2025 OMS DER Survey Results

MISO DER Task Force

November 10, 2025

11/18/25: Edits made on slides 27 and 28 to convert 2025 totals from GW to MW

11/18/25: Edits made on slide 29 to correct minor errors of total DER

Organization of MISO States

Key Takeaways

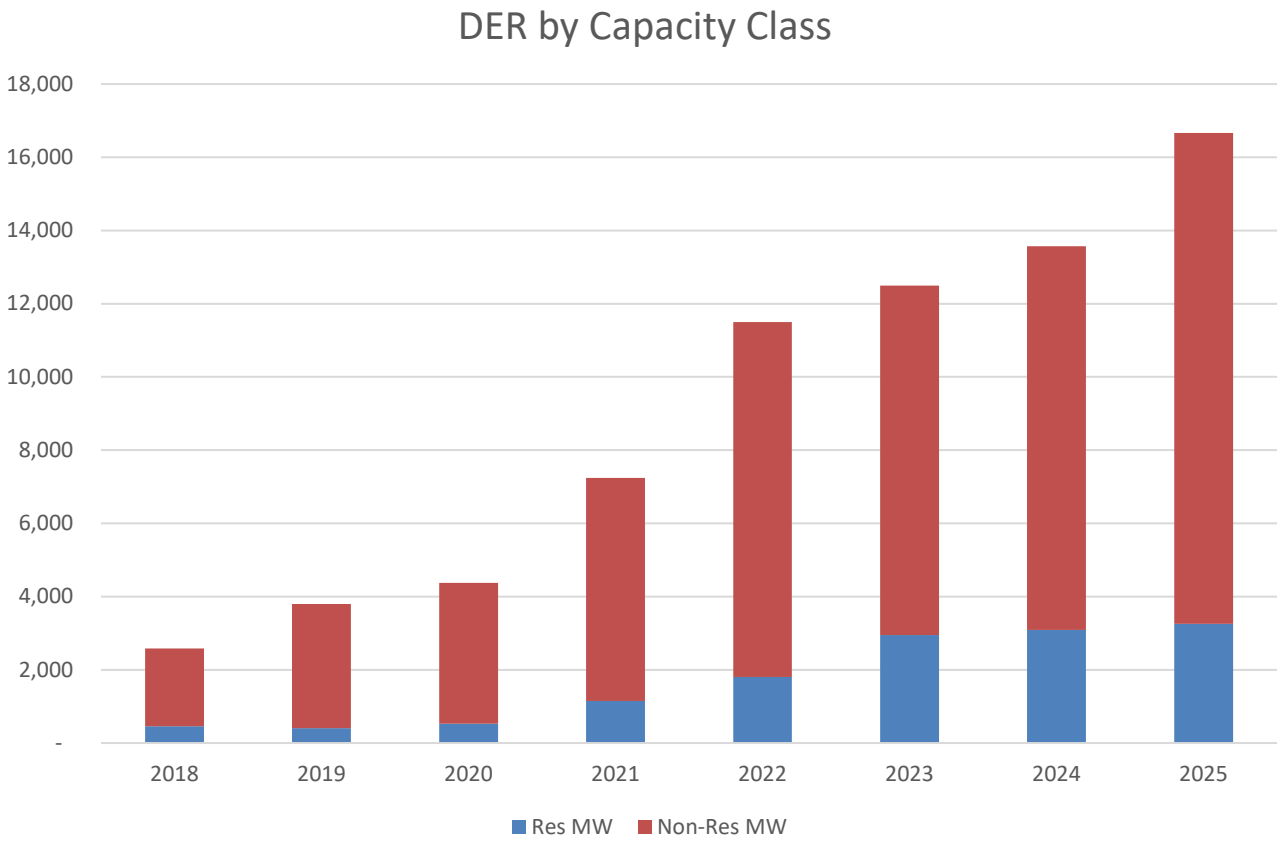
OMS has conducted the DER Survey every year since 2017

