

2024 Demand Response Operations Markets Activity Report: April 2024

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PJM Demand Side Response Operations

April 9, 2024



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Figure 1: DY 23/24 Active Participants in DR Programs

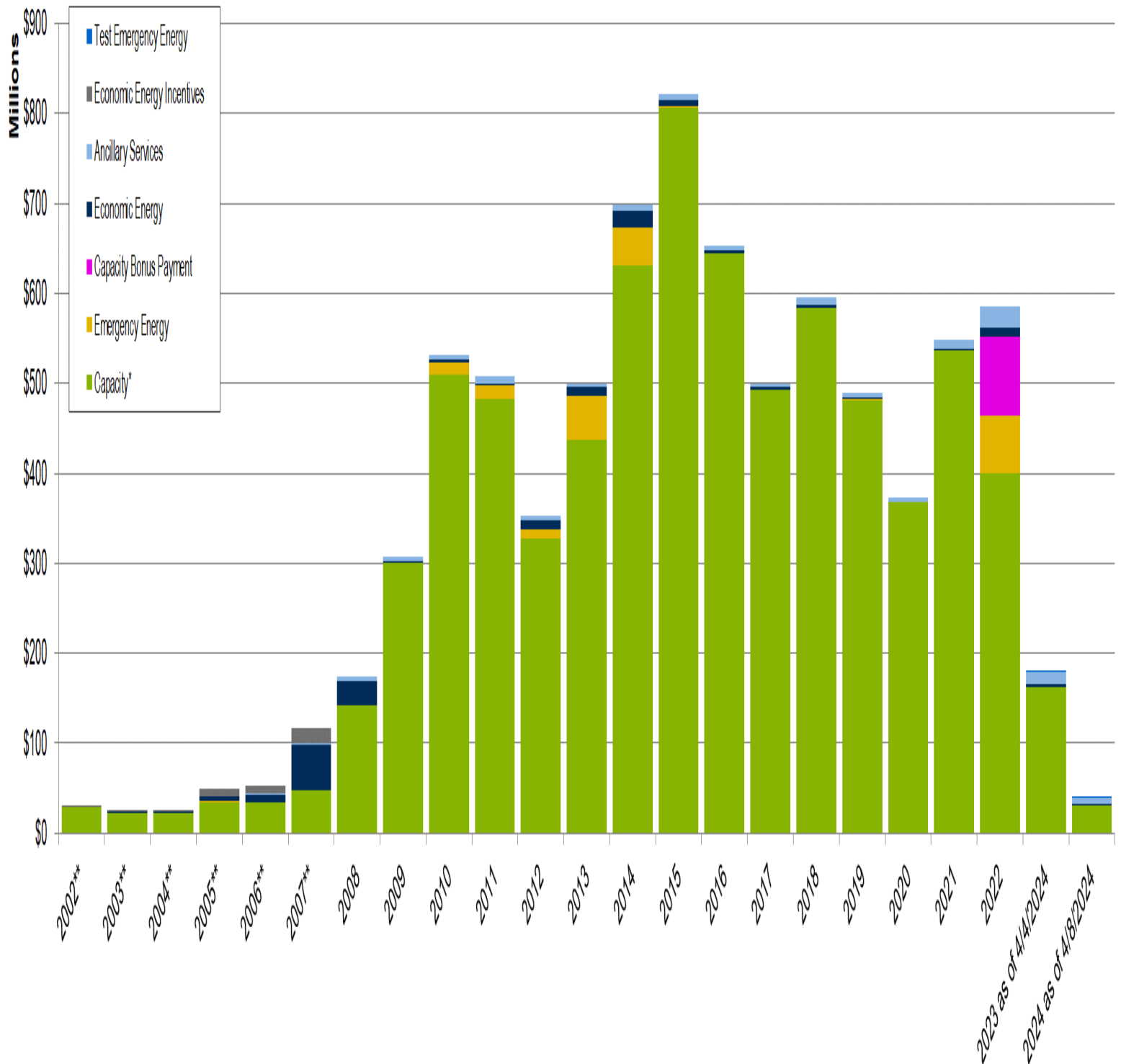
Zone	Economic		Load Management		Unique	
	Locations	MW	Locations	MW	Locations	MW
AECO	14	5.2	168	48.9	170	50.5
AEP	136	666.6	1,801	1,609.0	1,823	1,857.3
APS	27	308.6	1,166	726.1	1,176	747.6
ATSI	58	731.5	1,181	1,203.4	1,214	1,724.7
BGE	17	274.2	770	180.8	774	431.1
COMED	76	74.8	2,498	1,197.1	2,543	1,204.5
DAY	9	18.0	200	176.9	203	186.0
DEOK	15	161.9	381	186.8	382	227.2
DOM	58	137.5	1,200	646.5	1,248	753.2
DPL	131	33.7	401	108.5	402	108.6
DUQ	14	126.7	403	92.4	411	113.1
EKPC			19	266.1	19	266.1
JCPL	18	45.7	331	121.5	335	163.7
METED	14	109.8	467	162.7	475	255.0
PECO	40	89.3	1,147	325.0	1,157	359.1
PENELEC	12	60.4	593	231.1	599	239.6
PEPCO	13	24.3	584	136.4	594	141.9
PPL	26	103.1	1,338	475.1	1,354	514.0
PSEG	33	35.6	933	306.1	943	321.2
RECO			16	2.4	16	2.4
Totals	711	3,007	15,597	8,203	15,838	9,667

Note:

- 1) Data as of April 1, 2024.
- 2) Load Management MW are Winter ICAP and include FRR values.
- 3) Economic MW are CSP reported Load Reduction values.
- 4) Residential Locations reported as one location not a total number of end use customers in that program.
- 5) Unique MW: represents total estimated demand reduction assuming full Load Management and Economic reductions.
- 6) For the winter period of DY23/24, Total DR Commitment Value is 7,206 MW (includes FRR value of 413 MW)

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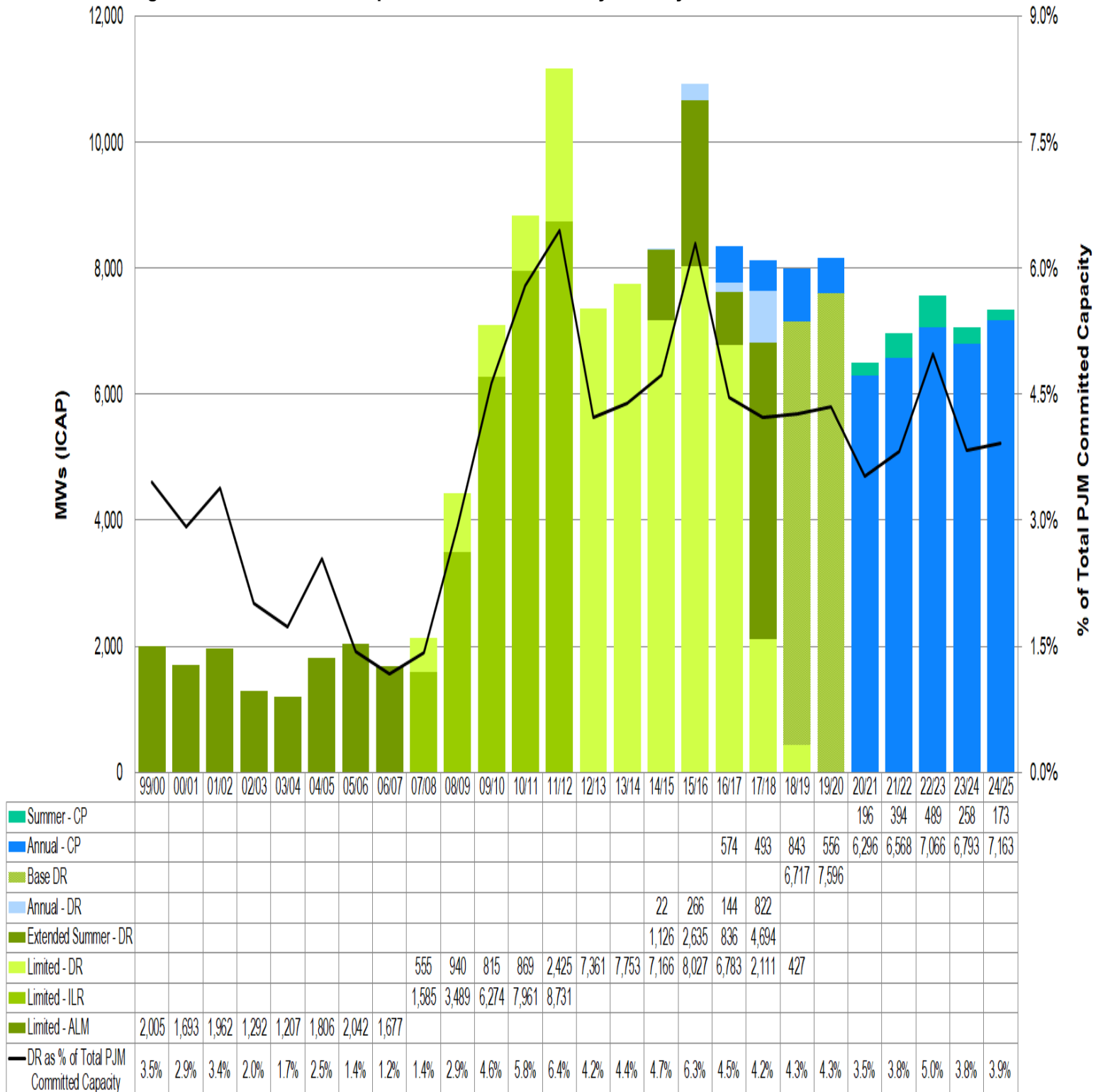
Figure 2: PJM Estimated Revenue for Economic and Load Management DR by Wholesale Markets



* Capacity Net Revenue inclusive of Capacity Credits and Charges. From 2020 on this value also includes Price Responsive Demand Credits.

