

# Market Monitor Report

MC Webinar

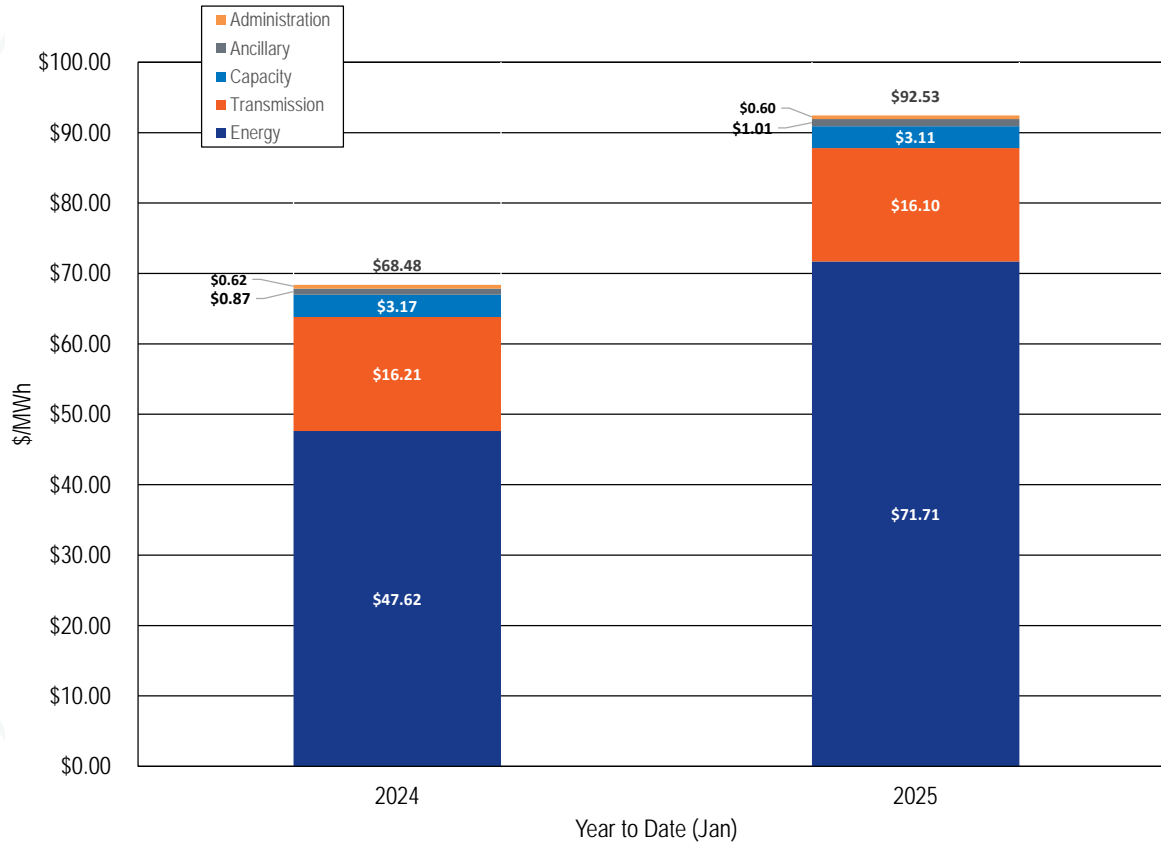
February 18, 2025

IMM



Monitoring Analytics

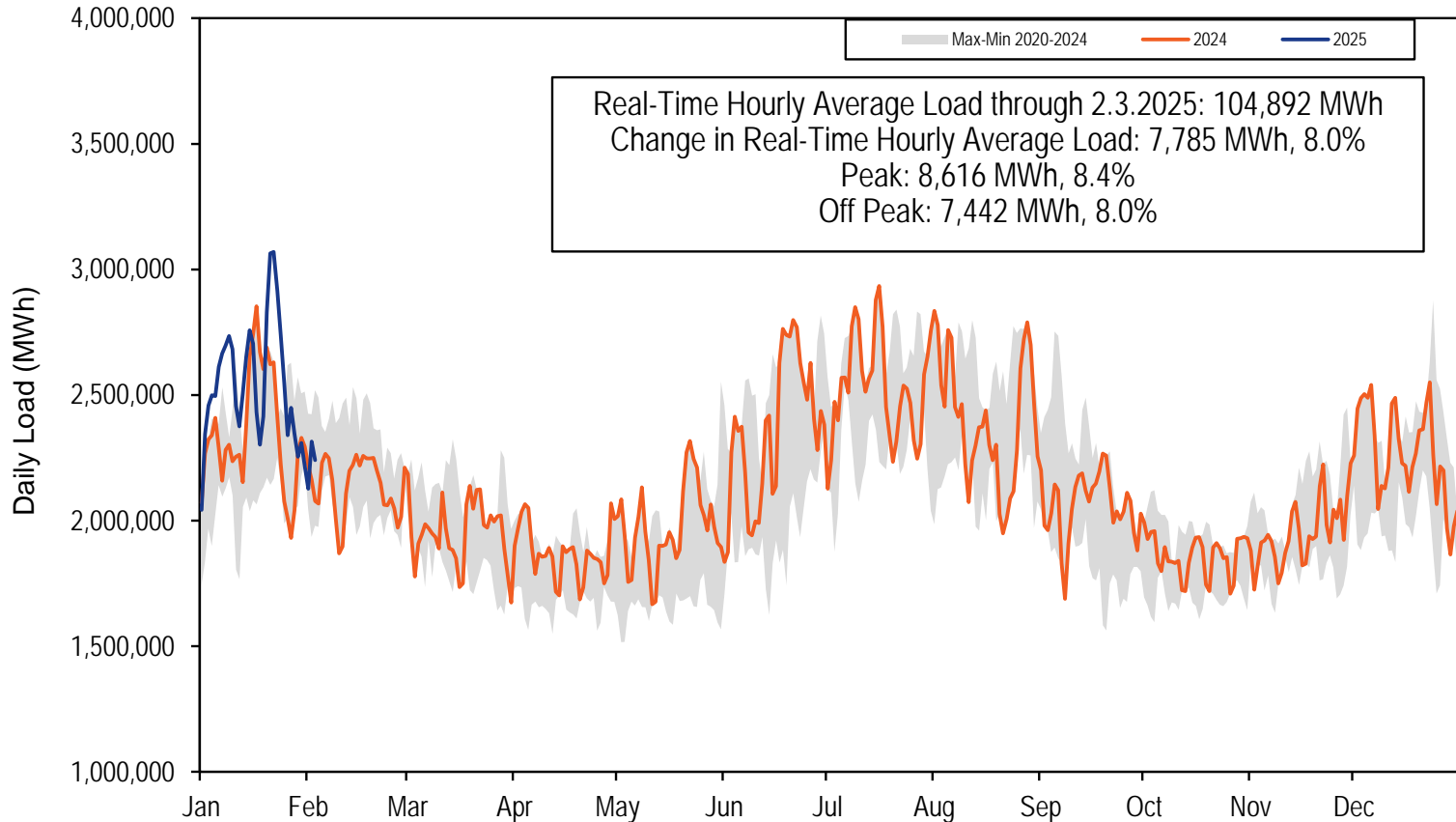
# Total Cost of Wholesale Power



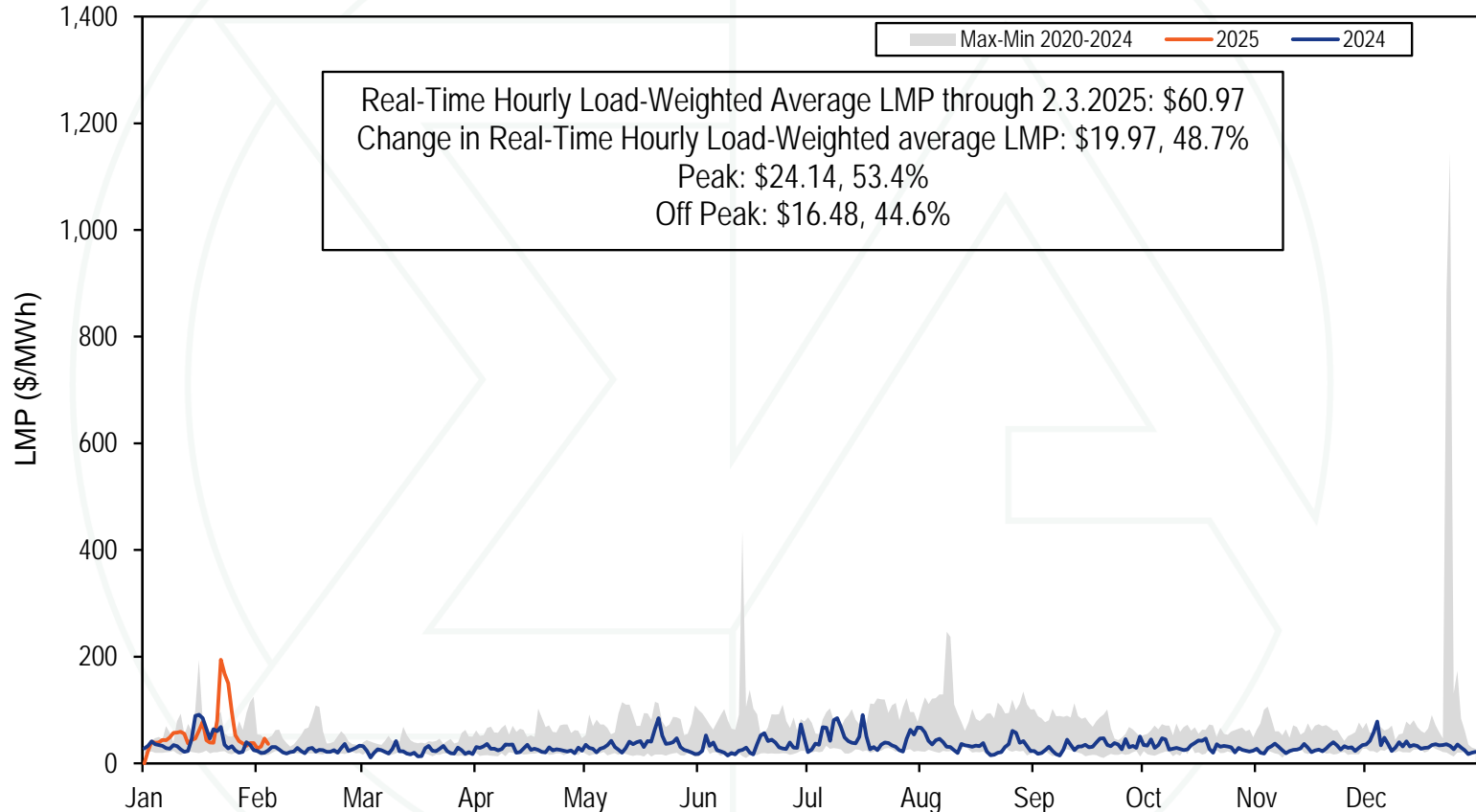
# Total Cost of Wholesale Power

Category	2024 (Jan) \$/MWh	2024 (Jan) (\$ Millions)	2024 (Jan) Percent of Total	2025 (Jan) \$/MWh	2025 (Jan) (\$ Millions)	2025 (Jan) Percent of Total	Percent Change
<b>Energy</b>	\$47.62	\$3,465	69.5%	\$71.71	\$5,659	77.5%	50.6%
Day Ahead Energy	\$48.01	\$3,494	70.1%	\$66.89	\$5,278	72.3%	39.3%
Balancing Energy	\$0.74	\$54	1.1%	\$1.45	\$114	1.6%	96.2%
ARR Credits	(\$1.18)	(\$86)	(1.7%)	(\$1.11)	(\$88)	(1.2%)	(5.8%)
Self Scheduled FTR Credits	(\$0.59)	(\$43)	(0.9%)	(\$1.30)	(\$103)	(1.4%)	122.4%
Balancing Congestion	\$0.48	\$35	0.7%	\$1.70	\$134	1.8%	252.9%
Emergency Energy	\$0.00	\$0	0.0%	\$0.00	\$0	0.0%	0.0%
Inadvertent Energy	\$0.01	\$1	0.0%	(\$0.01)	(\$1)	(0.0%)	(179.4%)
Load Response - Energy	\$0.04	\$3	0.1%	\$0.01	\$1	0.0%	(64.4%)
Emergency Load Response	\$0.00	\$0	0.0%	\$0.00	\$0	0.0%	0.0%
Energy Uplift (Operating Reserves)	\$0.78	\$57	1.1%	\$4.97	\$392	5.4%	538.3%
Marginal Loss Surplus Allocation	(\$0.70)	(\$51)	(1.0%)	(\$1.06)	(\$84)	(1.1%)	52.0%
Market to Market Payments	\$0.03	\$2	0.0%	\$0.19	\$15	0.2%	526.1%
<b>Capacity</b>	\$3.17	\$231	4.6%	\$3.11	\$245	3.4%	(2.1%)
Capacity (Capacity Market and FRR)	\$3.08	\$224	4.5%	\$3.11	\$245	3.4%	0.9%
Capacity Part V (RMR)	\$0.09	\$7	0.1%	\$0.00	\$0	0.0%	(100.0%)