- past surveys *available here*

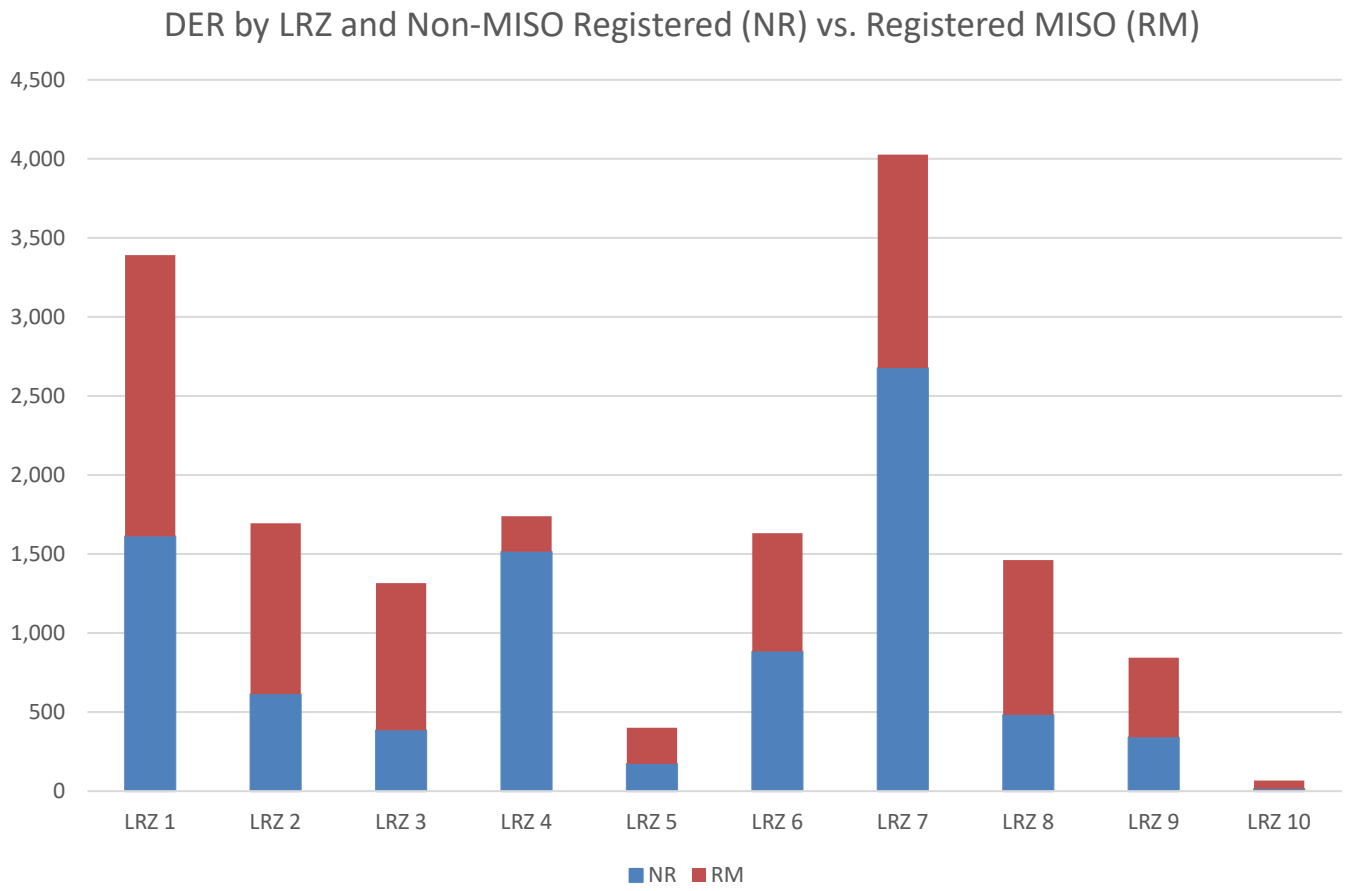
Utilities continue to see a need for state regulatory direction and the benefits of a common data-sharing platform

Reported DER continues to grow – solar and DR still dominate, continued education and tracking needs to be considered

