliability, data sharing, or metering and telemetry requirements; Oversight of the Distribution Utility review process for DERs to participate in DER Aggregations; Establishment of rules for multi-use applications; and Resolution of disputes between DERAs, LSEs, and Distribution Utilities over issues such as access to individual DER data or other disputes exclusively between the DERA and the LSE or Distribution Utility.”

¹² Restructured states outside of MISO and SPP have established jurisdiction specific to their market structures (and are thus not highlighted here in the main body of the report). Specifically, CA, NY, and PA have established authority via state statute and MD and OH have done so through retail law.

Tier & Description	Example	Source
over regulated retail electric utilities and their customers at the distribution level.	In West Virginia, state regulators have “jurisdiction over 3rd party aggregations not over terms of service, but over the utility and things impacting retail load.”	Interview with West Virginia PSC staff. (Roberts, 2022)
Tier III: State regulator coordinates with state legislature to pass legislation explicitly defining the state regulator’s jurisdiction over ARCs or initiating a process to address jurisdictional questions as part of Order 2222 implementation.	“[T]he marketing, selling, or marketing and selling of demand response within the State of Arkansas by electric public utilities or aggregators of retail customers is subject to regulation [by the Arkansas PSC]... The Commission may establish the terms and conditions for the marketing, selling, or marketing and selling of demand response by electric public utilities or aggregators of retail customers to retail customers or by electric public utilities, aggregators of retail customers, or retail customers into wholesale electricity markets.”	Arkansas Code Section 23-18-1003, developed pursuant to the 2013 Arkansas “Regulation of Electric Demand Response Act.” (AR State Legislature, 2013)

Arkansas is currently the only example of a state that we reviewed in which the PSC has been delegated explicit statutory authority over ARCs participating in competitive markets. This jurisdiction was established in the 2013 “Regulation of Demand Response Act,” which amended Arkansas Code to simultaneously place the marketing and sale of demand response under Arkansas PSC regulation while prohibiting the direct sale of DR resources by ARCs or retailers without commission authorization. Despite never reversing its Order 719 opt out, the Arkansas PSC has leveraged its jurisdiction to initiate investigations into DR and other types of DER, such as solar, wind, and energy storage technologies (AR PSC, 2018). The Arkansas PSC drew the distinction between regulating rates paid to ARCs in the competitive wholesale market, which would go beyond its jurisdiction, and regulating codes of conduct for customer participation in ARC activity, which is within its jurisdiction. The Order found that compliance plans, compliance audits, complaint procedures and logs, and penalties for such contracts are within the PSC’s authority under the Act (AR PSC, 2018). It included the provision that applicants for DER aggregation “will consent to the jurisdiction of the Arkansas Commission and courts and the service of process” as part of a certification process (AR PSC, 2018).

In contrast, there are also many examples of state regulators establishing implicit or de facto arrangements with ARCs as they interact with Commission-jurisdictional utility territories. For example, the Kansas Commission staff regulate ARCs based on their engagement with regulated retail utilities and their distribution system, although this policy has not been codified via legislation or Commission order (McClanahan et al., 2022). Similarly, the Indiana Utility Regulatory Commission (IURC) regulated DR aggregation through implicit jurisdiction over ARC relationships with regulated retail utilities, but was later granted explicit legislative authority to investigate whether it has jurisdiction over ARCs as “public utilities” when the ARC is acting in organized wholesale markets. (See Text Box 1) (IURC, 2022, 2010).

Text Box 1: Indiana seeks to apply broader jurisdiction to ARCs.

The Indiana Utility Regulatory Commission (IURC) investigated end-use customer participation in MISO and PJM DR programs in 2010, ultimately limiting DR aggregation activity to retail utility programs and tariffs (IURC, 2010). The Order noted that, while customer enrollment in ARCs directly participating in organized wholesale markets would introduce uncertainty about regulatory authority and other challenges, limiting ARC activity within retail utility programs and tariffs allowed the regulator to leverage existing statute related to resource planning. The limitation allowed the state regulator to regulate DR that was “incorporated into the IRP process

while maintaining Commission oversight of the effect of demand response offerings on participating and non-participating customers” (IURC, 2010).

2022 legislation directed the Indiana Commission to initiate a stakeholder process to implement FERC Order 2222, which is ongoing and specifically authorizes the Commission to design rules around DER aggregation (122nd Indiana General Assembly, 2022). While Indiana’s DR aggregation activity has historically taken place in retail utility programs, retail regulators are considering options to expand their oversight of DR aggregation as Indiana moves towards Order 2222 implementation. Regulators are evaluating whether state code provides sufficient basis to assert direct jurisdiction, while simultaneously working with stakeholders in the Commission’s Order 2222 implementation process to determine whether to regulate DR aggregators as “public utilities.” (IURC, 2022)

3.2.2 Participation

Once the extent and breadth of jurisdiction is established or clarified, retail regulators should clarify their role in facilitating rules and processes for ARC participation in organized wholesale markets (i.e. requirements for registration, licensing, and data governance) in coordination with retail utility and RTO processes. Both MISO¹³ and SPP¹⁴ preliminary compliance filings state that the retail regulator governs eligibility for a DER to enroll in an aggregation participating in organized wholesale markets (MISO, 2022; SPP, 2022). For example, in MISO during the enrollment review process, the ARC must affirm that they are in compliance with local rules. Both the retail utility and retail regulator are given time to review and confirm that the individual DERs comply with local regulation and interconnection requirements (which is state regulation in the case of DERs in regulated retail utility territory) and do not violate double counting criteria, also consistent with state regulation. Additionally, the compliance filings place the coordination, data collection, and reporting burden on the ARC. To the retail utility, ARCs must submit registration information and ensure compliance with local regulation. To the RTO, ARCs must comply with wholesale market participation requirements and provide revenue-grade data at the aggregation level, similar to any other wholesale market participant. Real-time operational data from the ARC will be made available to both the retail utility and RTO to ensure grid reliability (i.e., no trigger of an override condition from the distribution network). Since all DERs must comply with local regulation, it will be important for the state retail regulators to consider what constitutes impermissible “double counting” and what conditions may trigger a distribution system override as ARC participation in organized wholesale markets increases.

3.2.2.1 Registration and licensing

Consistent with language in the MISO and SPP Order 2222 compliance filings, ARCs have registration obligations to the retail utility and/or RTO. Retail regulators directly impact the interaction between ARCs and the retail utility via interconnection agreements, data sharing agreements, metering and telemetry requirements, and any other requirements for DERs. While

¹³ Registration information from individual DERs includes the technology type, size, location, and operating characteristics needed by MISO and the retail utility. During operation, revenue grade data must be collected and provided in compliance with MISO participation requirements.

¹⁴ In SPP, an aggregator must attest that each DER is eligible, compliant with local tariffs, that the retail provider affirmed that the DER is not providing the same service at the retail level, etc. To the RTO, aggregators must establish real-time telemetry at the point of aggregation interconnection and collect revenue quality data, also available to the distribution utility for review.

retail regulators do not have jurisdiction over RTO registration processes, FERC has emphasized that DERs must comply with state rules, and that the data affirming DER compliance will be made available to state regulators. Therefore, the MoPSC likely does not need additional processes to gain access to these data. Rather, the state may consider whether changes to jurisdictional practices (e.g., interconnection agreements or DER requirements) may better address issues that relate to ARCs or Order 2222 implementation.

