

2024 Demand Response Operations Markets Activity Report: June 2024

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PJM Demand Side Response Operations

June 12, 2024



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Figure 1: DY 24/25 Active Participants in DR Programs

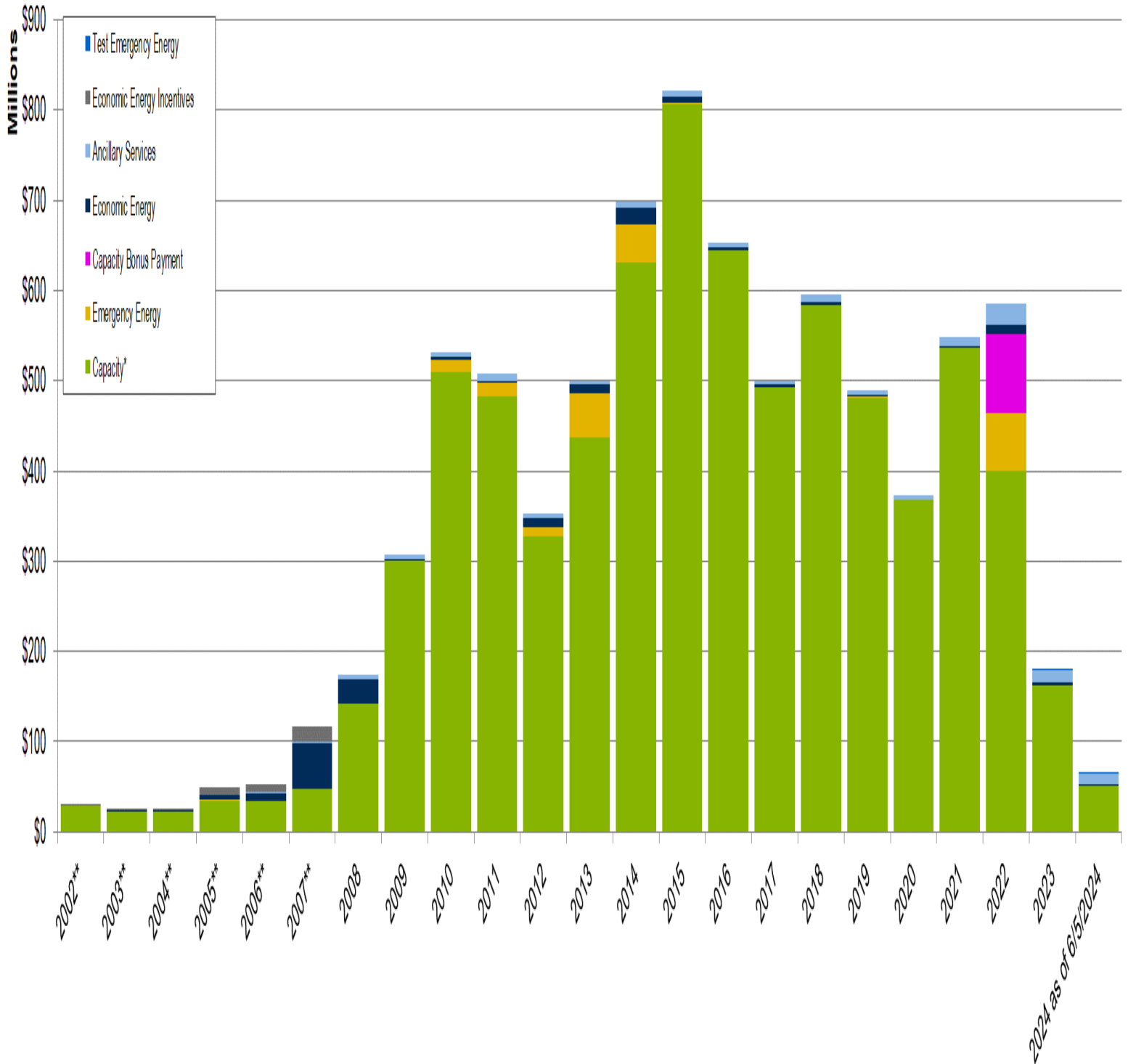
Zone	Economic		Load Management		Unique	
	Locations	MW	Locations	MW	Locations	MW
AECO	16	6.7	172	34.0	176	37.3
AEP	163	640.8	1,782	1,418.3	1,817	1,625.7
APS	54	305.2	1,222	451.0	1,233	471.4
ATSI	54	521.5	1,334	677.4	1,365	1,017.1
BGE	27	277.1	819	198.2	823	448.5
COMED	79	66.5	2,537	1,283.6	2,582	1,290.9
DAY	9	18.0	199	181.7	203	193.3
DEOK	15	161.9	458	214.5	459	254.8
DOM	73	144.7	1,282	664.9	1,332	777.2
DPL	135	34.6	577	136.5	578	136.6
DUQ	14	127.8	494	101.3	502	123.1
EKPC			22	203.9	22	203.9
JCPL	19	45.8	305	106.3	308	146.5
METED	14	102.9	548	139.7	556	231.9
PECO	40	70.6	1,265	334.9	1,275	368.9
PENELEC	12	56.7	611	225.2	615	230.6
PEPCO	13	9.1	634	165.1	644	170.6
PPL	25	89.8	1,403	419.8	1,418	460.1
PSEG	38	39.6	941	256.9	952	272.9
RECO			16	2.5	16	2.5
Total	800	2,719	16,621	7,216	16,876	8,464

Note:

- 1) Data as of June 12, 2024.
- 2) Load Management MW are 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 summer period of DY24/25, Total DR Commitment Value is 7,334 MW (includes FRR value of 457 MW and DR Summer Only value of 234 MW)