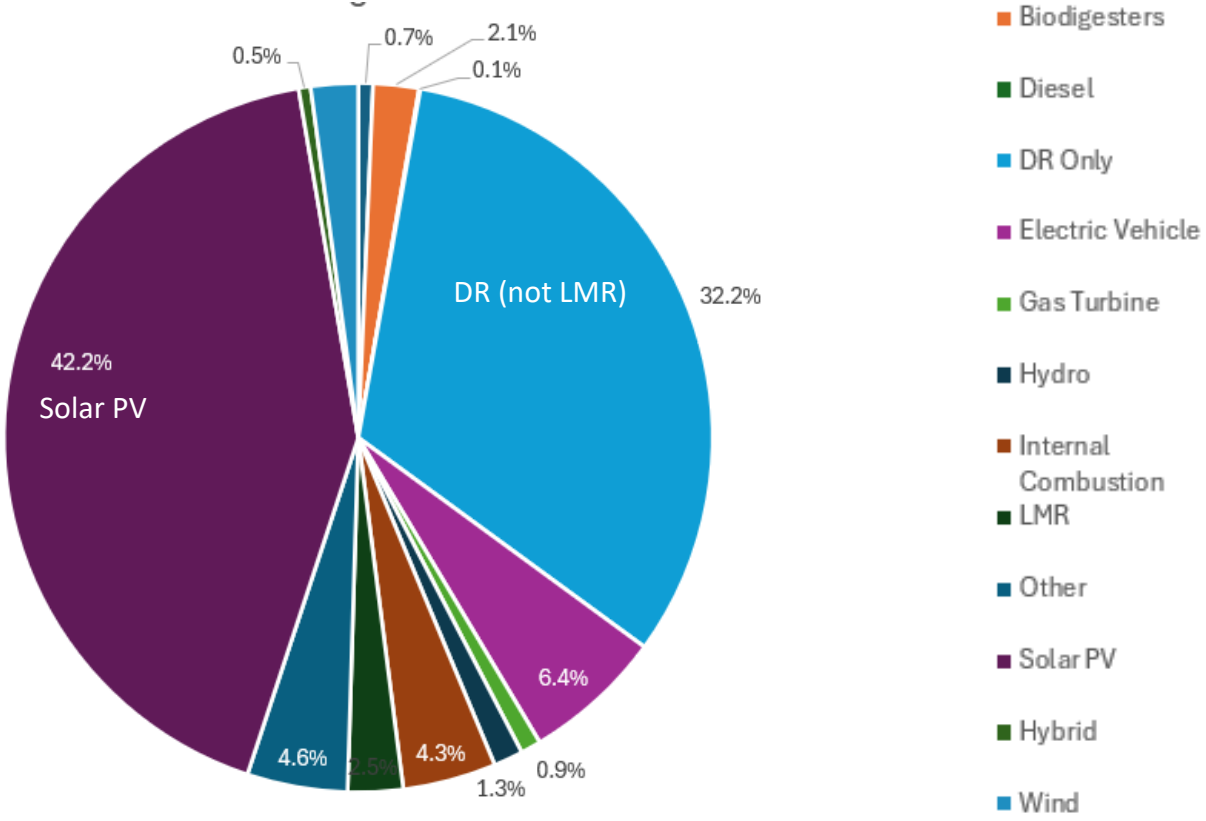
Trend of DER growth continues in MISO



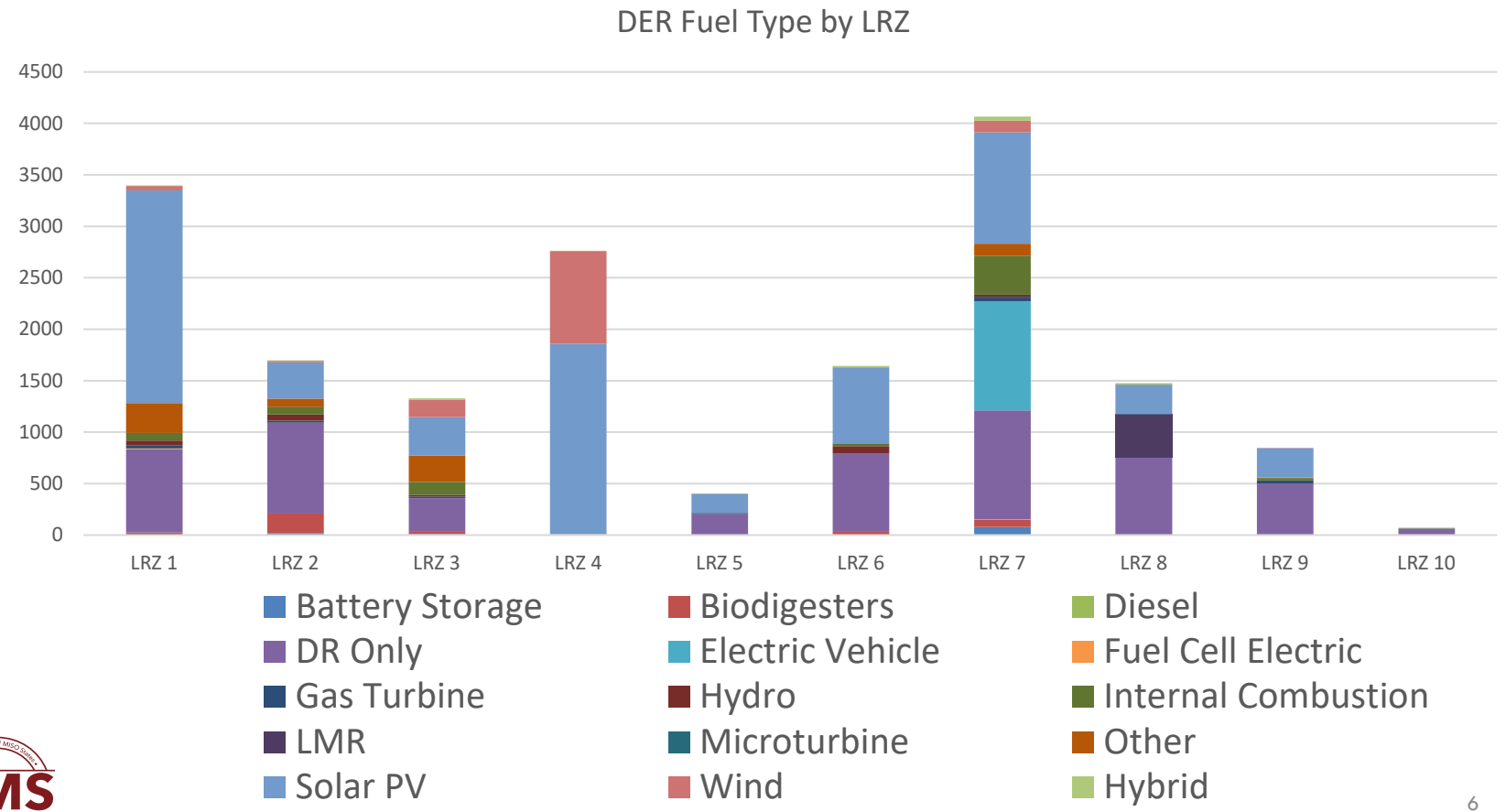
LRZ Trends Similar to Previous Years



16.6 GW of DER by Resource Type



Solar, DR (non-LMR) most common in all zones