Load Response - Capacity	\$0.00	\$0	0.0%	\$0.00	\$0	0.0%	0.0%
<b>Transmission</b>	\$16.21	\$1,179	23.7%	\$16.10	\$1,270	17.4%	(0.7%)
Transmission Service Charges	\$13.74	\$1,000	20.1%	\$13.72	\$1,082	14.8%	(0.2%)
Transmission Enhancement Cost Recovery	\$2.37	\$172	3.5%	\$2.29	\$181	2.5%	(3.3%)
Transmission Owner (Schedule 1A)	\$0.09	\$7	0.1%	\$0.09	\$7	0.1%	(1.0%)
Transmission Seams Elimination Cost Assignment (SECA)	\$0.00	\$0	0.0%	\$0.00	\$0	0.0%	0.0%
Transmission Facility Charges	\$0.00	\$0	0.0%	\$0.00	\$0	0.0%	0.0%
<b>Ancillary</b>	\$0.87	\$63	1.3%	\$1.01	\$80	1.1%	16.6%
Reactive	\$0.45	\$33	0.7%	\$0.39	\$31	0.4%	(11.6%)
Regulation	\$0.27	\$20	0.4%	\$0.40	\$31	0.4%	46.2%
Black Start	\$0.08	\$6	0.1%	\$0.07	\$5	0.1%	(10.5%)
Synchronized Reserves	\$0.07	\$5	0.1%	\$0.14	\$11	0.1%	97.0%
Secondary Reserves	\$0.00	\$0	0.0%	\$0.00	\$0	0.0%	48.4%
Non-Synchronized Reserves	(\$0.00)	(\$0)	(0.0%)	\$0.01	\$1	0.0%	(7,036.2%)
Day Ahead Scheduling Reserve (DASR)	\$0.00	\$0	0.0%	\$0.00	\$0	0.0%	0.0%
<b>Administration</b>	\$0.62	\$45	0.9%	\$0.60	\$48	0.7%	(2.4%)
PJM Administrative Fees	\$0.57	\$41	0.8%	\$0.56	\$44	0.6%	(1.8%)
NERC/RFC	\$0.04	\$3	0.1%	\$0.04	\$3	0.0%	0.9%
RTO Startup and Expansion	\$0.00	\$0	0.0%	\$0.00	\$0	0.0%	0.0%
Other	\$0.01	\$1	0.0%	\$0.00	\$0	0.0%	(51.2%)
<b>Total Price</b>	\$68.48	\$4,984	100.0%	\$92.53	\$7,302	100.0%	35.1%
<b>Total Day Ahead Load</b>	71,816			77,617			8.1%
<b>Total Balancing Load</b>	(965)			(1,292)			33.9%
<b>Total Real Time Load</b>	72,780			78,909			8.4%
<b>Total Cost (\$ Billions)</b>	\$4.98			\$7.30			46.5%