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

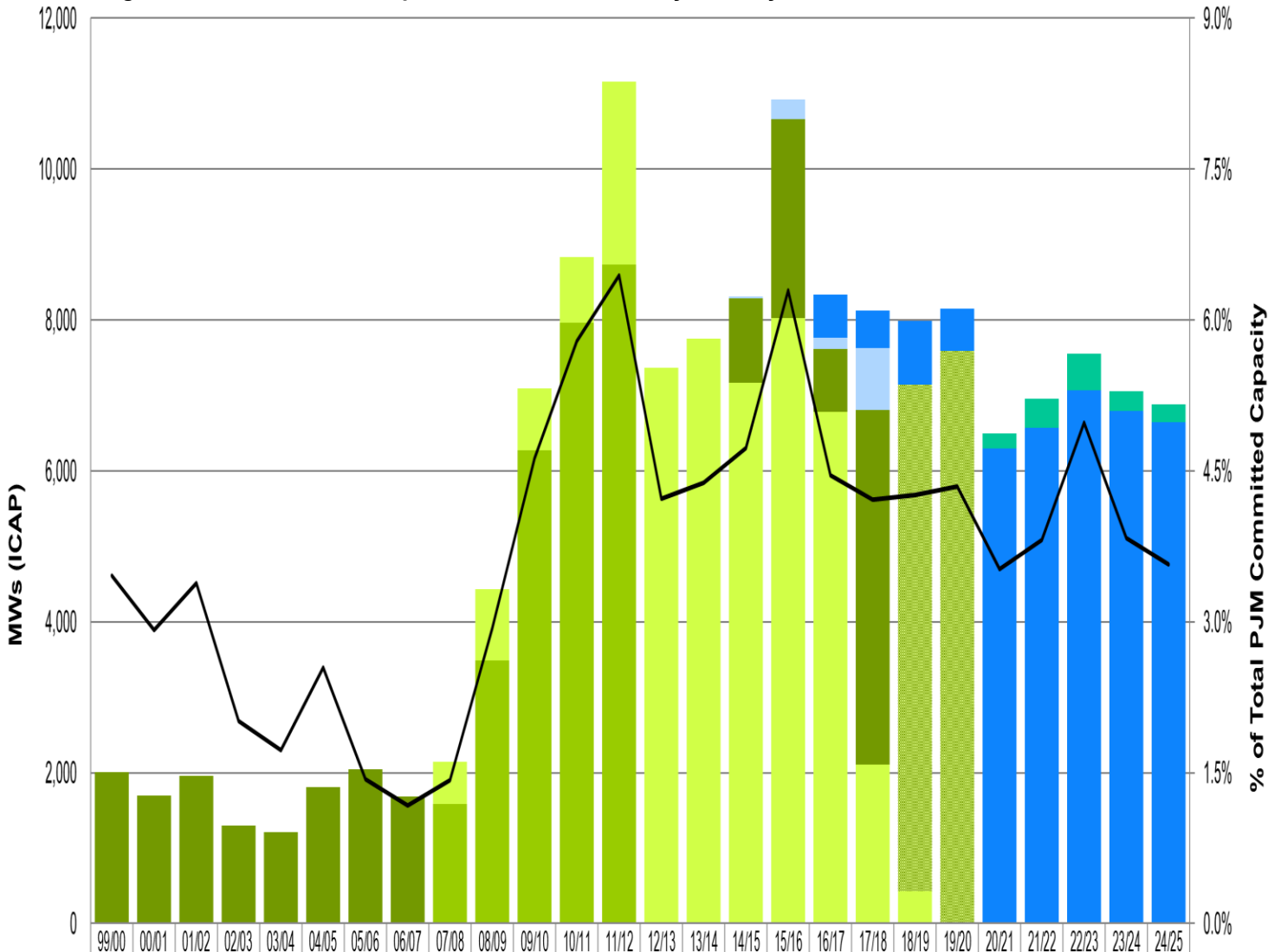


* Capacity Net Revenue inclusive of Capacity Credits and Charges. From 2020 on this value also includes Price Responsive Demand Credits.

** 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.

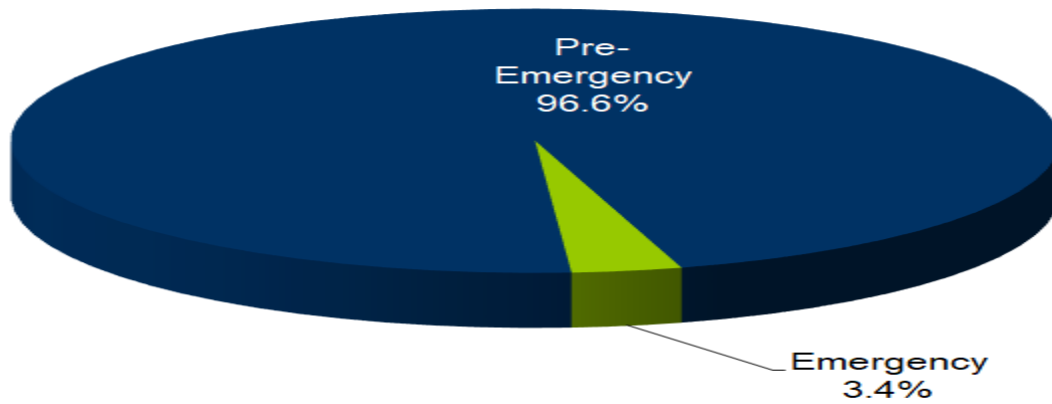
Figure 3: PJM Demand Response Committed MWs by Delivery Year



	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25
Summer - CP																						196	394	489	258	234
Annual - CP																		574	493	843	556	6,296	6,568	7,066	6,793	6,644
Base DR																				6,717	7,596					
Annual - DR																22	266	144	822							
Extended Summer - DR																1,126	2,635	836	4,694							
Limited - DR									555	940	815	869	2,425	7,361	7,753	7,166	8,027	6,783	2,111	427						
Limited - ILR								1,585	3,489	6,274	7,961	8,731														
Limited - ALM	2,005	1,693	1,962	1,292	1,207	1,806	2,042	1,677																		
Total PJM MWs	58,000	58,000	58,000	64,076	69,969	70,852	142,494	142,864	150,041	150,720	153,274	152,413	173,188	174,272	176,717	175,994	173,499	187,076	192,489	187,322	187,492	184,098	182,747	151,698	184,179	192,486
DR as % of Total PJM Committed Capacity	3.5%	2.9%	3.4%	2.0%	1.7%	2.5%	1.4%	1.2%	1.4%	2.9%	4.6%	5.8%	6.4%	4.2%	4.4%	4.7%	6.3%	4.5%	4.2%	4.3%	4.3%	3.5%	3.8%	5.0%	3.8%	3.6%

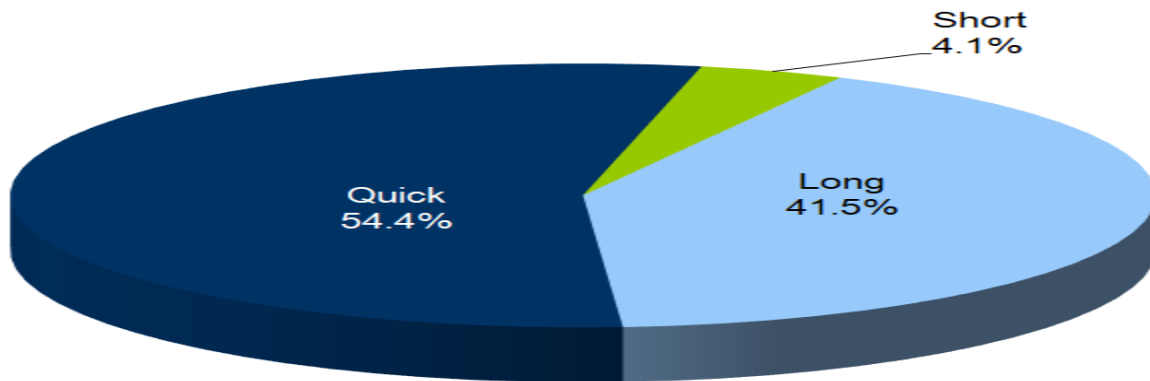
- Notes:
- 1) Data represents net commitment ICAP value (for each product) as of 6/1/2024. Does not include FRR values.
 - 2) RPM was implemented DY 07/08.
 - 3) ALM MWs are seasonal averages for Delivery Years before 07/08.