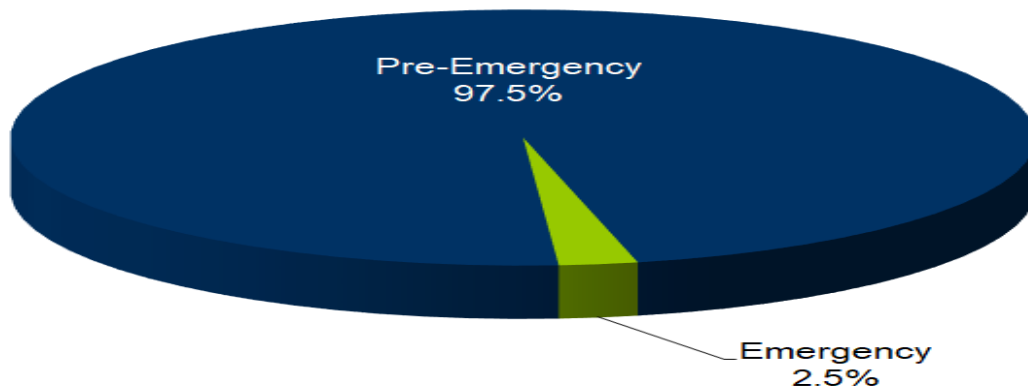
** PJM assumes capacity value at \$50 MW Day (PJM does not know the value of capacity credits in the forward market prior to RPM; only a portion of capacity was purchased through the daily capacity market at the time).

Note: Capacity Bonus Payments include payments for Load Management, Economic (includes Ancillary Services) and Price Responsive Demand registrations.

Figure 3: PJM Demand Response Committed MWs by Delivery Year

Notes:

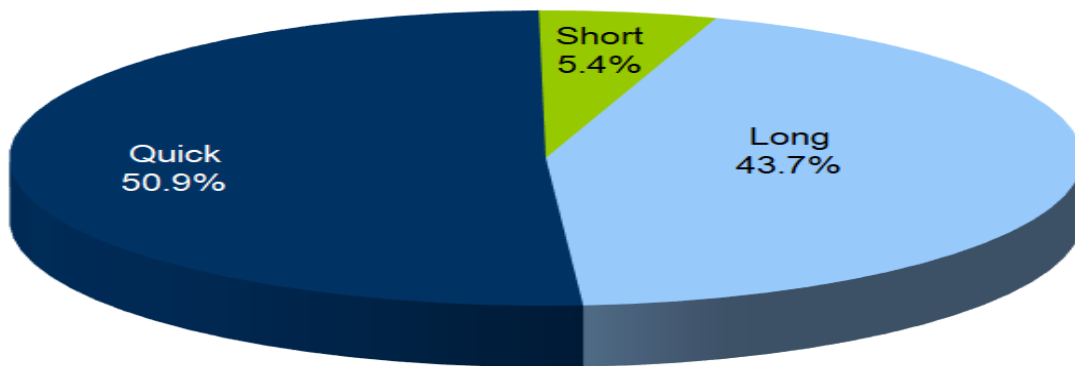
- 1) Data represents net commitment ICAP value (for each product) as of 6/1/2023. Does not include FRR values.
- 2) DY 24/25 MWs include values from the Base Residual Auction.
- 3) RPM was implemented DY 07/08.
- 4) ALM MWs are seasonal averages for Delivery Years before 07/08.

Figure 4: DY 23/24 Confirmed Load Management DR Registrations by Resource



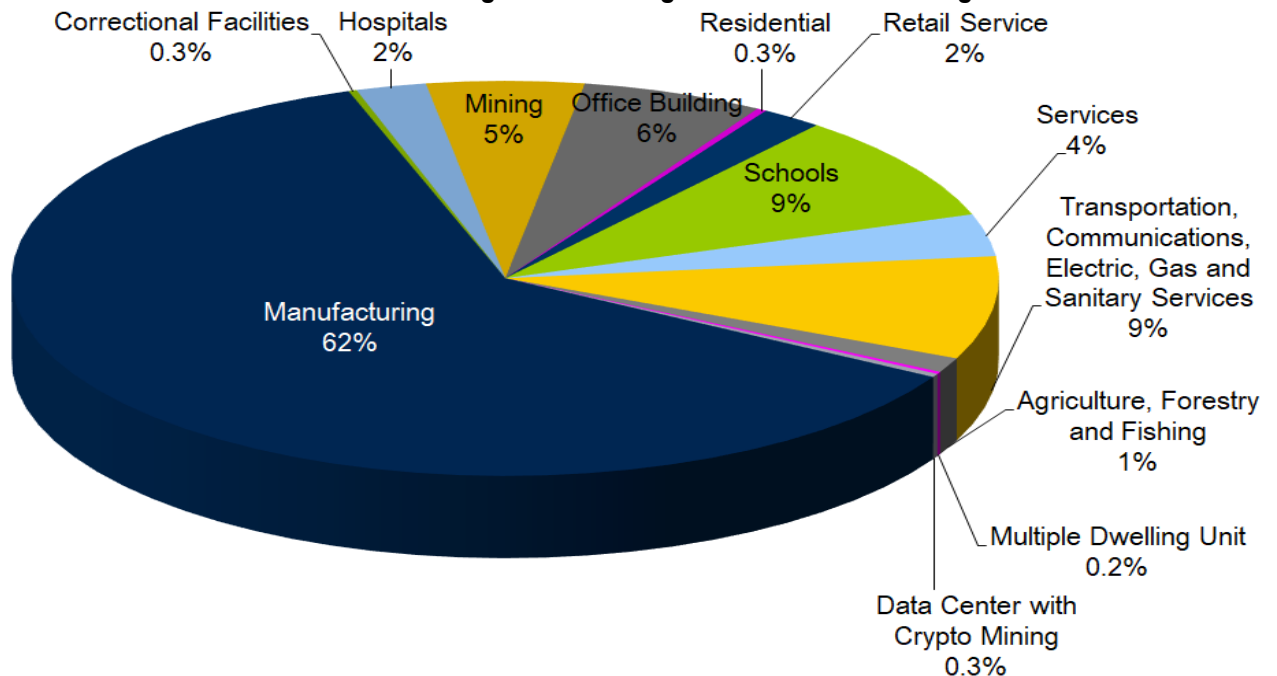
Note: Percent of Winter Nominated Capacity (MWs).

Figure 5: DY 23/24 Confirmed Load Management DR Registrations Lead Times



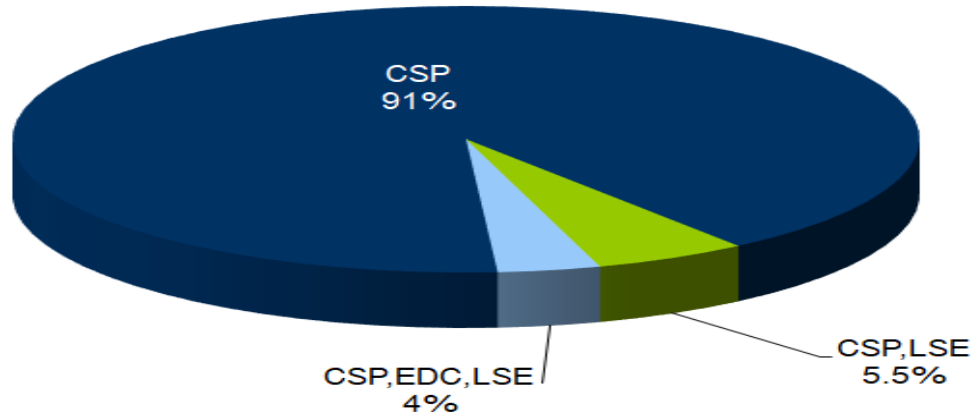
Note: Percent of Winter Nominated Capacity (MWs).