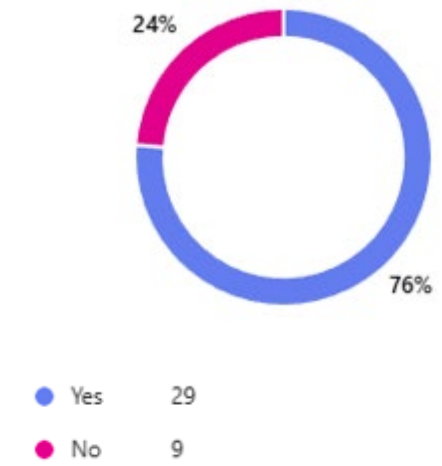


WRITTEN RESPONSE ANALYSIS

Organization of MISO States

Future DER Investments

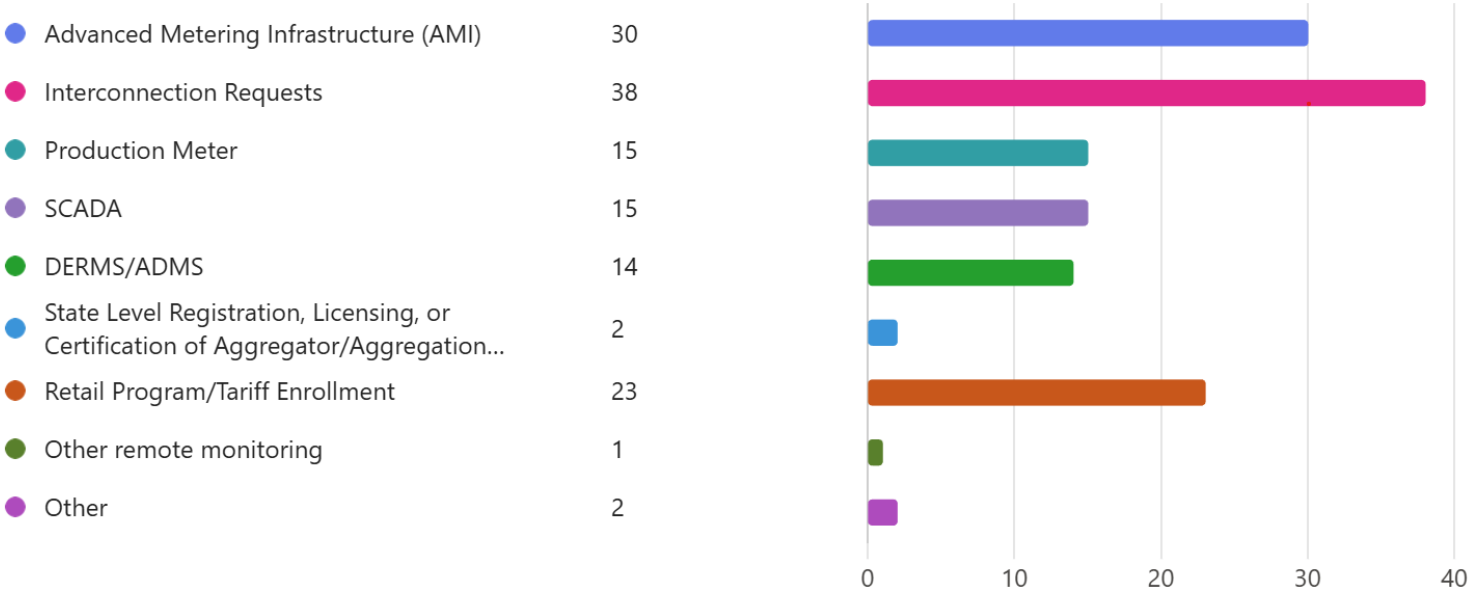
Is your utility considering future investments to increase awareness of DER operations?



