BEFORE THE PUBLIC SERVICE COMMISSION OF THE STATE OF MISSOURI

In the Matter of the Establishment of a Working Case Regarding FERC Order 2222 Regarding Participation of Distributed Energy Resource Aggregators in Markets Operated by Regional Transmission Organizations and Independent Systems Operators	))))))	**File No. EW-2021-0267**

NOTICE OF WORKSHOP PRESENTATIONS

Issue Date: July 12, 2023

A workshop was held July 10, 2023, at the Commission's offices in Jefferson City, Missouri. Attached are copies of the presentations from the workshop. Additionally, a recording of the workshop may be viewed under the "Archived Videos" link on the Commission's website at psc.mo.gov.

BY THE COMMISSION

Nancy Dippell

Nancy Dippell
Secretary

Nancy Dippell, Chief Regulatory
Law Judge, by delegation of authority
pursuant to Section 386.240, RSMo 2016.

Dated at Jefferson City, Missouri,
on this 12th day of July, 2023.

Demand Response in Missouri

JOHN BORGMEYER

MISSOURI PUBLIC SERVICE COMMISSION

EW-2021-0267 WORKSHOP JULY 10, 2023

Demand Response (DR)

- Reduction in the consumption of electric energy by customers from their expected consumption in response to an increase in the price of electric energy or to incentive payments designed to induce lower consumption of electric energy.

  - FERC Rule 18 CFR 35.28(4).

FERC Order 719 (2008)

- Requires RTOs and ISOs, in certain circumstances, to permit an aggregator of retail customers (ARC) to bid demand response on behalf of retail customers directly into the organized energy market.

FERC Order 719: State Opt-Out

RTOs and ISOs may not accept bids from ARCs that aggregate DR of certain utility customers:

(1) Utility distributed **more than 4 million MWh** in the previous fiscal year: **If RERRA opts out**;

(2) Utility distributed **less than 4 million MWh** or less in the previous fiscal year: **Unless RERRA opts in**.

Demand response in Missouri

- **State policy:** Encourage electrical corporations to develop and administer energy efficiency initiatives that reduce the annual growth in energy consumption and the need to build additional electric generation capacity.

  Section 393.1040, RSMo (2008).

Missouri Energy Efficiency Investment Act (2009)

Demand Response: Measures that decrease peak demand or shift demand to off-peak periods.

It shall be the policy of the state to value demand-side investments equal to traditional investments in supply and delivery infrastructure and allow recovery of all reasonable and prudent costs of delivering cost-effective demand-side programs.

Missouri PSC Docket No. EW-2010-0187

- **January 2010:** PSC Order to investigate the coordination of state and federal regulatory policies to facilitate the deployment of all cost-effective demand-side savings to electric customers of all classes, consistent with the public interest.

- **March 2010:** PSC Order temporarily prohibiting the demand response load reductions of customers of the four Missouri electric utilities regulated by the Commission from being transferred to the MISO or SPP markets directly by retail customers or third-party ARCs.

FERC Orders: no state opt out for other distribution system resources

- **Energy Efficiency:** *Advanced Energy Economy* (2017)
- **Energy Storage:** Order No. 841 (2018)
- **Distributed Energy:** Order No. 2222 (2020)

RM21-14: Revise demand response state opt out?

- **Whether RTO/ISO markets would significantly benefit**
- **Legal, policy, and technological developments**
- **Improvements in ARC technology**
- **Emerging consumer technology**
- **Voltus Complaint, Docket No. EL21-12 (filed Oct. 20, 2020)**

MOPSC Docket No. EW-2021-0267

- Respond to Order No. 2222, and to review current PSC practices

- **August 2021:** Order offering opportunity to comment on modifying opt out for Commercial and Industrial (C&I) customers.
- **April 2023:** Lawrence Berkeley National Laboratory (LBNL) Report: *Regulation of Third-Party Aggregation in the MISO and SPP Footprints* (LBNL Report).
- **May 2023:** Opportunity for additional stakeholder comment

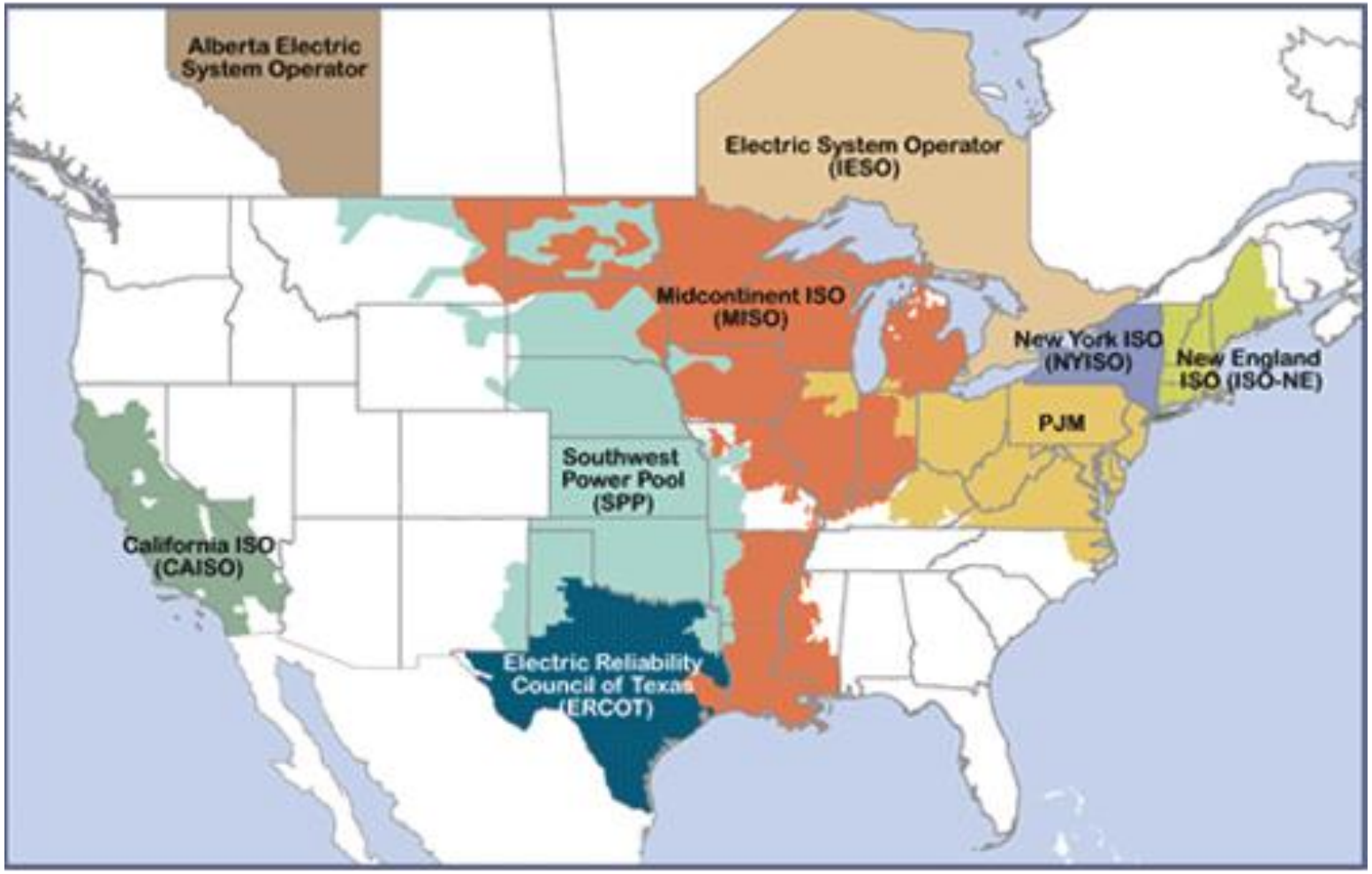
Regulations of Third-Party Aggregation in the MISO and SPP Footprints

MoPSC Demand Response Informational Workshop

Sydney Forrester (LBNL) & Cole Triedman (E9)

10 July 2023

Order 719 Opt Out



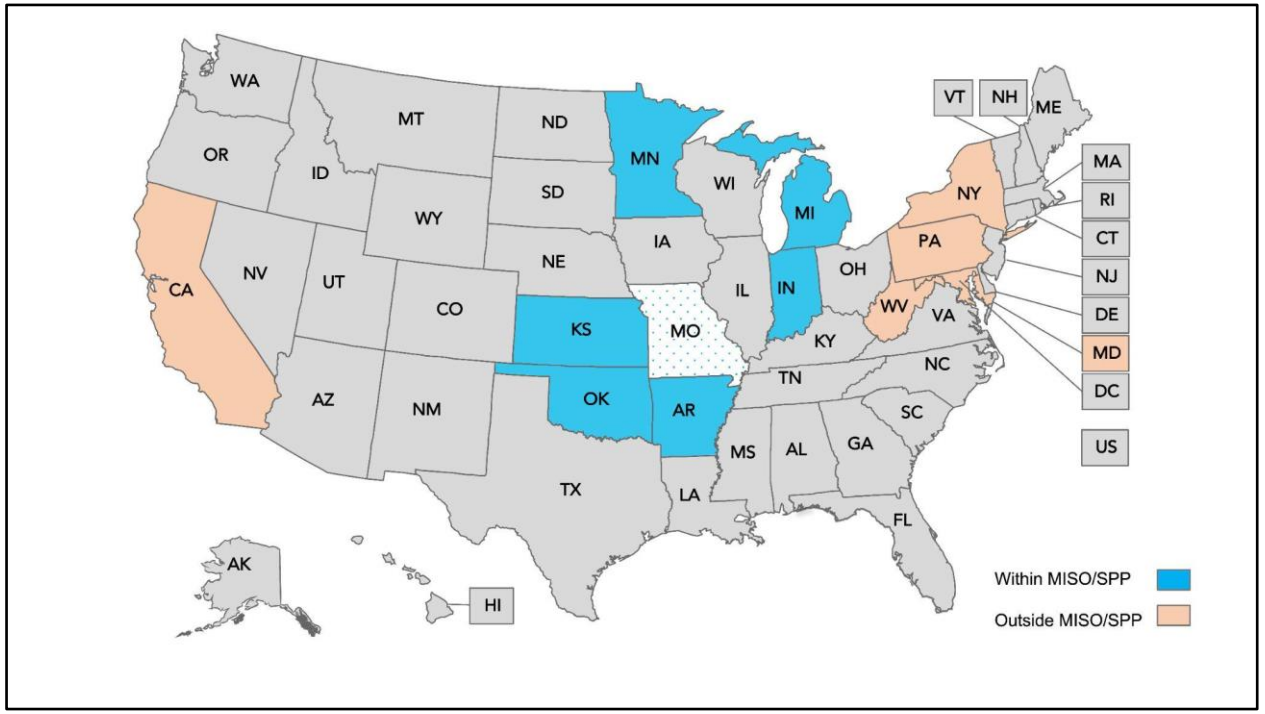
Source: FERC

- FERC Order 719 was issued in 2008
  - Reduced barriers of participation for DR in wholesale markets
  - Allowed states to opt out
- Many states in the MISO and SPP region opted out
  - States are primarily vertically integrated
  - Of 19 total states, 16 opted out

Main questions from MoPSC

1. *General history:* 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:* What is the state PUC's legal jurisdiction, if any, regarding DR/DER aggregators?
3. *Dispute resolution*: What are the processes or rules, if any, related to resolving disputes involving aggregators?
4. *Registration and licensing:* Which authority manages registration/licensing of aggregators and what are the related processes, rules, requirements, or fees?
5. *Double counting:* How is "double counting" defined and prevented? Which entities are responsible for detecting and resolving instances of non-compliance?
6. *Role of and limitations on aggregators:* Are there limitations on aggregators based on customer class, technology type, geographic spread, etc.?
7. *Data protection:* 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:* What are the overall main challenges and considerations?

Methods



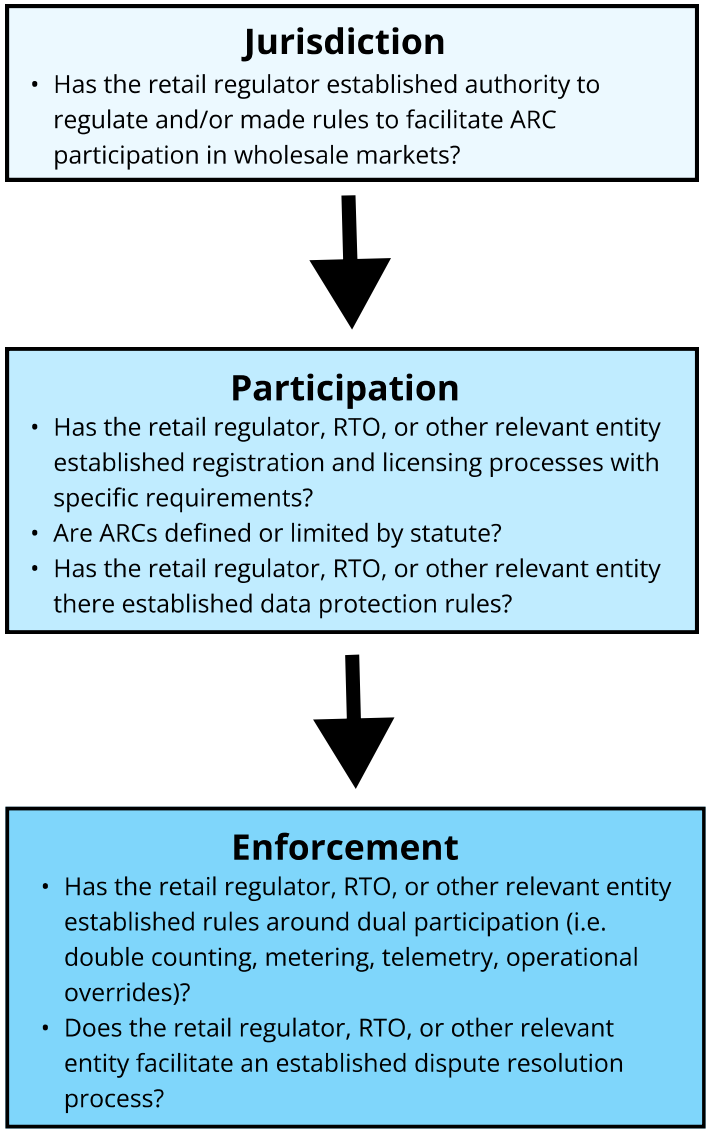
- Document review
- Interviews: 18 total
  - 9 interviews with 18 retail regulatory staff
  - 1 interview with state consumer advocate
  - 8 interviews with practitioners
  - (7 states did not respond)

General Findings

1. The vast majority of MISO and SPP states opted out of third-party ARCs after FERC Order 719
2. Third-party ARCs in MISO and SPP states currently exist in some forms
3. Restructured states outside of MISO and SPP exhibit heterogeneity in how they approach aggregations, but may still offer helpful considerations for Missouri
4. States view some policy topics as higher priority than others
5. Many states have similar questions as Missouri, regardless of market footprint and structure

Specific Policy Findings

- State regulators with aggregators of retail customers (ARCs) provided examples around:
  - Jurisdiction
  - Participation
  - Enforcement
- For each, we have grouped state examples in Tiers I - III
  - Tiers indicate the potential level of involvement or change necessary by state regulators and/or legislators to implement
    - Tradeoffs from Tier I (simple/quicker implementation) vs. Tier III (comprehensive, lengthy due to additional stakeholder engagement, legislative/regulatory actions)
  - Tiers can be discrete, but also continuous
    - Phased approach can offer longer onramp
    - E.g., Michigan (simpler opt-out reversal for large customers, but more comprehensive approach for smaller residential customers)



The report lays out Tiers I – III for various processes…

	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.