Figure 6: DY 23/24 Confirmed Load Management DR Registrations Business Segments



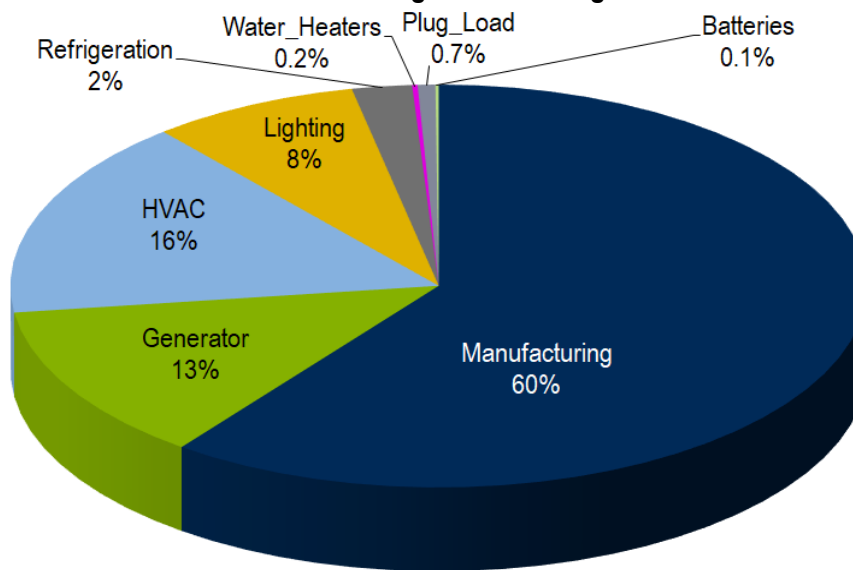
Note: Percent of Winter Nominated Capacity (MWs).

Figure 7: DY 23/24 Confirmed Load Management DR Registrations Owner/Company Type



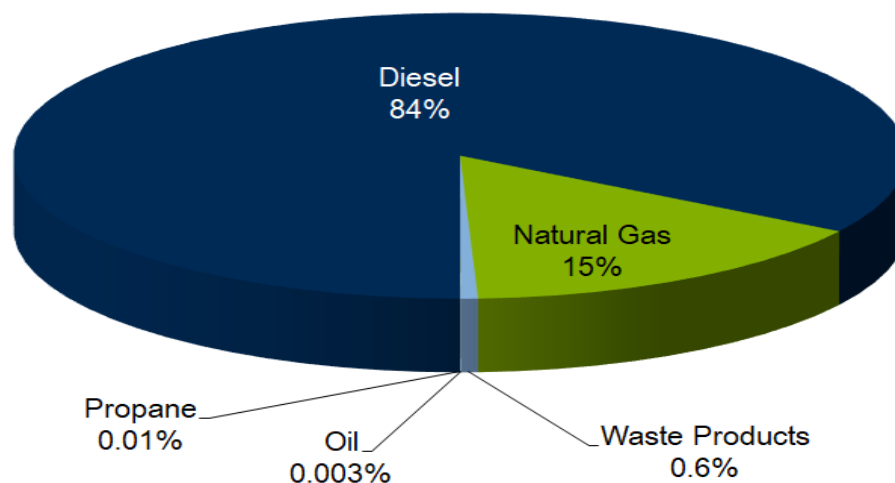
Note: Percent of Winter Nominated Capacity (MWs).

Figure 8: DY 23/24 Confirmed Load Management DR Registrations Customer Load Reduction Methods



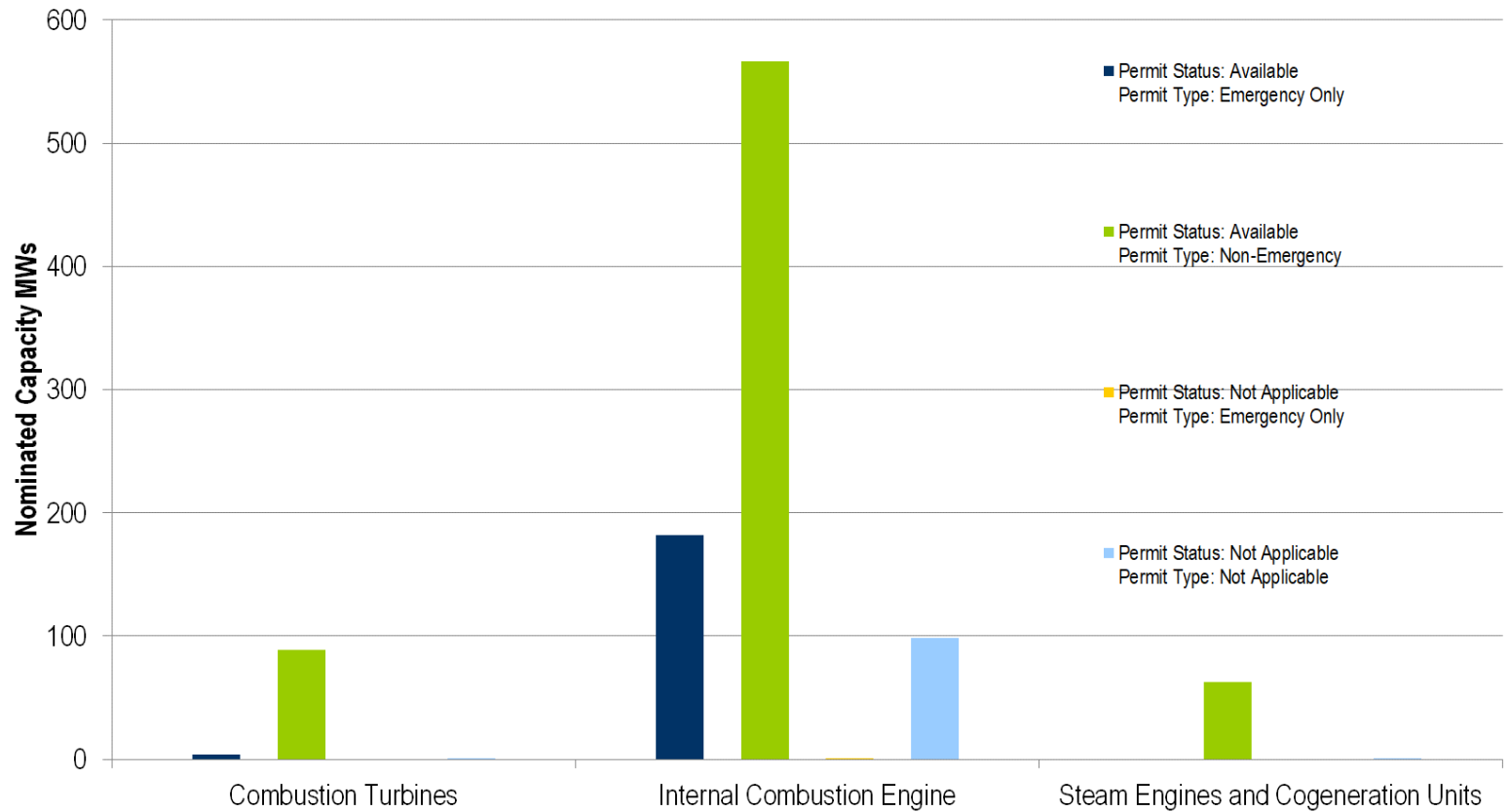
Note: Percent of Winter Nominated Capacity (MWs). Plug Load includes nominated capacity from Data Centers.

Figure 9: DY 23/24 Confirmed Load Management DR Registrations Fuel Mix with Behind the Meter Generation



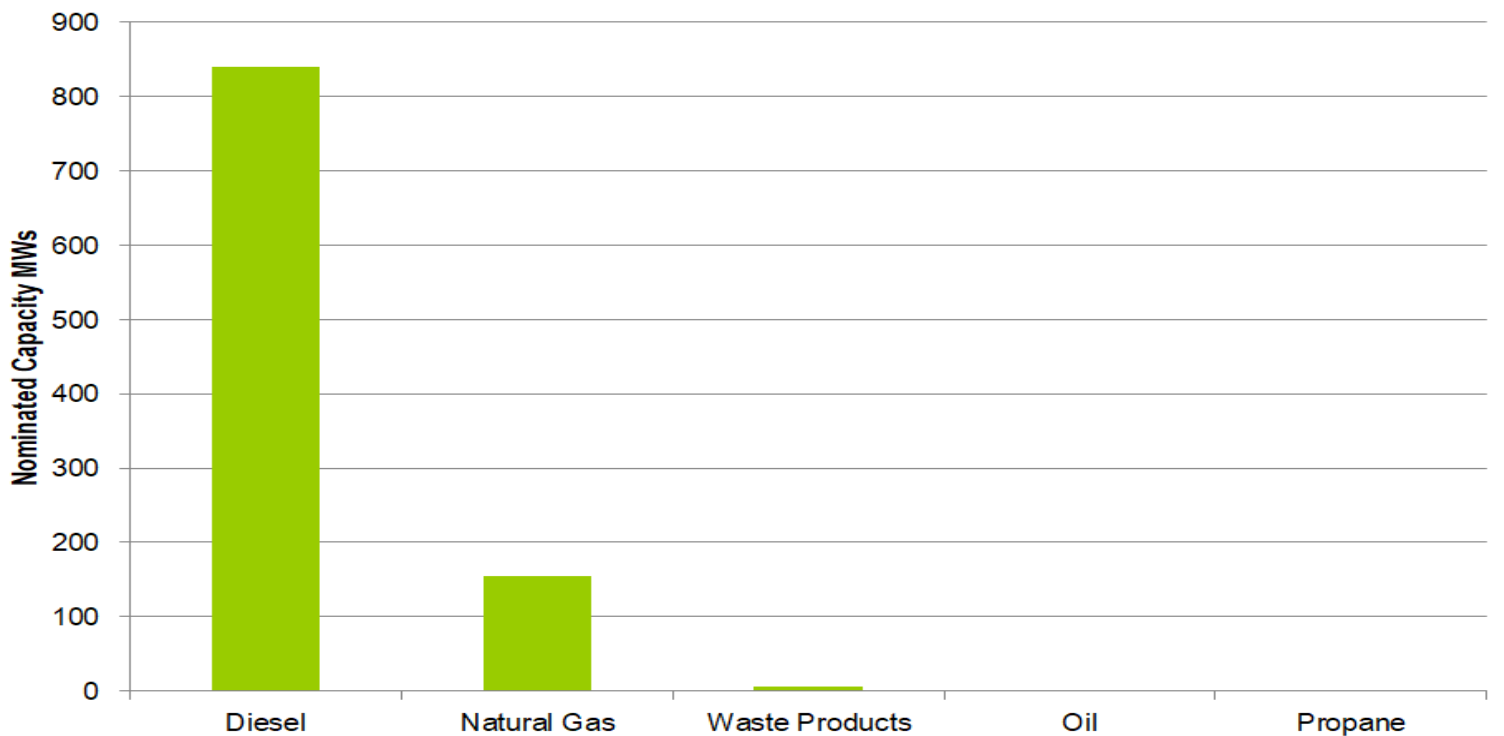
Note: Percent of Winter Nominated Capacity (MWs).