Depending on each state, relevant registration and licensing processes may be in place for individual DERs and/or DER aggregations. In states where significant aggregation activity takes place in retail markets (e.g. California), retail aggregator registration and licensing processes apply to the wholesale context in the case of dual participation. Moreover, registration processes for individual DERs within aggregations are prerequisites for individual customer-generators or aggregators within that retail utility’s service area to participate in both retail and wholesale programs (PG&E, 2017).

In some states that have sought or received jurisdiction to regulate aspects of aggregations in both retail and organized wholesale markets, regulator-facilitated registration and licensing processes often complement processes facilitated by relevant RTOs. For example, Michigan plans to utilize MISO’s existing registration process to collect basic contact, resource type, timing, and other information while seeking to develop a complementary PSC licensing process to ensure consumer protections (See Text Box 2).

Lastly, some states default to wholesale processes. In Oklahoma and Kansas, where organized wholesale DR aggregation occurs with limited retail regulatory oversight, ARCs register directly with SPP, upon which the retail regulator and affected utilities usually receive a notification from the ARC or RTO (Champion and Rush, 2022; McClanahan et al., 2022). In another example, New York DER suppliers including ARCs can enter into retail or organized wholesale contracts without following a PSC registration process,¹⁵ but are subject to PSC rules facilitating sales agreements, enforcement of violations, and terms of termination; customer data privacy and security, distribution-level cybersecurity, and terms of compliance with PSC oversight in the event of data requests or audits (NY PSC, 2019a).

In sum, since different aspects of ARCs are subject to various authorities in different states, and full wholesale participation may require ARCs register through multiple processes and/or authorities. Summary Table 2 highlights actions taken in New York, Michigan, and Indiana.

Text Box 2: Michigan uses MISO registration processes for extra-large customers, seeks jurisdiction for customer-centered retail regulator licensing process.

In December 2022, the Michigan PSC issued an order reversing the state’s prohibition of aggregated demand response participation in wholesale markets for commercial and industrial resources with enrolled load exceeding 1 MW. For this limited market segment, the PSC maintained an existing registration process for which several authorities are involved: “The load balancing authority (LBA), transmission provider (i.e., MISO), and relevant electric retail regulatory authority (RERRA) (i.e., the Commission) play a role in receiving and verifying registration information from the ARC regarding the DR resource(s) including the ARC name, [load serving

¹⁵ With the exception of Community Distributed Generation and Mass Market DG.

entity] name(s), resource type, end use customer account number(s), effective date, termination date, and customer’s maximum level of participation.” (MI PSC, 2022). However, as Michigan works towards broadening its reversal to smaller customers (including the residential customer class), the order describes the PSC’s intention to design an expanded licensing processes that ensures customer protections and complements MISO’s existing processes. Specifically, the PSC demonstrates its intention to work with stakeholders to “outline the desired consumer protections to guard against deceptive marketing tactics that have been employed in the past by certain AEs and their third-party marketers”– and then seek jurisdiction to implement whatever licensing process it produces (MI PSC, 2022). In a February 2023 order responding to intervenor petitions for rehearing, the Michigan PSC clarified the purpose of utilizing MISO procedures as a ‘placeholder’ process as it further develops consumer data protection requirements: “The ARC’s registration as a MISO market participant and the ARC’s receipt of a letter of authorization from participating customers should provide assurance to [load serving entities] and [load balancing authorities] that the necessary data can be shared.” (MI PSC, 2023)

Summary Table 2: Actions taken in other states related to registration and licensing requirements

Tier & Description	Example	Source
<p>Tier I: State regulators rely on the RTO’s existing ARC and proposed Order 2222 DER amendments for registration. If required, State regulator directs retail utilities and/or requests RTOs to provide the state regulator with DER and/or ARC registration data at some specified frequency (e.g. one-time, quarterly, yearly) to ensure compliance with existing and/or amended state regulation.</p>	<p>“Staff shall develop and issue a registration form that complies with the requirements set forth in the UBP-DERS by October 30, 2017. That registration form shall be filed in Case 15-M-0180 and shall be posted on the Department’s website.” In New York, DER Suppliers encompass individual DERs as well as ARCs, and the registration form required by this order applies to both.</p>	<p>New York PSC 2017 Order establishing an oversight framework and uniform business practices for DER suppliers. (NY PSC, 2017)</p>
<p>Tier II: Initiate a process or issue an order clarifying the separate roles of the state regulator, regulated retail utility, and recognizing the role of the RTO in adapting and facilitating registration processes to accommodate new ARC market access.</p>	<p>See Text Box 2: Michigan uses MISO registration processes for extra-large customers, seeks jurisdiction for customer-centered retail regulator licensing process.</p>	<p>Michigan PSC 2022 order permitting demand response aggregation among resources exceeding 1 MW. (MI PSC, 2022)</p>
<p>Tier III: Initiate a process or issue an order specifically designed to clarify the retail regulator’s role in developing eligibility requirements for ARCs such as for registration and licensing process. Additionally if required, this process could consider changes to individual DER and/or ARC processes consistent with Order 2222 implementation.</p>	<p>The IURC’s FERC Order 2222 stakeholder process highlights several discussion topics aligned with the policy issues raised by Order 2222 that would be prerequisite for aggregator participation including dual participation, interconnection, and coordination among RTO, retail utility, ARC, and the IURC.</p>	<p>IURC’s FERC Order 2222 implementation stakeholder process. (IURC, 2022)</p>

3.2.2.2 Data governance

Data governance refers to the privacy and security of customer meter data, as well as the security of operational data exchanged among individual DERs, ARCs, retail utilities, and the RTOs in the process of DER aggregation activity (i.e., cybersecurity). While these topics are important within the context of ARCs, many state regulators may choose to focus on DERs more broadly, which would then apply to any DER participating in an ARC.

In many states, ARCs must comply with customer protections as a minimum requirement of any registration process. In such cases, retail utilities or RERRAs establish rules governing which

entities have access to individualized customer data. For example, in certain cases RERRAs bar third parties from accessing data or implement tools and regulations to ensure data confidentiality or anonymization (MN PUC, 2020). On the other hand, the Michigan PSC clarified in a February 2023 Order that MISO’s current process requires customers to give ARCs, retail utilities, and the RTO consent to access sufficient data to make aggregation activity feasible (MI PSC, 2023).

Several states are interested in establishing rules that ensure efficient and secure data transfer and coordination between retail utilities, ARCs, RTOs, and retail regulators (See Summary Table 3). For example, the Michigan PSC prioritizes the development of consumer data protection requirements to incorporate into a future PSC-facilitated registration and licensing process (MI PSC, 2022). Furthermore, the Indiana state regulatory commission is prioritizing these issues as discussion topics as part of its FERC Order 2222 implementation process (IURC, 2022).