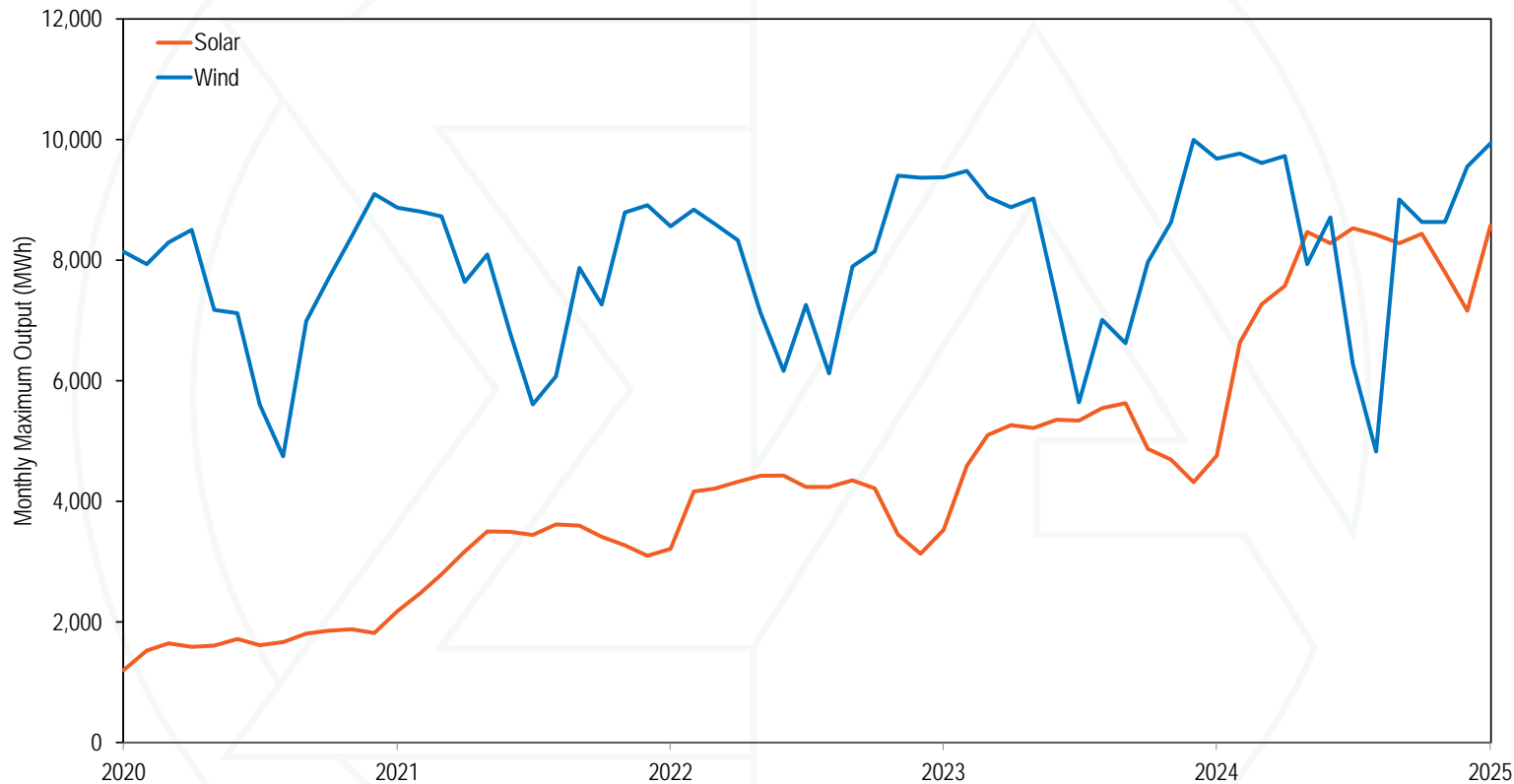
# 2024 YTD PJM Real-Time Daily Load



# 2024 YTD PJM Real-Time Daily LMP



# Monthly Maximum Solar and Wind Hourly Output



# Annual Maximum Hourly Solar and Wind Output

Year	Solar Maximum Hourly Output				Wind Maximum Hourly Output			
	Maximum Hourly MWh	Change	Percent Change	Solar Percent of All Generation For The Year	Maximum Hourly MWh	Change	Percent Change	Wind Percent of All Generation For The Year
2020	1,879			2.1%	9,095			11.3%
2021	3,617	1,739	92.5%	3.0%	8,911	(184)	(2.0%)	9.2%
2022	4,429	812	22.4%	5.2%	9,402	491	5.5%	9.8%
2023	5,630	1,201	27.1%	5.9%	9,993	592	6.3%	9.9%
2024	8,532	2,901	51.5%	8.2%	9,768	(226)	(2.3%)	10.3%
2025	8,575	44	0.5%	8.4%	9,937	169	1.7%	8.9%

