

2024 Demand Response Operations Markets Activity Report: October 2024

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PJM Demand Side Response Operations

October 8, 2024



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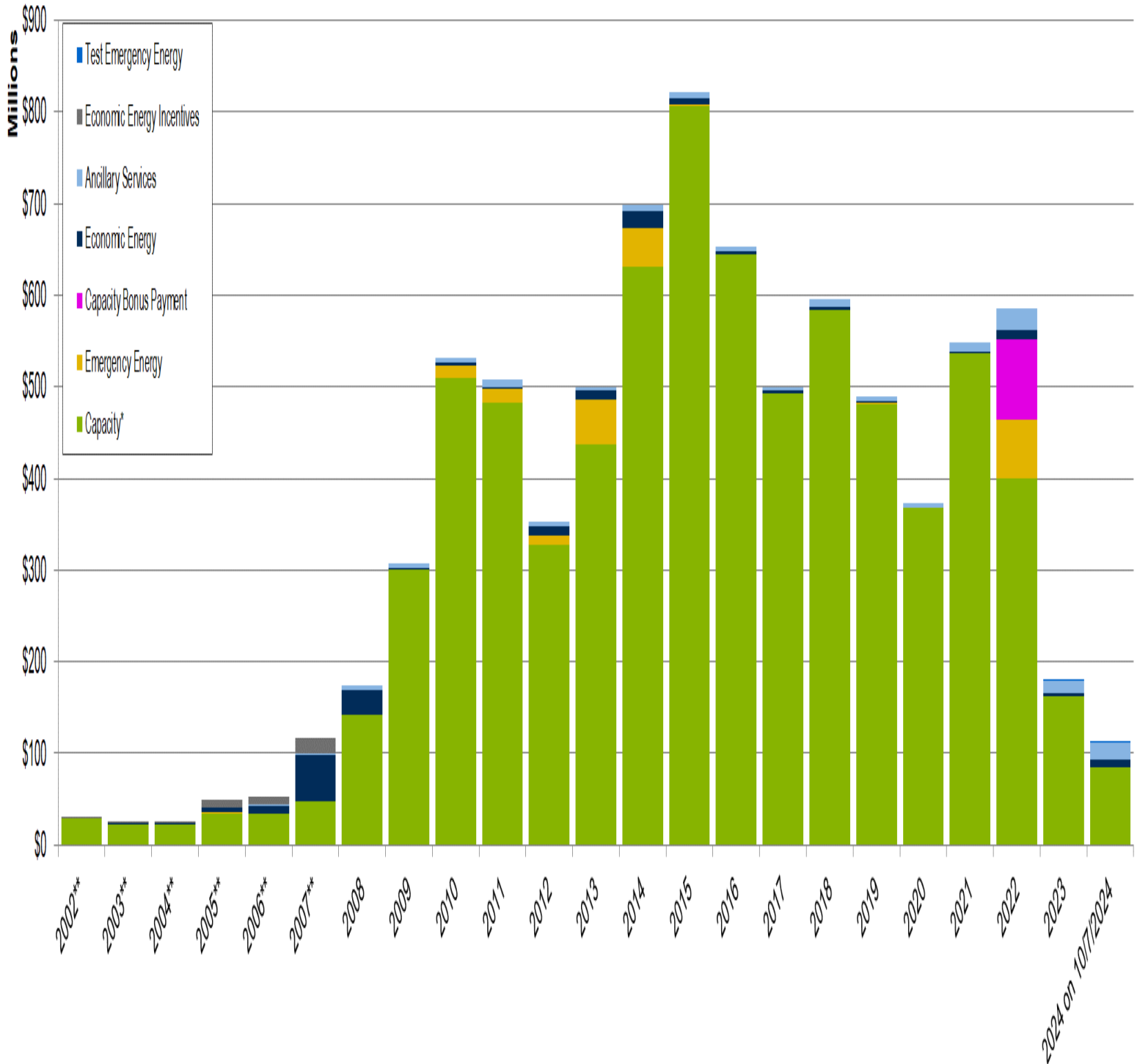
Figure 1: DY 24/25 Active Participants in DR Programs

Zone	Economic		Load Management		Unique	
	Locations	MW	Locations	MW	Locations	MW
AECO	16	6.7	172	34.0	176	37.3
AEP	492	674.1	1,782	1,418.3	1,822	1,639.0
APS	54	306.6	1,222	451.0	1,233	471.4
ATSI	54	612.5	1,334	677.4	1,364	1,104.1
BGE	27	27.7	819	198.2	822	198.5
COMED	85	71.4	2,537	1,283.6	2,583	1,291.4
DAY	9	12.2	199	181.7	202	187.3
DEOK	16	162.4	458	214.5	460	255.3
DOM	76	135.0	1,282	664.9	1,330	758.5
DPL	135	34.6	577	136.5	578	136.6
DUQ	15	136.0	494	101.3	503	123.3
EKPC			22	203.9	22	203.9
JCPL	19	45.8	305	106.3	308	146.5
METED	15	103.7	548	139.7	554	229.3
PECO	40	70.6	1,265	334.9	1,275	368.9
PENELEC	14	115.9	611	225.2	616	288.8
PEPCO	17	31.2	634	165.1	644	170.6
PPL	210	93.2	1,403	419.8	1,601	461.2
PSEG	38	39.9	941	256.9	952	273.2
RECO			16	2.5	16	2.5
Total	1,332	2,680	16,621	7,216	17,061	8,348

Note:

- 1) Data as of October 2, 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)