Figure 4: DY 24/25 Confirmed Load Management DR Registrations by Resource



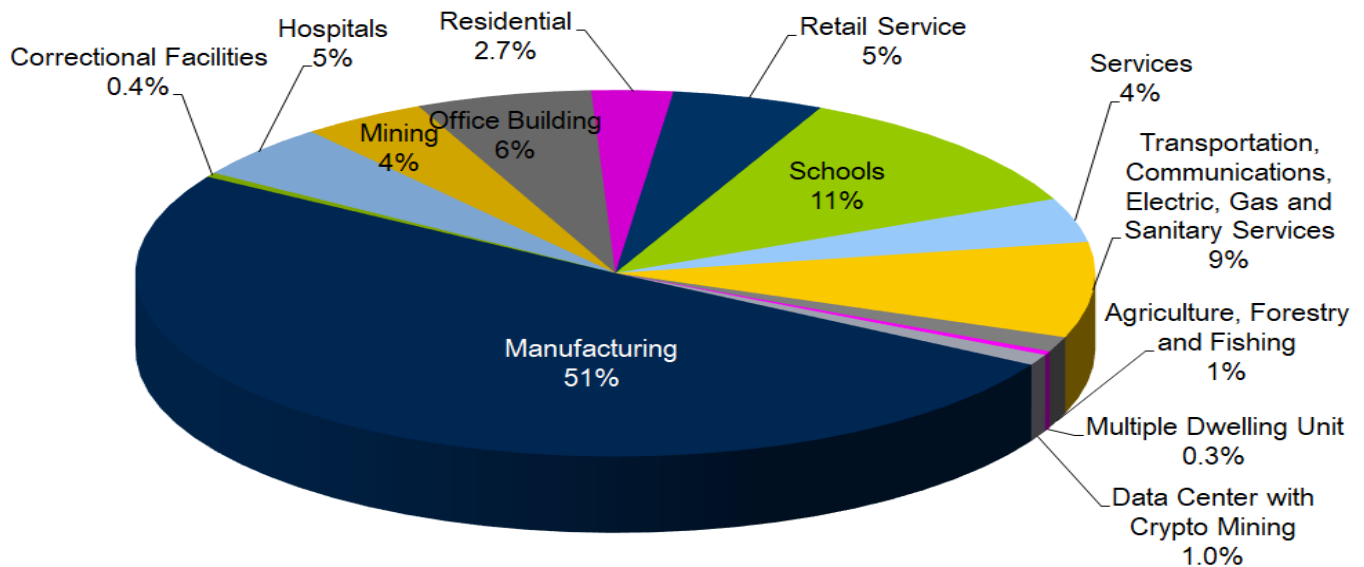
Note: Percent of Summer Nominated Capacity (MWs).

Figure 5: DY 24/25 Confirmed Load Management DR Registrations Lead Times



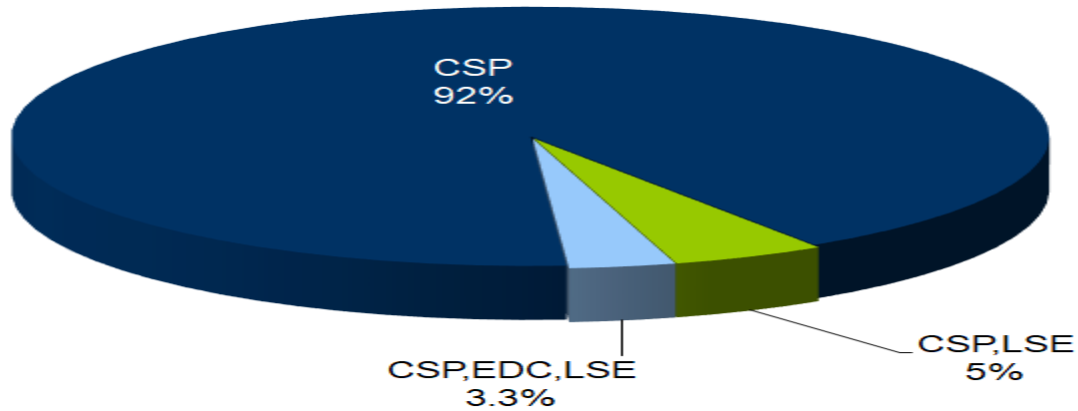
Note: Percent of Summer Nominated Capacity (MWs).

Figure 6: DY 24/25 Confirmed Load Management DR Registrations Business Segments



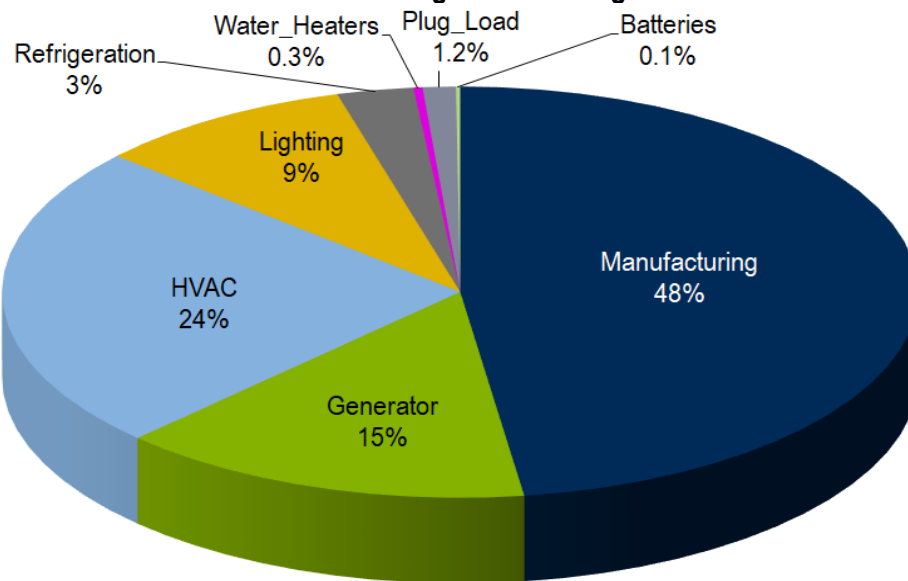
Note: Percent of Summer Nominated Capacity (MWs).

Figure 7: DY 24/25 Confirmed Load Management DR Registrations Owner/Company Type



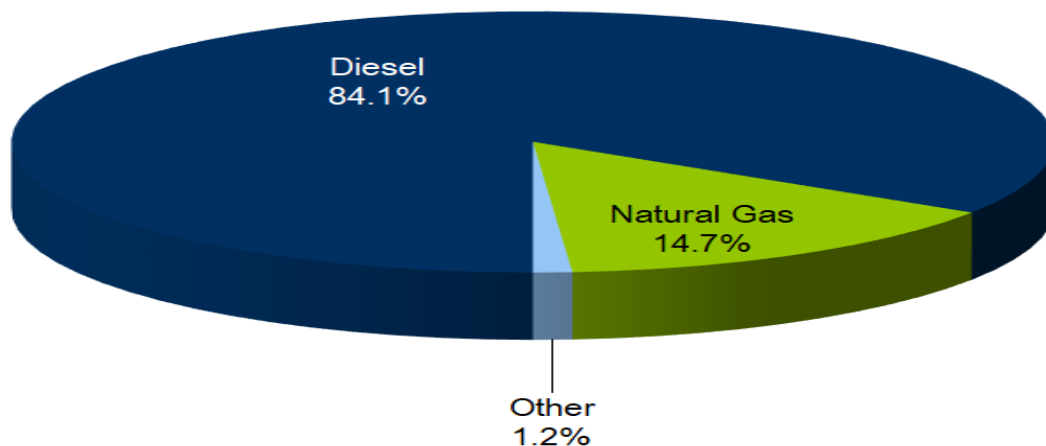
Note: Percent of Summer Nominated Capacity (MWs).