# Fast Start Pricing: DLMP and PLMP

- **PJM implemented fast start pricing in both the day-ahead and real-time markets on September 1, 2021.**
- **The goal of fast start pricing is to allow inflexible resources to set prices based on the sum of their commitment costs per MWh and their marginal costs.**
- **The pricing run LMP (PLMP) is now the official settlement LMP in PJM, replacing the dispatch run LMP (DLMP)**



# Fast Start Pricing: DLMP and PLMP

- **Fast start pricing employs a new LMP calculation called the pricing run.**
- **The pricing run calculates LMP using the same optimal power flow algorithm as the dispatch run while simultaneously reducing (“relaxing” or ignoring) the economic minimum and maximum output MW constraints for all eligible fast start units.**

# Fast Start Pricing: DLMP and PLMP

- **The price signal no longer equals the short run marginal cost and therefore no longer provides the correct signal for efficient behavior for market participants making decisions on the margin.**
- **The differences between the actual LMP (DLMP) and the fast start LMP (PLMP) distort the incentive for market participants to behave competitively and to follow PJM's dispatch instructions.**

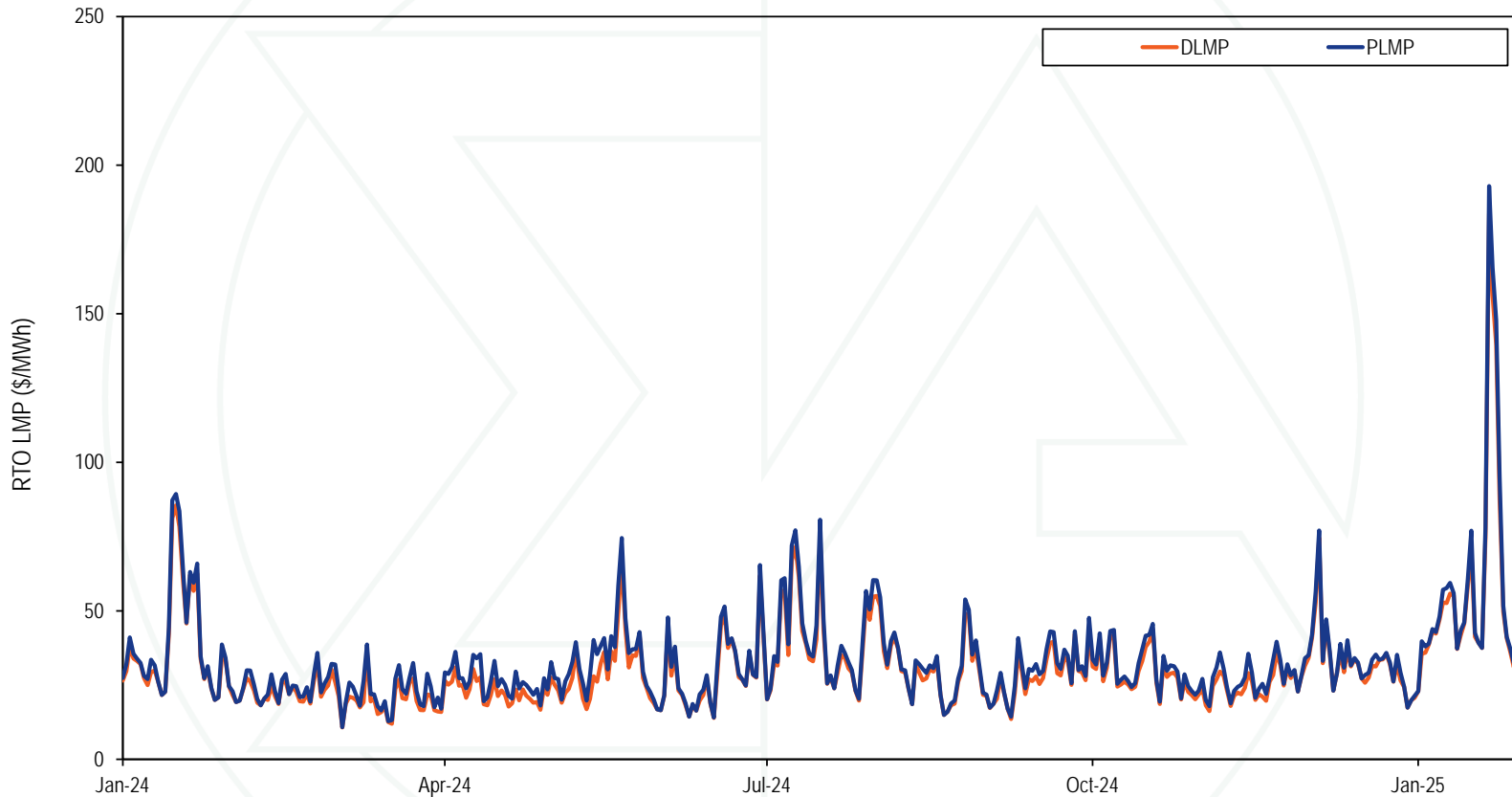
# Fast Start Pricing: DLMP and PLMP

- **PJM also uses the pricing run for capping the system marginal price at \$3,700 per MWh.**
  - **This was last used during Winter Storm Elliott.**
  - **The cap applies to the marginal energy component of LMP, but the congestion and loss components of LMP can exceed the cap.**
- **PJM uses a lower default transmission constraint penalty factor in the pricing run in the day-ahead market.**
  - **\$30,000 per MWh in the dispatch run**
  - **\$2,000 per MWh in the pricing run**