In designing data governance rules related to ARCs and DER integration more broadly, retail regulators have had to balance conflicting priorities: ensuring that relevant entities have sufficient data access to achieve operational success, while addressing concerns about customer data privacy and cybersecurity concerns. This dynamic was described in an order establishing a comment period within Minnesota’s Investigation into Distribution Grid Data Security (MN PUC, 2022b): “The Commission instituted the investigation in this docket to better understand how best to provide disclosure of distribution grid data necessary for efficient DER deployment while minimizing any potential grid and customer security issues that may be created through the increased access to the data.”

Retail regulators have addressed these issues in various regulatory contexts, spanning from broad DER-centered data governance investigations (e.g. Minnesota (MN PUC, 2020), Arkansas (AR PSC, 2018)); investigations specific to third-party customer data access (e.g. Pennsylvania (PA PUC, 2022), California (CPUC, 2011), Minnesota (MN PUC, 2020)); to rulemaking specific to DER supplier and ARC participation (e.g. New York (NY PSC, 2019b, 2017), Maryland (MD PSC, 2011)). Nearly all retail regulatory staff interviewed for this report stressed the importance of addressing data governance issues related to ARCs and DER integration more broadly (see Summary Table 3).

There are examples of DER aggregation rules developed to ensure secure and private customer meter data; however, rules addressing operational distribution data security and cybersecurity are more nascent (NERC, 2022b). Minnesota’s Open Data Access Standards (MN PUC, 2020) and New York’s Uniform Business Standards for DER (NY PSC, 2019a) exemplify standard, statewide approaches for third-party access to customer data, including procedures for aggregation and anonymization. Many of the questions addressed by Minnesota and New York’s statewide standards are being actively explored in the Pennsylvania Commission’s “Investigation into Conservation Service Provider and Other Third Party Access to Electric Distribution Company Customer Data” (See Text Box 3).

Examples of data requirements established by various arrangements across the states investigated in this report include:

- DER provider confirmation of customer consent for access to their meter data, the terms of which must be clearly communicated (NY PSC, 2019a).

- DER provider identification of intended activities and stated use of customer data (MN PUC, 2020; NY PSC, 2019a).
- The specific frequency (i.e. intervals), format, and characteristics of data that ARCs have access to (MD PSC, 2011; NY PSC, 2019a; PG&E, 2017).
- Rules to facilitate the exchange of information between retail utility and ARCs, like customer contact information, tax information, rate class, electric load profile, consumption and billing information, etc. (NY PSC, 2019a).
- Protocols to enforce violations or elaborate on retail regulator oversight (CPUC, 2011; MN PUC, 2020).
- Prohibition of ARCs from selling or otherwise disclosing customer data (MN PUC, 2020; NY PSC, 2019a).
- Prohibition of ARCs from reverse engineering aggregate or anonymized customer data (MN PUC, 2020).
- Prohibition of retail utilities from charging DER suppliers for customer data (NY PSC, 2019a).

Text Box 3: Pennsylvania is investigating data governance issues specific to ARC activity.

In 2021, the Pennsylvania Commission chose to deny a DR aggregation provider, Enerwise, access to customer usage data based on its failure to qualify as an ‘Electric Generation Supplier’ by state definition (PA PUC, 2021). While this definition is largely technical, it raised broader questions about third-party access to customer usage data. In the proceeding’s final order, the PUC directed its Office of Competitive Market Oversight, Law Bureau, and Bureau of Technical Utilities Services to initiate a new proceeding to “determine if a safe, acceptable path exists for CSPs to potentially gain access to customer data electronically from EDC data systems.” (PA PUC, 2021). The proceeding that was subsequently established represents a broad and detailed investigation of data governance issues relevant to CSP activity and has been receiving comments throughout 2022. The proceeding’s initiating letter published a set of questions for comment related to Electric Distribution Company (EDC) technical and legal concerns related to CSP and other third-party access to smart meter data, utility access to usage data and smart meters, Home Area Network (HAN) Protocols, automatic control of meters, and more (PA PUC, 2022).

Requirements addressing operational distribution data security and cybersecurity primarily facilitate DER provider compliance with the retail utility, RTO, retail regulator, or federal data security and cybersecurity practices and regulations. For example, Minnesota’s Investigation into Grid Data Security is considering the application of NERC’s Critical Infrastructure Protection standards to its bulk power system (MN PUC, 2022b), while New York’s Uniform Business Standards require DER providers to comply with processes and procedures consistent with the National Institute of Standards and Technology Cybersecurity Framework, and “comply with any data security requirements imposed by that utility or by Commission rules on ESCOs and/or any data security requirements associated with EDI eligibility” (NY PSC, 2019a).

In sum, several states have developed customer protection rules applying both to aggregations specifically and DERs more broadly; spanning the topics of customer protection, operational data security, and cybersecurity; and spanning from retail utility tariffs to broad retail regulator investigations and stakeholder processes. In that light, MoPSC has many examples to guide development of data governance rules (see Summary Table 3).

Summary Table 3: Actions taken in other states related to data governance

Tier & Description	Example	Source
<p>Tier I: Leverage existing retail utility or state customer consent processes, cybersecurity, and/or data protection standards used for DERs, ARCs, and/or retail choice providers.</p>	<p>“The Applicant agrees that it shall neither disclose nor resell individual residential customer data provided to the Applicant by any Maryland electricity company. Disclosure or resale of individual non-residential customer data provided to the Applicant by a Maryland electricity company will be governed by customer contract.”</p>	<p>Maryland Application for License to Operate as a Curtailment Service Provider. (MD PSC, 2013)</p>
	<p>Ordering clauses direct utilities to “file a revised Data Security Agreement and Self Attestation” incorporating protections developed by the DPS, while noting that “Energy Service Entities seeking access to customer data through utility IT systems shall be required to execute a Data Security Agreement and Self Attestation.”</p>	<p>New York DPS 2019 Order establishing minimum cybersecurity and privacy protections (NY PSC, 2019c).</p>
<p>Tier II: Establish a proceeding to develop customer data protection standards. ARCs would be required to implement these standards into customer contracts or sales agreements.</p>	<p>The Pennsylvania PUC determined to “initiate a new proceeding to determine if a safe, acceptable path exists for CSPs to potentially gain access to customer data.” See Text Box 3.</p>	<p>Pennsylvania PUC 2022 Final Order of Enerwise’s petition to be granted Electric Generation Supplier status. (PA PUC, 2021)</p>
	<p>The sharing of any C&I customer information For DR wholesale market participation purposes shall comply with the utilities’ approved privacy tariffs. The Commission agrees with the Staff that addressing all DR aggregation issues prior to Order 2222 implementation is a worthy goal and finds that the issues surrounding sharing customer data with aggregators similar for DR aggregation and Order 2222 implementation and revisions to data privacy tariffs may be warranted... adopting Green Button Connect or an alternative with similar functionality allowing third parties access to data as needed is strongly encouraged for all utilities in order to facilitate the timely and accurate DR registrations from ARCs.”</p>	<p>Michigan PSC 2022 order permitting demand response aggregation among resources exceeding 1 MW. (MI PSC, 2022)</p>
	<p>The CPUC developed rules applicable to third-party providers interacting with California IOUs, related to the categories of transparency, individual participation, purpose specification, data minimization, use limitation, data quality and integrity, security, and accountability and auditing. It directed IOUs to develop rules based on these standards.</p>	<p>California PUC 2011 Final Order in its rulemaking to guide policy in California’s development of a smart grid system (CPUC, 2011).</p>
<p>Tier III: Together with relevant stakeholders, regulators can address customer and operational data governance with respect to FERC Order 2222 implementation. This could monitor issues, develop standards, and facilitate the adoption of tools to enable coordination and data sharing processes between all relevant entities.</p>	<p>The IURC’s FERC Order 2222 stakeholder process highlights several relevant discussion topics including “Operational oversight and control of DERs,” “distribution utility overrides of DERs to maintain reliability,” and “Coordination among RTO/utility/aggregator/IURC.”</p>	<p>IURC’s FERC Order 2222 implementation stakeholder process. (IURC, 2022)</p>