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

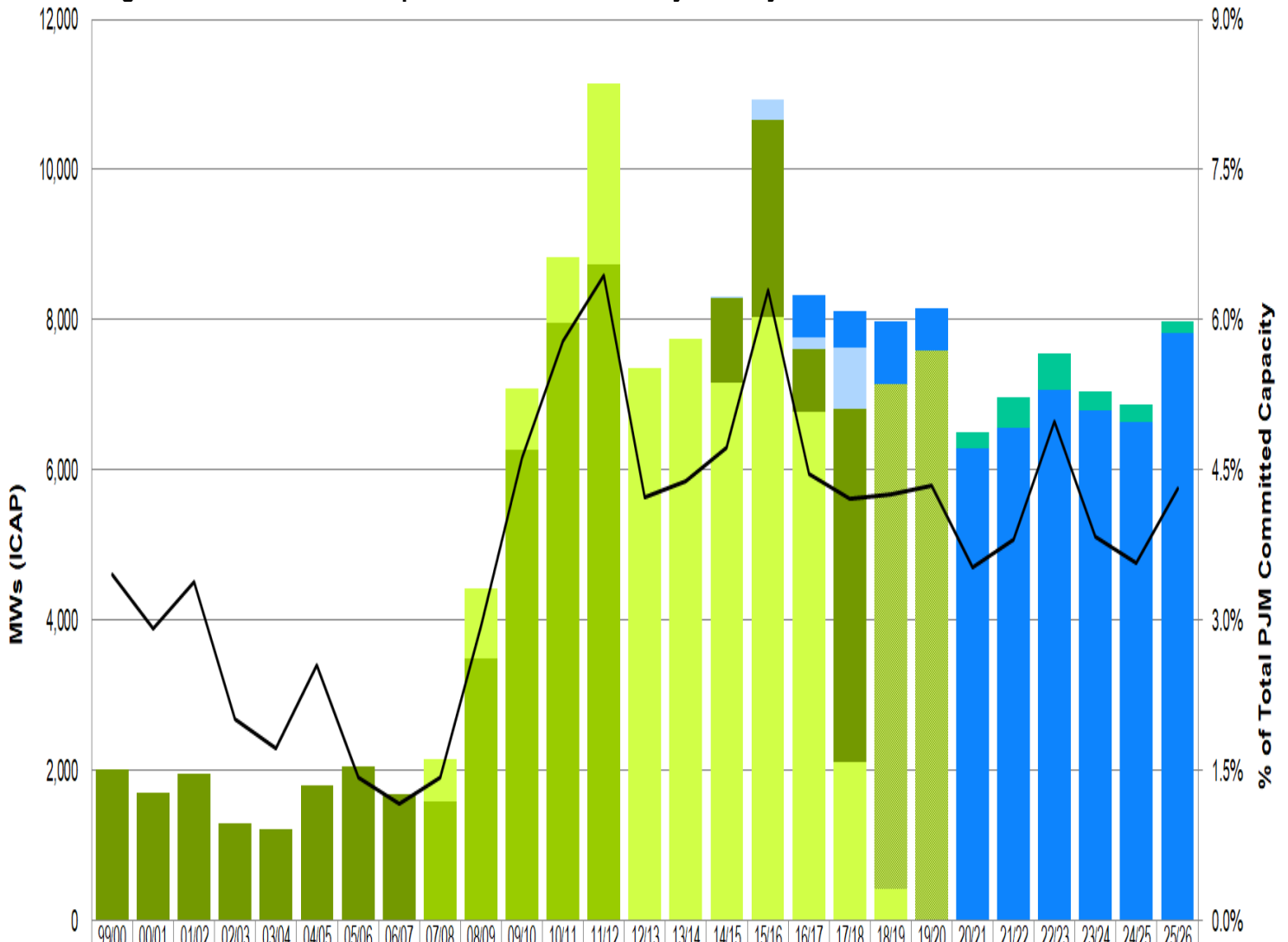


* Capacity Net Revenue inclusive of Capacity Credits and Charges. From 2020 on this value also includes Price Responsive Demand Credits.

** 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

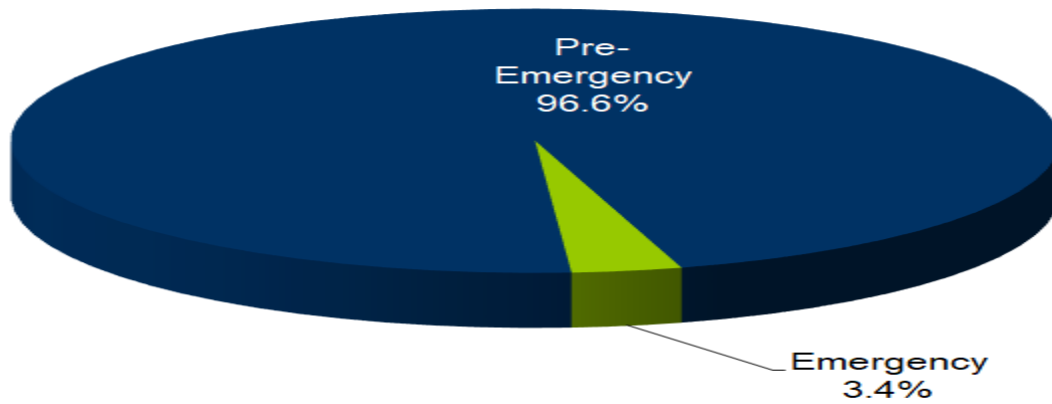


	99/00	00/01	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	24/25	25/26	
Summer - CP																						196	394	489	258	234	161	
Annual - CP																		574	493	843	556	6,296	6,568	7,066	6,793	6,644	7,819	
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	150,411	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	185,119	
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%	4.3%	

Notes:

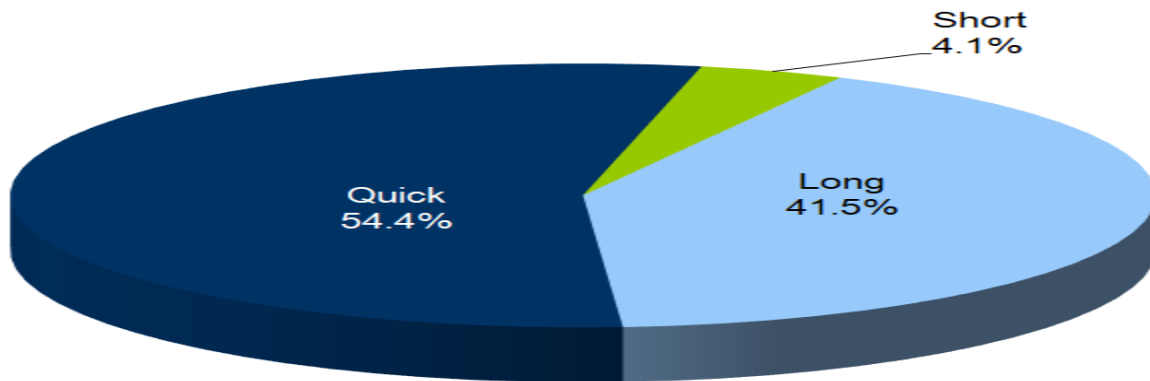
- 1) Data represents net commitment ICAP value (for each product) as of 8/8/2024. Does not include FRR values.
- 2) DY 25/26 MWs includes data from the Base Residual Auction.
- 3) RPM was implemented DY 07/08.
- 4) ALM MWs are seasonal averages for Delivery Years before 07/08.