Figure 8: DY 24/25 Confirmed Load Management DR Registrations Customer Load Reduction Methods



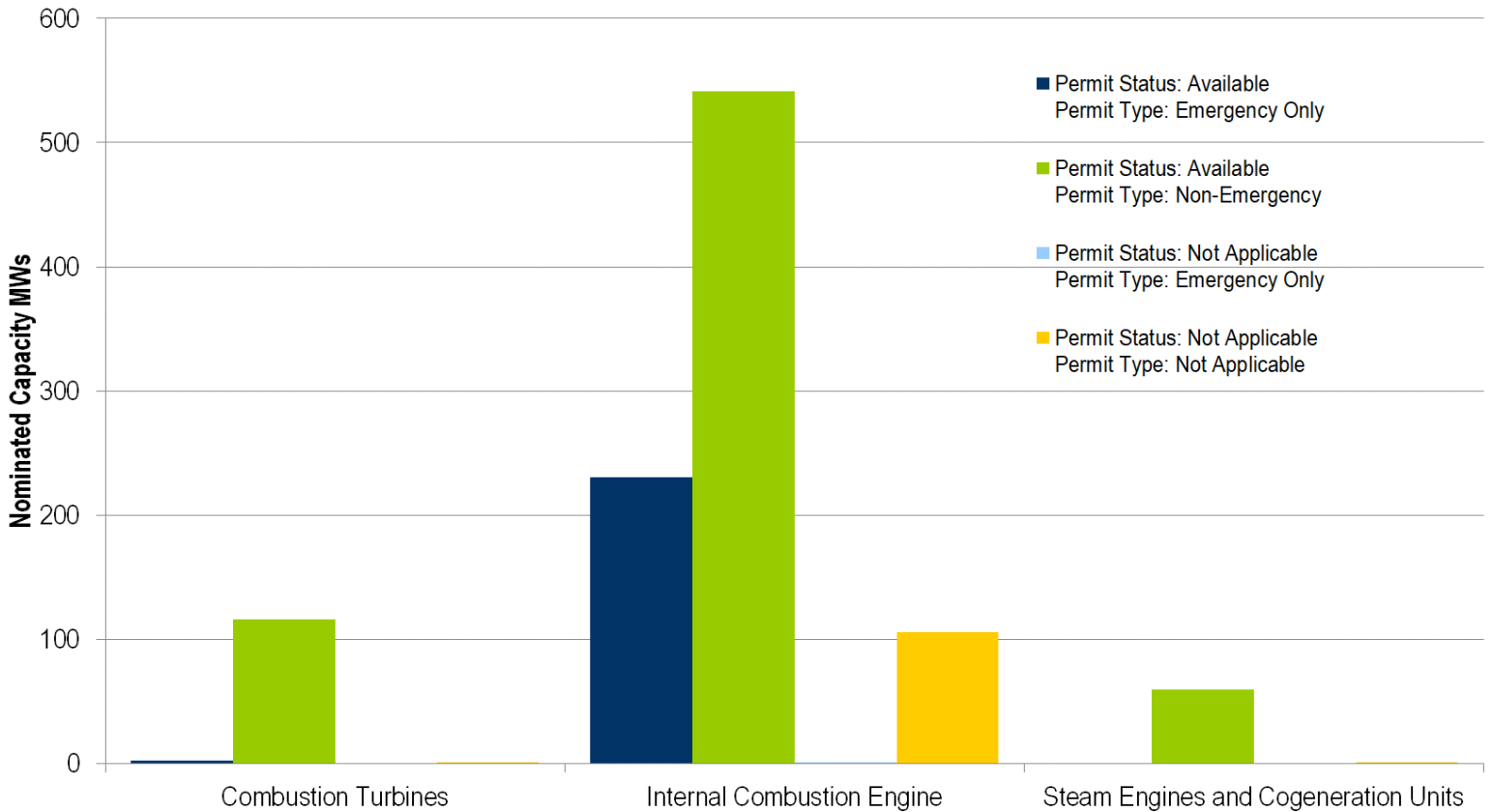
Note: Percent of Summer Nominated Capacity (MWs). Plug Load includes nominated capacity from Data Centers with Crypto Mining.

Figure 9: DY 24/25 Confirmed Load Management DR Registrations Fuel Mix with Behind the Meter Generation



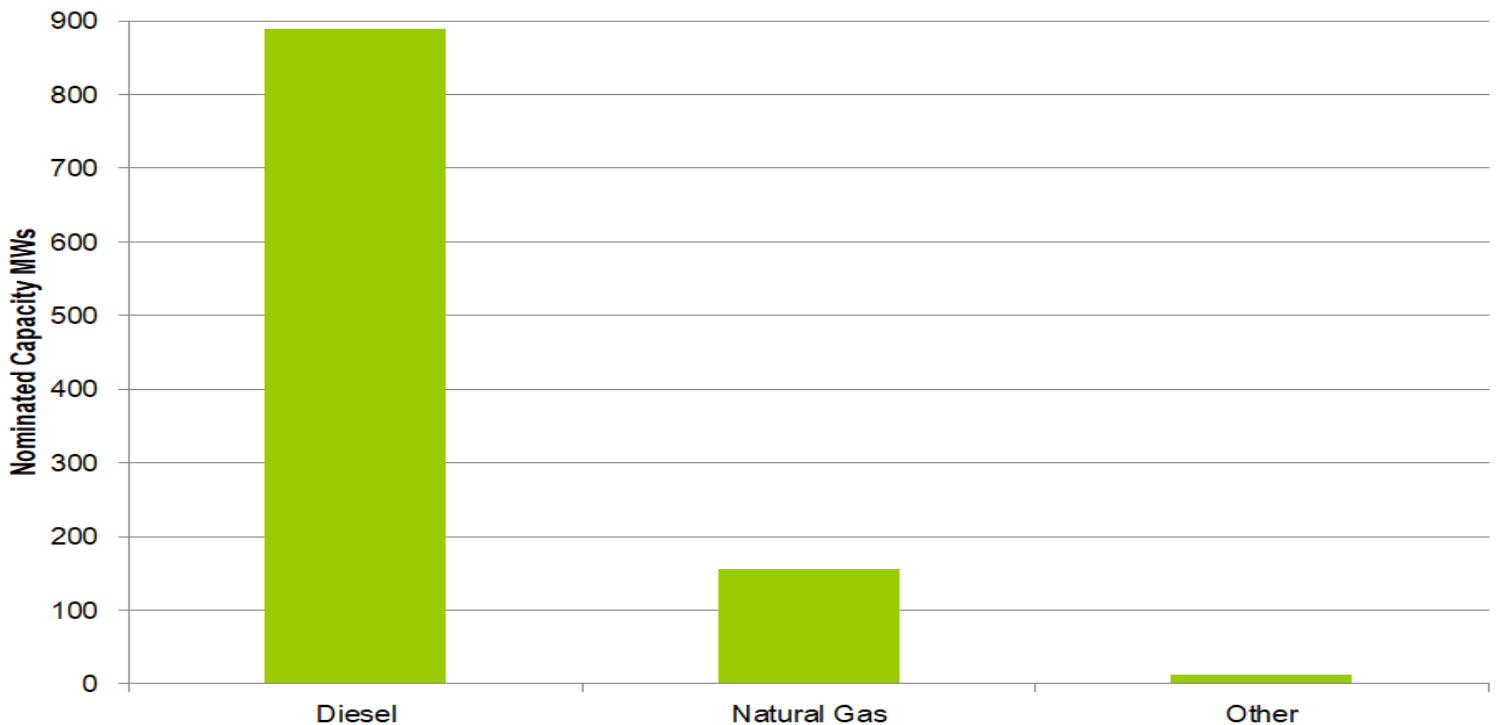
Note: Percent of Summer Nominated Capacity (MWs). The category "Other" includes Oil, Propane, Waste Products and Coal