Figure 10: DY 23/24 Confirmed Load Management DR Registrations Generator and Permit Type



Note: Winter Nominated Capacity (MWs).

Figure 11: DY 23/24 Confirmed Load Management DR Registrations Fuel Mix with Behind the Meter Generation



Note: Winter Nominated Capacity (MWs).

Figure 12: DY 23/24 Confirmed Load Management Full DR Registrations Energy Supply Curve:

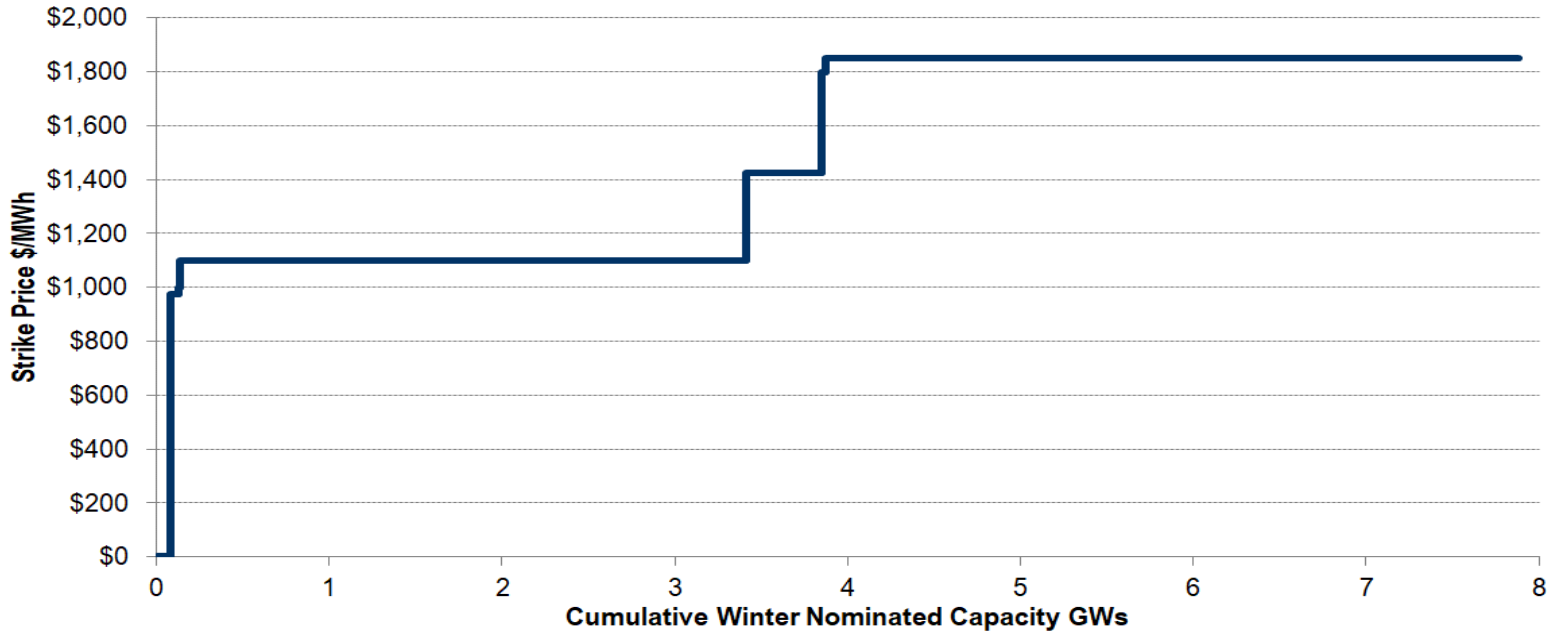


Figure 13: 2024 Load Management Demand Response Monthly Capacity Revenue from RPM

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AECO	\$84,687	\$79,224	\$84,687									
AEP	\$1,351,740	\$1,264,531	\$1,351,740									
APS	\$757,761	\$708,873	\$757,761									
ATSI	\$976,187	\$913,207	\$976,187									
BGE	\$365,167	\$341,608	\$365,167									
COMED	\$1,169,652	\$1,094,191	\$1,169,652									
DAY	\$221,445	\$207,159	\$221,445									
DEOK	\$185,579	\$173,606	\$185,579									
DOM	\$845,472	\$790,925	\$845,472									
DPL	\$258,481	\$241,805	\$258,481									
DUQ	\$125,059	\$116,991	\$125,059									
EKPC	\$285,562	\$267,139	\$285,562									
JCPL	\$184,870	\$172,943	\$184,870									
METED	\$331,692	\$310,293	\$331,692									
PECO	\$580,538	\$543,084	\$580,538									
PENELEC	\$448,444	\$419,512	\$448,444									
PEPCO	\$245,777	\$229,921	\$245,777									
PPL	\$895,046	\$837,301	\$895,046									
PSEG	\$418,374	\$391,382	\$418,374									
RECO	\$3,375	\$3,158	\$3,375									
Total	\$9,734,911	\$9,106,852	\$9,734,911									

Total Capacity Credits: \$28,576,674

Figure 14: Preliminary DY24/25 Load Management Participation by Zone

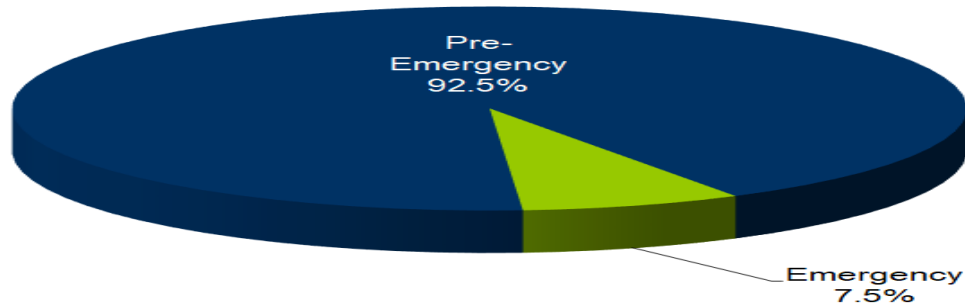
Zone	Load Management Locations	MW
AECO	102	18.6
AEP	625	607.9
APS	374	111.0
ATSI	472	302.0
BGE	367	104.7
COMED	1,183	453.9
DAY	111	110.1
DEOK	69	31.1
DOM	233	129.6
DPL	266	95.2
DUQ	234	60.2
JCPL	187	47.0
METED	183	66.4
PECO	301	94.3
PENELEC	222	84.3
PEPCO	206	49.8
PPL	535	189.1
PSEG	179	69.6
Totals	5,849	2,625

Note:

1) Data as of April 1, 2024.

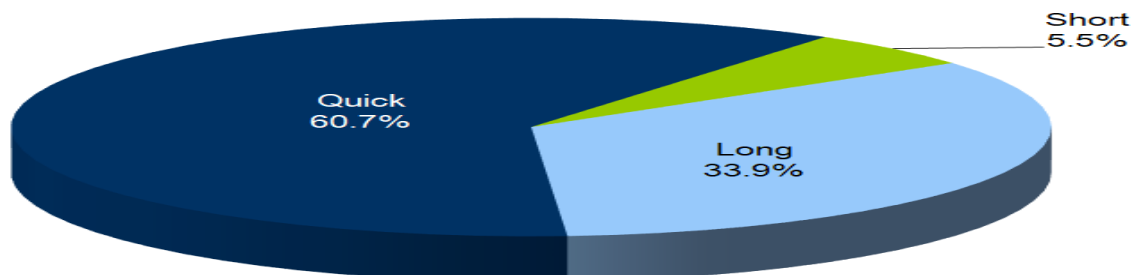
2) Load Management MW are Summer ICAP and include FRR values.