- Utilities are discussing possible updates:
  - Examples include AMI, DERMS, ADMS, DSM, and improved communications
- About half of respondents are considering updates, while half have begun updates already
- Larger DER are more of a concern

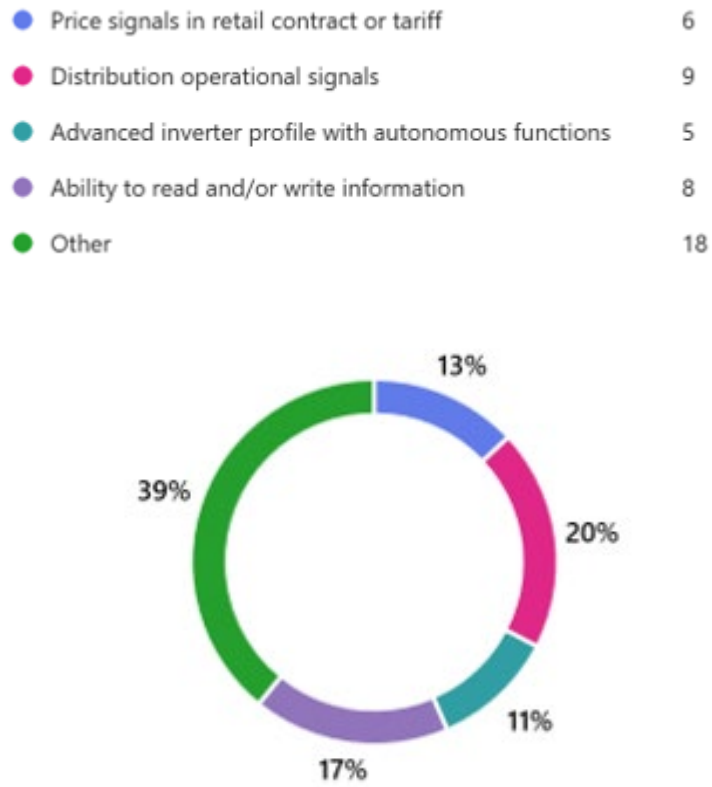
DER Awareness and Tracking

What process does your utility use to obtain initial or on-going awareness of DER?

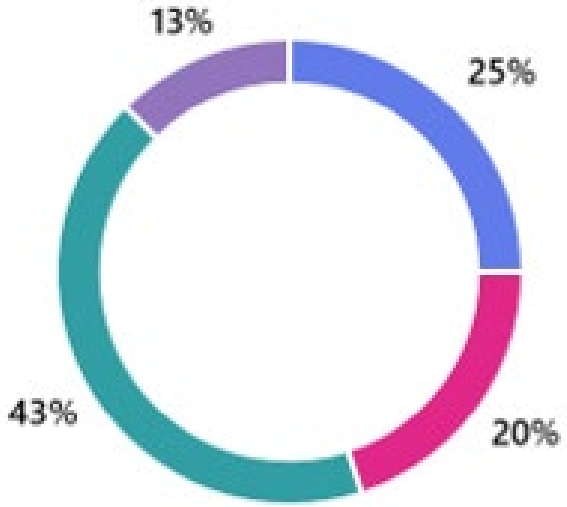


Types of Interoperability *"The ability to exchange information"*

- On average, only about 1-2% of DERs have interoperability actively deployed.
- Some pilots and large DERs are the exception to this trend
  - Solar gardens with advanced inverters
  - Category 5 (5 MW+) installations with SCADA/real time data
  - Direct trip to transfer schemes for large DERs
- Outliers indicated 25% of DERS have autonomous functions via advanced inverter (due to state rules)



DER Customer Interest Drivers



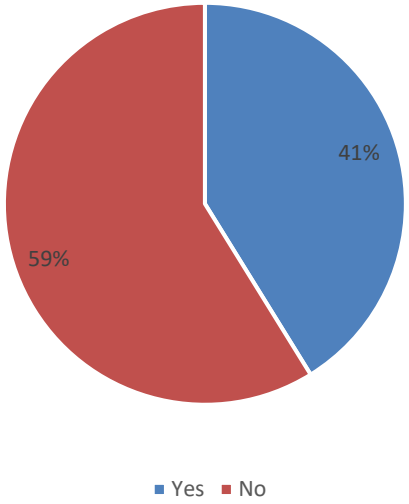
Third-Party and/or direct participation in wholesale market	20
Vehicle-to-grid or load-shifting EV rates	16
Responding to incentives, net metering, or other retail programs	34
Other	10