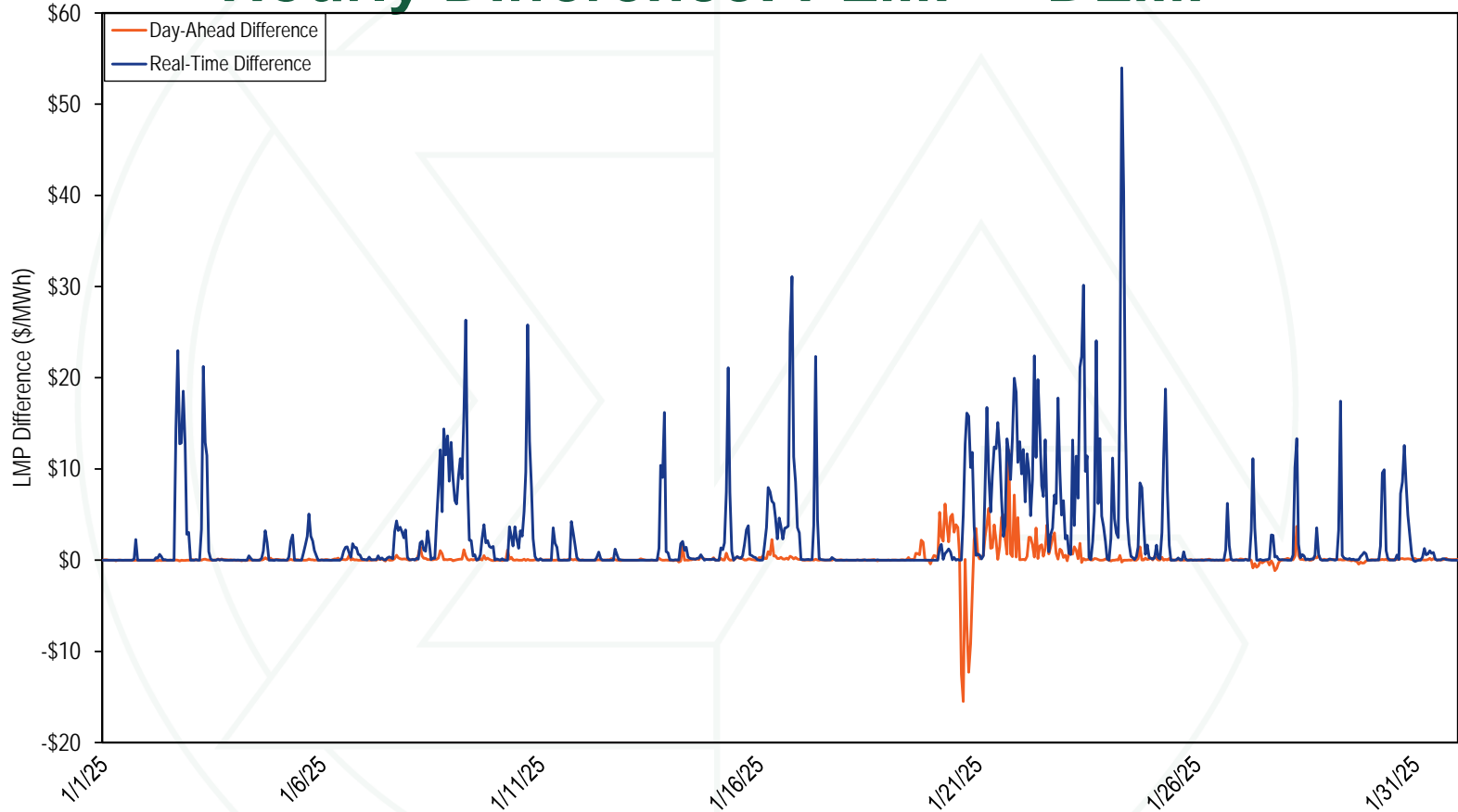
# Monthly Average Load-Weighted DLMP and PLMP

		Day-Ahead Load-Weighted Average				Real-Time Load-Weighted Average			
Year	Month	DLMP	PLMP	Difference	Percent Difference	DLMP	PLMP	Difference	Percent Difference
2024	Jan	\$48.45	\$48.65	\$0.20	0.4%	\$40.82	\$42.78	\$1.95	4.8%
2024	Feb	\$23.67	\$23.70	\$0.03	0.1%	\$23.20	\$24.86	\$1.66	7.2%
2024	Mar	\$21.89	\$21.93	\$0.04	0.2%	\$20.30	\$23.15	\$2.85	14.0%
2024	Apr	\$26.73	\$26.75	\$0.02	0.1%	\$23.29	\$27.17	\$3.87	16.6%
2024	May	\$32.92	\$32.90	(\$0.02)	(0.1%)	\$31.70	\$36.16	\$4.46	14.1%
2024	Jun	\$32.59	\$32.62	\$0.03	0.1%	\$31.95	\$33.35	\$1.40	4.4%
2024	Jul	\$44.51	\$44.69	\$0.18	0.4%	\$44.12	\$47.17	\$3.04	6.9%
2024	Aug	\$36.34	\$36.31	(\$0.03)	(0.1%)	\$34.37	\$36.29	\$1.92	5.6%
2024	Sep	\$30.63	\$30.77	\$0.14	0.4%	\$29.32	\$31.81	\$2.48	8.5%
2024	Oct	\$33.18	\$33.26	\$0.08	0.2%	\$29.85	\$31.87	\$2.02	6.8%
2024	Nov	\$29.78	\$29.82	\$0.04	0.1%	\$25.70	\$28.26	\$2.55	9.9%
2024	Dec	\$36.98	\$37.05	\$0.06	0.2%	\$33.62	\$34.98	\$1.36	4.0%
2024		\$48.45	\$48.65	\$0.20	0.4%	\$40.82	\$42.78	\$1.95	4.8%
2025	Jan	\$67.53	\$67.74	\$0.21	0.3%	\$59.93	\$62.87	\$2.94	4.9%

# Daily Average Real-Time DLMP and PLMP



# Hourly Difference: PLMP – DLMP



# Fast Start Units as a Percent of Marginal Units

Year	Month	Dispatch Run					Pricing Run				
		CT	Diesel	Wind	Solar	All Fast Start Units	CT	Diesel	Wind	Solar	All Fast Start Units
2024	Jan	0.7%	0.6%	0.0%	0.0%	1.3%	3.5%	1.1%	0.0%	0.0%	4.7%
2024	Feb	0.4%	0.1%	0.1%	0.0%	0.5%	2.2%	0.1%	0.1%	0.0%	2.4%
2024	Mar	0.7%	0.2%	1.2%	0.0%	2.1%	4.1%	0.8%	1.3%	0.0%	6.2%
2024	Apr	1.5%	0.2%	0.2%	0.0%	1.9%	6.5%	0.7%	0.1%	0.0%	7.3%
2024	May	0.6%	0.2%	0.1%	0.0%	1.0%	5.1%	0.6%	0.1%	0.0%	5.8%
2024	Jun	0.5%	0.3%	0.1%	0.0%	0.8%	3.5%	0.4%	0.1%	0.0%	4.0%
2024	Jul	0.8%	0.5%	0.0%	0.1%	1.4%	7.4%	1.0%	0.0%	0.1%	8.5%
2024	Aug	0.6%	0.5%	0.0%	0.0%	1.1%	5.0%	1.0%	0.0%	0.0%	6.0%
2024	Sep	1.0%	0.1%	0.0%	0.0%	1.1%	7.1%	0.4%	0.0%	0.0%	7.6%
2024	Oct	1.2%	0.1%	0.0%	0.0%	1.3%	6.4%	1.3%	0.0%	0.0%	7.7%
2024	Nov	1.0%	0.2%	0.0%	0.1%	1.4%	6.2%	0.6%	0.0%	0.1%	7.0%
2024	Dec	0.5%	0.2%	0.0%	0.0%	0.7%	2.2%	0.6%	0.0%	0.0%	2.9%
2025	Jan	0.8%	0.6%	0.1%	0.0%	1.5%	4.6%	2.1%	0.1%	0.0%	6.9%