Figure 15: Preliminary DY 24/25 Confirmed Load Management DR Registrations by Resource



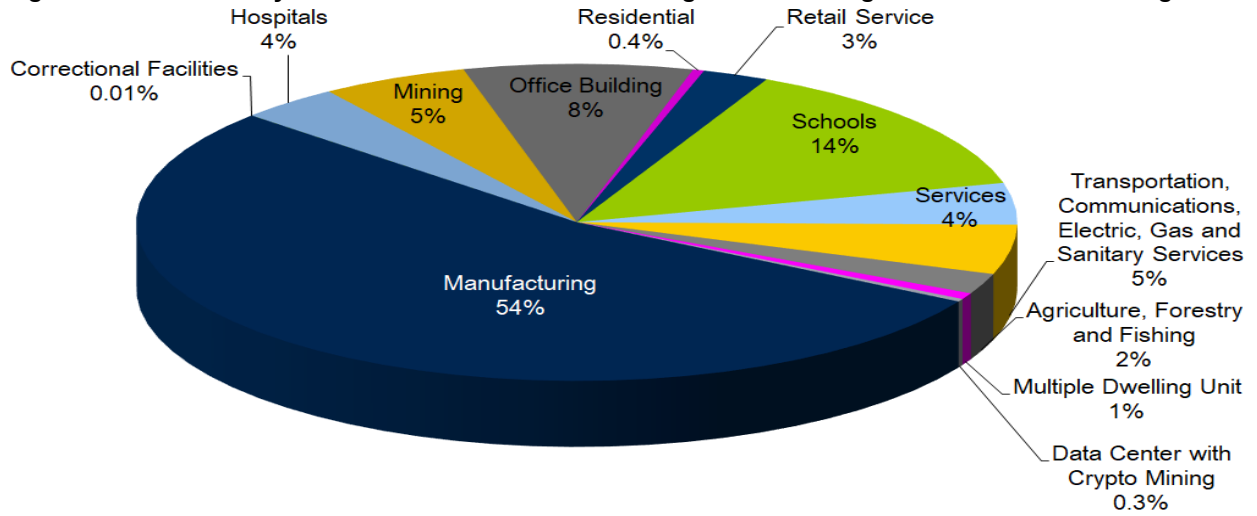
Note: Percent of Summer Nominated Capacity (MWs).

Figure 16: Preliminary DY 24/25 Confirmed Load Management DR Registrations by Lead Time



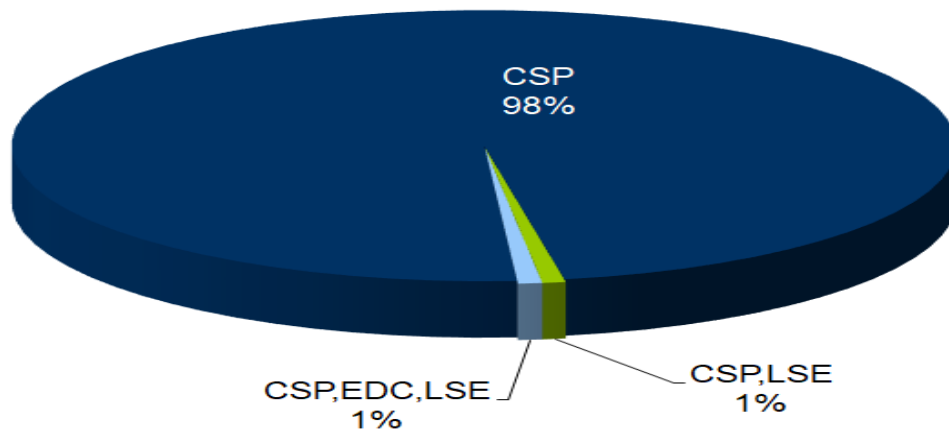
Note: Percent of Summer Nominated Capacity (MWs).

Figure 17: Preliminary DY24/25 Confirmed Load Management DR Registrations Business Segments



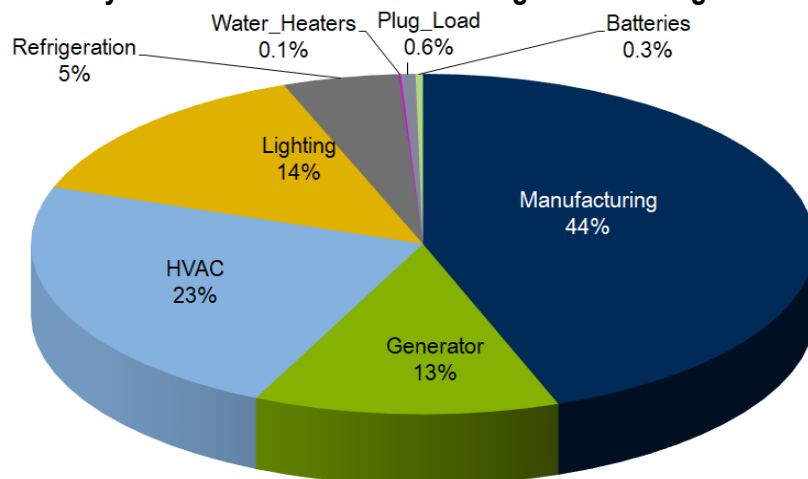
Note: Percent of Summer Nominated Capacity (MWs).

Figure 18: Preliminary DY24/25 Confirmed Load Management DR Registrations Owner/Company Type



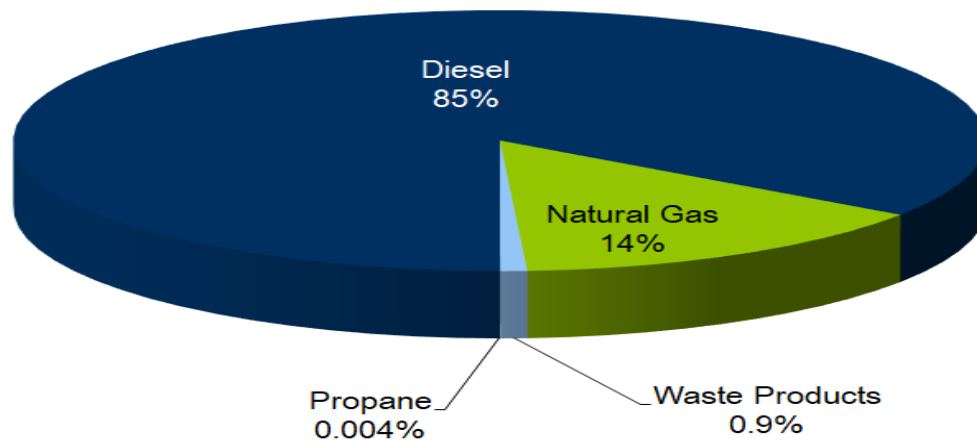
Note: Percent of Summer Nominated Capacity (MWs).

Figure 19: Preliminary DY24/25 Confirmed Load Management DR Registrations Load Reduction Methods



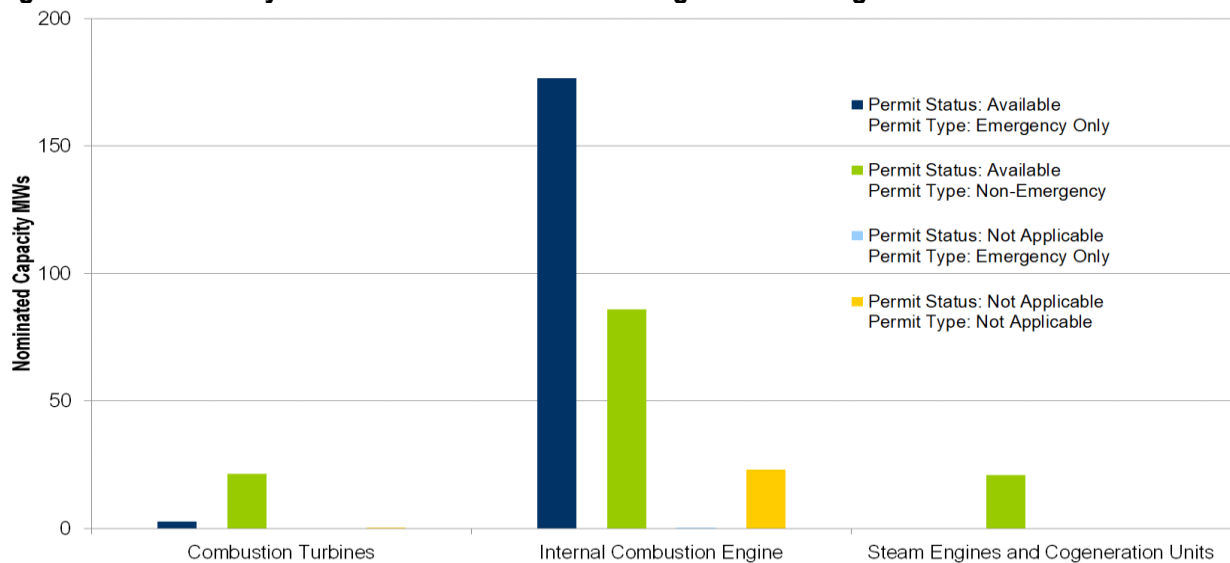
Note: Percent of Summer Nominated Capacity (MWs). Plug Load includes nominated capacity from Data Centers.