Figure 10: DY 24/25 Confirmed Load Management DR Registrations Generator and Permit Type

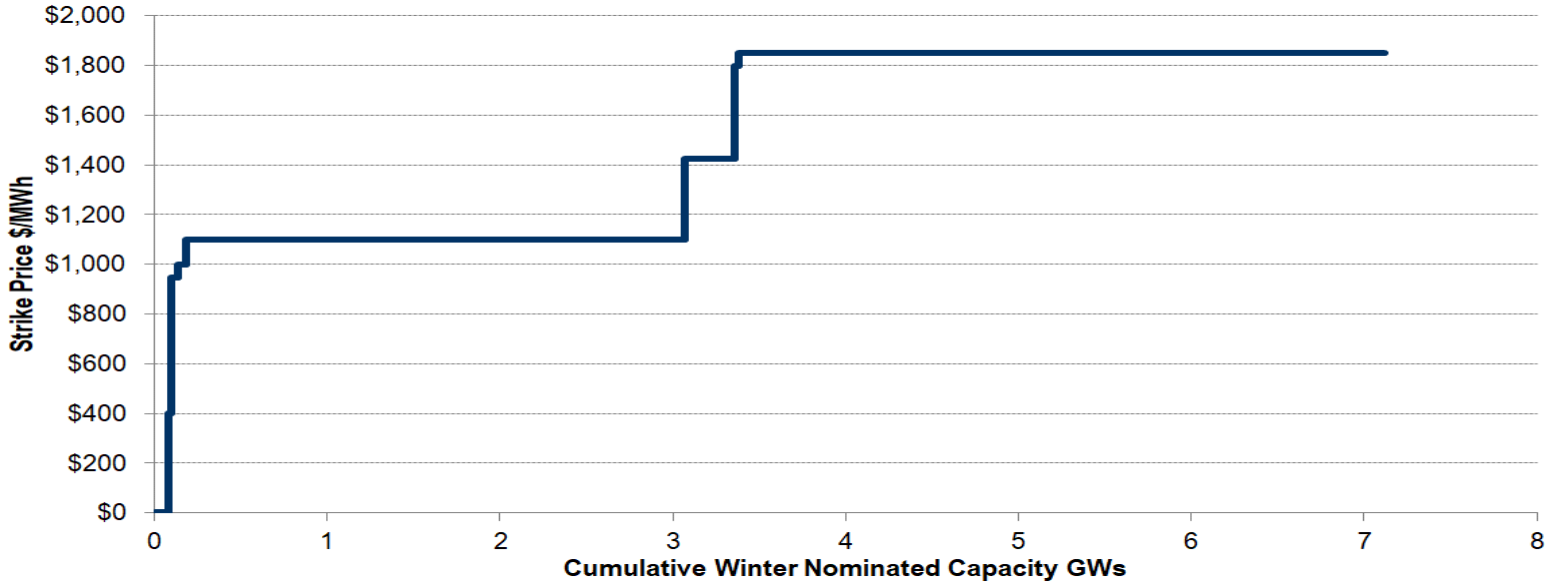


Note: Summer Nominated Capacity (MWh).

Figure 11: DY 24/25 Confirmed Load Management DR Registrations Fuel Mix with Behind the Meter Generation

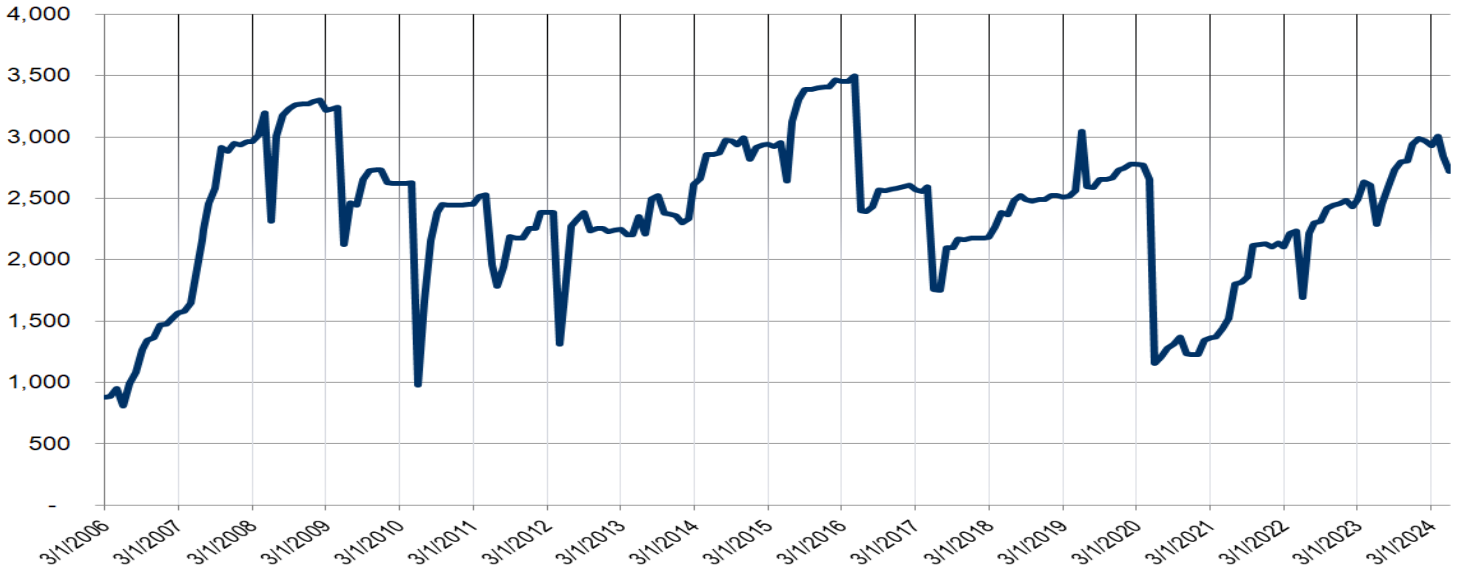


Note: Summer Nominated Capacity (MWh). The category "Other" includes Oil, Propane, Waste Products and Coal.