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



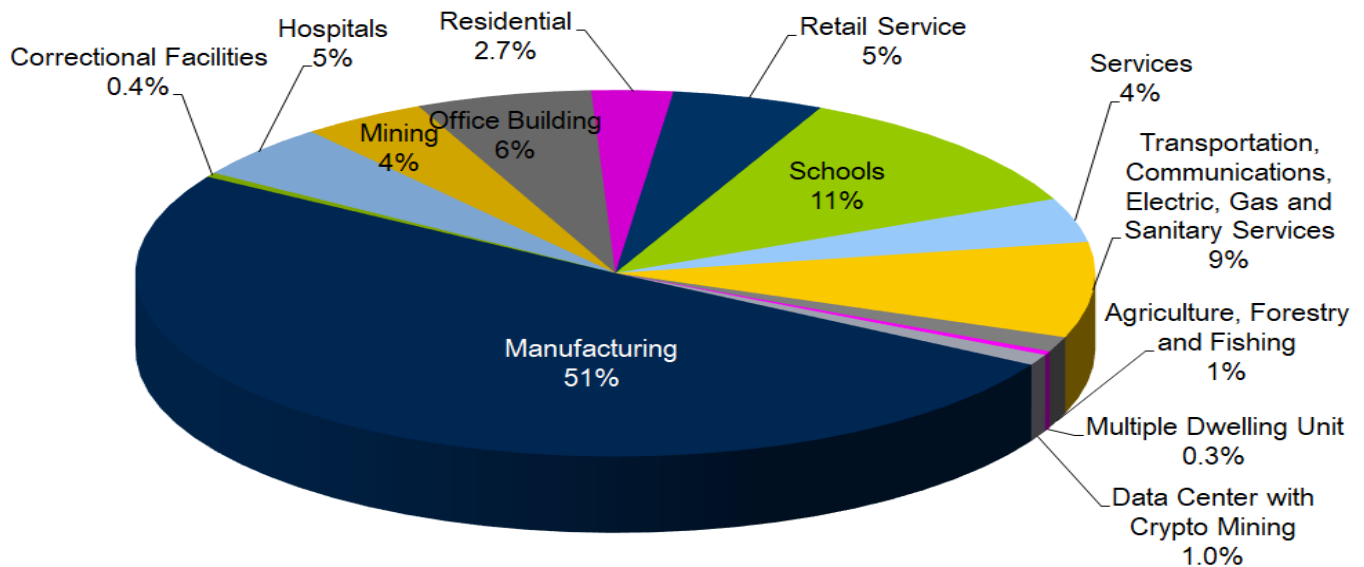
Note: Percent of Summer Nominated Capacity (MWs) based on Figure 1 Load Management MW Total.

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



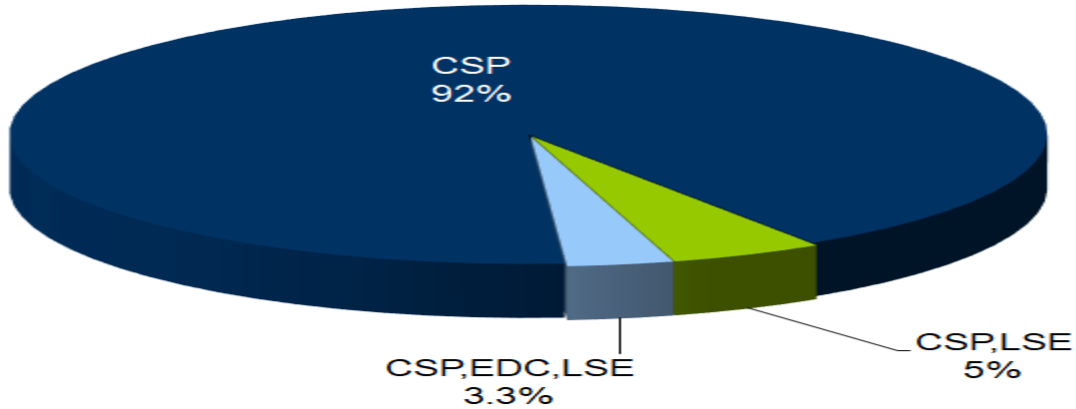
Note: Percent of Summer Nominated Capacity (MWs) based on Figure 1 Load Management MW Total.

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



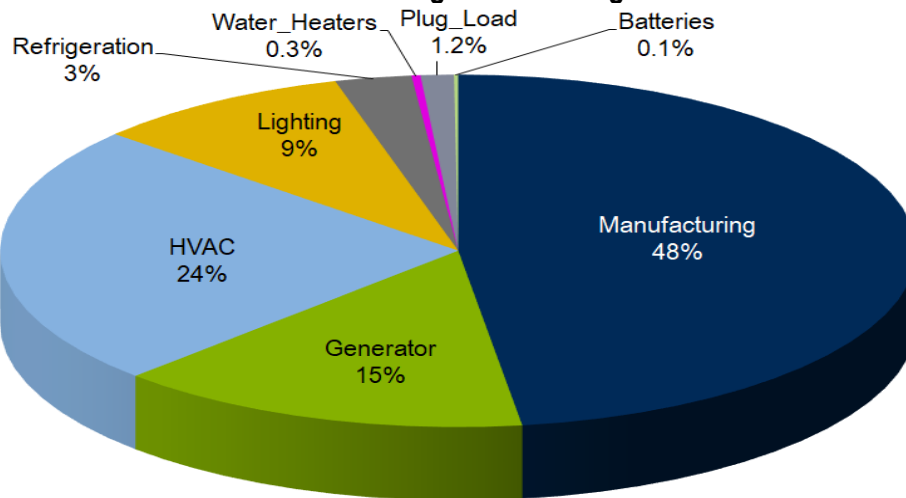
Note: Percent of Summer Nominated Capacity (MWs) based on Figure 1 Load Management MW Total.

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



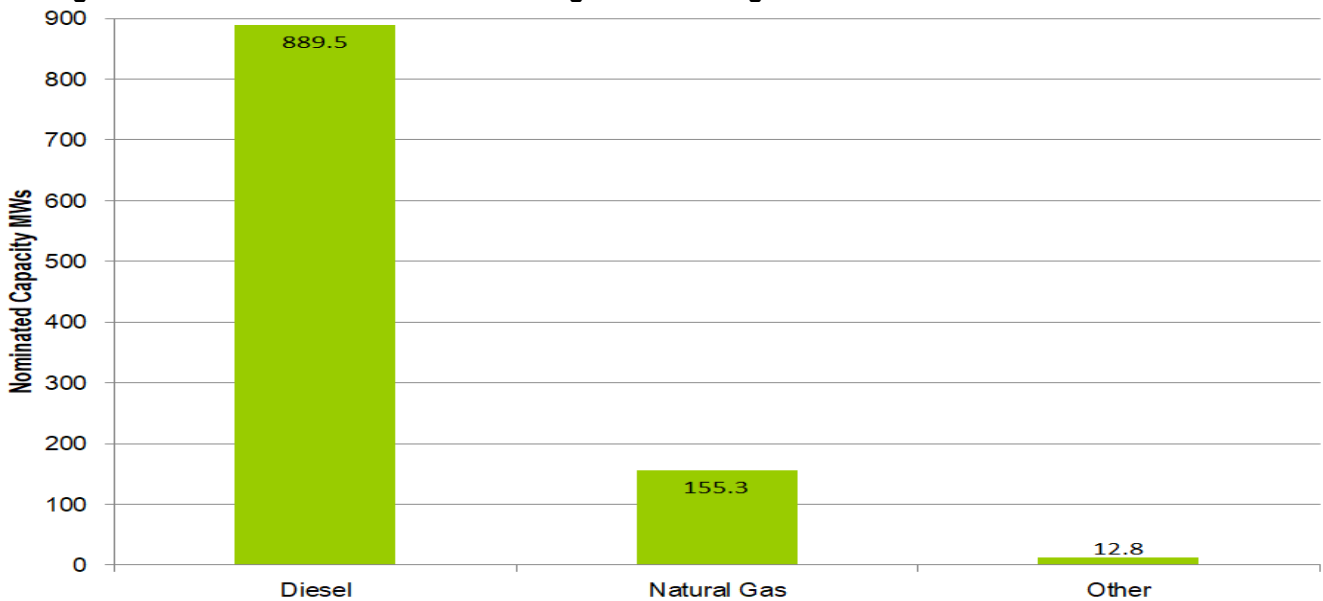
Note: Percent of Summer Nominated Capacity (MWs) based on Figure 1 Load Management MW Total.