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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.
	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.

… with examples from states

Tier & Description	Example	Source
Tier I: State regulator defaults to RTO authority over ARCs and completely delegates relevant processes.	"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."	Michigan PSC 2022 order permitting demand response aggregation among resources exceeding 1 MW. (MI PSC, 2022)
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 over regulated retail electric utilities and their customers at the distribution level.	"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."	Indiana IURC 2010 order prohibiting direct participation of third-party demand response providers in organized wholesale markets. (IURC, 2010)
	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)

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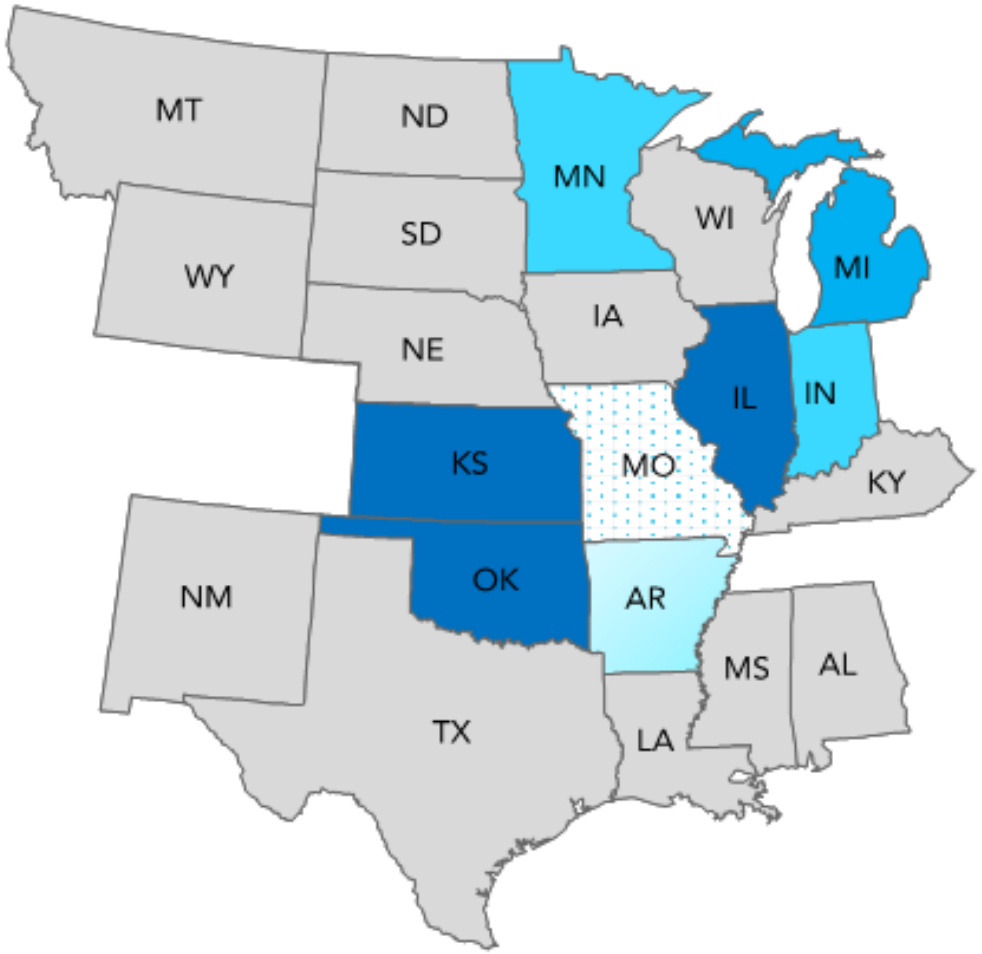
MISO/SPP states considering rolling back restrictions



ARC Participation in wholesale markets, MISO/SPP

- Full ARC participation
- Partial ARC participation
- Ongoing investigation into ARC participation
- Past investigation into ARC participation
- No ARC participation, or limitation to retail contexts

- FERC Order 2222 (generally) does *not* offer an opt out
- FERC considering eliminating Order 719 opt out option
- MISO and SPP have low reserve margins, and DERs/aggregators (ARCs) offer untapped potential

Implications

- As states in MISO and SPP footprints develop best practices, others may follow
- DERs in more regions will be able to participate in wholesale markets
- Both opportunities and challenges will likely arise
  - Increased value for DER owners as well as societal value in the form of grid services
  - More developed rules pertaining to dual participation will allow DER aggregations to provide value to both distribution and bulk system levels
  - Existing processes will have to be assessed and new processes developed
  - Developing dual participation rules will require more frequent coordination across stakeholders, both for registration and operational processes along with new considerations (e.g., defining “double counting”)

Questions?

Contacts

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For more information

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Acknowledgements

This material is based upon work supported by the U.S. Department of Energy's Grid Modernization Laboratory Consortium state technical assistance effort under Contract No. DE-AC02-05CH11231.

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Jurisdiction

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Participation

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DR Aggregation in Michigan

State of aggregation in MI and how we got here

Erik Hanser

Manager-Energy Markets

July 10, 2023

MPSC
MICHIGAN PUBLIC SERVICE COMMISSION

Setting the Stage

Legislative and MPSC docket history

A bit about Michigan's legislative activity

- In the year 2000, per PA 141, Michigan's electric restructuring began
  - Spun off transmission assets from previously vertically integrated utilities.
- In 2008, after several years of legal challenges and developments nationwide (Enron), the legislature passed PA 286 and 287 that capped electric retail choice at 10% for each utility (this remains in place today and is fully subscribed)
- In 2016, PA 341 and 342 passed that, among other things, promoted the use of 'energy waste reduction' and promoted the use of DR.

MPSC DR aggregation Docket activity

- U-16020: After FERC Order 719, MPSC allows Curtailment Service Providers (CSP) to complete their contracts but bans any new contracts. (2011)
  - After FERC Order 745 and court challenges, MPSC retains ban of MPSC jurisdictional utilities from bidding DR resources into RTO markets (2016)
- U-18369: MPSC establishes 'DR framework' for regulated utilities and affirms that alternative electric suppliers (AES-choice providers) may offer DR programs to their customers via aggregators- provided the AES is the LSE that bids the DR into the RTO market (2017)
- 2018 initiates new docket U-20348 and directs Staff to compile DR report

2018-2019 activity

Foundational DR questions and increased interest in DR

U-20348 directives- 2018

- Align with federal requirements and policy
- Ensure proper tracking to avoid double counting
- Identify barriers to 3rd party aggregation to make it scalable
- Provide a template to scale up aggregation
- How to track DR resources for capacity demonstration('cap demos') purposes and avoid double counting
- Reporting requirements for DR aggregation

Series of stakeholder meetings over 2019

- Education from MISO, PJM, and aggregators on DR registration process and wholesale DR product types
- Panel discussion with utilities highlighted experience with aggregated DR and issues with customers Peak Load Contribution (PLC) calculations
- Exploration of other state models (PA, IN)
- Discussion on lifting ban for bundled customers vs. smaller steps such as utility-aggregator partnerships
- How to track aggregated DR and forward ZRCs in capacity demonstrations
- How to true up those ZRC transfers in the prompt year
- Implications on aggregated EERs, storage, and DERs.
- Culminated in Staff report

A brief Interlude: What is this capacity demonstration you keep referencing??

- Established by 2016 legislation
- All LSEs in Michigan (including retail choice providers, munis/coops) must file a capacity demonstration with the MPSC annually
  - To demonstrate they have enough capacity to serve their retail load 4 years out
  - If unable to demonstrate sufficient capacity, capacity charge is applied to compensate the local utility for providing default capacity service (SRM charge)
- Established by U-18197 (2017)
- Landing page, legal brief, State Reliability Mechanism brief

2019 Staff recommendations

- Allow 3rd party aggregators to directly participate in RTO markets for AES load.
- Allow forward ZRC contracts in cap. demos, trued up and audited in the prompt year
- Ensure MISO is providing PLC information to the distribution company for DR dispatched on the MISO peak
- Maintain ban for bundled load
- Do not allow aggregated Energy Efficiency Resources (EERs), storage or DERs in cap demos unless have been qualified by MISO

MPSC accepts most of these recommendations

- Aggregators become active in AES footprints
- Continue tracking aggregator activity via cap demos
- Successfully inserted language into MISO tariff to ensure EDCs get the info they need to calculate PLCs. (Section 69A.1.2.1)
- Ban is maintained for bundled load, while utilities (wearing their EDC hat) gain experience processing MISO registrations
  - But encourage utilities to develop aggregator-utility partnerships and present them in next IRP, rate case, DR reconciliation, etc.
- Sees the writing on the wall with aggregated EERs, aggregated storage, and aggregated DERs, all of which state commissions cannot impose blanket restrictions on.

2019-2020 activity

DR performance issues and the reopening the DR aggregation docket

2019 Polar Vortex and implications for DR

- Governor requested a Statewide Energy Assessment (SEA), which included a section on DR in the Final Report
- After the SEA, the Governor and MPSC kicked off the MI Power Grid initiative in 2019, which focused on maximizing the benefits of the transition to clean, distributed energy resources (multi-year initiative with 17 workgroups and 75 MPSC Orders)
- One of these was a DR workgroup established by U-20628 (2019)
  - How to improve DR performance, communications and response, align with MISO changes, and improve DR participation
  - Final report (2020)

Couple quick takeaways from U-20628

- Primarily focused on utility program performance, but did include a couple recommendations on aggregation.
- Staff saw need for centralized software platform to automate communication, customer interaction, and reporting
  - Recommended partnering with 3rd parties who already have these tools (aggregators)
- Held a half day session to highlight MPSC-aggregator-choice entity-incumbent utility communication needs and limited partnerships with aggregators as service providers. (platform and software support)
- Recommended DR partnerships for real time metering, customer readiness, and a centralized platform

MPSC accepts DR performance recommendations and reopens U-20348

- Reopens DR aggregation docket to consider:
  - Whether Ban should now be lifted
  - Implications of Order 2222 and whether DR ban should be lifted to coincide
  - Safeguards needed if ban is lifted
  - Whether current MPSC processes, including cap demos, provide sufficient visibility, accounting, double counting protections, and integration with utility resource planning
  - Whether MPSC processes should overlap with RTO processes to ensure proper registration, info sharing and transparency
    - Or whether RTO processes alone are sufficient

Staff's Response to MPSC questions

- Alignment with Order 2222 should ease coordination, information/data sharing, double counting, other concerns
- Current safeguards are sufficient, as aggregator is not under MPSC jurisdiction and entire process occurs through RTO procedures. Becomes FERC jurisdictional
  - Double counting verification burden falls on LSE and LBA
  - MPSC has limited visibility through cap demo process and confidential MISO data requests
- Licensing of DR aggregators is worth pursuing, but unclear whether MPSC has statutory authority to do so
  - Note: MPSC *does* license retail choice providers, so Staff proposed licensing of aggregators would look similar

Staff's Pros/Cons on lifting the ban

Pros

- Able to reach different customers types and more capacity
- Proven success outside of MI
- Competition may increase utility efforts
- MISO process already in place
- Alignment with Order 2222

Cons

- Decision is irrevocable
- MPSC loses oversight and visibility into 3rd party aggregated DR
  - Licensing aggregators is a way around this, but unclear if have authority.
- 3rd party data access and information exchange barriers exist that may necessitate a change in utility processes

Staff alternative method to lifting ban

- Imitate the “Indiana model” by creating feed in tariffs that would allow 3rd party aggregators to operate in each utilities footprint
- Incumbent utility would be the Market Participant and register the 3rd party acquired DR at MISO
- Relative success in Indiana’s PJM footprint using this model
- Would build off of partnership models MPSC previously suggested exploring

Calm Before the Storm

No MPSC action until June 2022

MPSC again asks whether to lift ban, this time focused MI's capacity position

- Zone 7 cleared at Zone in 2020/2021 PRA
- Zones 1-7 cleared at CONE in 2022/2023 PRA

- MPSC asked whether is now the time to lift the ban as the MISO market continues to tighten
  - Among other questions, but those are not relevant to this conversation

Staff's response

- Informational update that since last response in 2020, FERC issued Orders 2222, 2222-A and 2222-B and issued a DR opt-out rulemaking in RM21-14
- While the DR rulemaking is still pending, Order 2222 is on the horizon and DR is a type of DER
  - MPSC could currently restrict DR participation in a DER aggregation, but would effect economics
- Pointed back to pros/cons in previous filing

Staff's response cont'd: outstanding issues

1) Enhance 2-way communication flow between utilities and aggregators (automation needed)
2) Secure and timely 3rd party data access is needed to prevent registration errors
3) MPSC would have limited visibility and jurisdiction over 3rd party DR
4) Recommend pursuing licensing requirements to provide customer protection and contact point with aggregator
5) All of these issues need to be addressed prior to Order 2222 regardless of the status of the DR ban

MPSC Order and clarification (2023)

- Lifted the ban for C&I bundled customers with an annual peak load of 1MW or greater
  - With an exception for customers that can demonstrate a corporate relationship and aggregate up to the 1MW threshold (aggregator bears this burden of proof)
- Will outline proposed aggregator licensing process in 2023
- Acknowledges data privacy concerns, but encourages utilities to share data and information to expedite consumer access to the DR market.
- Customers already participating in a utility DR program are ineligible for aggregator DR registration during that Season

MPSC Reasoning

- Framed as a “temporary size minimum” that is similarly situated to retail choice customers that already participate in DR aggregation
  - Will allow parties to gain experience with bundled load aggregation while introducing the least amount of issues
- LSEs can account for aggregated DR in their cap demo filings
  - Forward ZRCs can be sold bilaterally to Michigan LSEs
- MISO and PJM have detailed registration requirements, processes, and protections in their tariffs and manuals
  - These sufficiently address double counting and double compensation
  - Note LBA and RERRA both play a role in verifying registrations

MPSC reasoning cont'd

- AES licensing authority does not extend to 3rd party aggregators, but MPSC intends to outline a proposed licensing process in 2023 before seeking such authority
- Note information sharing gaps between the utility and DR aggregators
  - Encourage utilities to work in good faith to provide aggregators with access to required data (via GBC or similar functionality)
  - Existing process provides sufficient assurance that data can be shared
    - 3rd party receives signature from customer and a Letter of Authorization

MPSC reasoning cont'd

- MPSC counters numerous utility arguments based on previous findings (pg. 14-19)
- Agrees with staff that these issues need to be solved before Order 2222 implementation and may schedule future technical conferences
- Intends to develop customer protections for resources smaller than 1MW and may revisit the ban in the future

Questions?

Erik Hanser

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Appendix

Alternative Electric Supplier (AES/choice provider) MPSC Licensing Requirements

AES Licensing Requirements

- Per Michigan AES License Application:
  - Certificate for Authority to Transact Business in Michigan (if Foreign Corp, LLC, LPC);
  - Audited financial statements of the applicant for its two most recent fiscal years or other documentation, by affidavit, providing detailed factual data pertaining to applicant's financial standing. Please submit financials under separate cover if considered confidential;
  - Corporate/Company history with biographies of key personnel;
  - Safety record including any citations resulting from violations of any governmental or electric industry rule or regulation covering the sale of electric generation;
  - Outline of staffing and procedures for service quality and overview of risk management strategy or policy and reliability, including any violations or failures to perform on contracts or other obligations to sell or otherwise provide power.

AES Licensing Requirements Cont.