# Fast Start Impacts: Zone Average Differences

2025 Jan								
Zone	Day-Ahead				Real-Time			
	Average DLMP	Average PLMP	Difference	Percent Difference	Average DLMP	Average PLMP	Difference	Percent Difference
ACEC	\$30.59	\$30.67	\$0.08	0.3%	\$28.18	\$29.90	\$1.72	6.1%
AEP	\$33.37	\$33.44	\$0.06	0.2%	\$30.98	\$33.29	\$2.32	7.5%
APS	\$34.76	\$34.83	\$0.07	0.2%	\$32.12	\$34.53	\$2.41	7.5%
ATSI	\$33.71	\$33.70	(\$0.02)	(0.0%)	\$30.57	\$32.80	\$2.23	7.3%
BGE	\$42.76	\$42.85	\$0.09	0.2%	\$39.34	\$42.25	\$2.91	7.4%
COMED	\$26.71	\$26.80	\$0.09	0.3%	\$23.90	\$25.83	\$1.93	8.1%
DAY	\$34.70	\$34.77	\$0.07	0.2%	\$31.62	\$34.04	\$2.42	7.7%
DUKE	\$33.15	\$33.22	\$0.07	0.2%	\$30.15	\$32.43	\$2.29	7.6%
DOM	\$39.97	\$40.04	\$0.07	0.2%	\$36.81	\$39.46	\$2.66	7.2%
DPL	\$34.52	\$34.63	\$0.11	0.3%	\$30.87	\$33.49	\$2.62	8.5%
DUQ	\$32.94	\$32.98	\$0.04	0.1%	\$30.53	\$32.74	\$2.21	7.2%
EKPC	\$32.67	\$32.73	\$0.07	0.2%	\$30.39	\$32.68	\$2.29	7.5%
JCPLC	\$30.58	\$30.67	\$0.08	0.3%	\$28.27	\$30.03	\$1.76	6.2%
MEC	\$31.77	\$31.85	\$0.08	0.2%	\$28.50	\$30.45	\$1.95	6.8%
OVEC	\$31.72	\$31.78	\$0.06	0.2%	\$28.73	\$30.89	\$2.16	7.5%
PECO	\$30.18	\$30.26	\$0.08	0.3%	\$27.82	\$29.48	\$1.66	6.0%
PE	\$34.73	\$34.76	\$0.04	0.1%	\$31.60	\$33.78	\$2.18	6.9%
PEPCO	\$41.09	\$41.17	\$0.08	0.2%	\$37.80	\$40.56	\$2.76	7.3%
PPL	\$29.64	\$29.73	\$0.09	0.3%	\$27.04	\$28.84	\$1.80	6.7%
PSEG	\$30.80	\$30.89	\$0.09	0.3%	\$28.72	\$30.50	\$1.78	6.2%
REC	\$33.06	\$33.15	\$0.08	0.2%	\$30.60	\$32.47	\$1.87	6.1%



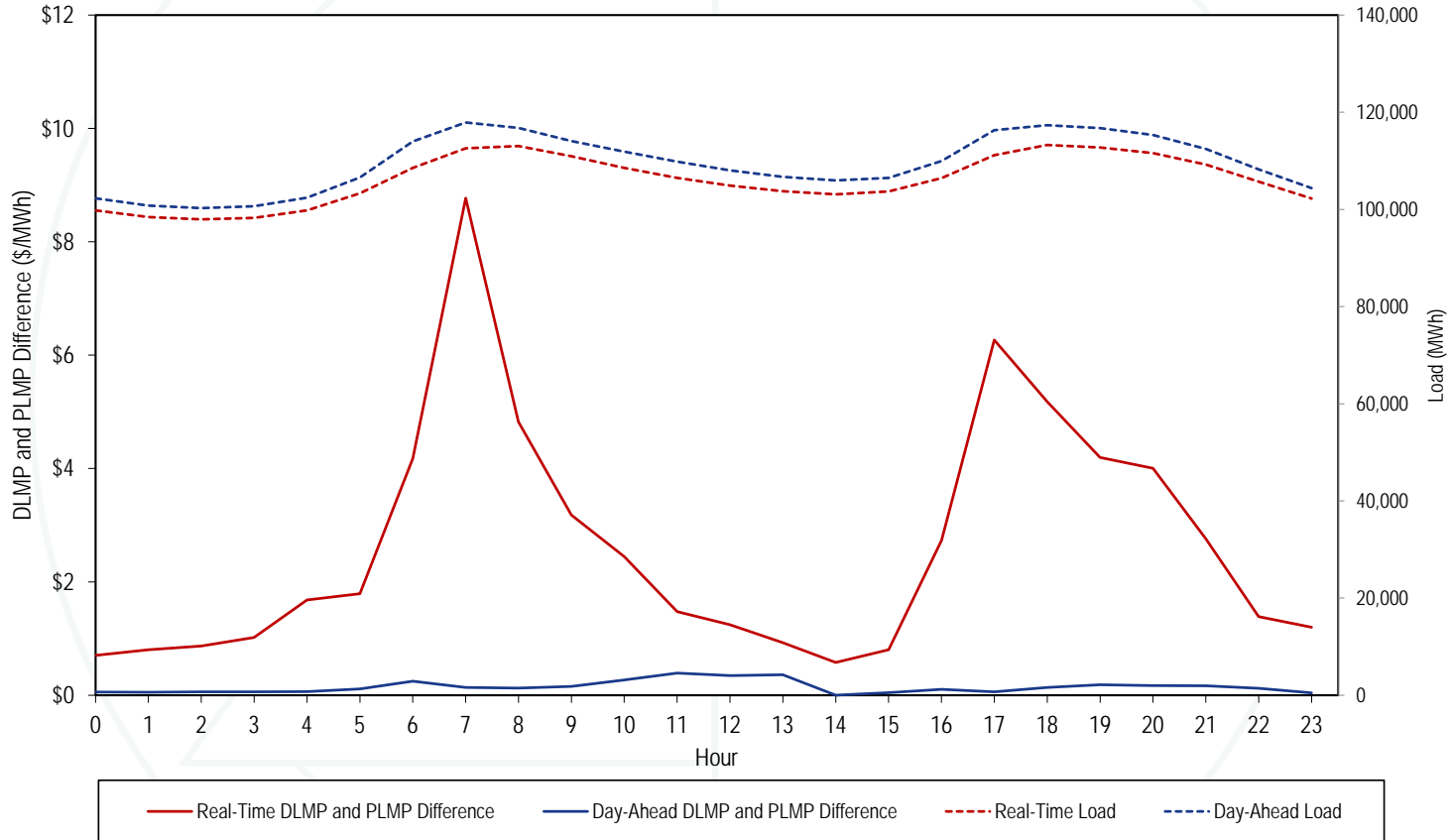
# Fast Start Impacts: Hub Average Differences