Figure 12: DY 24/25 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	\$81,956	\$84,687							
AEP	\$1,351,740	\$1,264,531	\$1,351,740	\$1,308,135	\$1,351,740							
APS	\$757,761	\$708,873	\$757,761	\$733,317	\$757,761							
ATSI	\$976,187	\$913,207	\$976,187	\$944,697	\$976,187							
BGE	\$365,167	\$341,608	\$365,167	\$353,388	\$365,167							
COMED	\$1,169,652	\$1,094,191	\$1,169,652	\$1,131,922	\$1,169,652							
DAY	\$221,445	\$207,159	\$221,445	\$214,302	\$221,445							
DEOK	\$185,579	\$173,606	\$185,579	\$179,592	\$185,579							
DOM	\$845,472	\$790,925	\$845,472	\$818,198	\$845,472							
DPL	\$258,481	\$241,805	\$258,481	\$250,143	\$258,481							
DUQ	\$125,059	\$116,991	\$125,059	\$121,025	\$125,059							
EKPC	\$285,562	\$267,139	\$285,562	\$276,351	\$285,562							
JCPL	\$184,870	\$172,943	\$184,870	\$178,907	\$184,870							
METED	\$331,692	\$310,293	\$331,692	\$320,993	\$331,692							
PECO	\$580,538	\$543,084	\$580,538	\$561,811	\$580,538							
PENELEC	\$448,444	\$419,512	\$448,444	\$433,978	\$448,444							
PEPCO	\$245,777	\$229,921	\$245,777	\$237,849	\$245,777							
PPL	\$895,046	\$837,301	\$895,046	\$866,174	\$895,046							
PSEG	\$418,374	\$391,382	\$418,374	\$404,878	\$418,374							
RECO	\$3,375	\$3,158	\$3,375	\$3,266	\$3,375							
Total	\$9,734,911	\$9,106,852	\$9,734,911	\$9,420,882	\$9,734,911							

Total Capacity Credits: \$47,732,467

Figure 14: PJM Economic Demand Response Capability in Energy Market (3/1/2006-6/1/2024)


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 15: 2024 Economic Demand Response Dispatch/Cleared vs Settled Total Energy Market Summary

Year	Month	Zone		MWh			Registration Hours			Credits \$
		Dispatched/Cleared	Settled	Dispatched/Cleared	Settled	%	Dispatched/Cleared	Settled	%	
2024	1	9	9	24,576	25,484	104%	1,617	1,617	100%	\$2,621,636
2024	2	4	4	1,295	1,468	113%	271	271	100%	\$67,555
2024	3	4	4	1,169	1,210	104%	224	223	100%	\$75,390
2024	4	4	3	2,557	2,567	100%	409	213	52%	\$101,253
2024	5	6	2	21,933	6,248	28%	1,353	237	18%	\$226,042
2024	6									
2024	7									
2024	8									
2024	9									
2024	10									
2024	11									
2024	12									
YTD Totals				51,530	36,978	72%	3,874	2,561	66%	\$3,091,876
YTD Average		5	4							

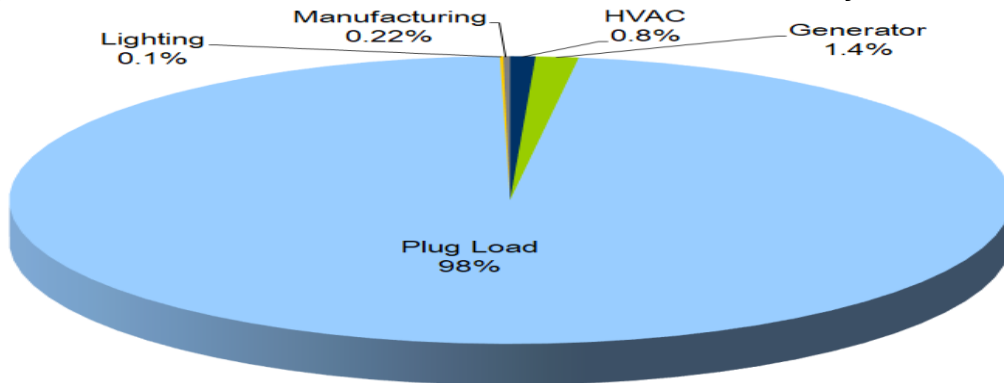
Figure 16: 2024 Economic Demand Response Dispatched vs Settled Real-Time Energy Market Summary

Year	Month	Zone		MWh			Registration Hours			Credits \$
		Dispatched	Settled	Dispatched	Settled	%	Dispatched	Settled	%	
2024	1	6	6	282	345	122%	397	397	100%	\$23,442
2024	2	2	2	13	168	1317%	147	147	100%	\$3,723
2024	3	1	1	8	21	272%	87	87	100%	\$586
2024	4	2	1	22	6	26%	180	5	3%	\$527
2024	5	3		28			221			
2024	6									
2024	7									
2024	8									
2024	9									
2024	10									
2024	11									
2024	12									
YTD Totals				353	540	153%	1,032	636	62%	\$28,277
YTD Average		3	3							

Figure 17: 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	1,220	100%	\$2,598,194
2024	2	3	3	1,282	1,299	101%	124	124	100%	\$63,832
2024	3	3	3	1,161	1,190	102%	137	136	99%	\$74,804
2024	4	3	3	2,535	2,562	101%	229	208	91%	\$100,727
2024	5	5	2	21,905	6,248	29%	1,132	237	21%	\$226,042
2024	6									
2024	7									
2024	8									
2024	9									
2024	10									
2024	11									
2024	12									
YTD Totals				51,177	36,438	71%	2,842	1,925	68%	\$3,063,599
YTD Average		4	4							

Figure 18: 2024 Estimated Total Economic DR Load Reduction MWh by Load Reduction Method



Note: Plug Load includes reductions from Data Centers with Crypto Mining.

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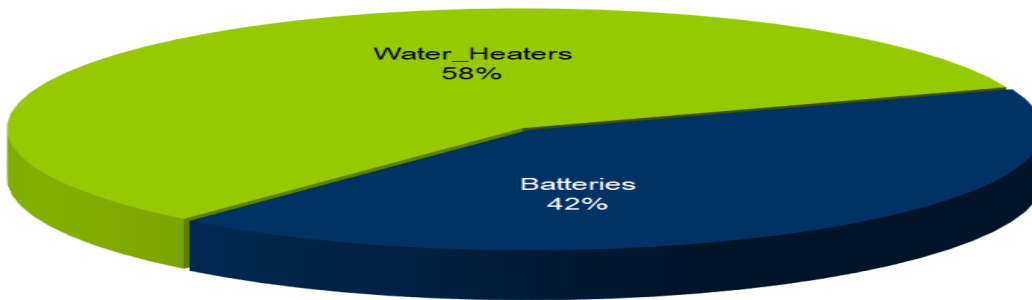
Figure 19: 2024 Economic Demand Response Capability in the Ancillary Service Markets

Synch Reserves	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Locations	MAD	215	214	217	223	225							
	Non-MAD	199	203	205	210	235							
	RTO	414	417	422	433	433							
Average Number of Unique Participating Locations per Month:		424											
MWs	MAD	631	547	550	493	497							
	Non-MAD	1,701	1,836	1,831	1,714	1,765							
	RTO	2,332	2,383	2,381	2,207	2,262							
Average MWs per Month:		2,313											

Regulation	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Locations	RTO	180	176	166	119	133							
Average Number of Unique Participating Locations per Month:		155											
MWs	RTO	157	160	157	143	155							
Average MWs per Month:		155											