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



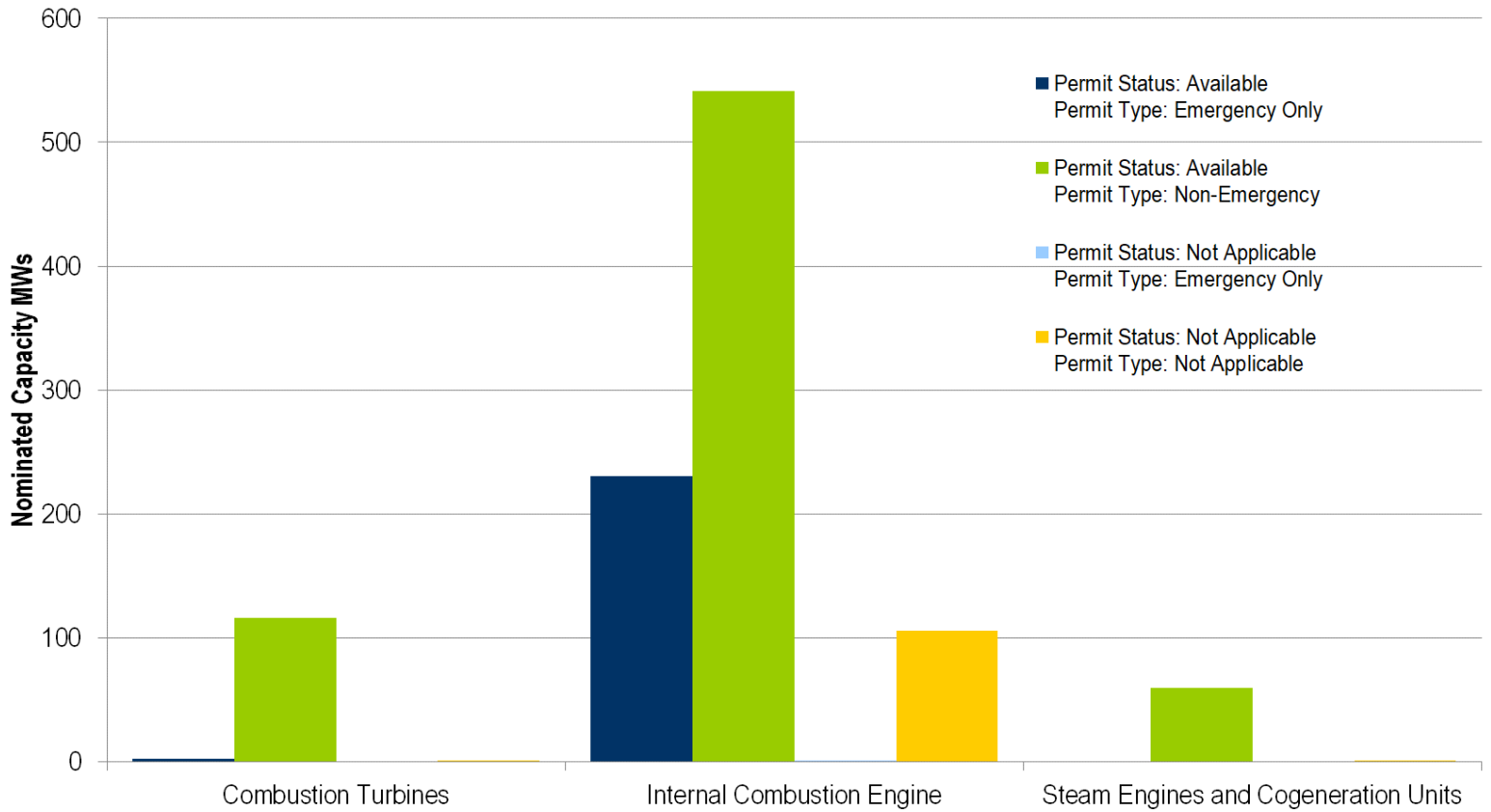
Note: Percent of Summer Nominated Capacity (MWs) based on Figure 1 Load Management MW Total. Plug Load includes nominated capacity from Data Centers with Crypto Mining.

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



Note: Portion of Summer Nominated Capacity (MWs) based on Figure 1 Load Management MW Total. 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: Portion of Summer Nominated Capacity (MWs) based on Figure 1 Load Management MW Total.

Figure 11: DY 24/25 Confirmed Load Management Full DR Registrations Energy Supply Curve:

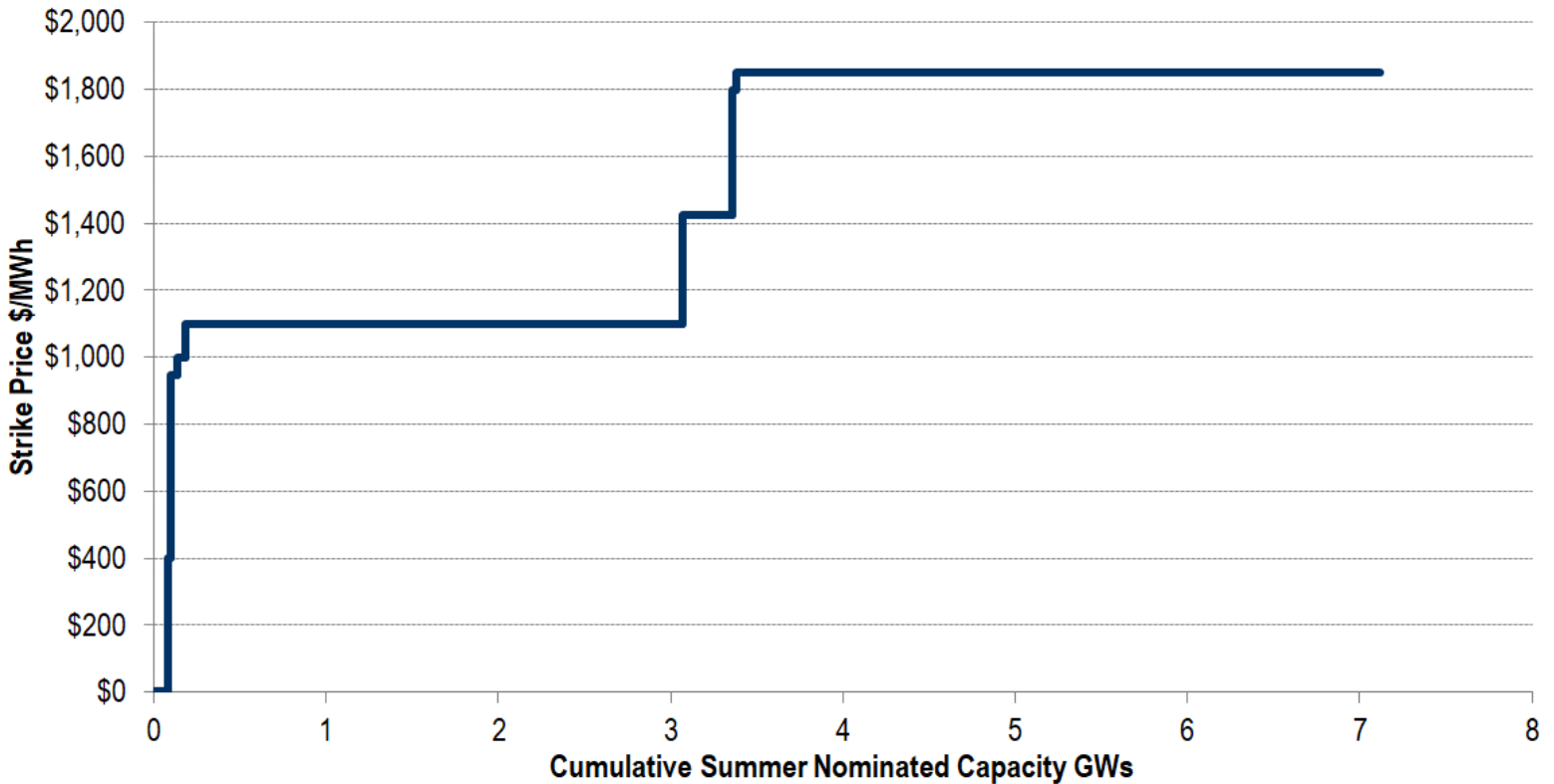
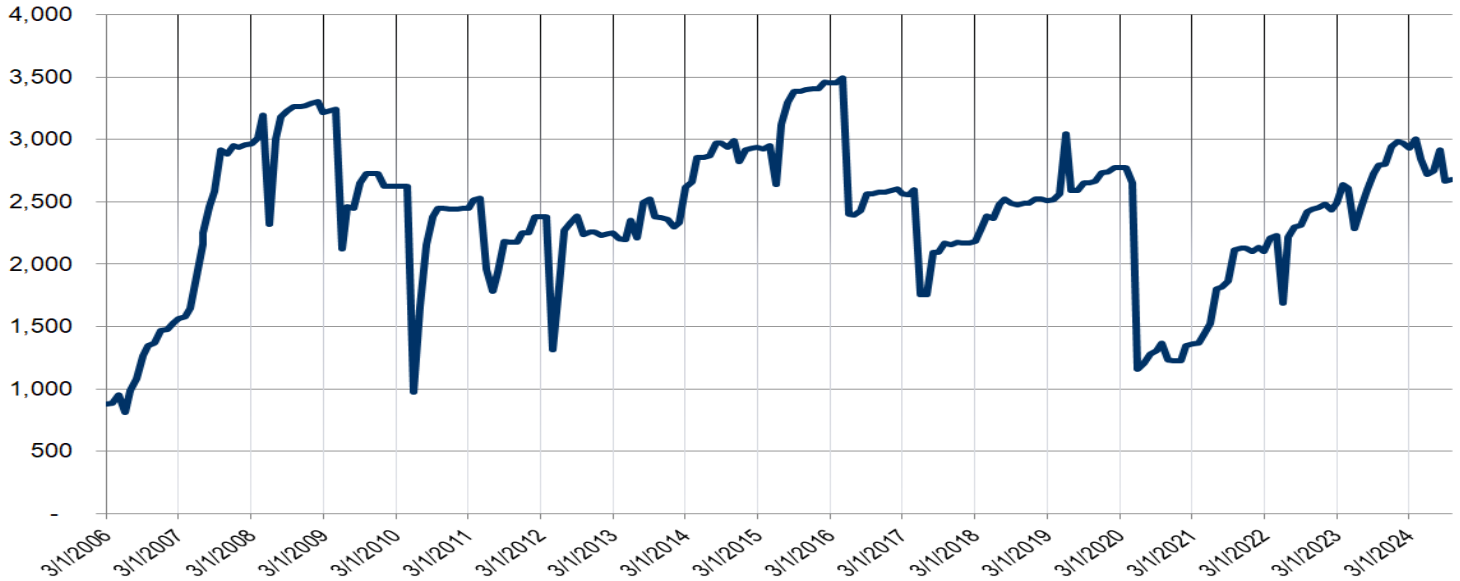


Figure 12: 2024 Load Management Demand Response Monthly Capacity Revenue from RPM

Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
AECO	\$84,687	\$79,224	\$84,687	\$81,956	\$84,687	\$107,414	\$110,995	\$110,995	\$107,414			
AEP	\$1,351,740	\$1,264,531	\$1,351,740	\$1,308,135	\$1,351,740	\$949,875	\$981,538	\$981,538	\$949,875			
APS	\$757,761	\$708,873	\$757,761	\$733,317	\$757,761	\$554,841	\$573,335	\$573,335	\$554,841			
ATSI	\$976,187	\$913,207	\$976,187	\$944,697	\$976,187	\$599,203	\$619,177	\$619,177	\$599,203			
BGE	\$365,167	\$341,608	\$365,167	\$353,388	\$365,167	\$433,839	\$448,300	\$448,300	\$433,839			
COMED	\$1,169,652	\$1,094,191	\$1,169,652	\$1,131,922	\$1,169,652	\$1,224,155	\$1,264,960	\$1,264,960	\$1,224,155			
DAY	\$221,445	\$207,159	\$221,445	\$214,302	\$221,445	\$168,930	\$174,561	\$174,561	\$168,930			
DEOK	\$185,579	\$173,606	\$185,579	\$179,592	\$185,579	\$640,670	\$662,025	\$662,025	\$640,670			
DOM	\$845,472	\$790,925	\$845,472	\$818,198	\$845,472	\$703,256	\$726,698	\$726,698	\$703,256			
DPL	\$258,481	\$241,805	\$258,481	\$250,143	\$258,481	\$757,919	\$783,183	\$783,183	\$757,919			
DUQ	\$125,059	\$116,991	\$125,059	\$121,025	\$125,059	\$104,632	\$108,120	\$108,120	\$104,632			
EKPC	\$285,562	\$267,139	\$285,562	\$276,351	\$285,562	\$250,736	\$259,094	\$259,094	\$250,736			
JCPL	\$184,870	\$172,943	\$184,870	\$178,907	\$184,870	\$211,934	\$218,999	\$218,999	\$211,934			
METED	\$331,692	\$310,293	\$331,692	\$320,993	\$331,692	\$323,368	\$334,147	\$334,147	\$323,368			
PECO	\$580,538	\$543,084	\$580,538	\$561,811	\$580,538	\$587,563	\$607,149	\$607,149	\$587,563			
PENELEC	\$448,444	\$419,512	\$448,444	\$433,978	\$448,444	\$466,048	\$481,583	\$481,583	\$466,048			
PEPCO	\$245,777	\$229,921	\$245,777	\$237,849	\$245,777	\$217,212	\$224,452	\$224,452	\$217,212			
PPL	\$895,046	\$837,301	\$895,046	\$866,174	\$895,046	\$895,868	\$925,730	\$925,730	\$895,868			
PSEG	\$418,374	\$391,382	\$418,374	\$404,878	\$418,374	\$459,406	\$474,719	\$474,719	\$459,406			
RECO	\$3,375	\$3,158	\$3,375	\$3,266	\$3,375	\$4,342	\$4,486	\$4,486	\$4,342			
Total	\$9,734,911	\$9,106,852	\$9,734,911	\$9,420,882	\$9,734,911	\$9,661,211	\$9,983,251	\$9,983,251	\$9,661,211			