2025 Jan								
Hub	Day-Ahead				Real-Time			
	Average DLMP	Average PLMP	Difference	Percent Difference	Average DLMP	Average PLMP	Difference	Percent Difference
AEP GEN HUB	\$31.64	\$31.67	\$0.04	0.1%	\$28.75	\$30.95	\$2.20	7.6%
AEP-DAYTON HUB	\$32.69	\$32.73	\$0.04	0.1%	\$29.74	\$31.98	\$2.24	7.5%
ATSI GEN HUB	\$33.19	\$33.18	(\$0.01)	(0.0%)	\$29.77	\$31.94	\$2.17	7.3%
CHICAGO GEN HUB	\$26.03	\$26.14	\$0.11	0.4%	\$22.98	\$24.94	\$1.97	8.6%
CHICAGO HUB	\$26.98	\$27.01	\$0.04	0.1%	\$24.10	\$26.04	\$1.94	8.0%
DOMINION HUB	\$37.16	\$37.19	\$0.04	0.1%	\$34.79	\$37.36	\$2.57	7.4%
EASTERN HUB	\$34.42	\$34.49	\$0.07	0.2%	\$30.68	\$33.28	\$2.60	8.5%
N ILLINOIS HUB	\$26.59	\$26.71	\$0.12	0.4%	\$23.92	\$25.84	\$1.93	8.0%
NEW JERSEY HUB	\$30.70	\$30.76	\$0.05	0.2%	\$28.45	\$30.21	\$1.77	6.2%
OHIO HUB	\$32.63	\$32.67	\$0.04	0.1%	\$29.67	\$31.90	\$2.23	7.5%
WEST INT HUB	\$34.61	\$34.61	\$0.00	0.0%	\$31.86	\$34.21	\$2.35	7.4%
WESTERN HUB	\$36.35	\$36.39	\$0.04	0.1%	\$33.17	\$35.58	\$2.41	7.3%

# Zonal Real-Time PLMP-DLMP Difference Frequency

Zone	2025 Jan									
	< (\$50)	(\$50) to (\$10)	(\$10) to \$0	\$0	\$0 to \$10	\$10 to \$20	\$20 to \$50	\$50 to \$100	\$100 to \$200	>= \$200
PJM-RTO	0.0%	0.0%	1.4%	45.7%	44.6%	5.1%	2.8%	0.4%	0.0%	0.0%
ACEC	0.0%	0.0%	2.1%	45.9%	43.7%	4.4%	3.1%	0.7%	0.0%	0.0%
AEP	0.0%	0.1%	2.3%	45.9%	44.3%	4.7%	2.4%	0.3%	0.0%	0.0%
APS	0.0%	0.0%	1.7%	45.8%	43.9%	4.7%	3.4%	0.4%	0.0%	0.0%
ATSI	0.0%	0.1%	3.4%	45.9%	44.3%	3.9%	2.0%	0.4%	0.0%	0.0%
BGE	0.0%	0.5%	3.3%	45.8%	42.0%	4.5%	3.2%	0.6%	0.1%	0.0%
COMED	0.0%	0.0%	10.1%	48.9%	35.7%	3.0%	1.9%	0.4%	0.0%	0.0%
DAY	0.0%	0.5%	4.2%	46.0%	43.1%	3.7%	2.1%	0.4%	0.0%	0.0%
DUKE	0.0%	0.4%	4.4%	46.1%	43.2%	3.5%	2.0%	0.4%	0.0%	0.0%
DOM	0.0%	0.2%	3.8%	45.8%	41.0%	4.4%	3.7%	0.9%	0.1%	0.0%
DPL	0.0%	0.0%	2.1%	45.7%	40.9%	5.1%	4.7%	1.2%	0.2%	0.0%
DUQ	0.0%	0.1%	3.2%	45.9%	44.1%	4.2%	2.1%	0.3%	0.0%	0.0%
EKPC	0.0%	0.0%	3.1%	46.0%	43.3%	4.8%	2.4%	0.4%	0.0%	0.0%
JCPLC	0.0%	0.0%	2.4%	45.8%	43.5%	4.5%	3.0%	0.7%	0.0%	0.0%
MEC	0.0%	0.1%	2.3%	45.8%	43.7%	4.5%	3.0%	0.7%	0.1%	0.0%
OVEC	0.0%	1.2%	5.0%	46.3%	41.9%	3.4%	1.9%	0.4%	0.0%	0.0%
PECO	0.0%	0.0%	2.2%	45.7%	43.8%	4.5%	3.0%	0.7%	0.0%	0.0%
PE	0.1%	0.4%	3.1%	45.5%	43.0%	4.5%	2.8%	0.4%	0.0%	0.0%
PEPCO	0.0%	0.2%	3.6%	45.9%	41.7%	4.4%	3.4%	0.6%	0.1%	0.0%
PPL	0.0%	0.1%	2.7%	45.8%	43.2%	4.7%	2.8%	0.7%	0.0%	0.0%
PSEG	0.0%	0.0%	2.5%	45.9%	43.3%	4.5%	3.0%	0.7%	0.0%	0.0%
REC	0.0%	0.2%	3.3%	45.7%	42.5%	4.5%	3.1%	0.7%	0.0%	0.0%