DER Impacts to Transmission

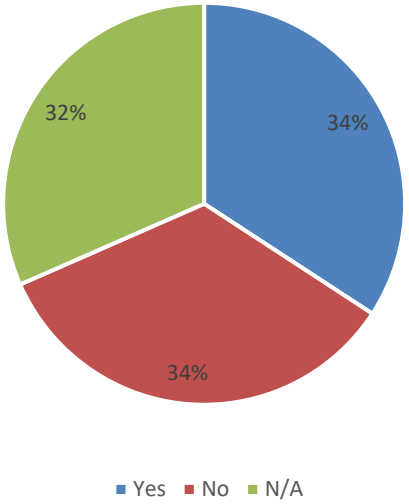
- Most utilities are not seeing any impact from DER at the Transmission level
  - Only distrib. level impacts: power quality (flicker), load forecast inaccuracies
  - A few indicated seeing more TO and MISO level studies being triggered due to increase in DERs
  - Focus is on worker and equipment safety: DERs can energize equipment when a fault occurs and present a danger utility must be aware of.
- Root causes of a handful of incidents
  - Backflow on circuits/subs in high DER penetration areas.
    - Addressed via distribution investment to mitigate backflow.
  - Mitigate thru monitoring and protocols: reverse flow procedures, locational & control settings
- DERs did not lead to more/less Transmission for vast majority
  - 1 mention of limited transmission investment
  - 1 mention of developer withdrawing/seeking other locations after facility or transmission upgrades were identified

DER Impact Projections

Do you expect EVs to impact T system?

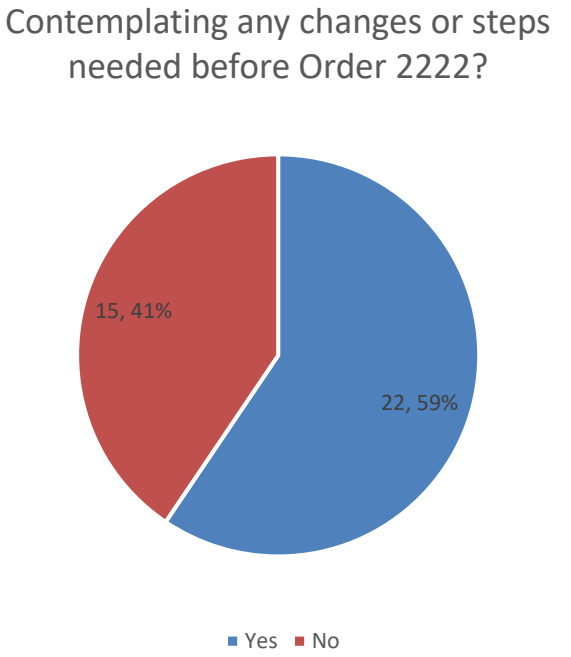


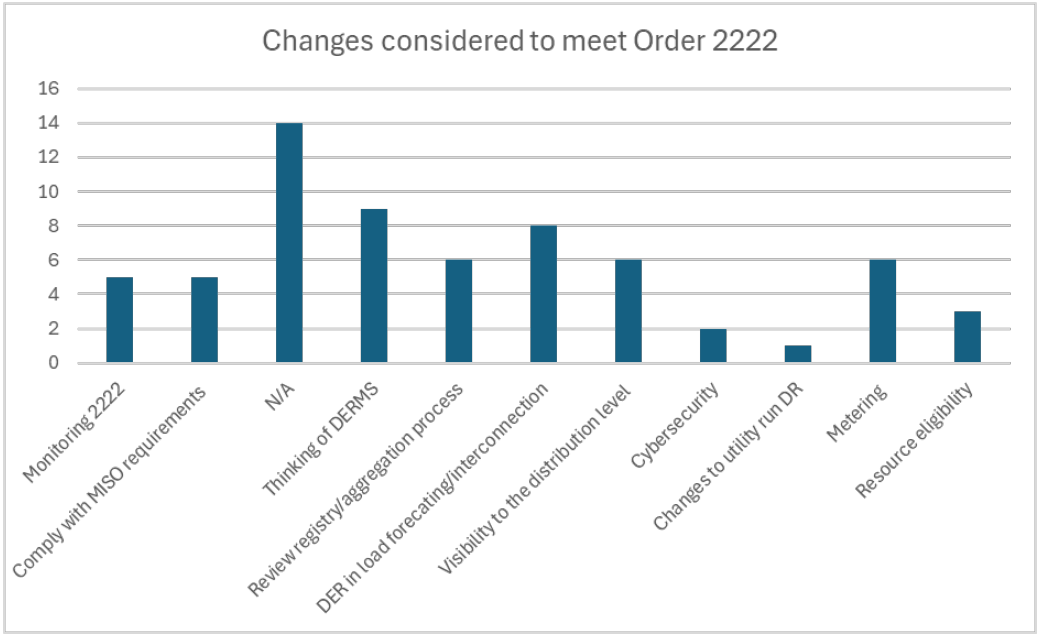
If no impacts today, do you forsee DER-related issues arising?