Total Capacity Credits: \$87,021,391

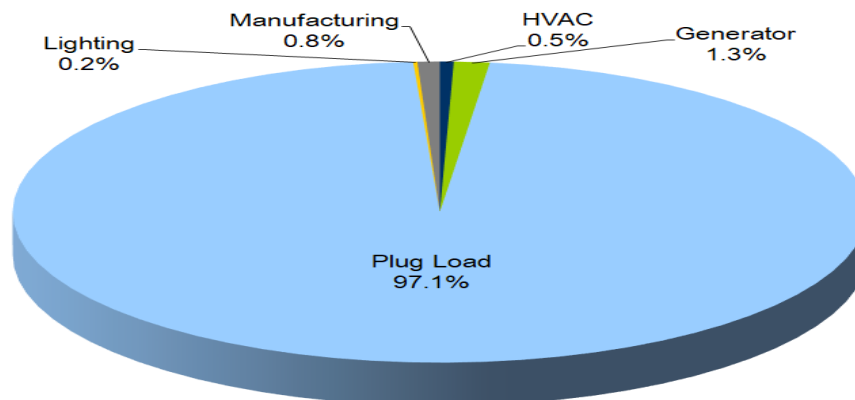
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Figure 13: PJM Economic Demand Response Capability in Energy Market (3/1/2006-10/1/2024)


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 14: 2024 Economic Demand Response Total Energy Market Summary (Dispatch/Cleared vs Settled)

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	1,617	100%	
2024	2	4	4	1,295	1,468	113%	271	271	100%	\$2,621,636
2024	3	4	4	1,169	1,210	104%	224	224	100%	\$67,555
2024	4	4	4	2,557	2,654	104%	409	409	100%	\$75,606
2024	5	6	6	20,866	20,775	100%	1,246	1,246	100%	\$103,731
2024	6	8	8	14,242	13,712	96%	1,433	1,433	100%	\$936,194
2024	7	9	9	25,777	27,057	105%	2,174	2,113	97%	\$550,521
2024	8	10	9	32,240	30,795	96%	2,675	1,983	74%	\$1,433,634
2024	9	8	3	38,592	11,905	31%	2,884	546	19%	\$1,321,000
2024	10	3		1,578			95			\$473,868
2024	11									
2024	12									
YTD Totals				162,891	135,059	83%	13,028	9,842	76%	\$7,583,744
YTD Average		7	6							

Figure 15: 2024 Economic Demand Response Energy Market Year to Date Total Settled MWh by Load Reduction Method


Note: Pie chart based on YTD Totals for MWh Settled based on Figure 14. Plug Load includes reductions from Data Centers with Crypto Mining.

Figure 16: 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	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	2	22	64	290%	180	180	100%	\$2,021
2024	5	3	3	28	70	251%	221	221	100%	\$2,473
2024	6	3	3	307	374	122%	196	196	100%	\$28,167
2024	7	7	7	770	756	98%	287	273	95%	\$148,484
2024	8	7	5	285	324	114%	233	209	90%	\$32,738
2024	9	4	1	136	1	1%	253	2	1%	\$13
2024	10	1		4			2			
2024	11									
2024	12									
YTD Totals				1,854	2,125	115%	2,003	1,712	85%	\$241,646
YTD Average		4	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	137	100%	\$75,020
2024	4	3	3	2,535	2,590	102%	229	229	100%	\$101,710
2024	5	5	5	20,838	20,705	99%	1,025	1,025	100%	\$933,721
2024	6	6	6	13,935	13,338	96%	1,237	1,237	100%	\$522,354
2024	7	7	7	25,006	26,300	105%	1,887	1,840	98%	\$1,285,150
2024	8	8	7	31,955	30,470	95%	2,442	1,774	73%	\$1,288,262
2024	9	6	3	38,457	11,904	31%	2,631	544	21%	\$473,855
2024	10	3		1,575			93			
2024	11									
2024	12									
YTD Totals				161,038	132,935	83%	11,025	8,130	74%	\$7,342,098
YTD Average		5	5							

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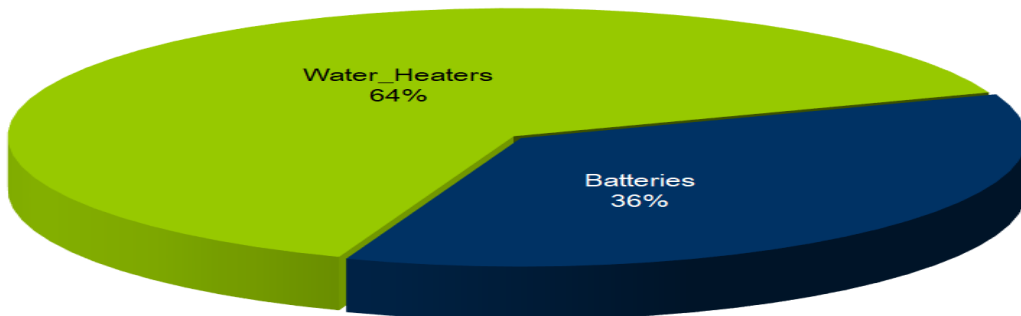
Figure 18: 2024 Economic Demand Response Locations and Capability MWs in the Ancillary Service Markets

Synch Reserves	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Locations	MAD	215	214	217	223	225	227	228	228	228			
	Non-MAD	199	203	205	210	235	233	243	248	248			
	RTO	414	417	422	433	460	460	471	476	476			
Average Number of Unique Participating Locations per Month:		448											
MWs	MAD	631	547	550	493	497	499	500	485	485			
	Non-MAD	1,701	1,836	1,831	1,714	1,765	1,593	1,707	1,721	1,730			
	RTO	2,332	2,383	2,381	2,207	2,262	2,092	2,207	2,207	2,215			
Average MWs per Month:		2,254											

Regulation	Zone	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Locations	RTO	180	176	166	119	133	133	189	189	188			
Average Number of Unique Participating Locations per Month:		164											
MWs	RTO	157	160	157	143	155	156	180	180	180			
Average MWs per Month:		163											