3.2.3 Enforcement

Enabling third-party ARC participation in organized wholesale markets necessitates data management across many behind-the-meter resources and the facilitation of compensation

mechanisms at the individual DER level as well as the aggregation level (and sometimes across both retail and organized wholesale markets in the case of dual participation). The introduction of such complexity was part of Order 719's justification for permitting states to opt out of ARCs' access to organized wholesale markets (FERC, 2008) and some MISO and SPP states' decisions to maintain their opt-out years later (MI PSC, 2019). With the introduction of this complexity, it is important that retail regulators understand their role in allowing organized wholesale market participation while enforcing retail market rules to ensure reliable grid operation with respect to ARCs and avoid instances of double counting. The two key examples of such enforcement are for rules surrounding double counting of dually participating aggregations and dispute resolution.

3.2.3.1 Double counting

Order 2222 provides that state-level restrictions are allowed for DERs that are “registered to provide the same services either individually or as part of another RTO market participant or 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” (FERC, 2020). While double counting *within* markets has traditionally been enforced by relevant utilities or RTOs, enrolled resources that are participating dually across both retail and wholesale levels will likely require additional data collection, verification, and coordination to ensure that no double counting occurs across the organized wholesale and retail markets. Both MISO and SPP addressed this topic in their preliminary compliance filings, mostly in the context of enrollment and registration of ARCs.

Since double counting is a potential problem involving both retail utilities (retail market) and RTOs (organized wholesale market), the involvement of both entities in any rulemaking activity is paramount. In states where double counting is primarily a concern exclusively within retail markets (i.e. West Virginia) or organized wholesale markets (i.e. Maryland), enforcement is usually more squarely facilitated by the retail utility or RTO, respectively (Mosier, 2022; Roberts, 2022).

In states that are considering opening their markets to dual participation, the retail regulator often has a more significant role facilitating adequate coordination and data sharing practices across relevant entities. Key examples include Indiana, whose state regulator is explicitly considering double counting issues as part of its Order 2222 implementation process (Indiana IURC 2022), and Michigan, whose Commission noted that “more work needs to be done in establishing participation details and requirements for ESRs in these markets prior to allowing dual participation, and commits to continued involvement with the implementation of Order 2222” (MI PSC, 2022). For these states, New York may serve as a starting point due to its experience with dual participation. In New York, the PSC is reviewing retail utility tariff updates intended to align with NYISO’s Order 2222 approved compliance filing, as well as comments from third-party DER suppliers, without having published explicit guidance in the proceeding (See Text Box 4) (Central Hudson, 2022; conEdison, 2022; National Grid, 2022; NYSEG and RG&E, 2022; O&R, 2022).

As MISO and SPP’s Order 2222 compliance filings become finalized and approved, states within their footprints may be able to learn from other state processes to serve as a starting point for their respective implementation (see Summary Table 4).

Text Box 4: New York’s Commission will review, implement NYISO Order 2222 compliance and utility tariffs.

In New York, the Department of Public Service (DPS) is reviewing and implementing dual participation rules developed by NYISO and integrated into retail utility tariffs. NYISO’s Order 2222 compliance filing and New York Joint Utilities’ updated tariffs each presented adjustments to ensure ARCs do not enroll DERs that provide the same service to both retail and wholesale markets (NYISO, 2022) as well as affirm customers’ ability to dually participate provided they adhere to double counting protections and the updated tariffs. In addition, each utility introduced a ‘Wholesale Value Stack’ methodology, in which aggregators would receive capacity and energy payments either from NYISO or directly through an ARC, eliminating the need for utilities to distribute payments and accommodating access to both markets (Central Hudson, 2022). Furthermore, in a November 2021 presentation in response to Order 2222, NYISO noted that it is “collaborating with the Joint Utilities to develop a services compatibility document identifying retail market services that conflict with wholesale market services to prevent double counting”(NYISO, 2021). New York regulators are now reviewing the proposed utility tariff adjustments for implementation in Docket No. 22-E0549 (NY DPS, 2022).

Summary Table 4: Actions taken in other states related to dual participation

Tier & Description	Example	Source
Tier I: Coordinate with retail utilities, RTOs, multi-state groups, and industry working groups to gather and provide feedback on this topic. As FERC rules on RTOs’ Order 2222 compliance filings and finalizes these, utilize RTOs’ proposed double counting guidance.	Coalitions could be coordinated via national associations, public entities, nonprofits, or expert consultants. NARUC’s Center for Partnerships & Innovation has facilitated technical work (i.e. webinars) on DER aggregation and FERC Order 2222 implementation, and NARUC’s August 2023 Mid-America Regulatory Conference includes many states within MISO’s and SPP’s footprints. This could present an appropriate venue for coordination.	NARUC CPI “ Leveraging Distributed Energy Resource Capabilities through Transactive Energy ”, NARUC Mid-America Regulatory Conference .
	“In its compliance efforts, MISO created a coordination framework for engagement between RERRAs, electric distribution companies, and DER aggregators and created a DER task force that meets on a monthly basis.”	Michigan PSC 2022 order permitting demand response aggregation among resources exceeding 1 MW. (MI PSC, 2022)
Tier II: Work with retail utilities and RTOs stakeholder processes to co-develop the definition of double counting and determine information necessary to identify cases. Direct retail utilities to submit updated tariff proposals addressing dual participation and prohibiting double counting.	“The proposed revisions filed herein clarify customer eligibility to participate in the Company’s DER retail programs when such DER also participate in the NYISO markets to prevent duplicative compensation from the Company and NYISO for the same service.”	Central Hudson Gas & Electric’s Order 2222 implementation tariff update. (Central Hudson, 2022)
Tier III: Address double counting as part of a comprehensive Order 2222 implementation process, considering additional development of statewide rules if required.	The IURC’s Order 2222 stakeholder process identifies “dual participation (retail and organized wholesale participation) and double-counting concerns or challenges” as a core discussion topic.	IURC’s FERC Order 2222 implementation stakeholder process. (IURC, 2022)

3.2.3.2 *Dispute resolution*

MISO's and SPP's preliminary Order 2222 compliance filings refer to their existing dispute resolution processes for market participants. Even so, there is a role for retail regulators in a few specific scenarios. For example, MISO "recognizes in its proposal that disputes between the [distributed energy aggregation resource] and [electric distribution companies] may best be handled by the RERRA" whereas SPP mentions retail regulators' potential involvement if a dispute involves eligibility (MISO, 2022; SPP, 2022). As such, the RTOs' filings indicate that dispute resolution for ARCs will follow similar processes as other market participants, involving retail regulators only for disputes outside of FERC jurisdiction (and most likely within state jurisdiction). In both of these cases, existing state dispute resolution processes may suffice. If not, DER dispute resolution processes should be developed and applied to an ARC context. Summary Table 5 highlights some actions taken by other states.