- Provide the means for the required $100,000 bond or letter of credit to ensure adequate service to customers in Michigan. Draft language will be provided prior to licensing;
- Compliance Commitment to the Terms and Conditions of the AES Application
- Separate Legal Affidavit signed by a corporate officer with proper authority, which shall attest to the technical ability, knowledge, skill and competency of company and company employees to safely and reliably generate or otherwise obtain and deliver electricity and provide any other proposed services within this state.
- Michigan Office – Must be secured prior to serving customers, but not required for license to be issued

AES Licensing Process

- Staff does a thorough review of the application
- Face to face meeting held with applicant
  - Due to the ongoing pandemic, these have been held using Microsoft Teams
- Based on the application and meeting, Staff will submit their recommendation to the Commission
- Notify applicant of recommendation
- If it's a favorable recommendation, applicant will need to provide $100,000 Surety Bond or Letter of Credit before approval of any license is granted
- Reasonable average timeframe is 2-3 months from beginning to end
- No application or license renewal fee

ARC and Demand Response Resource Participation in MISO Markets

Missouri Public Service Commission

July 10, 2023

Purpose & Key Takeaways

Purpose:

Discuss Participation of Aggregators of Retail Customers and Demand Response Providers in MISO

Key Takeaways:

- Overview of market participation options, including:
  - Registration
  - Double counting
  - Data governance
  - Dispute resolution

Background

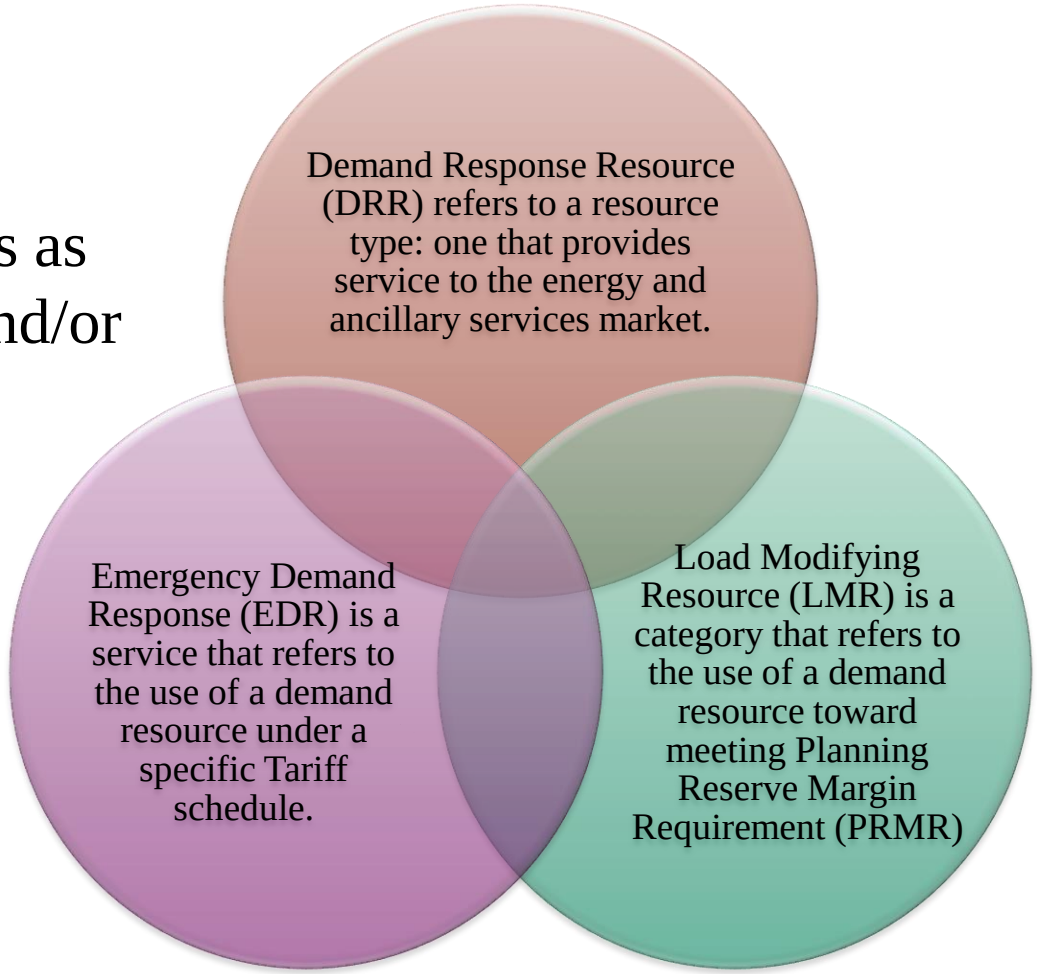
- FERC Order 719, issued on 17 October 2008, required MISO to amend its market rules to allow ARCs (aggregators of retail customers) to offer demand resources into MISO markets as long as certain conditions were met.
- On 19 July 2012 (and subsequent orders on compliance), FERC accepted MISO's proposed market rules for ARC participation.
- Relevant sections of the Tariff pertaining to ARC and demand response participation in various MISO markets include:
  - Module C, Sections 38.6 (ARC requirements); 38.7.2. 39.2.5, 39.2.5A, 40.2.5 & 40.2.6 (DRR requirements)
  - Module E-1 (resource adequacy participation requirements)
  - Schedule 30 (participation requirements under emergency conditions)
  - Attachment TT (measurement & verification for demand resource performance)

Aggregators of Retail Customers (ARCs)

- ARCs are Market Participants that combine the abilities of one or more retail customers to “provide” electricity in the wholesale markets
  - demand response resources “provide” energy by reducing the amount of electricity purchased from the grid
  - behind-the-meter generation supplies energy
- ARCs can combine customers, but only under certain circumstances
  - All customers receive service within a single Local Balancing Authority
  - The relevant electricity retail regulatory authority (RERRA) may allow customer participation (either directly or implicitly)
- An example of an ARC might be a business entity that combines several large retail businesses, each of which is able to turn off lighting in certain areas of their buildings

Resources, Categories, Services

ARCs may participate in MISO markets as DRR, LMR and/or EDR



Resource Participation Summary

Product / Resource	Energy	Regulation Reserve	Other Reserves	Module E-1 (ZRC)	Emergency Energy
DRR- Type I	1		1	1	1
DRR- Type II	1	1	1	1	1
DR - LMR				1	2
BTMG - LMR				1	2
EDR					1

Key	
1	Can Participate
2	Must Participate

ARC Registration Processes

- ARC becomes a Market Participant (MP)
- ARC submits location data to enroll assets
- For LMR's the Module E Capacity Tracking Tool (MECT) tool will be used for registration
- For DRR's, the Demand Response Tool (DRT) will be used for registration (offline for EDR's)
- LSE/LBA review (approve/deny) within 10 business days
- RERRA allows/denies participation upon ARC registration
- *See* Section 9.6 of MISO BPM 001

- Data governance and double counting are addressed through registration processes

- **Additional information can be found at MISO Demand Response BPM 026**

Dispute Resolution Process

- Dispute resolution process limited to market settlement data
- Addressed through established Tariff processes
  - *See* Tariff Section 12, Attachment HH, MISO BPM 005 and 023

- MISO does not resolve disputes between ARC, LSE, LBA and RERRA

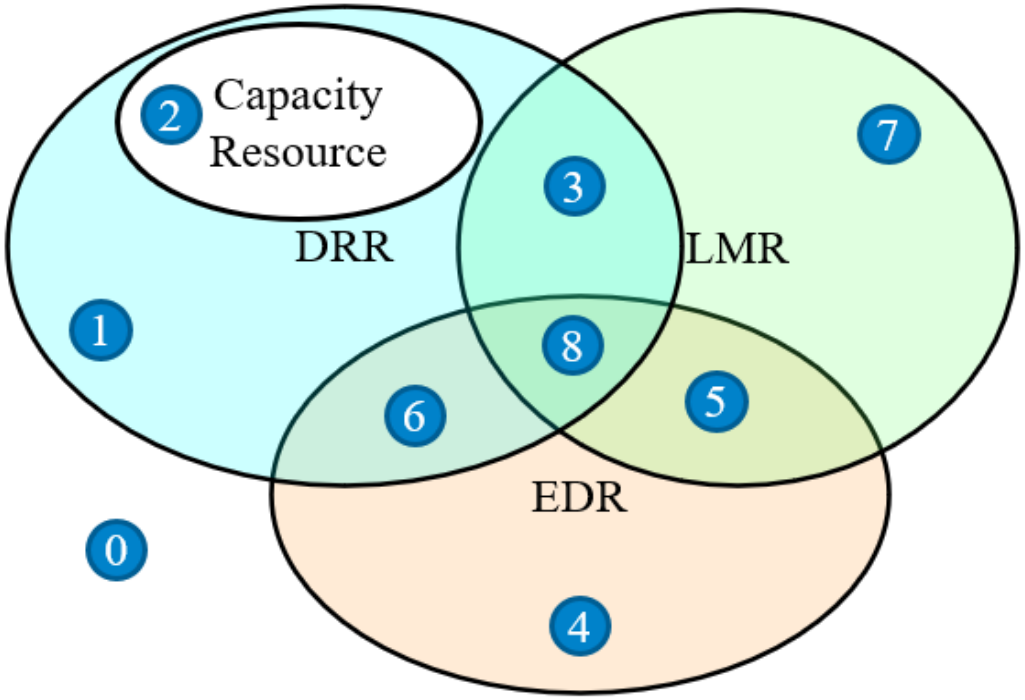
Appendix

Reference Materials

- MISO Tariff: Tariff (misoenergy.org)
- MISO Business Practices Manuals: Business Practices Manuals (misoenergy.org)

Demand Registration Options

Options available for demand response registration include:



#	Comments/Notes
0	Not MISO Registered
1	There is no DRR "must offer" requirement here, since there are no capacity credits.
2	Uncommon approach for DRR. Resource "must offer" in Energy & AS markets.
3	LMR receives capacity credits, and resource can optionally offer into the Energy & AS markets.
4	EDR Only. No capacity credits or "must offer" requirement.
5	LMR that optionally provides an EDR offer for emergency energy.
6	Similar to "1", but can optionally participate in emergencies
7	LMR only. Not involved in Energy and AS markets.
8	Similar to "5", but can optionally participate in Energy & AS markets.

Market Design Elements

	DRR-Type I	DRR-Type II	LMR	EDR
Demand response type	btmg/(interruptible/ curtailable) load	btmg/ dispatchable load	BTMG / DR	BTMG / DR
Size/ impact	≥ 1 MW	≥ 1 MW	≥ 0.1 MW	≥ 0.1 MW
Real time telemetry	No	Yes, for regulation service	No	No
In-network model	Through load	As negative gen	Through load	Through load
In-commercial model	Yes	Yes	Through load	Through load
Treatment in DART market process	On/ off, not continuously dispatchable for energy	Dispatchable	N/A	N/A
Aggregation in DART	Allowed within single LBA	Allowed under single EPNode	N/A	N/A
Capacity payment	eligible	eligible	eligible	ineligible

Tariff Definitions

From Module A

- **Behind the Meter Generation (BTMG):**
  - Generation resources used to serve wholesale or retail load located behind a CP-Node that are not included in the Transmission Provider's Set-point Instructions and in some cases can also be deliverable to Load located within the Transmission Provider Region using either Network Integration, Point-To-Point Transmission Service or transmission service pursuant to a Grandfathered Agreement. These resources have an obligation to be made available during Emergencies.
- **Demand Resource (DR):**
  - **Interruptible Load** or **Direct Control Load Management** and **other resources** that can reduce Demand during Emergencies.
- **Emergency Demand Response (EDR):**
  - The commitment and dispatch of Load reductions, Behind the Meter Generation Resources and other Demand Resources during an Emergency, in accordance with Schedule 30.
- **Load Modifying Resource (LMR):**
  - A **Demand Resource** or **Behind the Meter Generation** Resource.
- **Demand Response Resource (DRR)-Type I:**
  - Resource owned by a single Load Serving Entity, or an ARC within the MISO BAA and that (i) is registered to participate in the Energy and Operating Reserve Markets, (ii) that is capable of supplying a specific quantity of Energy, Contingency Reserve or Capacity … through Behind the Meter Generation and/or controllable Load, (iii) is capable of complying with the Transmission Provider's instructions, and (iv) has the appropriate metering equipment installed.
- **Demand Response Resource (DRR)-Type II:**
  - Resource owned by a single Load Serving Entity, or an ARC within the MISO BAA and that (i) is registered to participate in the Energy and Operating Reserve Markets, (ii) is capable of supplying a range of Energy, Operating Reserve, Up Ramp Capability and/or Down Ramp Capability...through Behind-The-Meter generation and/or controllable Load, (iii) is capable of complying with Transmission Provider's Setpoint Instructions and (iv) has the appropriate metering equipment installed.

Acronyms

ARC	Aggregator of Retail Customers
BPM	Business Practices Manual
BTMG	Behind the Meter Generation
CPNode	Commercial Pricing Node
DADS	Demand Response Availability Data System
DR	Demand Resource
DRR	Demand Response Resource
EDR	Emergency Demand Response
EDRI	Emergency Demand Response Initiative
EEA(1, 2, 3)	NERC Energy Emergency Alert levels
EOP	Emergency Operations Procedures
FERC	Federal Energy Regulatory Commission

Acronyms (Cont.)

GADS	Generating Availability Data System
IMM	Independent Market Monitor
LBA	Local Balancing Authority
LMP	Locational Marginal Price
LMR	Load Modifying Resource
LSE	Load Serving Entity
MECT	Module E Capacity Tracking tool
Module E-1	MISO EMT module regarding Resource Adequacy
MP	Market Participant
MTEP	MISO Transmission Expansion Planning
NAESB	North American Energy Standards Board
NERC	North American Electric Reliability Corporation

Acronyms (Cont.)

PRA	Planning Resource Auction
Power GADS	MISO GADS database
PRMR	Planning Reserve Margin Requirement
RA	Resource Adequacy
RAR	Resource Adequacy Requirement
RASC	Resource Adequacy Subcommittee
RSG	Revenue Sufficiency Guarantee
ZRC	Zonal Resource Credit

SPP Southwest Power Pool

DEMAND RESPONSE IN THE SPP MARKET

MISSOURI PUBLIC SERVICE COMMISSION

JULY 10, 2023

Working together to responsibly and economically keep the lights on today and in the future.