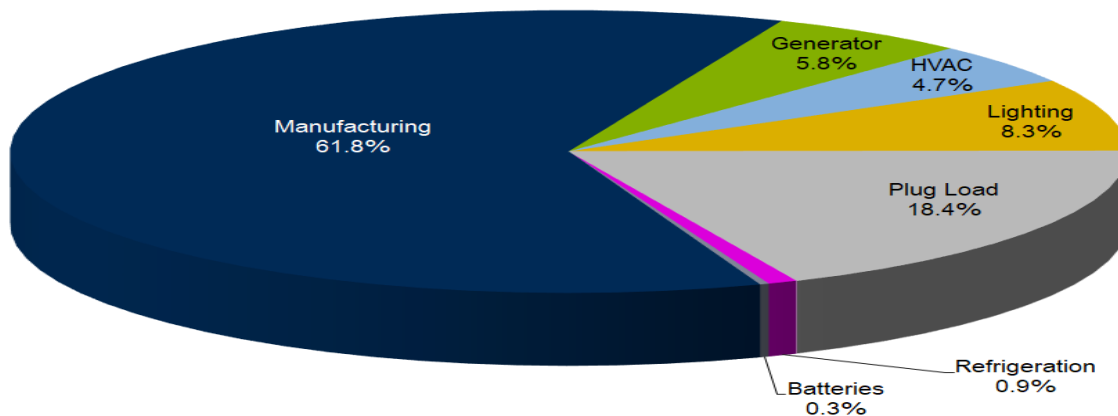
Capability represents total amount that may be offered. Actual offered and cleared volume may be significantly lower and is represented in subsequent figures/tables in report

Figure 20: 2024 PJM Demand Response Confirmed Regulation Registrations Load Reduction Methods



Note: Percent of CSP Reported Load Reduction MWs

Figure 21: 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 with Crypto Mining.