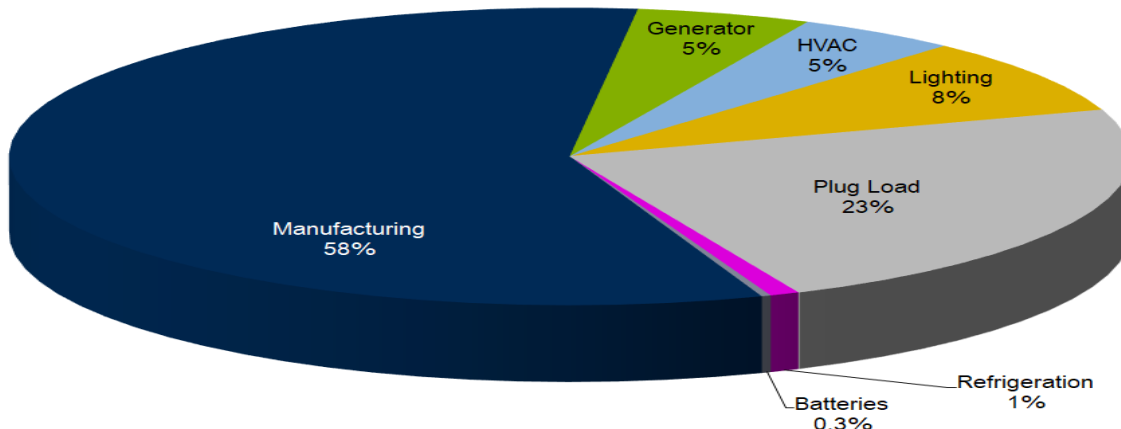
Capability represents total amount that may be offered. Actual offered and cleared volume may be significantly lower and is represented in subsequent figures/tables in report

Figure 19: 2024 PJM Demand Response Confirmed Regulation Registrations Load Reduction Methods



Note: Percent of CSP Reported Load Reduction MWs based on latest month RTO MWs based on Figure 18 for Regulation.

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



Note: Percent of CSP Reported Load Reduction MWs based on latest month RTO MWs based on Figure 18 for Synch Reserves. Plug Load includes reported reductions from Data Centers with Crypto Mining.