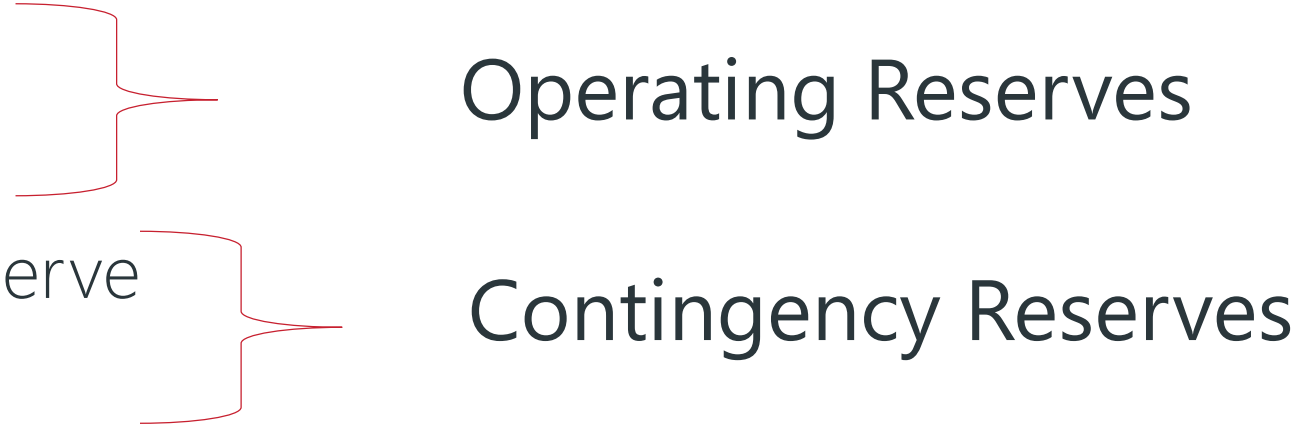
SouthwestPowerPool SPPorg southwest-power-pool

DEMAND RESPONSE AT SPP IS FOR A REDUCTION OF RETAIL LOAD REGISTERED AS A WHOLESALE RESOURCE

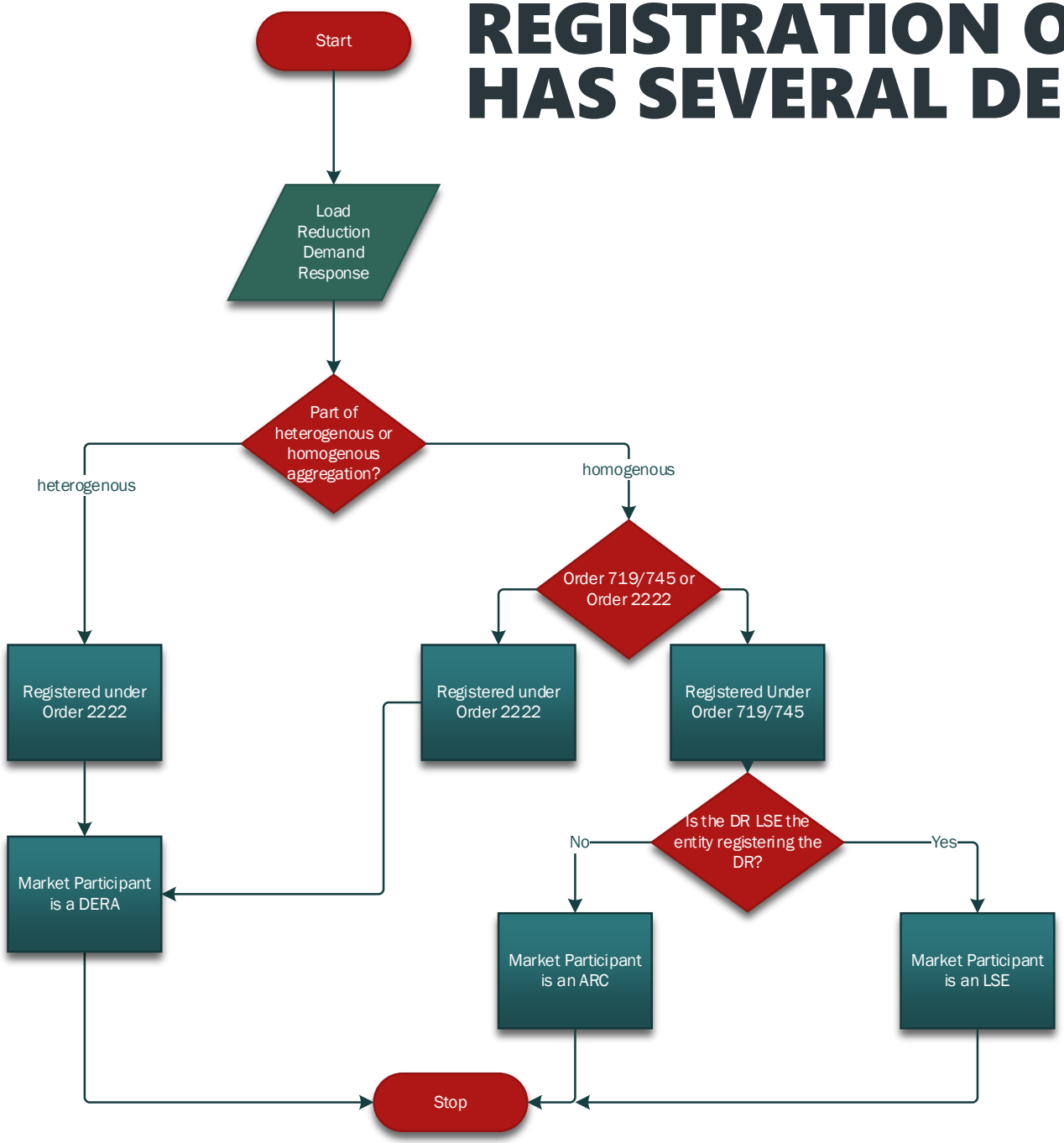
- Types
  - Actual reduction of the metered load
  - Reduction of load as a result of co-located unregistered Behind-the-Meter generation
- Registration types
  - Dispatchable Demand Response – 5 minute dispatch block
  - Block Demand Response – 1 hour dispatch block

REGISTERED DEMAND RESPONSE MAY PARTICIPATE IN ALL MARKET PRODUCTS

- Day Ahead and Real-time Balancing Markets
- Energy and Operating Reserves
  - Energy
  - Regulation Down
  - Regulation Up
  - Supplemental Reserve
  - Spinning Reserve
  - Ramp Capability Up
  - Ramp Capability Down



REGISTRATION OF DEMAND RESPONSE HAS SEVERAL DECISION POINTS



RESPONSIBILITIES

1) Demand Response Load submitted in all cases

2) DERA – Attestation – 1) RERRA opted in for LSE < 4 million MWh
2) RERRA has not opted out for LSE > 4 million MWh
3) DER is not double counted
- DU has no reliablity/safety concerns
- DERA responsible for implementing and communication to RTO a DU curtailment instruction
- Communication of real-time and settlement meter data to the DU and LSE, respectively

3) ARC – Attestation – 1) RERRA opted in for LSE < 4 million MWh
2) RERRA has not opted out for LSE > 4 million MWh
- Communication of real-time and settlement meter data to the DU and LSE, respectively (planned)

4) LSE – No ARC or DERA Attestation

VALIDATION OF DEMAND RESPONSE FOR WHOLESALE REGISTRATION INVOLVES REGULATORS AND RETAIL PROVIDER

- Relevant Electric Retail Regulatory Authority (RERRA) and Retail Provider (aka Load Serving Entity or LSE) notified in writing by SPP upon receipt of a registration package from an Aggregator of Retail Customers (ARC)
- Registration proceeds at normal timeline unless RERRA or LSE indicates the Demand Response is ineligible for wholesale registration by ARC
- Registration dispute among the RERRA/LSE/ARC is settled among the parties
- Registration canceled if dispute is unresolved after 90 days

METER VALIDATION AND DOUBLE COUNTING UNDER ORDER 719/745

- Meter validation is primarily through monitoring the calibration calculation and Energy Management System data
  - Demand Response of less than 1 MW each is within rounding errors in a 52,000 MW system
- Order 745 compliance order to SPP required the LSE to be settled on load reduction and the funding gap for also paying the Demand Response to be uplifted

CONFIDENTIALITY OF DATA

- Data submitted to SPP is only available to the relevant Market Participant and relevant regulatory entities
- Aggregated data for settlement purposes may be available to Market Participants
- Discrete offer data is posted with anonymous identifiers

DISPUTE RESOLUTION

- SPP is engaged with disputes related to data reporting and SPP settlements (e.g. meter data, wholesale pricing)
- Disputes between retail customers, LSE, ARCs, RERRA are the responsibility of the disputing parties

ORDER 2222 WORK IDENTIFIED IMPROVEMENTS TO THE EXISTING ORDER 719/745 TARIFF LANGUAGE

- Meter Validation
  - ARC sending LSE relevant information
    - Actual output
  - Penalties for small DR non-compliance with instructions
- Attestations
  - Clarifying language regarding LSE registering Demand Response
- Registration
  - Explicit language regarding double compensation

RICHARD DILLON

Director, Market Policy

rdillon@spp.org

Demand Response Informational workshop

The experience of PJM Vertically Integrated States like West Virginia

Greg Poulos

July 10, 2023

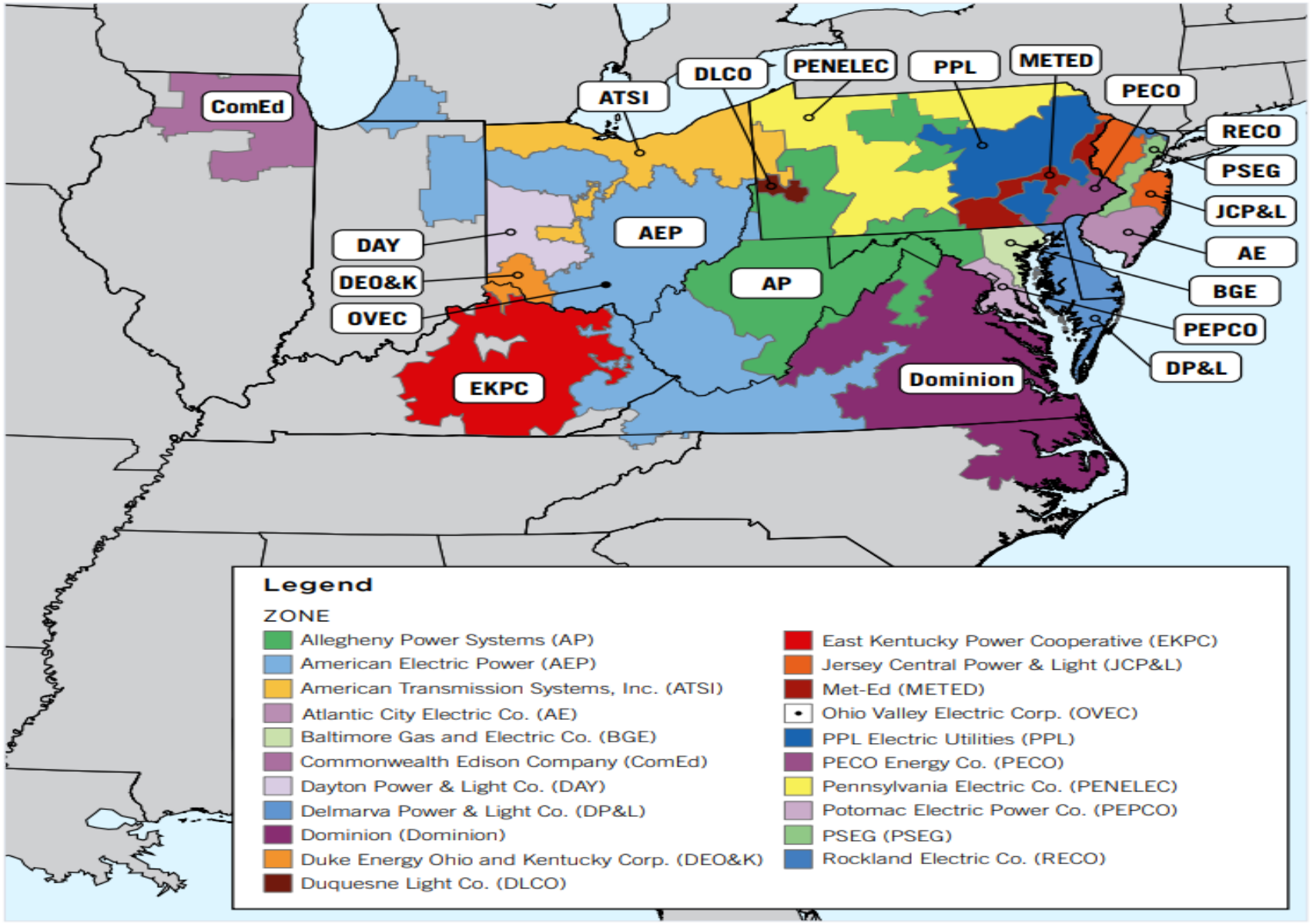
What is CAPS?

Who We Are

Established in 2013, Consumer Advocates of the PJM States, Inc., (CAPS) is a nonprofit organization whose members represent over 61-million consumers in the 13 PJM states and the District of Columbia. Regulatory rules vary greatly across our jurisdictions, but in each the electricity costs paid by consumers is at least partly determined by the tariff and rules under which PJM operates. PJM and its stakeholders set those rules and CAPS' engagement is necessary to ensure that consumers' voices are heard.

Mission

Our mission is to actively engage in the PJM stakeholder process and at the Federal Energy Regulatory Commission to ensure that the prices we pay for reliable, wholesale electric service are reasonable.



Points of Perspective:

*The PJM territory is made of all or parts of thirteen states plus the District of Columbia.

*Seven of the fourteen jurisdictions are vertically integrated states (IN, KY, NC, MI, TN VA, and WV).

Overall, the populations of the seven vertically integrated states are much smaller than the deregulated states.

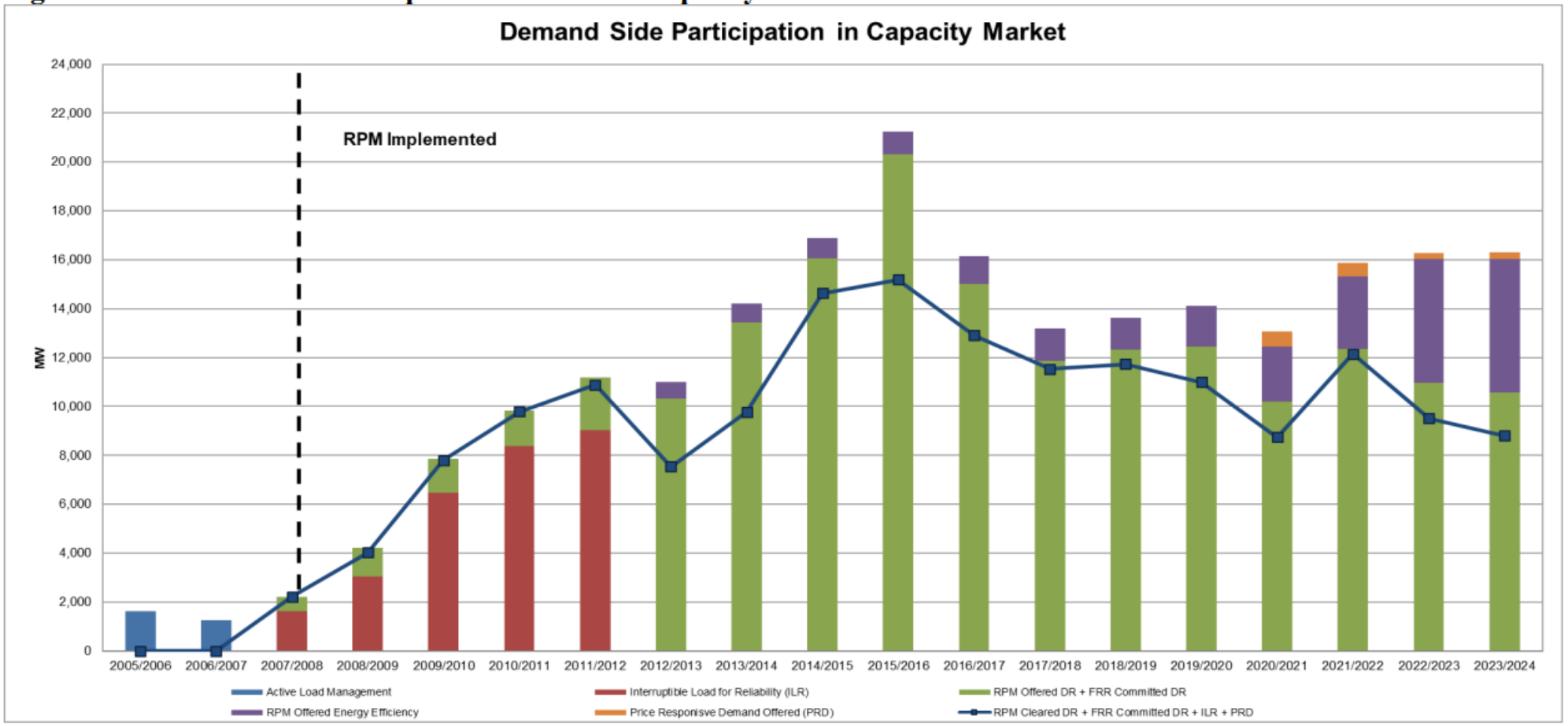
Five of the regulated states have limited populations in PJM. (Three of the five have extremely small populations in PJM (MI, TN, and NC).