# Hourly Average Load and LMP Difference

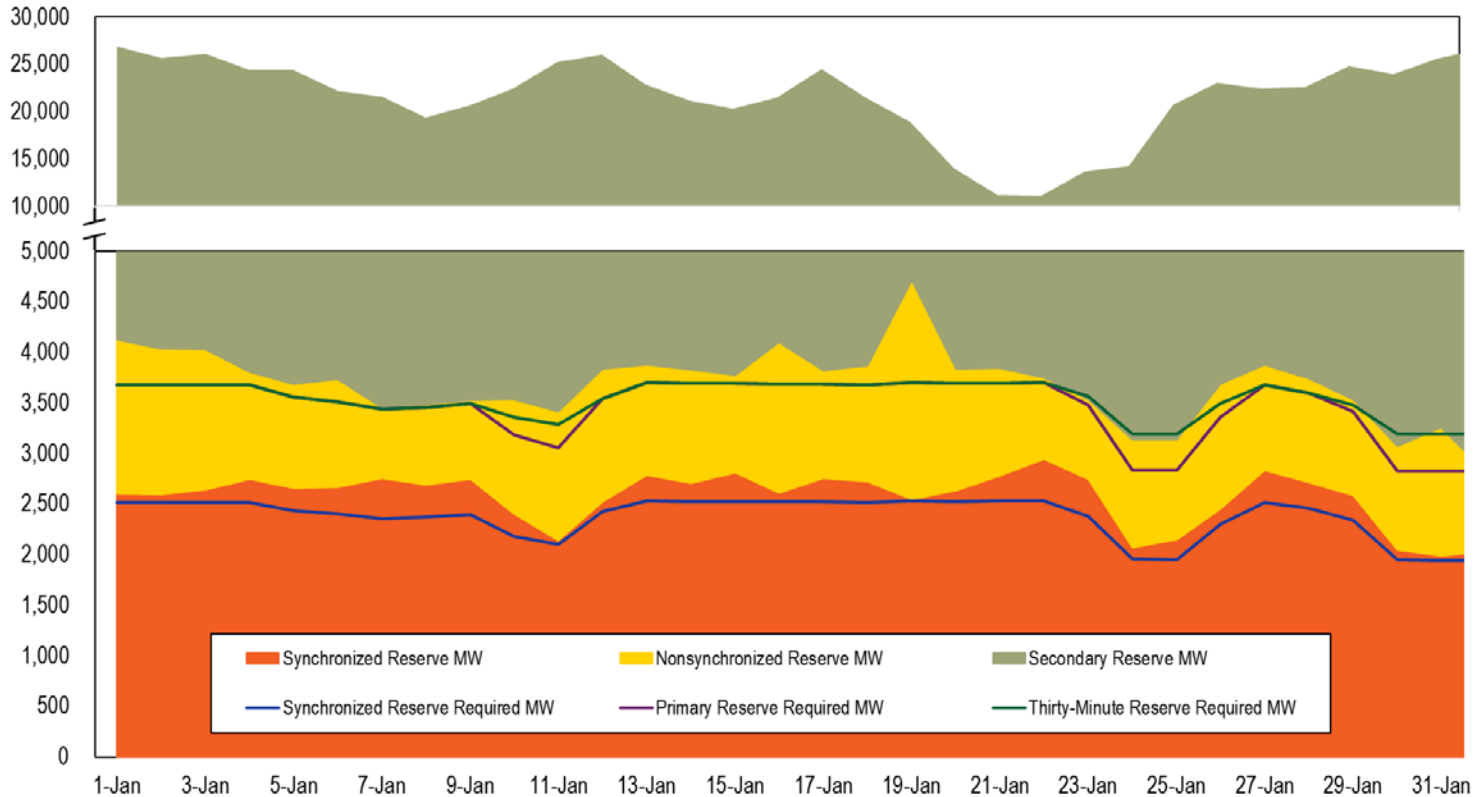


# Real-Time Load-Weighted Average LMP

	2024				2025			
	Off Peak	On Peak	Difference	Percent Difference	Off Peak	On Peak	Difference	Percent Difference
Jan	\$38.50	\$47.10	\$8.60	22.3%	\$55.29	\$70.54	\$15.25	27.6%
Feb	\$24.49	\$25.23	\$0.74	3.0%				
Mar	\$21.64	\$24.79	\$3.15	14.6%				
Apr	\$23.99	\$30.03	\$6.04	25.2%				
May	\$28.99	\$42.74	\$13.75	47.4%				
Jun	\$26.66	\$40.04	\$13.38	50.2%				
Jul	\$32.20	\$60.78	\$28.58	88.7%				
Aug	\$26.71	\$44.99	\$18.28	68.5%				
Sep	\$24.53	\$39.42	\$14.89	60.7%				
Oct	\$26.60	\$36.49	\$9.89	37.2%				
Nov	\$23.80	\$33.18	\$9.38	39.4%				
Dec	\$31.60	\$38.70	\$7.10	22.5%				



# Real-Time Reserves and Requirements



# Day-Ahead & Real-Time RTO Reserve MW

Year	Month	Synchronized Reserve MW		Nonsynchronized Reserve MW		Total Primary Reserve MW		Secondary Reserve MW		Total Thirty-Minute Reserve MW	
		DA	RT	DA	RT	DA	RT	DA	RT	DA	RT
2024	Jan	2,637	2,582	1,313	1,130	3,950	3,712	13,079	17,602	17,028	21,313

# Day-Ahead & Real-Time MAD Reserve MW

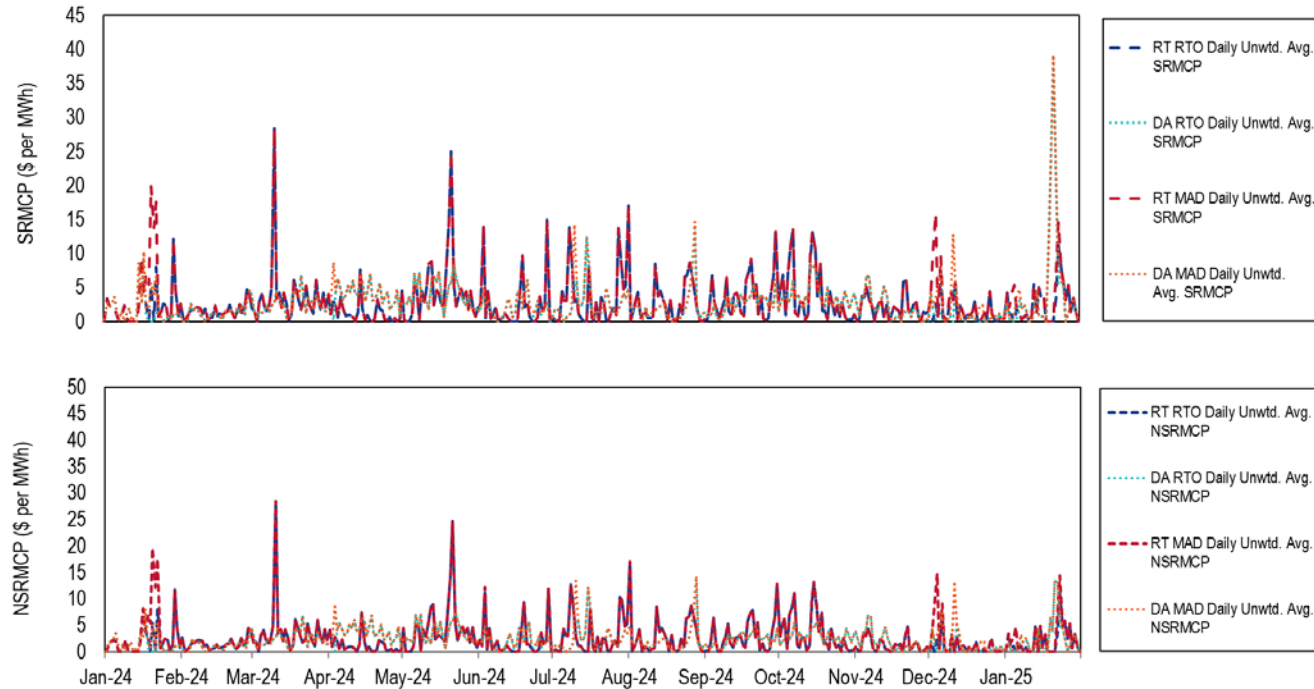
Year	Month	Synchronized Reserve MW		Nonsynchronized Reserve MW		Total Primary Reserve MW		Secondary Reserve MW		Total Thirty-Minute Reserve MW	
		DA	RT	DA	RT	DA	RT	DA	RT	DA	RT
2024	Jan	2,004	1,985	985	925	2,989	2,909	NA	NA	NA	NA

# Reserve Settlements by Month

Product	Year	Month	Total Day-Ahead Credits	Total Balancing MCP Credits	Total LOC Credits	Total Shortfall Charges	Total Credits
Synchronized Reserve	2024	Jan	\$9,766,362	(\$93,903)	\$1,087,537	\$0	\$10,759,996
Nonsynchronized Reserve	2024	Jan	\$1,310,758	(\$792,148)	\$185,918	NA	\$704,528
Secondary Reserve	2024	Jan	\$0	\$0	\$255,127	\$0	\$255,127



# Reserve Prices: 2024 and January 2025



- Higher prices in January 2025 during winter storms, cold weather alerts, and conservative operations.

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