Figure 20: Preliminary DY24/25 Confirmed Load Management DR Registrations Fuel Mix with Behind the Meter Generation



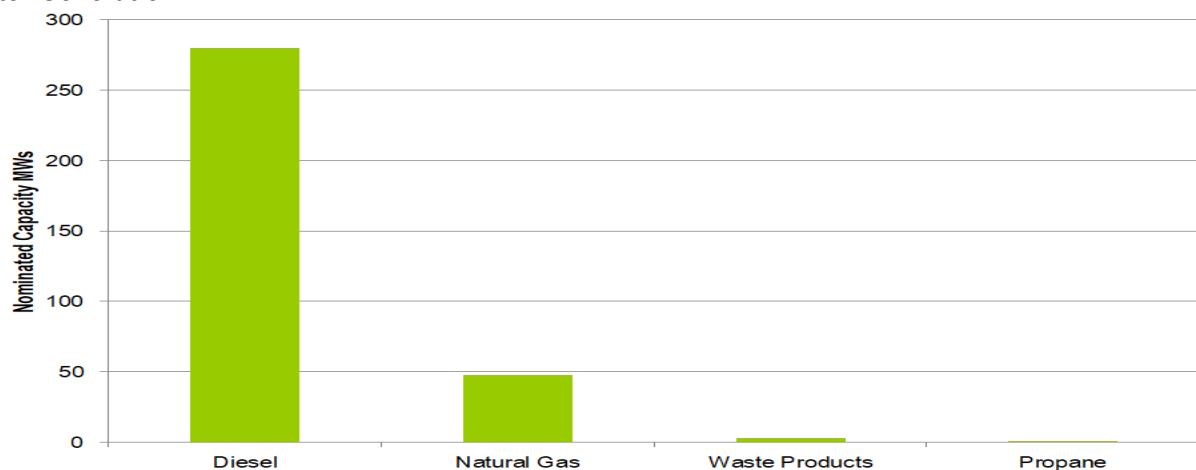
Note: Percent of Summer Nominated Capacity (MWs).

Figure 21: Preliminary DY24/25 Confirmed Load Management DR Registrations Generator and Permit Type



Note: Summer Nominated Capacity (MWs).

Figure 22: Preliminary DY24/25 Confirmed Load Management DR Registrations Fuel Mix with Behind the Meter Generation



Note: Summer Nominated Capacity (MWs).

Figure 23: Preliminary DY24/25 Confirmed Load Management Full DR Registrations Energy Supply Curve:

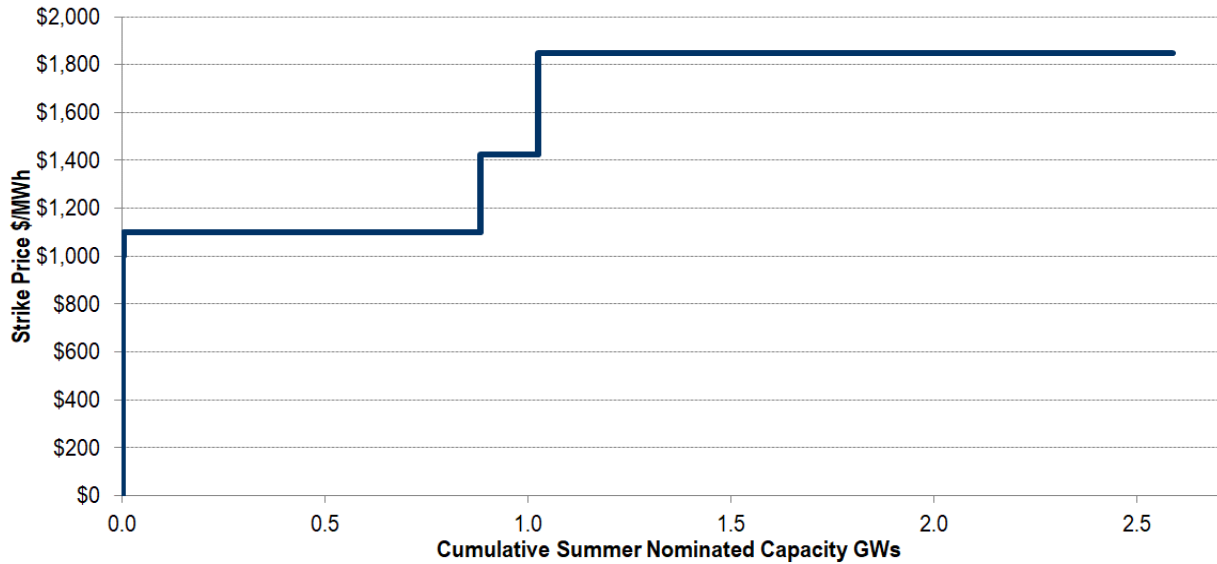
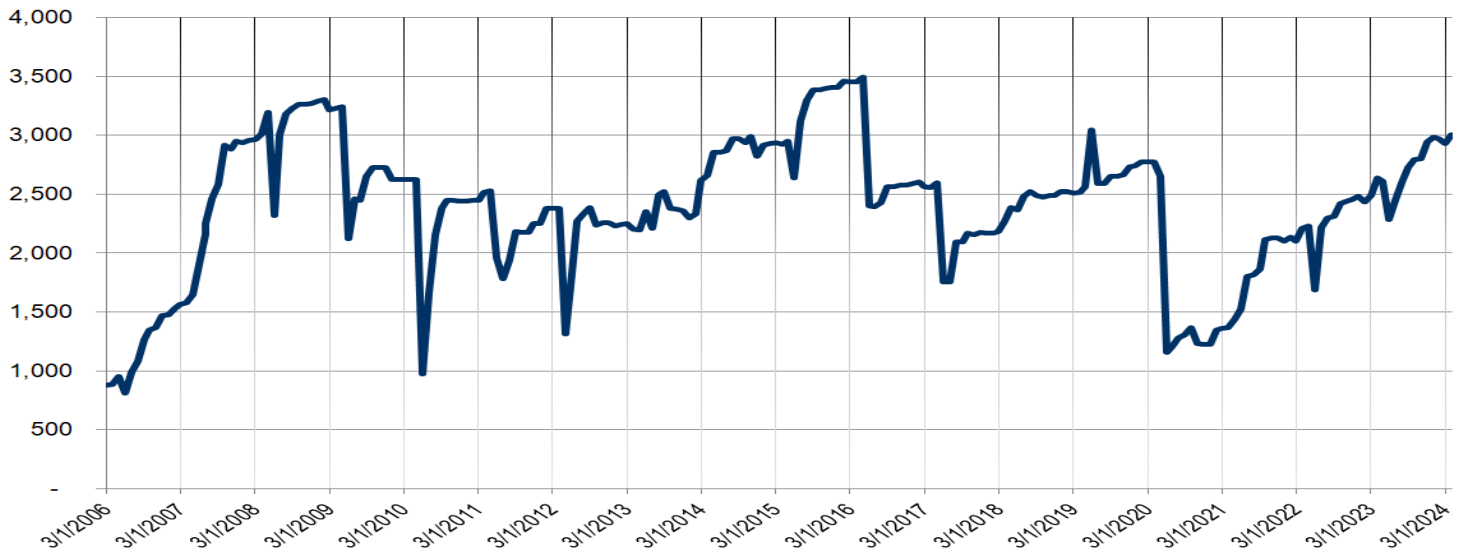


Figure 24: PJM Economic Demand Response Capability in Energy Market (3/1/2006-4/1/2024)



Capability represents total amount that may be offered. Actual offered and cleared volume may be significantly lower and is represented in subsequent figures/tables in report.

Figure 25: 2024 Economic Demand Response Dispatch/Cleared vs Settled Total Energy Market Summary

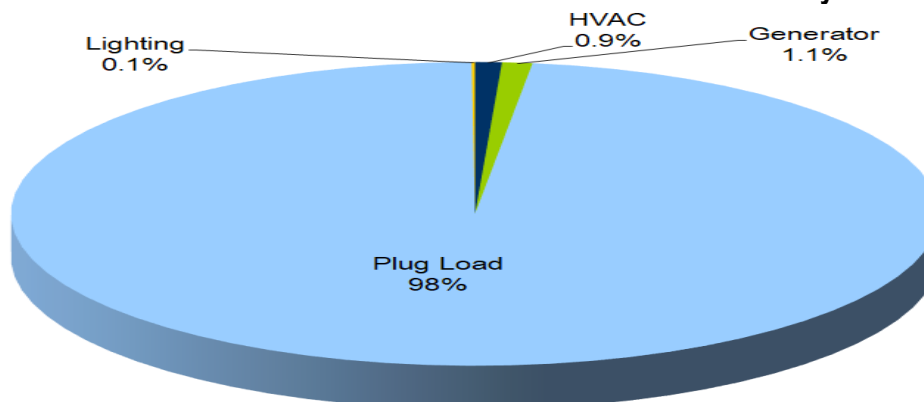
Time		Zone		MWh			Registration Hours			Credits
Year	Month	Dispatched/Cleared	Settled	Dispatched/Cleared	Settled	%	Dispatched/Cleared	Settled	%	\$
2024	1	9	9	24,576	25,484	104%	1,617	1,548	96%	\$2,621,462
2024	2	4	3	1,295	1,452	112%	271	269	99%	\$65,962
2024	3	4	2	1,186	768		241	22	9%	\$47,997
2024	4									
2024	5									
2024	6									
2024	7									
2024	8									
2024	9									
2024	10									
2024	11									
2024	12									
YTD Totals				27,057	27,704	102%	2,129	1,839	86%	\$2,735,422
YTD Average		6	5							