- ~www.pjm.com/library “transmission zones”

Demand Response Participation at the Regional Level

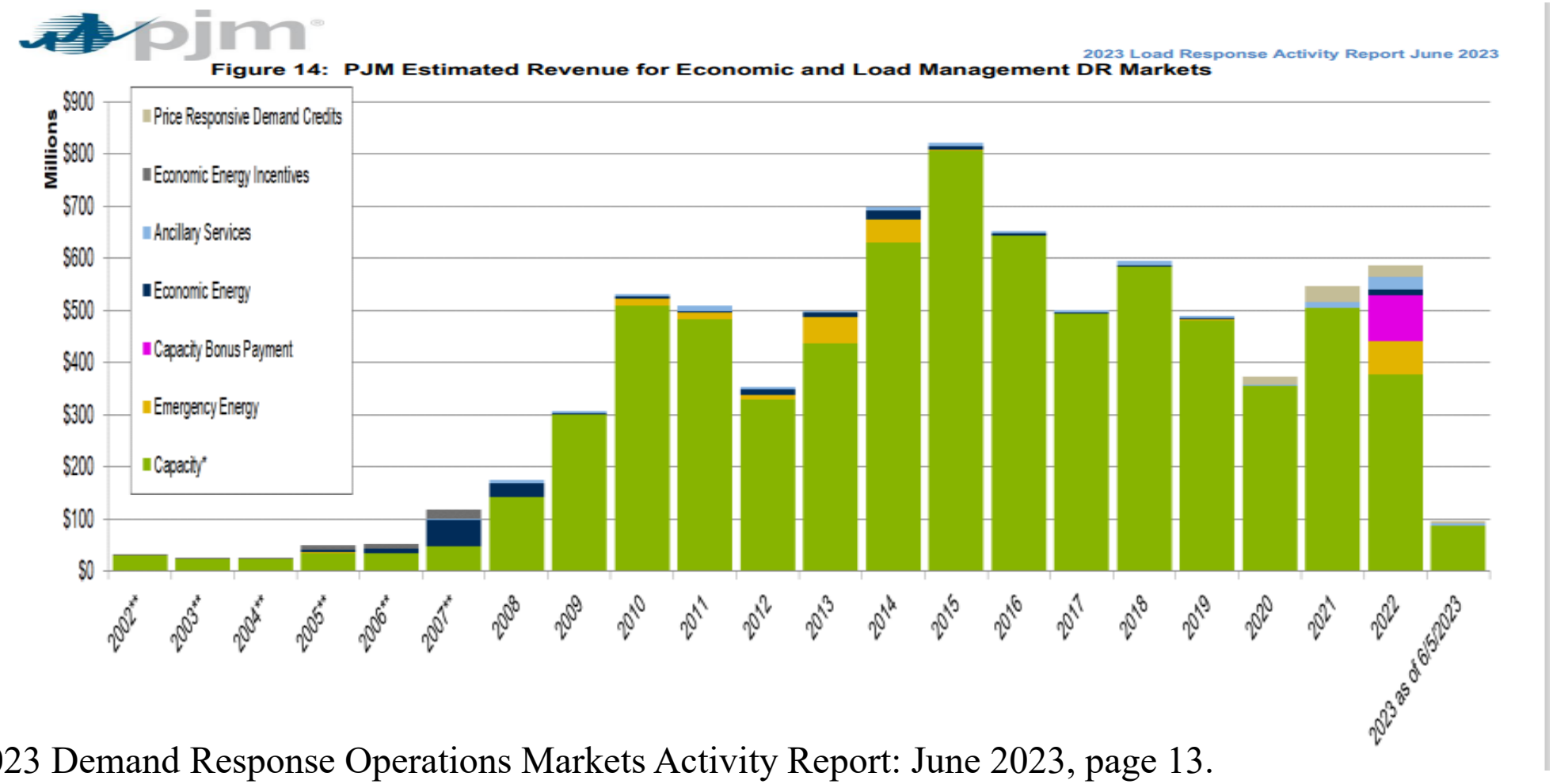
2023/2024 RPM Base Residual Auction Results

Figure 1 – Demand Side Participation in the PJM Capacity Market



*PJM 2023/2024 RPM Base Residual Auction Results Report, page 13.

C&I Customers Received Millions of Dollars from Participating in PJM DR Programs



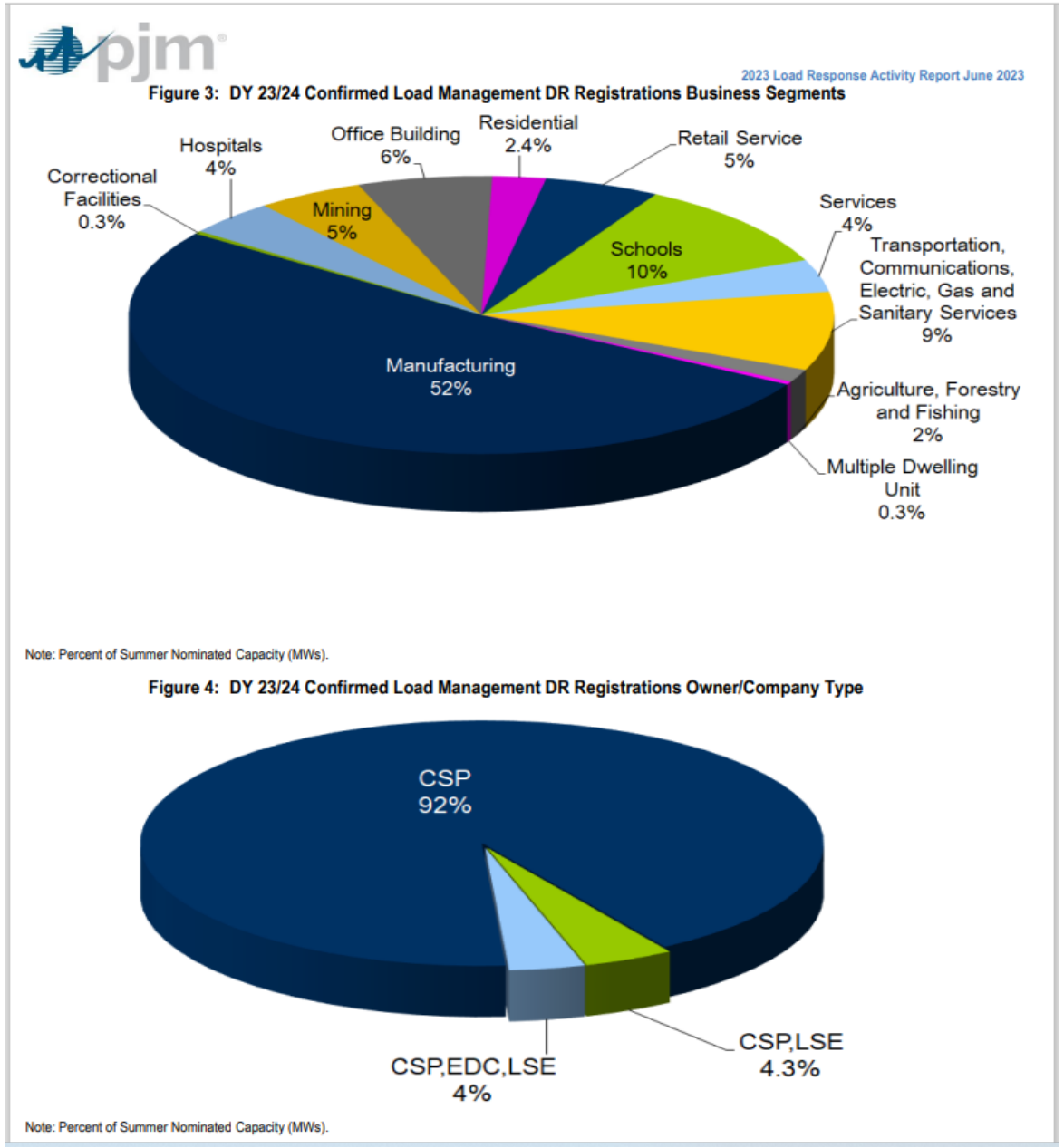
*PJM 2023 Demand Response Operations Markets Activity Report: June 2023, page 13.

Demand Resources Save Customers Billions of Dollars Every Year in the PJM Region

Based on actual auction clearing prices and quantities and uplift MW, total RPM market revenues for the 2023/2024 RPM Base Residual Auction were $2,196,444,791. If there had been no offers for DR in the 2023/2024 RPM Base Residual Auction and everything else had remained the same, total RPM market revenues for the 2023/2024 RPM Base Residual Auction would have been $4,111,765,958, an increase of $1,915,321,168, or 87.2 percent, compared to the actual results. From another perspective, the inclusion of DR resulted in a 46.6 percent reduction in RPM revenues for the 2023/2024 RPM Base Residual Auction compared to what RPM revenues would have been without any DR.

Analysis of the 2023/2024 RPM Base Residual Auction, Monitoring Analytics (The independent Market Monitor for PJM), October 28, 2022, page 75.

DR in the PJM Region



Participation Numbers for VA and WV Demand Response Resources offered into the PJM BRA Market (2023-2024 Delivery Year)

- 1885 unique load management locations (Capacity Market resources) in Virginia providing 994.7 MWs.
- 582 unique load management locations (Capacity Market resource) participating in West Virginia

2023 Load Response Activity Report June 2023

State	Zone	EDC	Economic		Load Management		Price Responsive Demand		Unique	
			Locations	MW	Locations	MW	Locations	MW	Locations	MW
PA	DUQ	DLCO	10	134.0	524	99.5			529	118.3
PA	METED	MetEd	11	24.3	563	155.9			567	161.2
PA	PECO	PE	34	77.0	1,306	327.1			1,314	360.2
PA	PENELEC	AECI			8	8.6			8	8.6
PA	PENELEC	AMPO			1	0.4			1	0.4
PA	PENELEC	PaElec	8	76.6	632	222.0			636	249.0
PA	PENELEC	WELLSB			1	0.8			1	0.8
PA	PPL	AMPO			14	35.1			14	35.1
PA	PPL	CTZECL			1	0.3			1	0.3
PA	PPL	PPL	25	94.7	1,406	404.7			1,419	430.8
PA	PPL	UGI-UI			12	4.2			12	4.2
TN	AEP	AEPAPT			1	0.2			1	0.2
VA	AEP	AEPAPT	9	45.2	404	255.7			408	261.0
VA	AEP	AMPO	2	20.5	10	13.0			10	13.0
VA	AEP	RADFRD	1	2.9	1	4.9			1	4.9
VA	AEP	SALEM			5	0.3			5	0.3
VA	AEP	VATECH			1	8.6			1	8.6
VA	APS	ODEC	2	0.4	59	31.0			59	31.0
VA	DOM	CVEC			11	1.6			11	1.6
VA	DOM	DOMEDC	64	134.9	1,206	557.3			1,250	662.3
VA	DOM	DOMVME			25	90.8			25	90.8
VA	DOM	NVEC	2	1.3	104	13.4			104	13.4
VA	DOM	ODEC	5	3.4	49	17.1			52	17.4
VA	DPL	ODEC			10	1.0			10	1.0
WV	AEP	AEPAPT	6	169.0	318	314.7			321	483.4
WV	APS	AETSAP	20	73.8	264	267.5			264	267.5
Total			**521**	**2,285**	**17,484**	**7,796**	**1,410**	**447**	**19,102**	**9,247**

*PJM 2023 Demand Response Operations Markets Activity Report: June 2023, page 4.

West Virginia (and Other Regulated States)

- Under FERC Order 719(a) a PSC – as the RERRA - can always institute qualifications to participation and have the utilities enforce the policies as part of the (PJM) wholesale market registration process.
- Any rules put in place at the state level must be done by Commission Order.
- Per PJM - Demand response throughout the region has been running pretty smooth and there have been very little issues.

*RERRA stands for Relevant Electric Retail Regulatory Authority.

One Last Point….
DR Opportunities Help Develop a Smarter Consumer

AEP Ohio is asking customers to conserve electricity until 10 a.m. Sunday, as extreme cold continues to put pressure on the power system.

PJM Interconnect, which oversees the flow of electricity in all or parts of 13 states and the District of Columbia, including all of Ohio, is joining AEP in asking people do the following to reduce electricity use in order to ensure adequate power supply:

- Setting your thermostat lower than usual, if health allows
- Postponing use of major electric appliances such as stoves, dishwashers and clothes dryers
- Turning off nonessential electric lights, equipment and appliances

Live winter storm updates: Car crashes, flight delays, power outages, as dangerous, freezing weather settles in for Christmas

PJM will continue monitoring the power supply and do everything possible to keep the power on, but if there's a risk of widespread power loss or long-term damage to the power grid, it would direct AEP to implement brief, intermittent emergency power outages, according to AEP Ohio.

AEP encourages customers to prepare for potential emergency outages and to check on friends and neighbors.

nshuda@dispatch.com

@NathanielShuda

Contact information

Greg Poulos,

Executive Director, CAPS

Phone: 614-507-7377

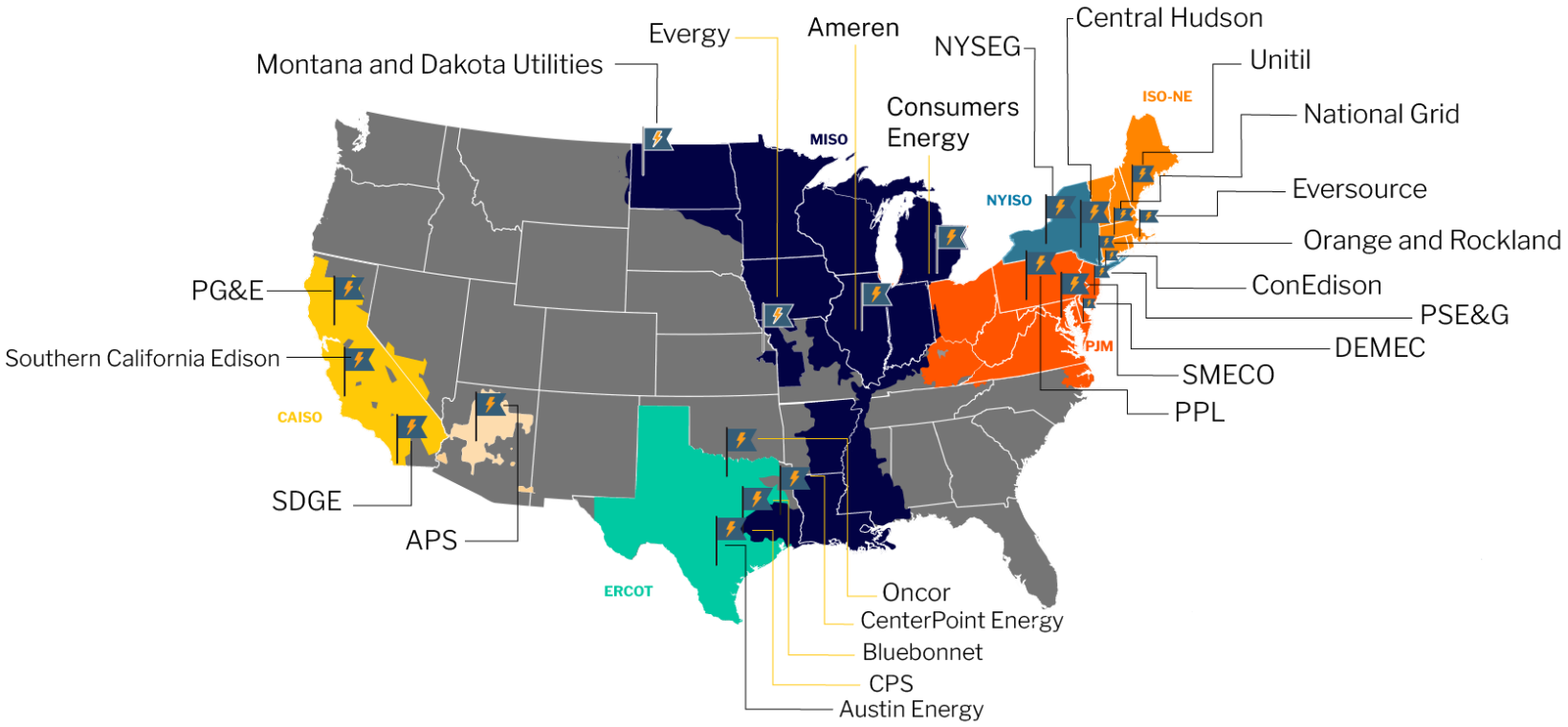
E-mail: poulos@pjm-advocates.org

CPower

Demand Response In Vertically Integrated States

Presentation to Missouri PSC Demand Response Informational Workshop
July 10, 2023

CPower Snapshot



6.3 GW
of DER Capacity

60+
local energy solutions offered

20+
years of experience

17,000
sites across the U.S.