84% indicated they *do* have a method to determine when a bulk impact study is needed

Order 2222 Implementation



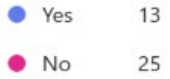


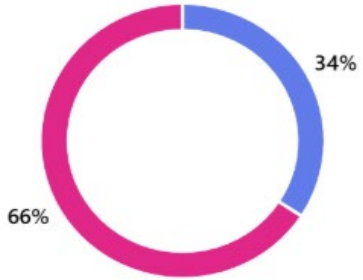
Order 2222 Implementation (cont'd)

- Why are utilities not undertaking changes:
  - Utilities are still observing how MISO moves forward with its implementation plan
    - "MISO is still developing the rules and requirements to incorporate Order 2222 into its markets and therefore it is premature to make changes."
  - DER aggregation is not an issue for some utilities
    - "Nobody has talked to us about aggregation. The total capacity of the DERs on our system is quite small."

Communication Upgrades

- Most utilities are *not* considering enhancing two-way communication between utility and aggregator
- Some utilities are considering DERMs
- Other utilities are in the early stages of addressing communication and awaiting more information, including from MISO



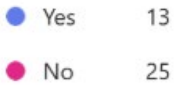


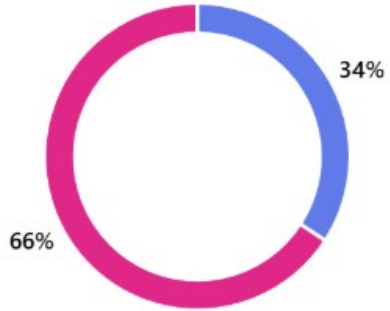
Communication Upgrades (cont'd)

- "Communication should be facilitated through the RTO to avoid miscommunication and adherence to code."
- "Interoperability and standards compliance"
- "Cybersecurity risks and customer privacy concerns at DER endpoints."

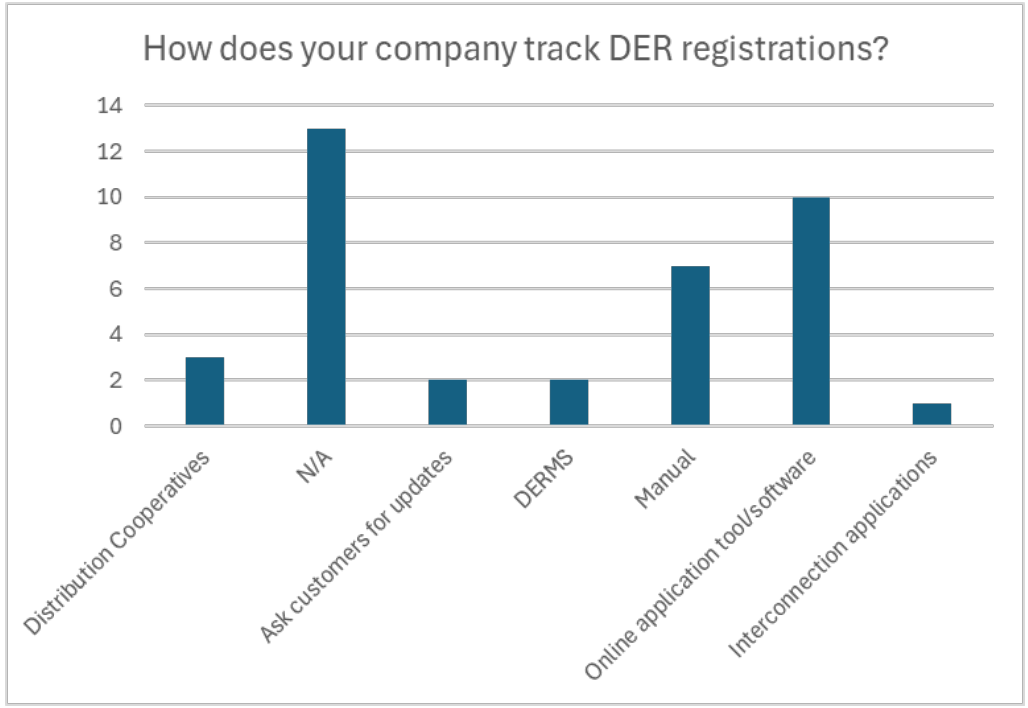
Automation Issues

- Many utilities are early in this process.
  - DERMs could fill this role. Online utility portal
- Other utilities consider the DER workload manageable and do not perceive a need for automation
  - Waiting for the issue to develop further or for MISO/RERRA direction
  - Current interconnection/aggregation workload is manageable without automation



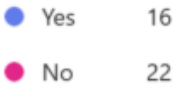


Tracking DER Registration



State Planning Processes

- Most utilities do not perceive a need to change how DERs are included in state planning processes



State Planning Processes (cont'd)

- Many states still see DER as too small to require planning changes
- Current state planning processes could be sufficient
- But some utilities have concerns:
  - DER come in a range of forms, making planning more complicated
  - DERAs do not connect behind the same point of interconnections
  - Aggregators should be responsible for upgrades

OMS DER Work Group Takeaways

Many Utilities Are Waiting for More Guidance

– Utilities are wary to act before fully understanding how DER will eventually operate in MISO. Utilities want to build systems they believe will interact easily with MISO rules.