If disputes arise between entities involved in DER aggregation (i.e. customers, ARCs, retail utilities, RTOs), it is important that retail regulators have procedures in place to address them within their jurisdiction. Retail regulators usually maintain existing processes and staff resources for dispute resolutions between customers, third-party developers, and retail utilities, but few have developed processes specific to ARCs. Retail regulators from Arkansas, Indiana, Minnesota, and Pennsylvania each expressed that existing dispute resolution processes related to DERs should be flexible enough to be adapted for aggregations (Davies and Johnston, 2022; McDowell et al., 2022; Nixon, 2022; Rosier, 2022). Michigan PSC staff said that ARC-related disputes are usually addressed in the MISO registration process without PSC intervention (Hanser, 2022), while Maryland PSC staff noted that no disputes have arisen in the 11 years that CSPs have been bidding aggregations (mostly commercial and industrial) into PJM markets (Mosier, 2022; Schreim, 2022). The rules published by each of California's retail utilities regarding DER aggregation in retail programs is the sole example of existing broad dispute resolution procedures being explicitly referenced as statutorily applicable aggregation-related disputes (See Text Box 5) (PG&E, 2017).

Text Box 5: California utilities leverage existing statute to guide dispute resolution for aggregations.

The rules published by California utilities to guide DR aggregator participation in retail programs leverage existing California Commission statutes to clarify dispute resolution processes concerning DER aggregations. In doing so, these rules appear to be the only example of an existing dispute resolution process being repurposed to specifically apply to aggregations. While the California PUC facilitates dispute resolution processes for disputes related to ARCs within its jurisdiction (i.e. involving a retail utility), it follows Alternative Dispute Resolution procedures developed by CAISO (CAISO, 2021).

PG&E’s Rule 24 (PG&E, 2017), for example, references the California Commission’s existing processes as outlined in Article 4 of its Rules of Practice and Procedure (CPUC, 2021a) and Public Utilities Code Sections 451 (CPUC, 2021b), 701, and 702 (CPUC, 2018). Based on these statutes, dispute claims will be first directed to the California Commission’s Consumer Affairs Branch (CAB) to informally seek resolution among parties through the Alternative Dispute resolution process (CPUC 2005), then subsequently to its Safety and Enforcement Division if the claim remains contested. Following a formal litigated process, the Safety and Enforcement Division will have the option to exercise authority to issue a penalty or revoke Demand Response Providers’ registration status, in which case it would inform relevant parties (the Demand Response Provider, retail utility, and CAISO) via an established notification process (PG&E, 2017). Examples of ARC conduct that would warrant the initiation of California’s dispute resolution process include Rule 24 form forgery (or 32, in the case of SDG&E), deceptive advertising or marketing, improper registration, failure to notify customers or the retail utility about the initiation or discontinuation of DR services, violation of dual participation rules, and non-payment of fees (PG&E, 2017).

Summary Table 5: Actions taken in other states related to dispute resolution

Tier & Description	Example	Source
Tier I: Utilize existing dispute resolution processes to the extent possible for issues involving DERs within retail markets or in organized wholesale aggregation scenarios.	New York process for “Generally Applicable” DER Suppliers: "Department Staff will accept inquiries and complaints related to DER suppliers and will make efforts to investigate and resolve those complaints and, if necessary, bring those complaints to the Commission for consideration."	New York DPS 2019 Uniform Business Standards. (NY PSC, 2019b)
Tier II: Adapt processes, frameworks or general principles from existing dispute resolution procedures to specifically address ARCs.	California developed two options for customers seeking to open a dispute with Demand Response Providers (DRP): a formal complaint claimed through civil court, which could enable the PUC to take corrective action, or implementation of an informal Alternative Dispute Resolution (ADR) process as developed by CAISO, in which PUC officials facilitate or mediate a resolution without bringing it to court (see Text Box 5).	California Demand Response Provider (DRP) resource page. (CPUC, n.d.)
Tier III: Coordinate with state regulator staff responsible for managing dispute resolution to develop a new process specific to ARC disputes, possibly in the context of Order 2222 implementation.	The IURC’s Order 2222 stakeholder process identifies “[d]istribution utility overrides of DERs to maintain reliability, and disputes arising therefrom” as a targeted form of dispute to address as a discussion topic.	IURC’s FERC Order 2222 implementation stakeholder process. (IURC, 2022)

4. Conclusion

DER aggregations across the country have provided various benefits, both in the form of increased value streams to the owner as well as societally beneficial grid services that increase distribution and/or bulk system grid operational efficiency such as peaking capacity, energy services, and ancillary services. The majority of MISO and SPP states opted out of allowing direct ARC participation in organized wholesale markets following FERC Order 719, providing few examples of “best practices” for states to follow when evaluating future actions and the possibility of establishing rules and regulations for ARCs. However, the issuance of FERC Order 2222 has led some states in MISO and SPP to explore reducing or reversing these restrictions. Despite most states’ approaches to these issues being in early stages, this document outlines five general findings across interviewees and further extracts several specific examples across states of how retail regulators have weighed different tradeoffs and taken different actions related to legal jurisdiction, participation requirements, and rule enforcement via a close document review.

These policy findings and specific state examples, grouped into Tiers I, II, and III could provide the Missouri PSC and other state regulators with examples and templates for how others are approaching questions within their respective topic categories, but they are not direct recommendations and should not be taken as such. With each state’s unique set of goals, challenges, and regulatory landscapes, there will be separate tradeoffs when choosing and developing a set of actions to allow direct ARC participation in organized wholesale markets.

In general, most Tier I examples may not require significant changes for most states and likely could be implemented on a shorter timeframe. On the other hand, Tier III examples generally require higher levels of stakeholder buy-in and coordination. However, this longer process can lead to more comprehensive and ARC-specific rulemaking that may offer more clear guidance on participation and important topics such as customer protection, dual participation, etc. These tiers are also not necessarily discrete options, as there are examples of states choosing to pursue parallel implementation strategies. In these cases, one track implements changes on quicker timeframes that apply existing processes to ARCs in the near term- sometimes limited to specific customer classes (aligned with Tier I options), while a parallel track focuses on a more comprehensive parallel process to specifically address ARCs or overall Order 2222 implementation (aligned with Tier II or III options). This incremental method allows states to loosen restrictions in the near term, learn from early experiences, and apply best practices to a more comprehensive rulemaking.