National Leader in
Unlocking the Value of Customer DERs to Provide Grid Flexibility and Reliability Solutions

24x7x365
dispatch

2,400+
loyal customers

$1 Billion
paid out to customers in grid revenue since 2015

286,000 metric tons of CO2 avoided through DR solutions, equivalent to **317 million pounds of coal**

ARC Participation – Discussion Topics

- MISO & SPP Participation
- Information Sharing
- Protection of Customer Data
- Disputes & Dispute Resolution
- Dual participation & Avoiding Double Counting
- Advancement of ARC technology and processes
- Customer Payments

Dual Participation & Avoiding Double Counting

Enable discrete wholesale and retail services to be broken out. Customer capabilities to “stack” services to maximize participation, while preventing double-counting and compensation.

Customer 1

Wholesale

- [x] Ancillary Services
- [x] Energy
- [x] Capacity

Retail

- [ ] Non-Wires Alternatives
- [x] Economic

Customer 2

Wholesale

- [x] Ancillary Services
- [x] Energy
- [ ] Capacity

Retail

- [x] Non-Wires Alternatives
- [ ] Economic

Customer 3

Wholesale

- [ ] Ancillary Services
- [x] Energy
- [x] Capacity

Retail

- [ ] Non-Wires Alternatives
- [x] Economic

Customer 4

Wholesale

- [ ] Ancillary Services
- [ ] Energy
- [x] Capacity

Retail

- [x] Non-Wires Alternatives
- [x] Economic

Developing behind the meter flexibility

- Energy experts work with work with facility managers to identify and harness flexibility that does not interfere with their primary business.
- Regulated utilities have liability and jurisdictional constraints on consulting with customers on behind the meter activities.

Worker Safety and Compliance

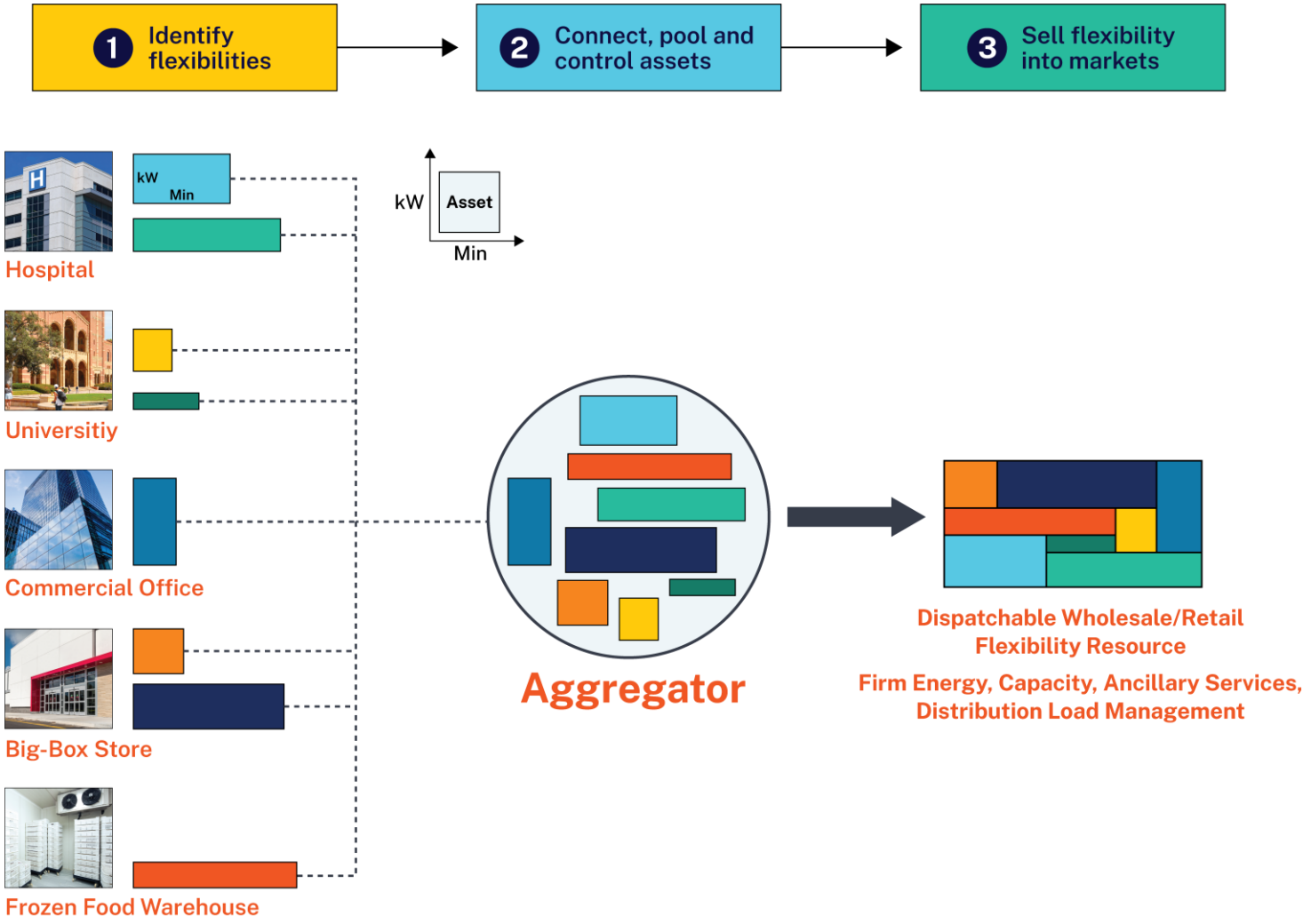
Protecting Equipment

Quality Control

Productivity

Creating Customer Value Through Aggregation

Aggregation combines heterogeneous customer capabilities into a firm resource that can perform reliably as a portfolio when dispatched.



Models for working with ARCs

DR Feed In Tariff

Utility procures DR through a tariff to meet its MISO capacity needs.

DR PPA

Same model as DR FIT, except a PPA contract replaces the tariff and customers may also come from elsewhere in the zone.

Conditional Opt In

Utility does not procure the DR, but Aggregator Coordination Tariff governs requirements and information sharing. DR participation supports reliability.

Aggregator-managed DR Program

Utility procures DR through aggregator that will impact load forecast that determines utility resource adequacy requirements.

Thank you!

Questions?

Peter Dotson-Westphalen

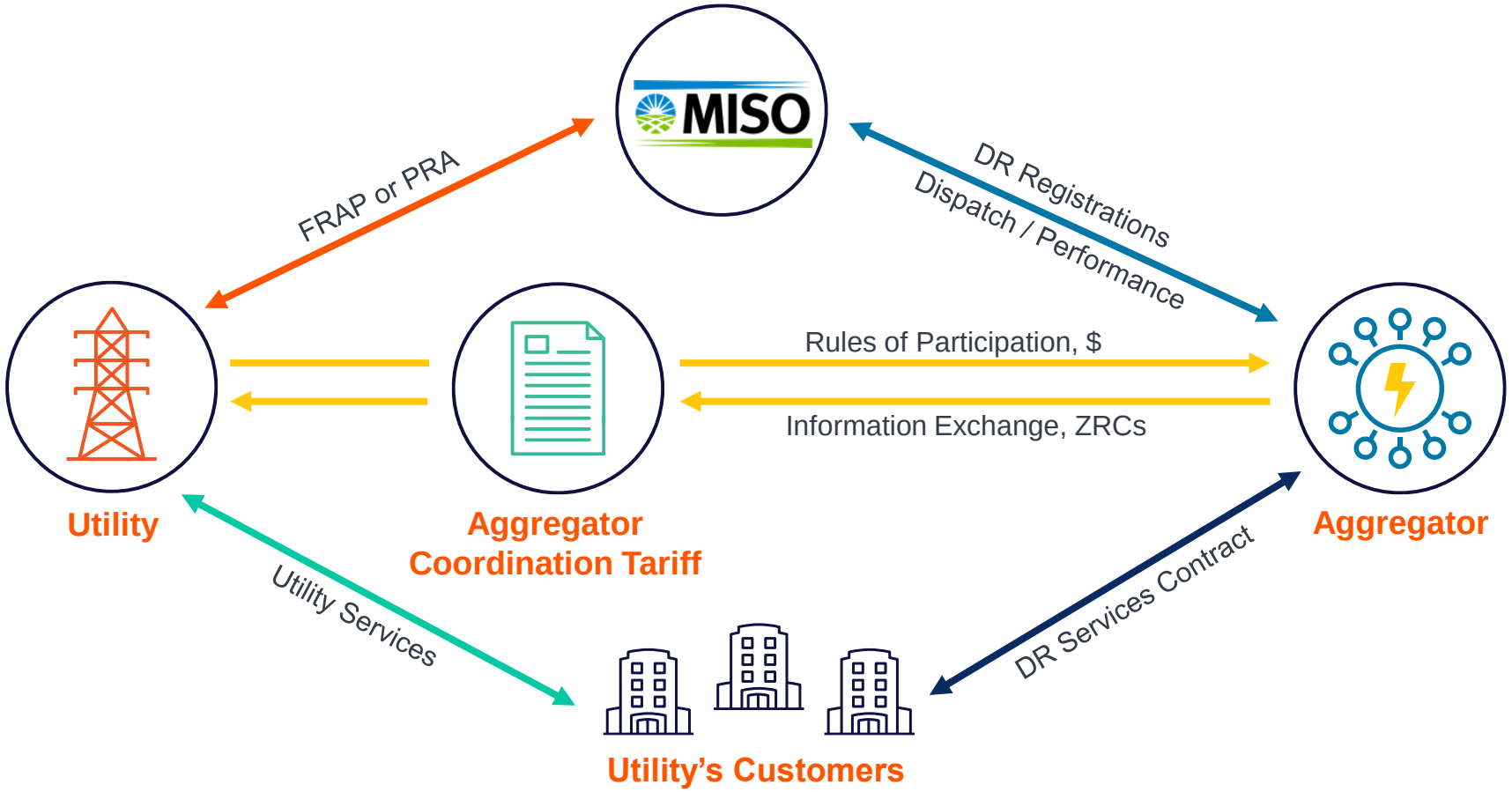
Sr. Director, Regulatory & Government Affairs

Peter.D.Westphalen@CPowerEnergyManagement.com

CPower

DR Feed in Tariff

Utility procures DR and establish rules through a tariff applicable to aggregators.



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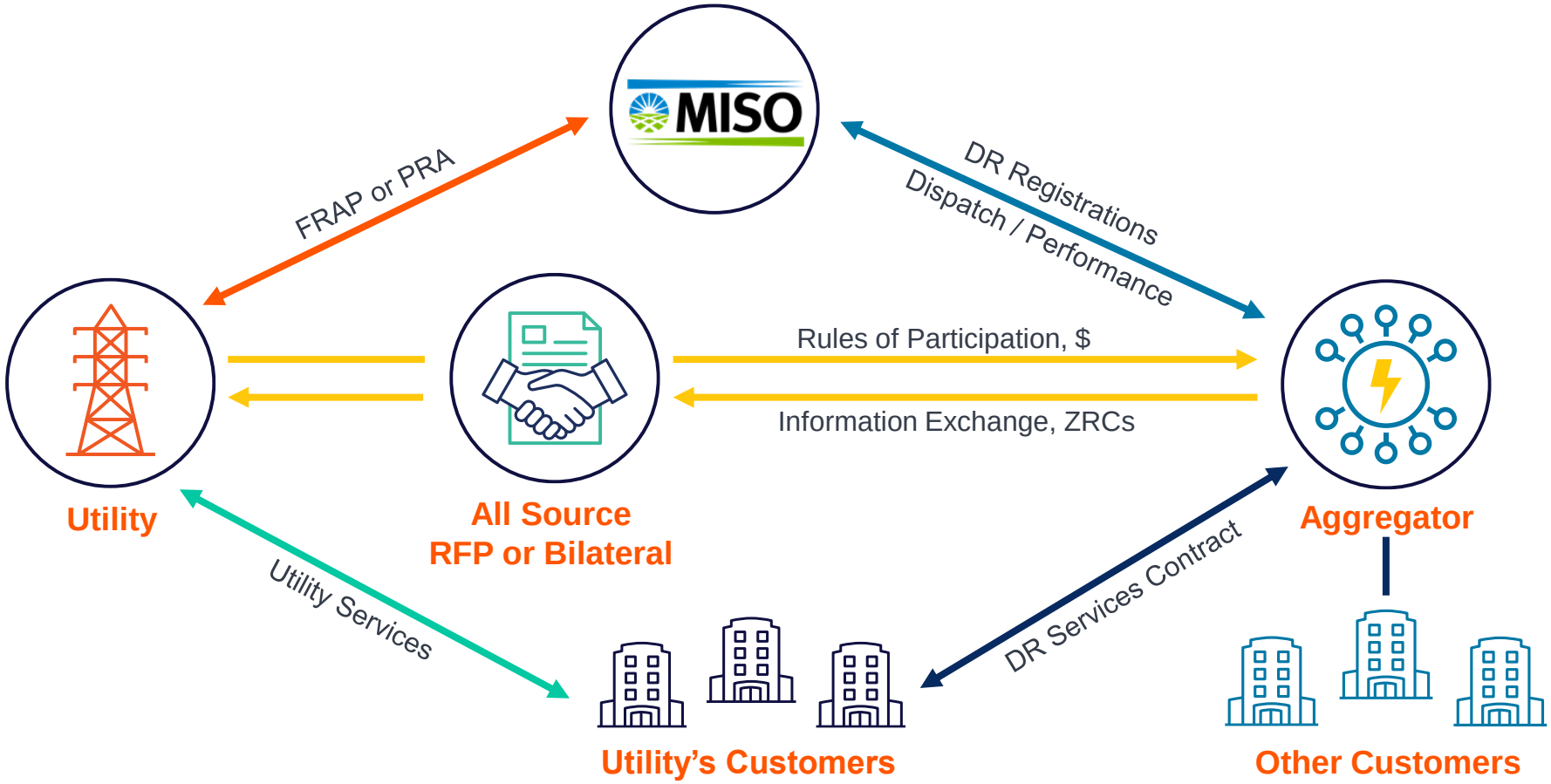
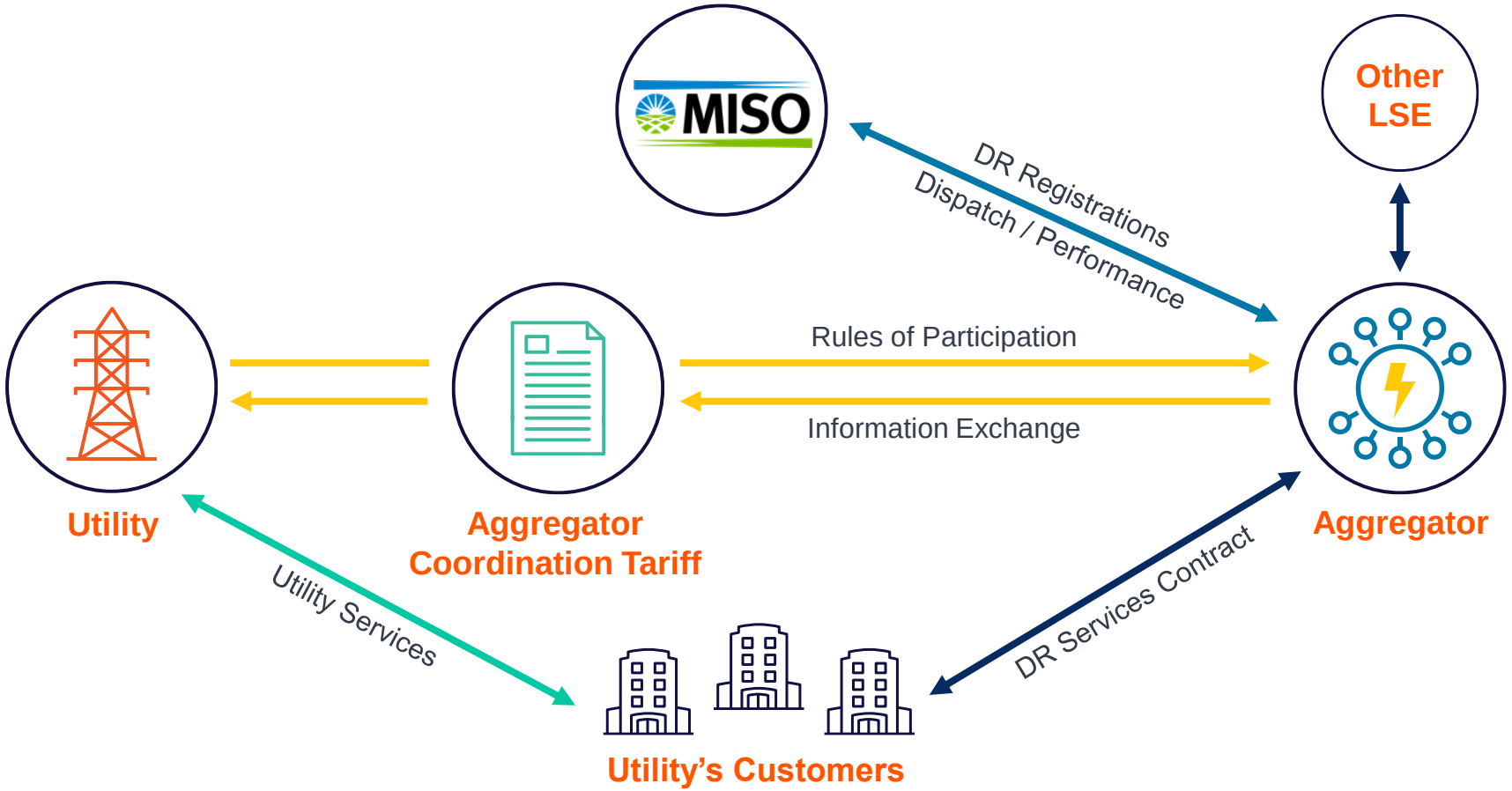