Increased Interest in DERMs

– There is a hope that DERMs will solve numerous registration and operations challenges. More utilities are investigating their possibilities.

Initial Impact of DER Is Unclear

– Utilities are unsure how large the impact of DER is going to be. Currently, most DER aggregations are too small to exert much of an impact.

ORDER 2222 READINESS

Organization of MISO States

OMS Member Survey – Order 2222 Readiness

1. Varying levels of progress toward Order 2222 readiness
2. Common recognition of data and communication challenges
3. General interest in collective or regional solutions
    - Support for a centralized and secure data platform
4. Coordination with MISO is key – but to what degree?
    - Reliance on MISO's enrollment and data systems
5. Aggregator licensing and oversight considerations

OMS Member Survey – Order 2222 Readiness

6. Dual participation and double counting concerns
7. Recognition of broader distribution system impacts
8. Planning, verification, and metering requirements
9. Customer protection and worker safety
10. Integration with emerging state and policy initiatives

APPENDIX

Organization of MISO States

Year-to-Year Comparison

YoY Comparison								
Customer Class	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Res MW	456	411	528	1,154	1,807	2,953	3,093	3,259
Non-Res MW	2,124	3,387	3,845	6,090	9,694	9,543	10,474	13,405
Total MW	2,581	3,797	4,373	7,244	11,501	12,496	13,568	16,664

11/18/25: Edit made to convert 2025 total to MW

DER Data Table

DER Type	Res	Non-Res	Total
Battery Storage	7	104	110
Biodigesters	0	345	345
Diesel	0	10	10
DR Only	1,263	4,079	5,342
Electric Vehicle	2	1,059	1,061
Fuel Cell Electric	0	7	7
Gas Turbine	0	153	153
Hydro	0	222	222
Internal Combustion	0	706	706
LMR	0	417	417
Microturbine	0	0	0
Other	15	739	753
Solar PV	1,907	5,181	7,088
Solar PV + Storage	58	32	90
Solar PV + Wind	0	0	1
Solar PV + Wind + Storage	0	0	0
Wind	7	351	358
Wind + Storage	0	0	0
		Total DER	16,664

11/18/25: Edit made to convert 2025 total to MW

DER by LRZ and Type

	LRZ 1	LRZ 2	LRZ 3	LRZ 4	LRZ 5	LRZ 6	LRZ 7	LRZ 8	LRZ 9	LRZ 10	Total DER
NR	1,619	619	398	1,514	173	894	2,716	495	341	14	8,782
RM	1,780	1,081	931	225	228	750	1,349	980	503	54	7,881
Total	3,399	1,700	1,329	1,739	401	1,644	4,064	1,475	843	67	***16,663***
Resource Type											**MW**
Battery Storage	1	18	11	1	0	1	78	0	0	0	**110**
Biodigesters	21	190	27	0	0	36	71	0	0	0	**345**
Diesel	2	1	0	0	0	0	7	0	0	0	**10**
DR Only	810	883	320	8	203	751	1,055	756	497	58	**5,342**
Electric Vehicle	0	0	0	0	0	0	1,061	0	0	0	**1,061**
Fuel Cell Electric	6	0	0	0	0	0	0	0	0	0	**7**
Gas Turbine	29	19	17	0	11	0	44	0	35	0	**153**
Hydro	50	59	18	0	0	75	20	0	0	0	**222**
Internal Combustic	75	75	126	0	0	25	379	0	21	6	**706**
LMR	0	0	0	0	0	0	0	417	0	0	**417**
Microturbine	0	0	0	0	0	0	0	0	0	0	**0**
Other	289	81	256	0	0	4	118	0	6	0	**753**
Solar PV	2,067	350	374	1,719	186	733	1,081	289	285	3	**7,088**
Solar PV + Storage	8	6	12	0	0	12	40	13	0	0	**90**
Solar PV + Wind	0	0	0	0	0	0	0	0	0	0	**1**
Solar PV + Wind + S	0	0	0	0	0	0	0	0	0	0	**0**
Wind	42	16	169	11	0	6	113	0	0	0	**357**
Wind + Storage	0	0	0	0	0	0	0	0	0	0	**0**
	3,399	**1,700**	**1,329**	**1,739**	**401**	**1,644**	**4,065**	**1,475**	**843**	**67**	**16,663**

11/18/25: Edit made to correct minor errors of total DERs

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