Figure 26: 2024 Economic Demand Response Dispatched vs Settled Real-Time Energy Market Summary

Time		Zone		MWh			Registration Hours			Credits
Year	Month	Dispatched	Settled	Dispatched	Settled	%	Dispatched	Settled	%	\$
2024	1	6	6	282	345	122%	397	363	91%	\$23,442
2024	2	2	2	13	168	1317%	147	147	100%	\$3,723
2024	3	1		8			87			
2024	4									
2024	5									
2024	6									
2024	7									
2024	8									
2024	9									
2024	10									
2024	11									
2024	12									
YTD Totals				303	513	170%	631	510	81%	\$27,165
YTD Average		3	4							

Figure 27: 2024 Economic Demand Response Cleared vs Settled Day-Ahead Energy Market Summary

Time		Zone		MWh			Registration Hours			Credits
Year	Month	Cleared	Settled	Cleared	Settled	%	Cleared	Settled	%	\$
2024	1	8	8	24,294	25,139	103%	1,220	1,185	97%	\$2,598,020
2024	2	3	2	1,282	1,283	100%	124	122	98%	\$62,239
2024	3	3	2	1,178	768		154	22	14%	\$47,997
2024	4									
2024	5									
2024	6									
2024	7									
2024	8									
2024	9									
2024	10									
2024	11									
2024	12									
YTD Totals				26,754	27,190	102%	1,498	1,329	89%	\$2,708,257
YTD Average		5	4							

Figure 28: 2024 Estimated Total Economic DR Load Reduction MWh by Load Reduction Method


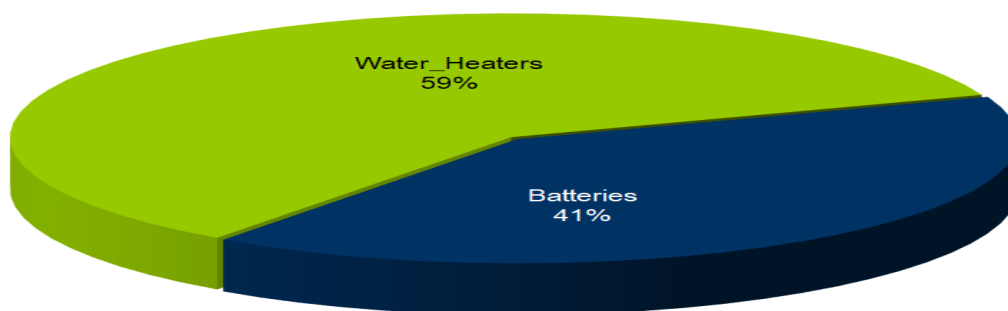
Note: Plug Load includes reductions from Data Centers.

Figure 29: 2024 Economic Demand Response Capability in the Ancillary Service Markets

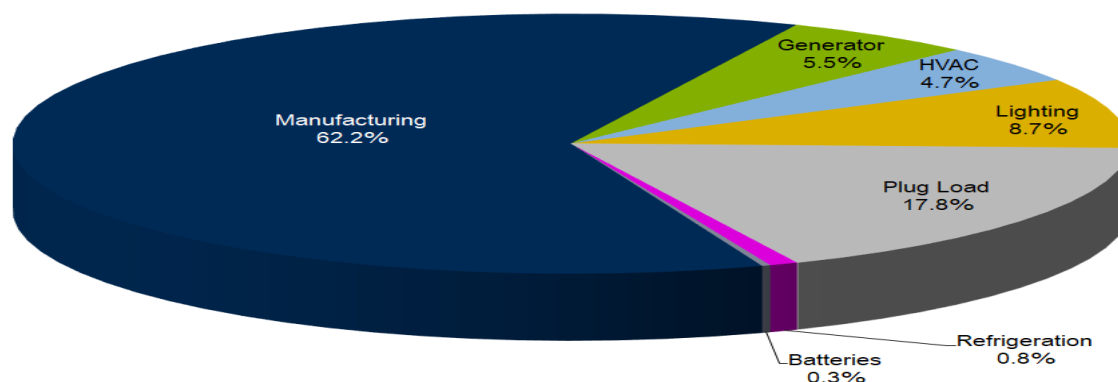
Synch Reserves	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Locations	MAD	215	214	217									
	Non-MAD	199	203	205									
	RTO	414	417	422									
Average Number of Unique Participating Locations per Month:		418											
MWs	MAD	631	547	550									
	Non-MAD	1,701	1,836	1,831									
	RTO	2,332	2,383	2,381									
Average MWs per Month:		2,365											

Regulation	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Locations	RTO	180	176	166									
Average Number of Unique Participating Locations per Month:		174											
MWs	RTO	157	160	157									
Average MWs per Month:		158											

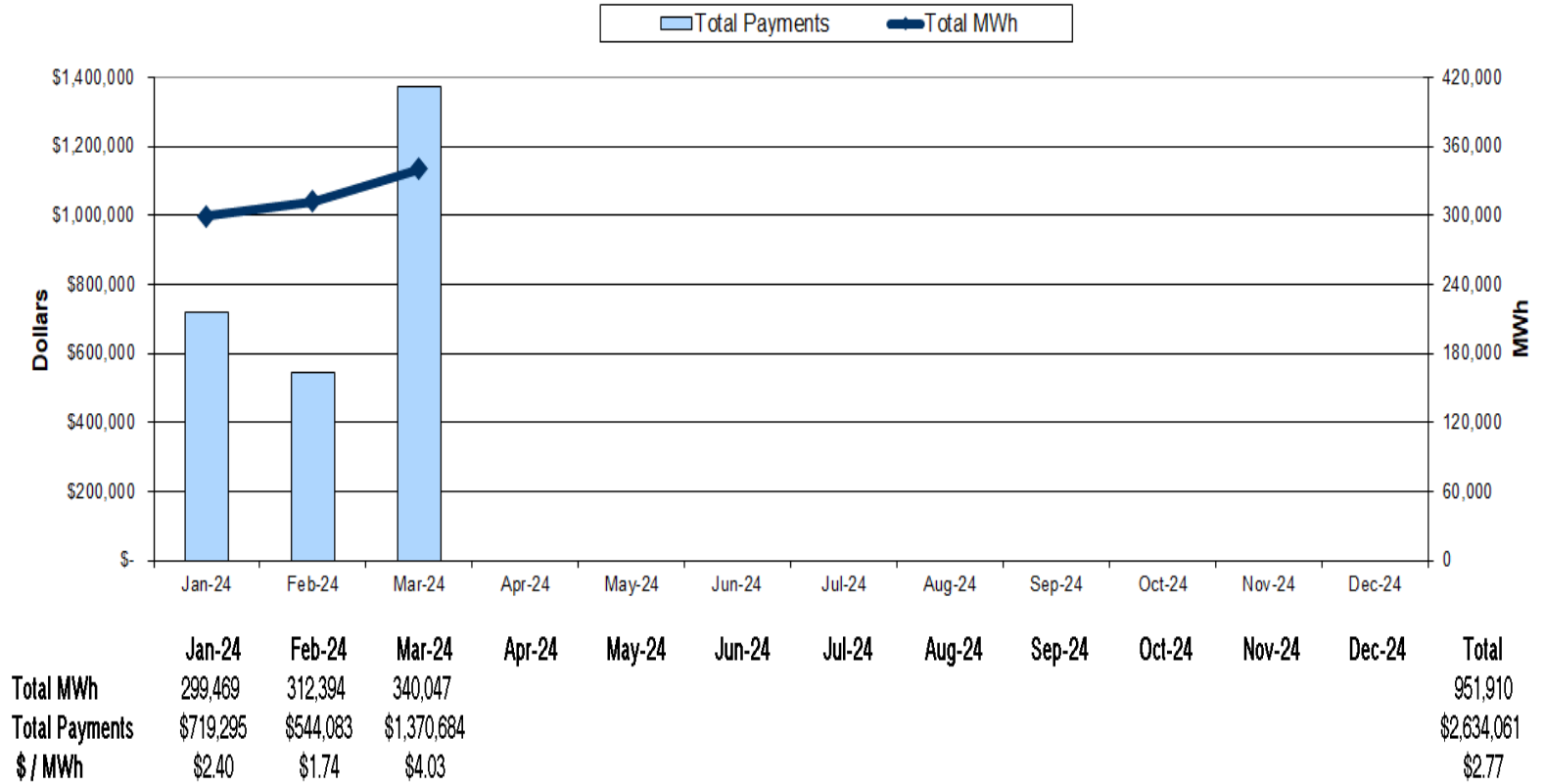
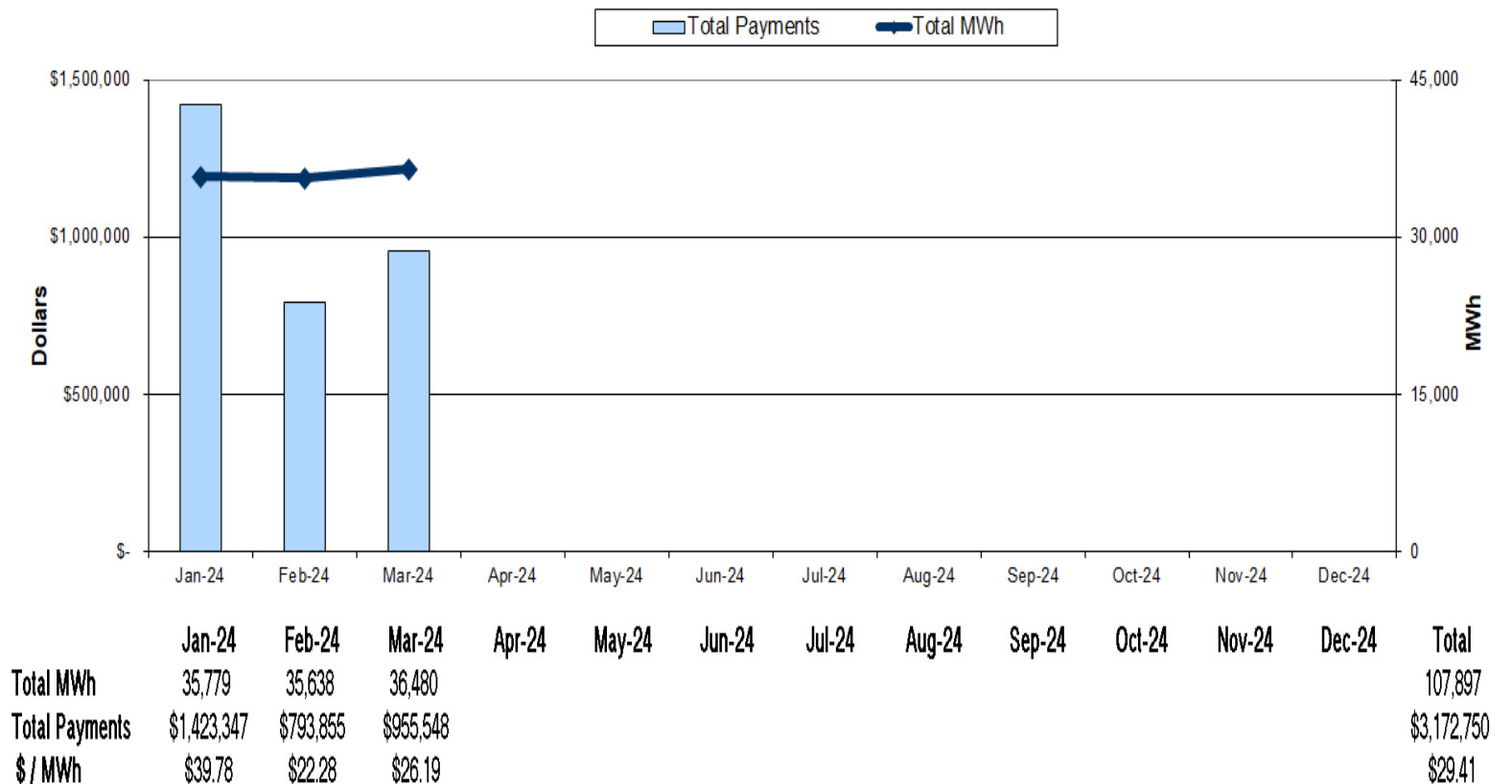
Capability represents total amount that may be offered. Actual offered and cleared volume may be significantly lower and is represented in subsequent figures/tables in report