State rulemaking around ARCs has not coalesced around one set of recommendations, but instead has spanned a wide range of possible interventions. This leaves the Missouri PSC and other state regulators, along with their stakeholders, with various options. With multiple states in somewhat similar stages, there are opportunities for sharing findings as they emerge and iterating on implementation in order to capture the benefits of ARC participation in organized wholesale markets while ensuring grid reliability and efficiency.

5. References

- 122nd Indiana General Assembly, 2022. Indiana Code Title 8. Utilities and Transportation (8-1-40.1).
- Aghaei, J., Alizadeh, M.I., 2013. Demand response in smart electricity grids equipped with renewable energy sources: A review. *Renew. Sustain. Energy Rev.*
<https://doi.org/10.1016/j.rser.2012.09.019>
- AR PSC, 2018. Docket No. 16-028-U Order No. 10: In the matter of an investigation of policies related to distributed energy resources.
- AR State Legislature, 2013. Arkansas Code 23-18-1003: Authority to regulate demand response.
- Baker, M., California OCA interview. Interview by Cameron Brooks, Sydney Forrester, Cole Triedman, Sam Kozel. 20 October 2022.
- Barbose, G., Darghouth, N., O’Shaughnessy, E., Forrester, S.P., 2022. Tracking the sun: Pricing and design trends for distributed photovoltaic systems in the United States.
- CAISO, 2021. Standard Procedures for Resolution of Disputes Version # 3.1.
- Castagneto Gisse, G., Subkhankulova, D., Dodds, P.E., Barrett, M., 2019. Value of energy storage aggregation to the electricity system. *Energy Policy.*
<https://doi.org/10.1016/j.enpol.2019.01.037>
- Central Hudson, 2022. Tariff Proposal to Preclude Dual Market Participants from Receiving Duplicative Compensation in both Wholesale and Retail Markets Concurrently and Other Conforming Changes in Connection with the New York Independent System Operator’s Implementation of FER.
- Champion, K., Rush, G., Oklahoma OCC. Interview by Cameron Brooks, Cole Triedman, Daisy Dunlap. 31 August 2022.
- conEdison, 2022. Tariff Proposals to Preclude Dual Market Participants from Receiving Duplicative Compensation in both Wholesale and Retail Markets Concurrently and Other Conforming Changes in Connection with the New York Independent System Operator’s Implementation of FE.
- Cook, J.J., Ardani, K., O’Shaughnessy, E., Smith, B., Margolis, R., 2018. Expanding PV Value: Lessons Learned from Utility-led Distributed Energy Resource Aggregation in the United States. <https://doi.org/https://doi.org/10.2172/1483067>
- CPUC, 2021a. California Code of Regulations Title 20, Division 1, Chapter 1: Rules of practice and procedure.
- CPUC, 2021b. Division 1, Part 1, Chapter 3, Article 1: Rights and obligations of public utilities.
- CPUC, 2018. Division 1, Part 1, Chapter 4, Article 1: Regulation of Public Utilities.
- CPUC, 2011. Rulemaking 08-12-009: Decision adopting rules to protect the privacy and security of the electricity usage data of the customers of Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company.
- CPUC, n.d. FAQ - Demand Response Providers (DRPs)/Aggregators.
- Davies, S., Johnston, D., Indiana IURC interview. Interview by Cameron Brooks, Cole Triedman, Daisy Dunlap.
- Dotson-Westphalen, P., Schisler, K.D., 2022. Regulating demand response and aggregators in the Midwest while safeguarding local jurisdiction.

EPRI, 2022. DER Aggregation Participation in Electricity Markets: EPRI Collaborative Forum Final Report and FERC Order 2222 Roadmap.

Energy Kansas, 2023. Application for Approval of Tariff Changes Related to Wholesale Demand Response Participation.

FERC, 2021. 2021 Assessment of demand response and advanced metering.

FERC, 2020. Docket No. RM18-9-000; Order No. 2222: Participation of Distributed Energy Resource Aggregations in Markets Operated by Regional Transmission Organizations and Independent System Operators.

FERC, 2008. Docket Nos. RM07-19-000 and AD07-7-000; Order No. 719: Wholesale Competition in Regions with Organized Electric Markets.

Gundlach, J., Webb, R., 2018. Distributed energy resource participation in wholesale markets: Lessons from the California ISO. *Energy Law J.* 39, 47–77.
<https://doi.org/https://doi.org/10.7916/D8CR79T5>

Hanser, E., Michigan PSC interview. Interview by Cameron Brooks, Sydney Forrester, Cole Triedman, Daisy Dunlap. 14 September 2022.

IURC, 2022. Implementation re: FERC Order 2222 [WWW Document]. URL <https://www.in.gov/iurc/home/implementation-re-ferc-order-2222/> (accessed 12.21.22).

IURC, 2010. In the matter of the Commission’s investigation into any and all matters related to Commission approval of participation by Indiana end-use customers in demand response programs offered by the Midwest ISO and PJM interconnection respondents: Indiana regul.

McClanahan, J., Albright, S., Haynos, L., Kansas KCC interview. Interview by Cole Triedman. 22 September 2022.

McDowell, C., Errick, J., Gebhardt, S., Pennsylvania PUC. Interview by Cameron Brooks, Cole Triedman, Daisy Dunlap. 16 September 2022.

MD PSC, 2013. Application for License to Operate as a Curtailment Service Provider in the State of Maryland.

MD PSC, 2011. Order No. 84275 Case No. 9241: In the matter of an investigation of the regulation of curtailment service providers.

MI PSC, 2023. Case No. U-20348-0044.

MI PSC, 2022. Case No. U-21099: In the matter, on the Commission’s own motion, to open a docket for the load serving entities in Michigan to file their capacity demonstrations as required by MCL 460.6w.

MI PSC, 2020. Case No. U-20628: In the matter, on the Commission’s own motion, to commence a collaborative to consider issues related to implementation of effective electric demand response tariffs and efficient deployment of load-modifying resources.

MI PSC, 2019. Case No. U-20348: In the matter, on the Commission’s own motion, to address outstanding issues regarding demand response aggregation for alternative electric supplier load.

Migden-Ostrander, J., Shenot, J., Kadoch, C., Dupuy, M., Linvill, C., 2018. Enabling Third-Party Aggregation of Distributed Energy Resources.

MISO, 2022. Midcontinent Independent System Operator, Inc. Order No. 2222 Compliance Filing.

MN PUC, 2022a. Docket No. E999/CI-22-600: Notice of Comment Period In the Matter of a

Commission Investigation into the Potential Role of Third-Party Aggregation of Retail Customers.

MN PUC, 2022b. Docket No. M-19-685 and No. CI-20-800: Order establishing additional comment period.

MN PUC, 2020. Docket No. M-19-505 and No. CI-12-1344: Order adopting open data access standards and establishing further proceedings.

MoPSC, 2022. File Nos. EO-2023-0100 and EO-2023-0101: Order establishing special contemporary resource planning issues.