Figure 21: 2024 Economic Demand Response Regulation Market Participation

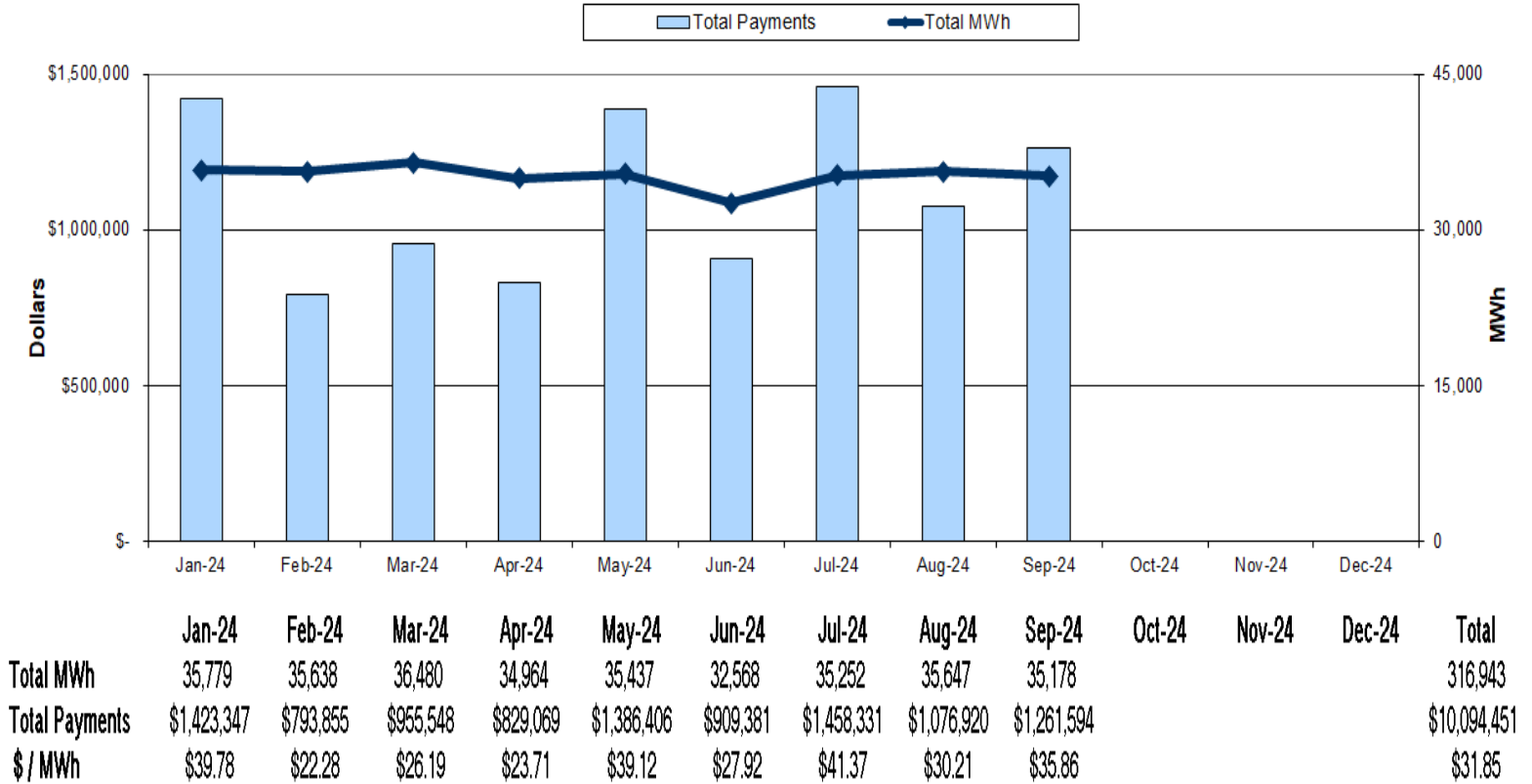
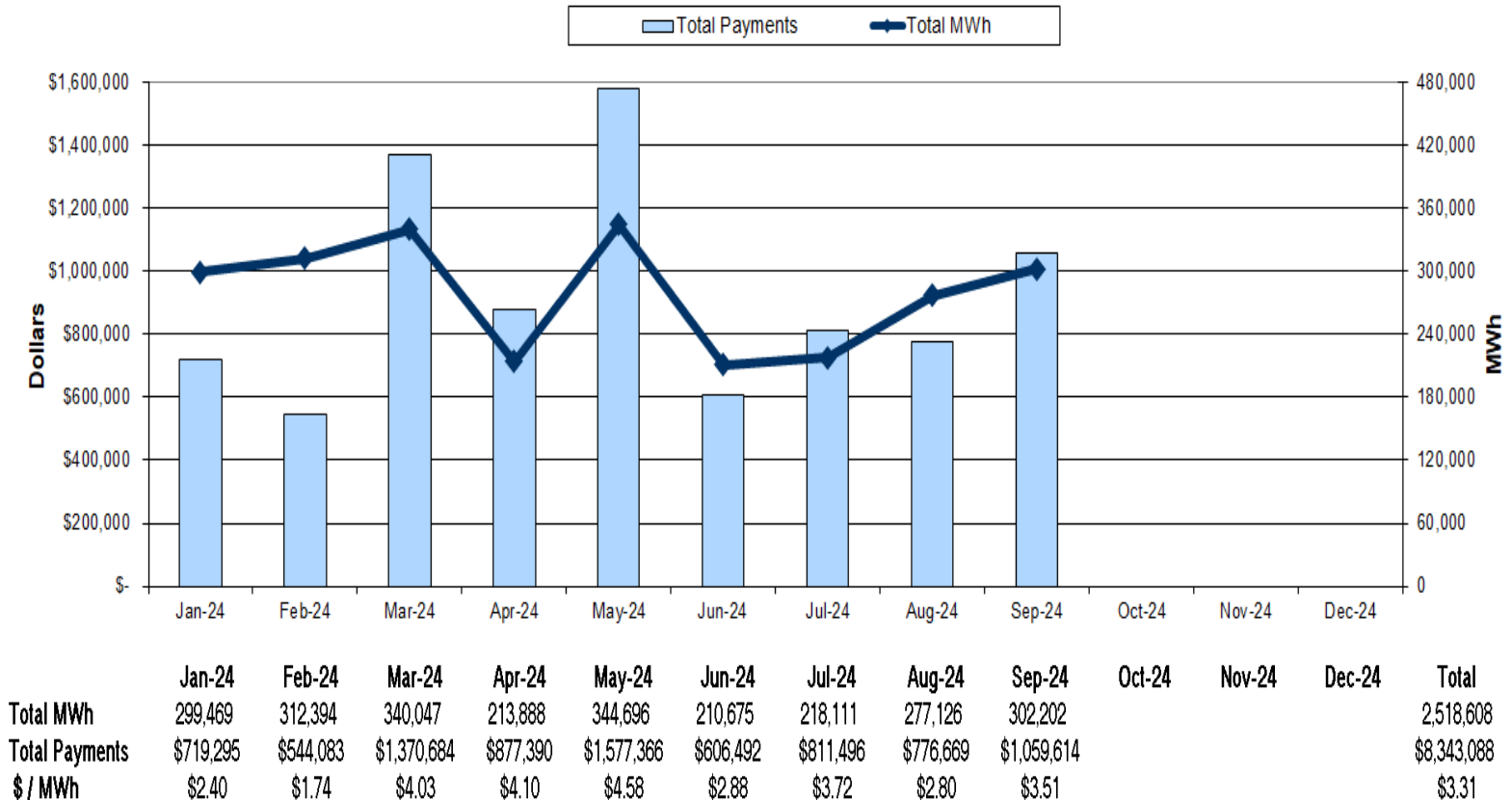
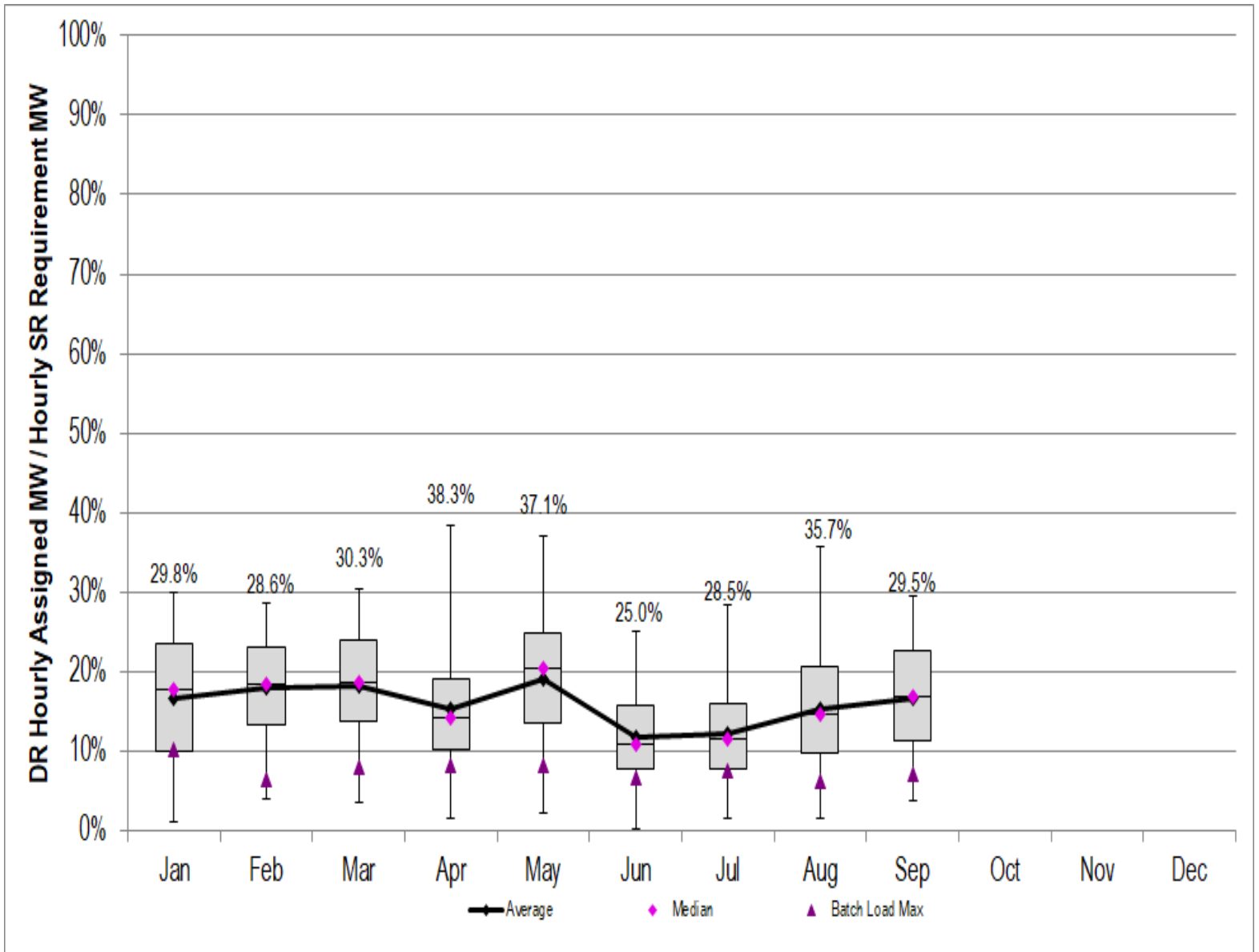


Figure 22: 2024 Economic Demand Response Synchronous Reserve Market Participation



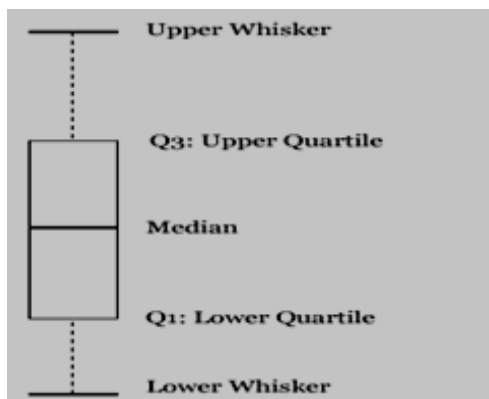
Note: For Figures 21 and 22 above, MWh=sum of the settled MW. Example: 1 MW load available for 12 hours = 12 MWh.

Figure 23: 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