Figure 30: 2024 PJM Demand Response Confirmed Regulation Registrations Load Reduction Methods


Note: Percent of CSP Reported Load Reduction MWs

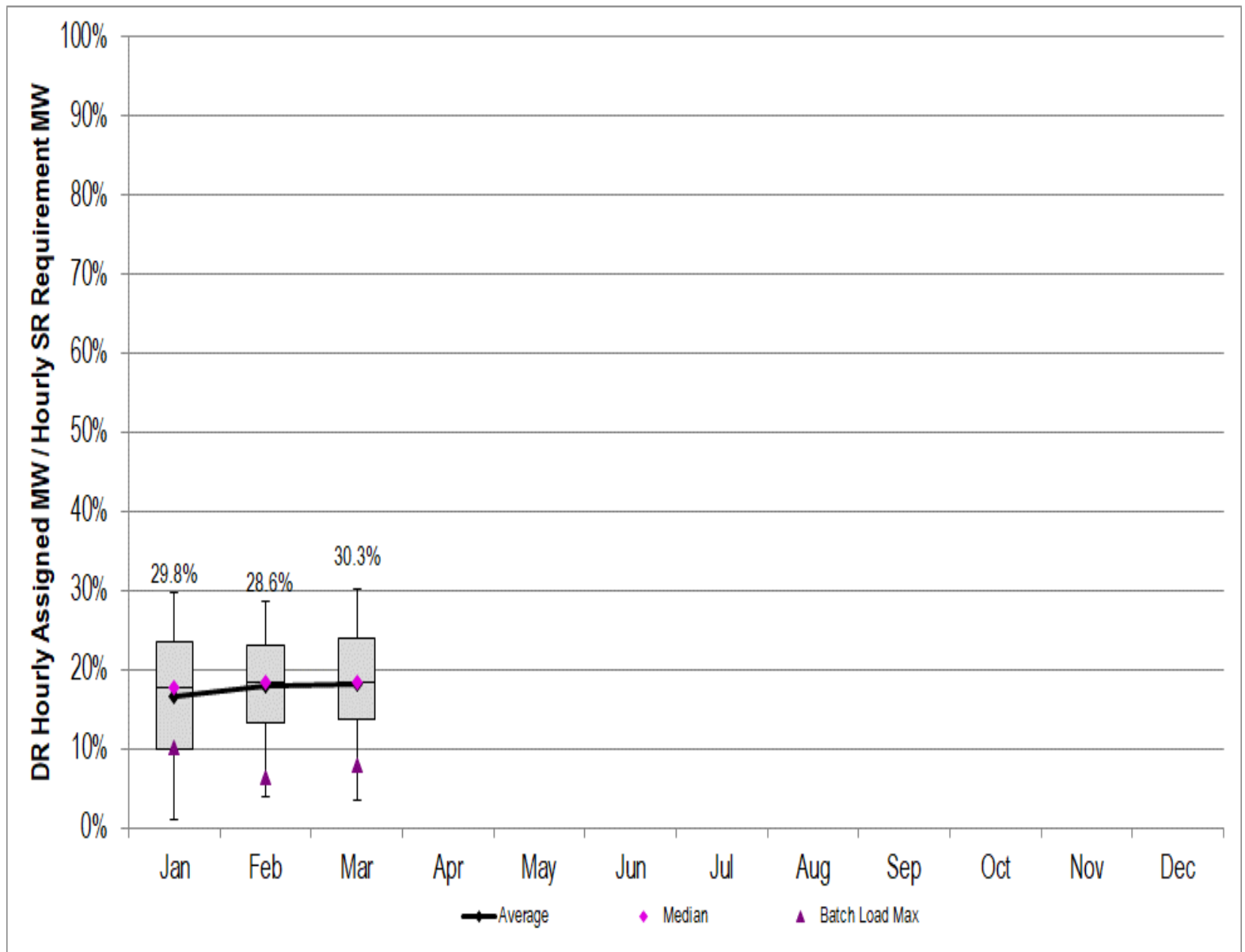
Figure 31: 2024 PJM Demand Response Confirmed Synch Reserve Registrations Load Reduction Methods


Note: Percent of CSP Reported Load Reduction MWs. Plug Load includes reported reductions from Data Centers.

Figure 32: 2024 Economic Demand Response Regulation Market Participation

Figure 33: 2024 Economic Demand Response Synchronous Reserve Market Participation


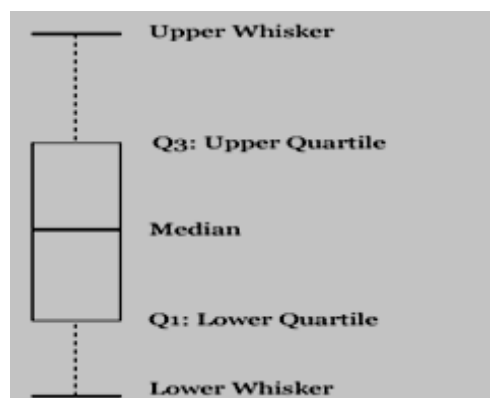
Note: For Figures 32 and 33 above, MWh=sum of the settled MW. Example: 1 MW load available for 12 hours = 12 MWh.

Figure 34: Economic DR Synchronous Reserve Penetration Distribution (Box-plot) for 2024



Notes:

- 1) Economic Demand Response are Tier2 resources.
- 2) Percents shown on upper whisker are maximum hourly DR percentage of Total SR Requirement.
- 3) The Box-plot depicts the distribution of DR hourly assigned (as a percentage of the Total requirement) for a month:



The upper whisker is the maximum value

The box top is the Upper Quartile (75%) value

The line inside the box is the median (50%) value

The box bottom is the Lower Quartile (25%) value

The lower whisker is the minimum value