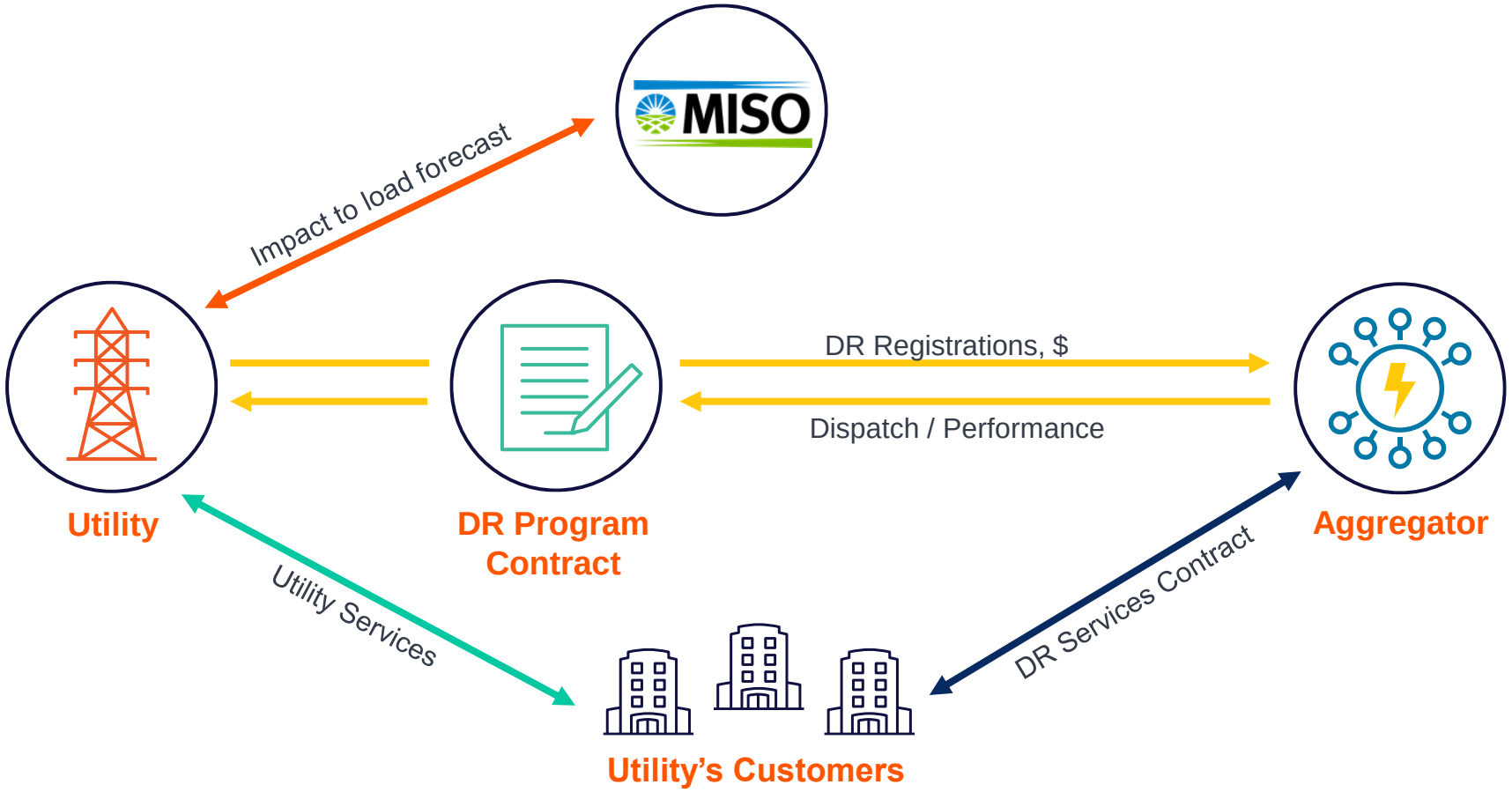
Conditional Opt In

Utility does not procure the DR, but Aggregator Coordination Tariff governs requirements and information sharing. DR participation supports reliability.



Aggregator-managed DR Program

Utility procures DR through aggregator that will impact load forecast that determines utility resource adequacy requirements.



Models for working with ARCs

ARC Participation Option	Allows Regulatory Oversight by RERRA	Contributes to Utility/LSE Resource Adequacy	Maximizes Latent DR Potential & Participation	Enables ARC-provided benefits	Allows Customer Selection of ARCs
DR Feed in Tariff	Yes	Yes	Yes	Yes	Yes
ARC DR PPAs	Yes	Yes	Yes	Yes	Yes
Conditional Opt In	Yes	Yes	Yes	Yes	Up to the RERRA
ARC-facilitated DR Program Administration for Utilities	Yes	Yes	No	Depends upon design	Typically, no
Traditional Tariff (w/o ARC participation)	Yes	Yes	No	No	No

Missouri Public Service Commission

EW-2021-0267

Demand Response Informational Workshop

July 10, 2023

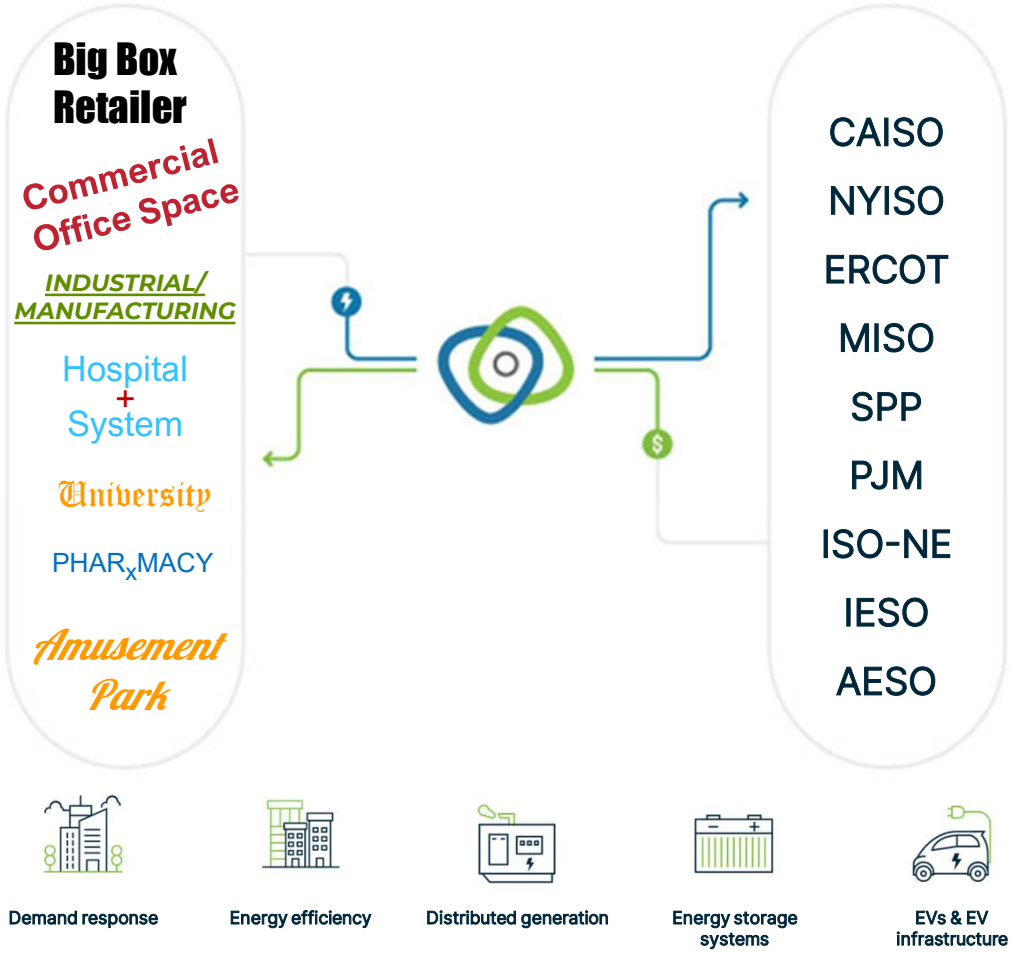
Agenda

- About Me
- Overview
- Information Sharing with Utility/RTO
- Disputes
- Protection of Customer Data
- Customer payment

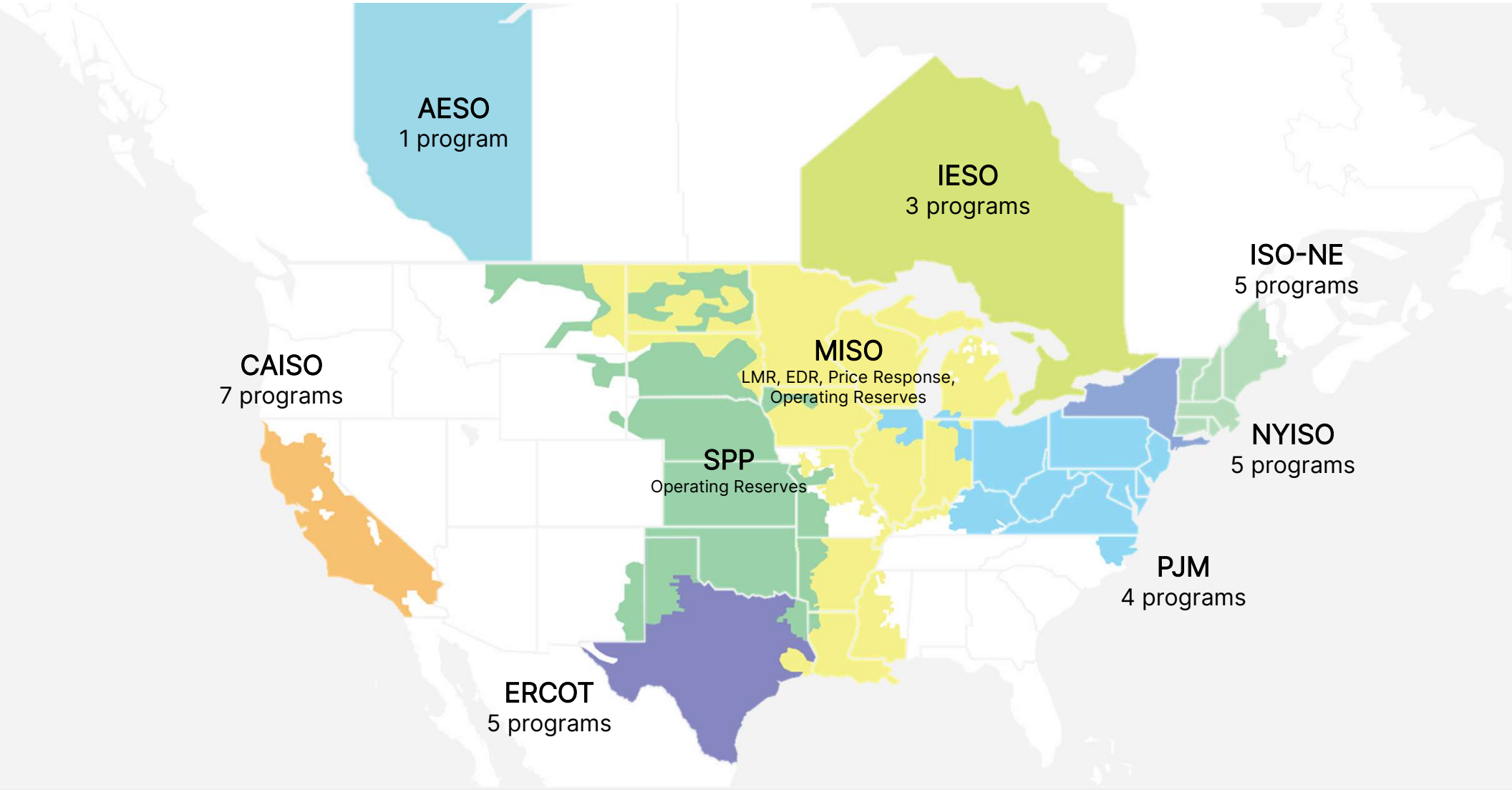
Better energy, more cash.