MoPSC, 2010. File No. EW-2010-0187: Order temporarily prohibiting the operation of aggregators of retail customers.

Mosier, K., Maryland PSC interview. Interview by Cameron Brooks, Cole Triedman, Daisy Dunlap. 05 October 2022.

National Grid, 2022. Proposal Tariff Language to Implement Federal Energy Regulatory Commission (FERC) Order Nos. 2222 and 841.

NCCETC, 2022. 50 States of grid modernization: 2021 Annual Review.

NERC, 2022a. 2022 Long-Term Reliability Assessment.

NERC, 2022b. Distributed Energy Resource Strategy: Ensuring Reliability of the Bulk Power System with Growing Levels of Distributed Energy Resources.

Nixon, W., Arkansas PSC interview. Interview by Cameron Brooks, Cole Triedman, Daisy Dunlap. 27 September 2022

NY DPS, 2022. Docket No. 22-E-0549: In the Matter of the Federal Energy Regulatory Commission (FERC) Order Nos. 2222 and 841, to Modify Rules Related to Distributed Energy Resources.

NY PSC, 2019a. Appendix A: Uniform business practices for distributed energy resource suppliers Case 15-M-0180.

NY PSC, 2019b. Case 15-M-0180 Filing No. 271: Order expanding uniform business practices for distributed energy resource suppliers.

NY PSC, 2019c. Order Establishing Minimum Cybersecurity and Privacy Protections and Making Other Findings.

NY PSC, 2017. Case 15-M-0180 Filing No. 118: In the Matter of Regulation and Oversight of Distributed Energy Resource Providers and Products.

NYISO, 2022. Docket No. ER21-2460-000 and No. ER21-2460-001: Order on Compliance Filing.

NYISO, 2021. FERC Order No. 2222 – NYISO Responses to FERC Data Request: New resource integration.

NYSEG, RG&E, 2022. Tariff Proposals to Preclude Dual Market Participants from Receiving Duplicative Compensation in both Wholesale and Retail Markets Concurrently and Other Conforming Changes in Connection with the New York Independent System Operator’s Implementation of FE.

O&R, 2022. Case No. 22-E-0549: O&R FERC Tariff Filing.

OMS, 2022. Notice of intervention and comments of the Organization of MISO States, Inc.

PA PUC, 2022. Docket No. M-2021-3029018: Investigation into Conservation Service Provider and Other Third Party Access to Electric Distribution Company Customer Data.

PA PUC, 2021. Docket No. A-2019-3009271: Final Order.

PG&E, 2017. Electric Rule No. 24: Direct participation demand response.

Roberts, J., West Virginia PSC. Interview by Cameron Brooks, Cole Triedman, Sam Kozel.
Rosier, M., Minnesota PUC interview. Interview by Cameron Brooks, Cole Triedman, Daisy
Dunlap. 29 August 2022.
Potomac Economics, 2022. 2021 State of the market report for the MISO electricity markets.
Schreim, M., Maryland PSC interview. Interview by Cole Triedman. 29 September 2022.
SPP, 2022. Compliance filing of Southwest Power Pool, Inc.

Appendix A. State profiles

See attached pdf

Appendix B. State DER Aggregation Resources Index

State	Proceeding(s)/ Topic(s)	Filing(s)	Primary Topic(s)	Description	Link
Arkansas	16-028-U	10	General History	Arkansas' investigation into DER issues, which addressed but never enacted policy related to DER aggregation.	- Proceeding: https://e9radar.link/kigp - Order 10 & RAP Report: https://e9radar.link/fxp0
	20-027-U	N/A	General History	Walmart's unresolved petition to aggregate DR.	https://e9radar.link/kigp
	09-090-U	14	Role of Aggregators	Arkansas' original opt-out proceeding, reopened to consider policy considerations related to potentially reversing the opt-out.	https://e9radar.link/2h8s
California	Retail DR rules	N/A	Registration	Utility aggregator registration rules.	- PG&E Rule 24: https://e9radar.link/b30 - SCE Rule 24: https://e9radar.link/m4v - SDG&E Rule 32: https://e9radar.link/hn5
	DRP FAQ page	N/A	Role of Aggregators	Demand Response Provider (DRP) frequently asked questions.	https://e9radar.link/js1
	R.08-12-009	11-07-056	Data	Order establishing customer data protection and privacy rules.	https://e9radar.link/ykj
	Retail Customer Protection Rule	N/A	Data	PG&E Customer Protection Rule 27.	https://e9radar.link/zj19
Indiana	43566	2010 WL 3073664	General History; Role of Aggregators	Order banning third-party aggregator participation in organized wholesale markets.	Indiana DR Order: https://e9radar.link/9oj
	H.B. 1111	N/A	All	Legislation changing state statutes, mandating IURC to investigate DER aggregations.	https://e9radar.link/ge6s
	(IC) 8-1-40.1-4	N/A	All	Code authorizing the IURC to regulate DER aggregation activity.	Code: https://e9radar.link/gmq1
	IURC FERC 2222 implementation page	N/A	All	Home page for the IURC's FERC Order 2222 Implementation Stakeholder Process, with presentations.	Web page: https://e9radar.link/xrvb FERC Presentation: https://e9radar.link/0tys MISO Presentation: https://e9radar.link/v8qi PJM Presentation: https://e9radar.link/lpyz
Kansas	23-EKCE-588-TAR	TR2300305	All	Evergy petition to develop registration requirements, a distribution utility-demand response aggregator agreement	Proceeding: http://e9radar.link/r541 TR2300305: https://e9radar.link/9jj0
Maryland	9421	84275	Registration; Role of Aggregators	Qualified Curtailment Service Providers (CSPs) as electric generators and retail electric providers; established a registration process.	https://e9radar.link/35e609
	CSP Application Form	N/A	Registration	CSP application form.	https://e9radar.link/hne
Michigan	U-18369	U-18369-0015	Role of Aggregators	FERC 719 opt-out decision, relating to AEP petition.	https://e9radar.link/xi8
	U-20438	U-20348-0013	Role of Aggregators	Affirming exclusion of third-party aggregators from DR markets.	https://e9radar.link/7vc