Figure 22: 2024 Economic Demand Response Regulation Market Participation

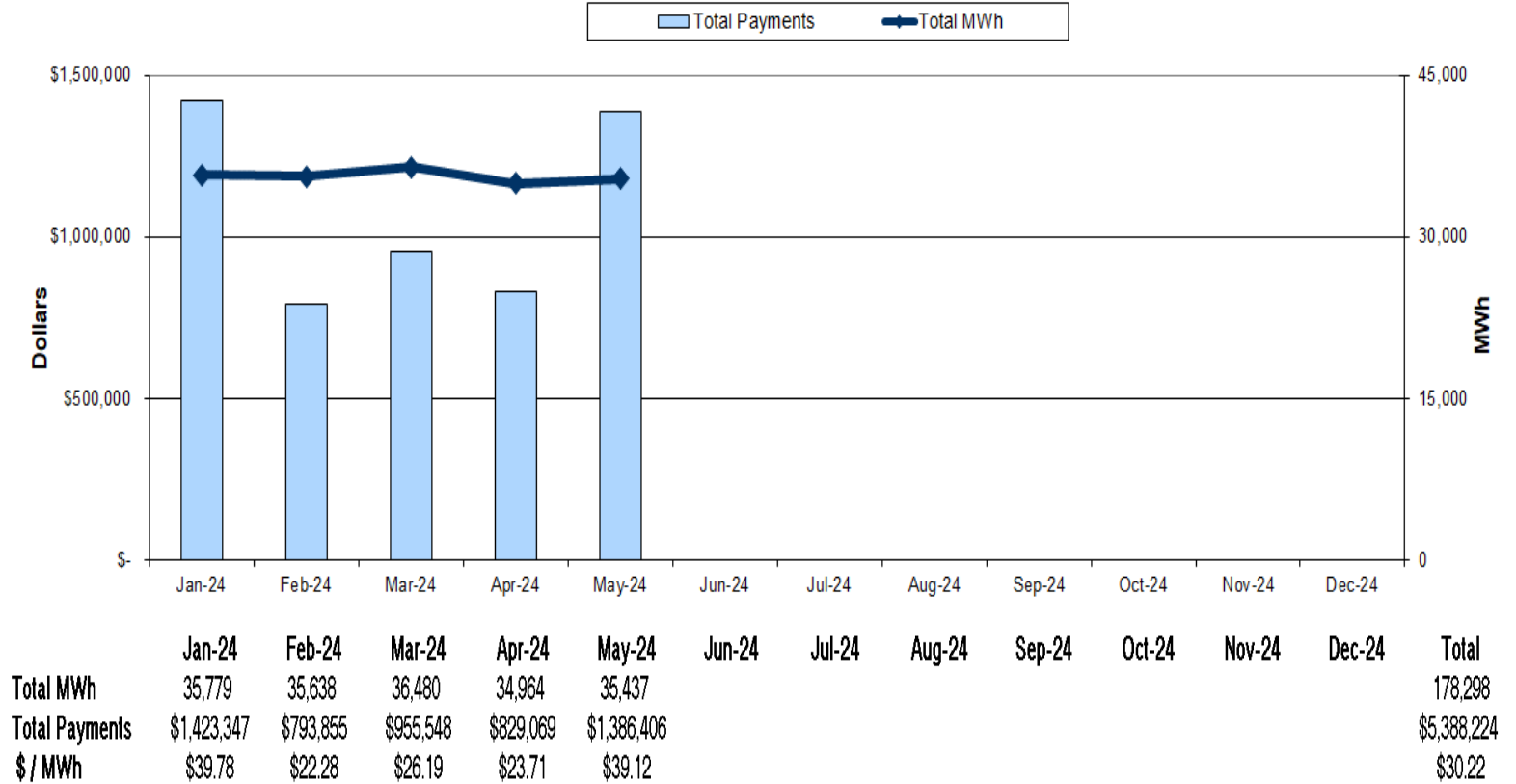
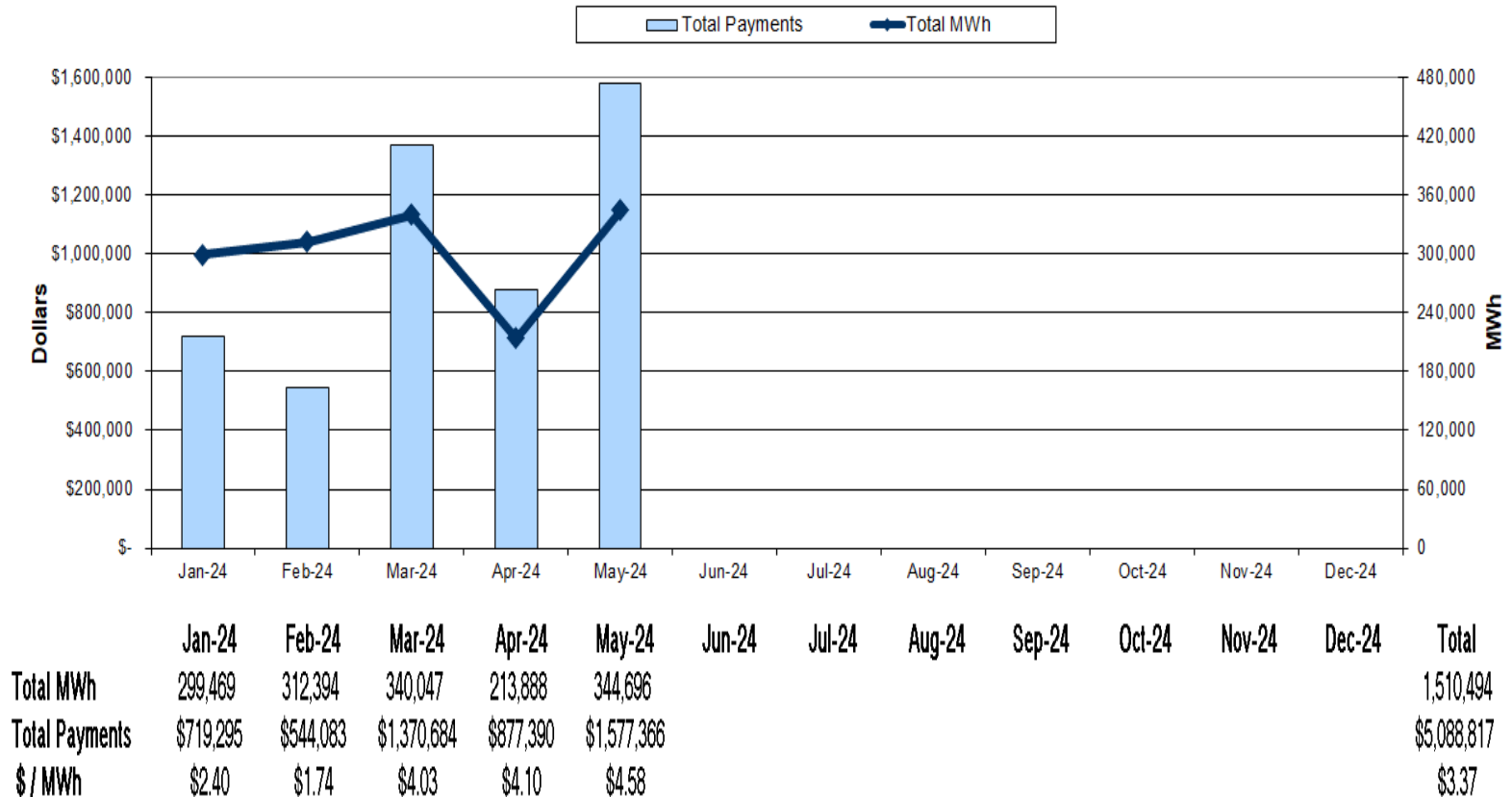
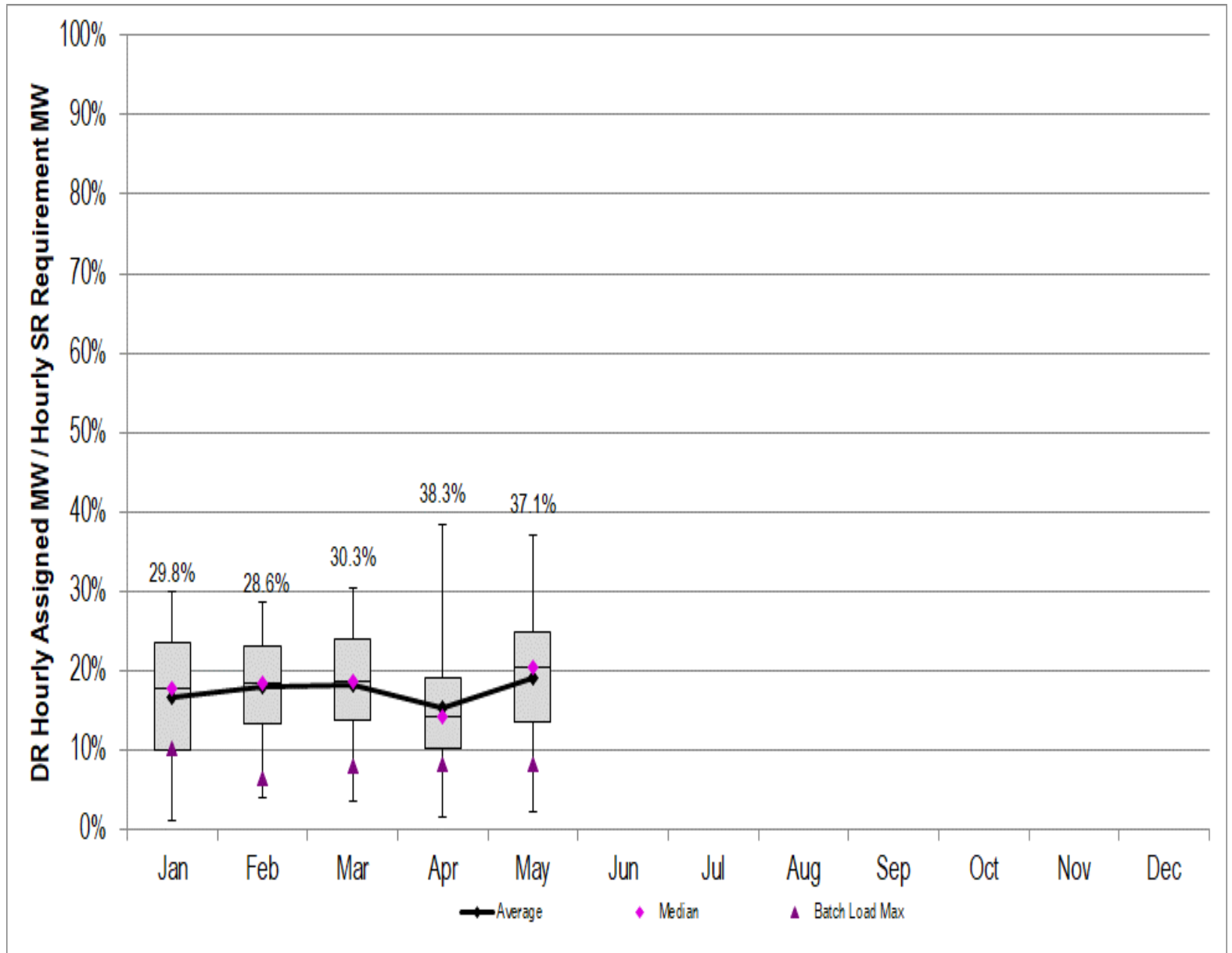


Figure 23: 2024 Economic Demand Response Synchronous Reserve Market Participation

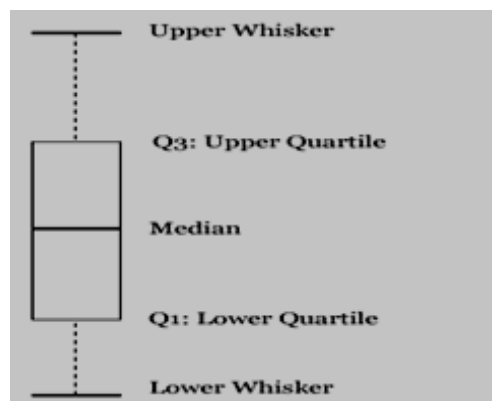


Note: For Figures 32 and 33 above, MWh=sum of the settled MW. Example: 1 MW load available for 12 hours = 12 MWh.

Figure 24: 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