VoltApp™ is the only distributed energy resource (DER) platform that connects any DER type to any wholesale energy market in North America.

More markets means more cash earning opportunities for customers.



Voltus is the only provider in all nine US and Canadian power markets



	MISO	SPP
Energy	**Real-Time**	Real-Time
	Day Ahead	Day Ahead
Ancillary Services	**Spinning Reserve**	**Spinning Reserve**
	Supplemental	Supplemental
	Regulation	Regulation
Capacity	**Load Modifying Resources**	N/A

Demand response, simplified

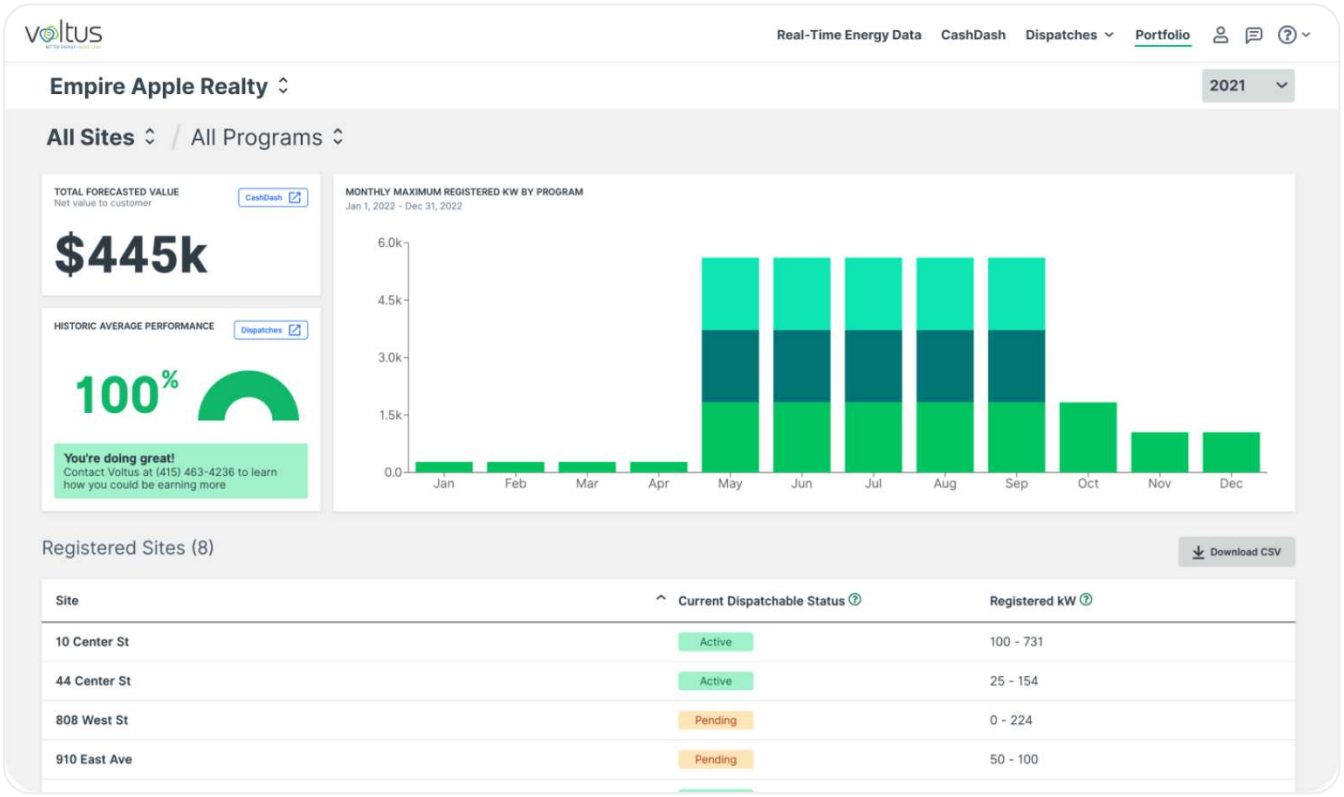
VoltApp speaks the language of cash and simplifies the complexities of market participation.

Technology that makes life easier

Real-time Energy Data to view how sites are consuming energy and performing in real-time

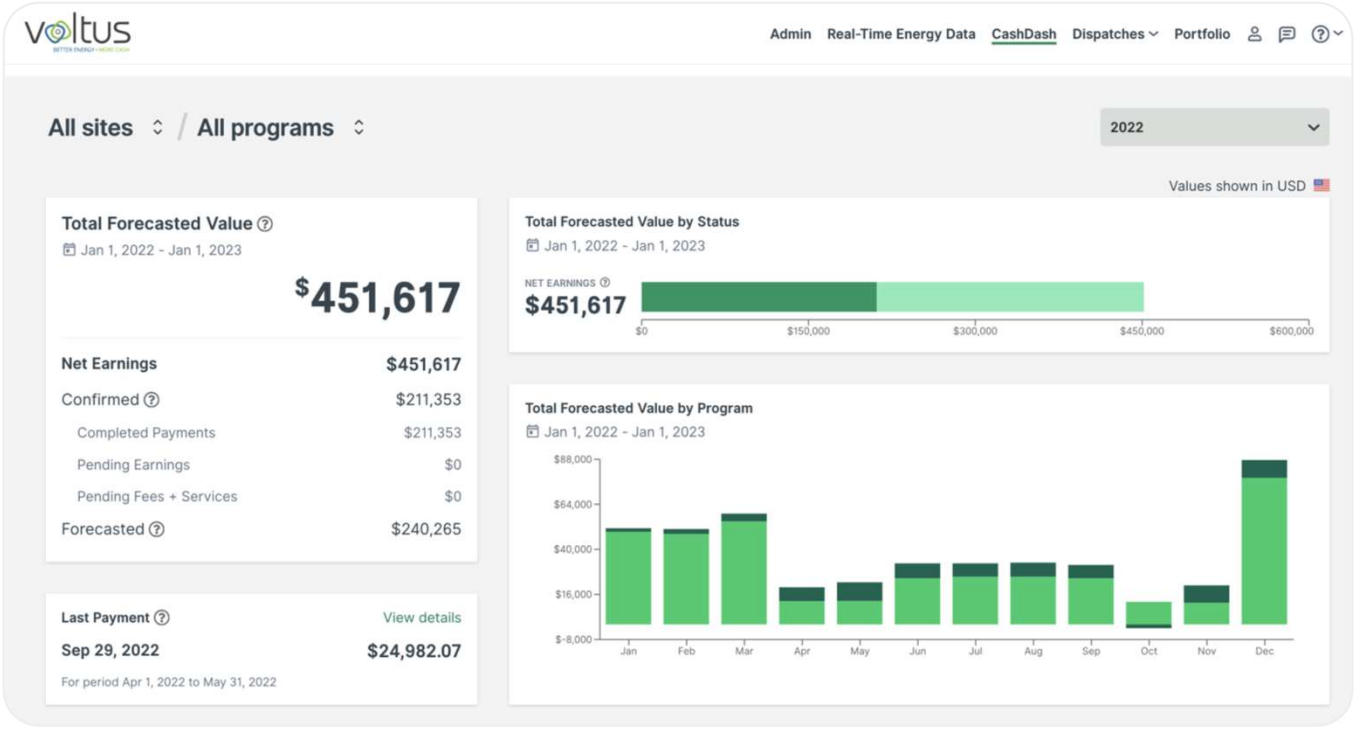
Technology that makes life easier

Portfolio to view forecasted value



Technology that makes life easier

CashDash to view reporting and payments. View holistically or granurly across programs and regions.



Our one-page commercial agreement

We’ve turned the complexity of connecting DERs to energy markets into a simple, single-page agreement. We integrate our technology into your facilities at no cost to the customer, and we eliminate any risk to our customers of participating in complex energy markets or utility programs.

voltus

Distributed Energy Resource and Peak Saver Agreement

This Distributed Energy Resource and Peak Saver Agreement ("Agreement"), effective as of ______________ ("Effective Date"), is made between Voltus, Inc. ("Voltus"), located at 2443 Fillmore St. #380-3427, San Francisco, CA 94115, and ______________ ("Customer"), located at ______________ both defined herein as the Parties to this Agreement.

1. **Term.** This Agreement will start on the Effective Date and automatically renew ______ months after the first day of participation in the distributed energy resource program(s) ("Program") for an equal subsequent term unless either Party provides notice of its intent to terminate this Agreement within thirty (30) days of the end of the then current term.

2. **Voltus Managed Services**
   a. *Distributed Energy Resource Scope of Services:* Voltus will manage Customer's participation in the Program(s) listed on Exhibit 1, in accordance with rules set forth by the grid operator and/or utility ("Operator"). Voltus will (i) work with Customer to develop an appropriate curtailment plan; (ii) manage all aspects of Customer's participation in the Program(s) and (iii) process all Program payments in accordance with the rules set forth by the Operator.
   b. *Peak Saver Scope of Services:* Voltus will provide services to help Customer reduce and/or eliminate Customer's demand charges at the sites listed on Exhibit 1. Voltus will (i) analyze site-specific information (e.g., energy interval data, utility bills), (ii) present to customer savings available for each site based on specific energy reduction strategies, (iii) finalize with site personnel the demand reduction plan and dispatch protocol, (iv) notify and dispatch sites in connection with potential peak demand hours, and (v) provide post season analysis and reporting on savings delivered.
   c. *Voltlet and Voltapp:* Upon Customer's authorization, Voltus will equip Customer with a system that collects energy data ("Voltlet") and provides visibility of this data through the Voltus cloud ("Voltapp"). At the Customer's request, such system may enable remote distributed generation control and direct load management. Voltus will install the system at each Customer facility as identified on Exhibit 1, which may be amended with the Customer's consent to reflect additional locations.

3. **Customer Requirements**
   a. *Utility Data:* Customer hereby authorizes utility data access for Voltus for facilities listed on Exhibit 1.
   b. *Voltus System Installation:* In the event a Voltlet needs to be installed, Customer will provide Voltus personnel, or their designee, with access to meters and/or equipment at facilities listed on Exhibit 1.
   c. *Acceptance Testing:* If the program requires acceptance testing, Customer will work with Voltus to prove Customer capability at each facility in a timely manner prior to Voltus registration of each facility in the Program(s).
   d. *Distributed Energy Resource Performance:* Customer will reduce electrical demand when notified by Voltus in accordance with Program rules. The Parties understand that the capacity listed on Exhibit 1 represents the best estimate of performance and that performance may vary.

4. **Payments**
   a. *Distributed Energy Resource Payment Sharing:* Voltus will pay Customer ____% of all payments obtained by Voltus owing to Customer's performance in the Program(s), up to the total enrolled amount, less $250 per Voltlet per month.
   b. *Peak Saver Shared Savings:* Customer will pay Voltus ____% of electricity demand charge savings owing to Customer's performance in accordance with this Agreement. Such payments are due to Voltus within forty-five (45) days of each calendar month in which the savings accrue to Customer. The calculation of savings for each site is defined on Exhibit 2. Notwithstanding the foregoing, any such payments owed to Voltus shall be subtracted from payments owed to Customer per paragraph 4a.
   c. *Underperformance:* In no event shall Customer be penalized for underperformance.
   d. *Payment Timing:* Voltus will issue customer payment within 45 days of Voltus's receipt of payment from the Operator for each program season.

5. **General Terms**
   a. *Limitation of Liability:* Voltus is not liable for Customer participation in Program(s). All remedies or damages are expressly waived, including any indirect, punitive, special, consequential, or incidental damages, lost profit, or other business interruption damages.
   b. *Choice of Law:* This Agreement shall be governed by, construed, and enforced in accordance with the laws of the State of ______________ without giving effect to choice of law rules.

Page 1

Steps for SPP enrollment:

- Customer signs one-page Voltus Agreement
- Voltus obtains data on facilities and kilowatts to be enrolled
- Voltus creates required forms and transmits through SPP's Request Management System ("RMS").
  - Location Letter
  - Resource Attestation
  - Appendix B
- The Location Letter is sent to utility and RERRA (state commission) who have opportunity to question/object to registration. Letter lists:
  - Name of load
  - MW offered
  - Retail provider
  - Targeted effective date
- Voltus requests interconnection data from utility (directly or through RTO) and provides to resource/location data
- Finalize curtailment plan
- Install Voltlet
- Conduct Dispatch Verification, insure ICCP integration (utility has access to ICCP data per SPP protocol)
- Designate registration as "dispatchable"

Dispute resolution

- Utility notified and communicates with RTO re: issues with registration or double counting
- Utility gets asset and dispatch data through telemetry and can audit
- Utilities can add reporting/attestation requirements to retail tariffs as well

Voltlet™

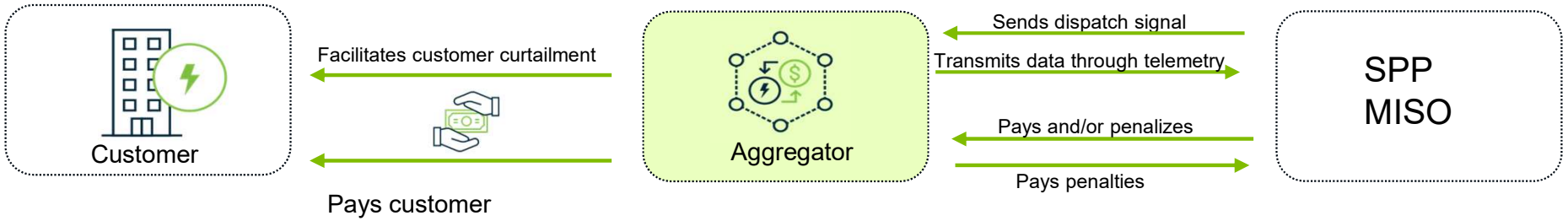
- Data recorder reads utility meter’s KYZ pulse

Customer Data Security

- VoltApp™ and Voltlet™ connect to our customers and receive and transmit data through a secure, native cloud platform providing real-time measurement and verification to Voltus customers.
- Data is encrypted and controlled using an end-user's generated password in line with established security best practices. The Voltlet™ is secured with standard intrusion detection/intrusion prevention techniques.
- Voltus is subject to the same cybersecurity requirements as other registered wholesale market participants

How Payment Works

Customers get paid to reduce electricity use, just like a generator gets paid to provide electricity.



Questions?

Contact us:

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Voltus.co

info@voltus.co

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San Francisco, CA 94115

Joann Worthington- Senior Manager Regulatory Affairs
Voltus, Inc. | Oklahoma City, OK
405-653-8138 | jworthington@voltus.co | http://www.voltus.co/vlog

STATE OF MISSOURI

OFFICE OF THE PUBLIC SERVICE COMMISSION

I have compared the preceding copy with the original on file in this office and I do hereby certify the same to be a true copy therefrom and the whole thereof.

WITNESS my hand and seal of the Public Service Commission, at Jefferson City, Missouri, this 12th day of July, 2023.

Nancy Dippell

Nancy Dippell
Secretary

MOPSC
Digitally signed by MOPSC
Date: 2023.07.12 15:58:45 -05'00'

MISSOURI PUBLIC SERVICE COMMISSION

July 12, 2023

File/Case No. EW-2021-0267

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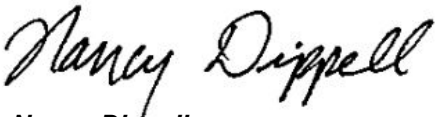
AmerenMOService@ameren.com

Enclosed find a certified copy of an Order or Notice issued in the above-referenced matter(s).

Sincerely,



Nancy Dippell
Secretary

Recipients listed above with a valid e-mail address will receive electronic service. Recipients without a valid e-mail address will receive paper service.