	U-20645	N/A	Role of Aggregators	MI Power Grid investigation of DR and DER issues.	https://e9radar.link/1apl
	U-21099; U-20348; U-21032; U-21225	U-20348-0036	Registration	Soliciting comments to inform licensing process design.	https://e9radar.link/6iq
Minnesota	13-867	N/A	General History	Xcel community solar proceeding.	http://e9insight.com/state-redirect-mn/
	15-825	N/A	General History	Minnesota Power community solar proceeding.	
	21-694	N/A	General History	Xcel Integrated Distribution Plan.	
	21-390	N/A	General History	Minnesota Power Integrated Distribution Plan.	
	21-101	N/A	Role of Aggregators	Xcel Load Flexibility pilots.	
	19-685	Document ID 20228-188096-01	Data	PUC Investigation into Distribution Grid Data Security	https://e9radar.link/71b839
	19-505	Docket ID 202011-168476-01	Data	PUC petition to develop Open Data Access Standards, based on Xcel and Centerpoint's whole building data petition.	https://e9radar.link/c16d32
	20-800	Document ID 202010-167790-03 Document ID 20228-188405-01	Data	PUC Investigation into Grid Data Access	- 202010-167790-03: https://e9radar.link/bbaj 20228-188405-01: https://e9radar.link/58bn
New York	15-M-0180	271, 271 Appendix A	All	DER Regulation and Oversight proceeding, Uniform Best Practices material establishing myriad rules for DER supplier participation	- Proceeding: http://e9radar.link/yn3l - Uniform Business Practices expansion: https://e9radar.link/1984d0 - Uniform Business Practices appendix: https://e9radar.link/1zu - Cybersecurity order: https://e9radar.link/1d9634
	15-E-0751	N/A	General History	Value of DER proceeding	https://e9radar.link/3ec5bf
	14-M-0101	N/A	General History	Reforming the Energy Vision proceeding	http://e9radar.link/e4kn
	N/A	N/A	Registration	DER supplier registration form	https://e9radar.link/hta
	22-E-0549	Filing Nos. 2-7	Registration	New York utilities Order 2222 implementation tariff proposals.	- ConEd: https://e9radar.link/jtd - Central Hudson: https://e9radar.link/1fe - National Grid: https://e9radar.link/69de12 - NYSEG: https://e9radar.link/ebu - Orange & Rockland: https://e9radar.link/3b9f17 - RG&E: https://e9radar.link/dy3
Oklahoma	2021000172	Filing No. 30444860	Role of Aggregators	Public Service Company of Oklahoma petition for a Voluntary Curtailment Service tariff. Proceeding: https://e9radar.link/7zd Proposed tariff: https://e9radar.link/urm6	

Pennsylvania	HB 2200 (Act 129 of 2008)	N/A	Role of Aggregators	State law establishing and defining Conservation Service Providers (CSPs).	https://e9radar.link/8x9
	M-2008-2074154	“Final Order”	Role of Aggregators, Registration	Order implementing Act 129 and establishing qualifications for CSPs, including registration form.	https://e9radar.link/7xb
	List of CSP Orders	N/A	General History	List of orders related to CSP participation.	https://e9radar.link/626
	CSP registration	N/A	Registration	CSP form of registration.	https://e9radar.link/awg
	A-2019-3009271	“Final Order”	Data	Order in Enerwise petition denying CSPs access to customer data.	https://e9radar.link/90ec78
	M-2021-3029018	Document No. 1733535	Data	Investigation into CSP access to customer data, established following Docket No. A-2019-3009271 final order.	Proceeding: https://e9radar.link/35g Initiating letter: https://e9radar.link/050b4b

Appendix C. Interview questions

1. General history:

- Did your state opt-out of DR third-party aggregation (under FERC Order 719)?
- Do aggregators participate in the state currently? If so, how (i.e., directly bidding DR into the wholesale market or working with a utility in retail or wholesale DR programs)?
- What rules are most important for successful third-party aggregation?
 - What did you do in the first year of implementing DR (or DER) aggregation? I.e., what did you prioritize and, with hindsight, what would you have prioritized?
 - Within the following categories, how were these prioritized?
 - Jurisdiction
 - Dispute resolution
 - Registration and licensing
 - Double counting
 - Role of aggregators
 - Data protection
 - Other? (Is anything missing?)
 - What existing processes or rules were necessary to revise/create to allow for aggregators to participate?
- Timeline: What regulatory activities or proceedings were necessary to enable aggregation (i.e., rulemakings, tariff changes, etc.)? Were they staged (and perhaps revised) in subsequent years? If so, how?
- Based on experience in your state, are there insights or recommendations about how Missouri should prioritize or stage rulemaking or other implementation efforts?

2. *Jurisdiction (applicable mostly to regulators; less so for utilities and aggregators):*

- Are utilities in your state vertically integrated or under some other regulatory structure?
- What agency/entity has legal authority to regulate DR/DER aggregations and/or aggregators?
- If the state utility commission has authority, did that authority emanate from specific legislation or from the agency's general regulatory authority?
- If the utility commission does not have explicit authority, did the commission seek explicit authority from the state legislature, or does it plan to do so?
- For aggregators and utilities: Are you aware of situations where jurisdiction has been in dispute? If so, have you or others contested the authority/jurisdiction of a utility commission or other regulatory body?
- Aggregators: How are you able to operate in states that have opted out of third-party aggregation under FERC Order 719? Is participation limited to certain products or applications?

3. *Dispute resolution:*

- In your territory, are there processes or rules related to resolution of disputes involving aggregators? If so, what are they? If not, how are these disputes resolved?
- What types of disputes come up frequently? Are these similar or different than those that you anticipated? Could these have been avoided via changes in planning stages that Missouri should consider?

4. *Registration/Licensing:*

- Is registration or licensing of aggregators required? Is there a template/list of requirements/process that you can share?
- How was this authority to require licensure granted? By specific legislation?
- Which authority manages registration?
- Are there fees charged? How much?

5. *Double Counting:*

- What is defined as “double counting”?
- What safeguards or procedures, if any, are in place to mitigate the occurrence of double counting? What has been successful? What has not?
- What entities are responsible for detecting or resolving instances of double counting in cases of non-compliance?
- Are there limitations imposed on aggregators operating dually across both retail and wholesale markets?
 - If yes, what are the limitations? Are they based on state statutes, state agency regulations, or PSC orders?
 - Have there ever been resulting litigation/challenges? If so, what has been the outcome?
- What telemetry and metering requirements are necessary to prevent or identify double counting? Does this vary based on situation (e.g., heterogeneous vs. homogeneous aggregations; geographic spread; dual participation; DR vs. injecting DERs; etc.) (limited question - *to utilities*)

6. *Role/Limitation of Aggregators:*

- Are there limitations on aggregators based on customer class, technology type, geographic spread, etc.? If so, is there a resource that outlines these?
- Who is responsible for ensuring compliance with established roles and limitations on aggregators? How is this done?

7. *Data protection:*

- Is there a template of required data or an established process that can be shared with Missouri?
- Is there a data governance framework or other regulations in place?
- How does operational data flow from the DER device to aggregator to distribution utility to the RTO and with what frequency? In the other direction, how do RTO market or dispatch signals flow down and with what frequency?
- How do other data such as registration, commitments, compensation, etc. get shared between aggregators, utilities, and/or RTOs? How and with what frequency?
- Who has access to the data that is exchanged between the aggregator, the utility and the RTO?
- What are the limitations on how data is shared or used?
- How do customers provide consent for data to be shared? Are there any other rules or practices regarding transparency or customer privacy in place?

- What rules or practices are in place regarding cybersecurity?

8. *Implementation challenges/Wrap up:*

- Can you summarize three takeaways for Missouri based on your experience?
- Is there anything important in your experience that we haven't asked or issues that we missed?
- Are you available to discuss further with MoPSC Staff? Can we add you to the network of peer resources available to the Staff?

Appendix D. Contact List

See attached pdf