Market Monitor Report

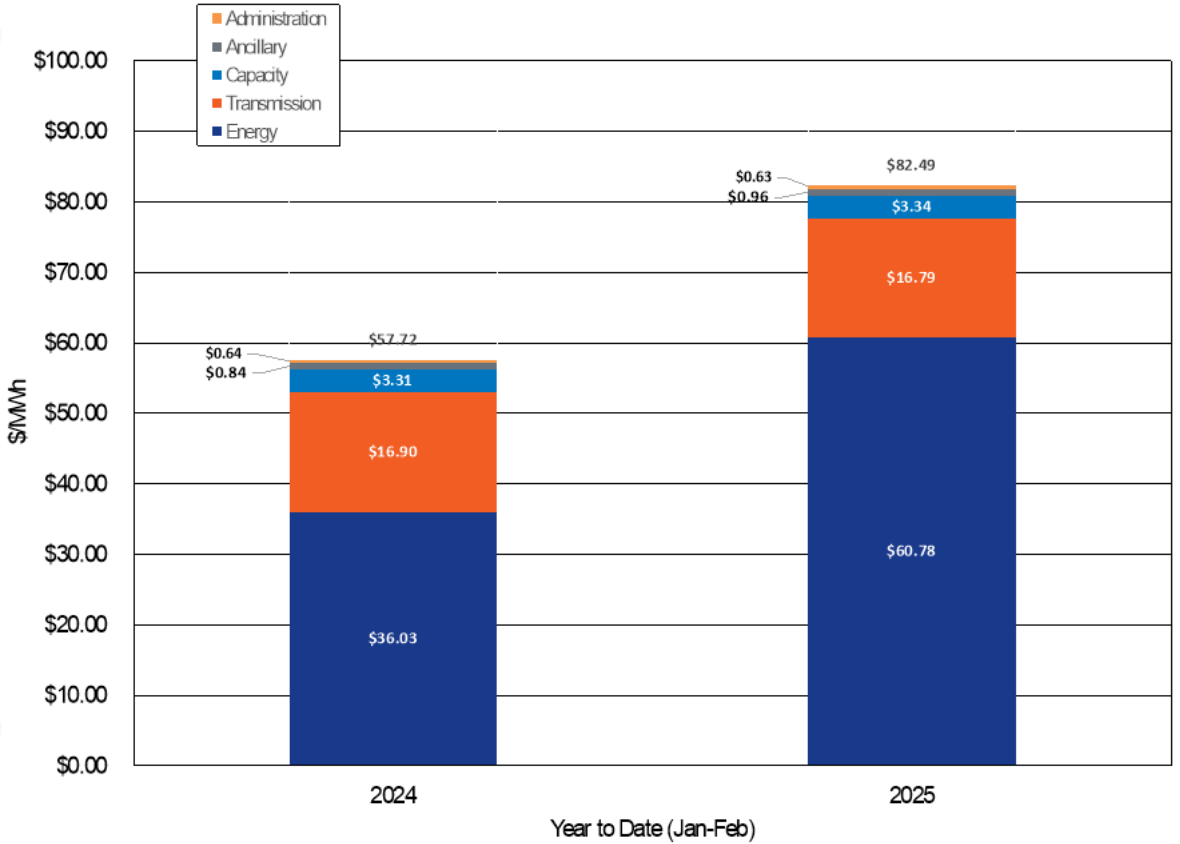
MC Webinar

March 17, 2025

IMM

Monitoring Analytics

Total Cost of Wholesale Power



Total Cost of Wholesale Power

Category	2024 (Jan-Feb) $/MWh	2024 (Jan-Feb) ($ Millions)	2024 (Jan-Feb) Percent of Total	2025 (Jan-Feb) $/MWh	2025 (Jan-Feb) ($ Millions)	2025 (Jan-Feb) Percent of Total	Percent Change
Energy	$36.03	$2,622	62.4%	$60.78	$4,796	73.7%	68.7%
Day Ahead Energy	$36.80	$2,678	63.7%	$58.40	$4,609	70.8%	58.7%
Balancing Energy	$0.48	$35	0.8%	$1.28	$101	1.6%	168.3%
ARR Credits	($1.23)	($90)	(2.1%)	($1.39)	($109)	(1.7%)	12.4%
Self Scheduled FTR Credits	($0.40)	($29)	(0.7%)	($0.86)	($68)	(1.0%)	113.6%
Balancing Congestion	$0.37	$27	0.6%	$1.08	$85	1.3%	192.6%
Emergency Energy	$0.00	$0	0.0%	$0.00	$0	0.0%	0.0%
Inadvertent Energy	$0.01	$0	0.0%	($0.01)	($1)	(0.0%)	(287.3%)
Load Response - Energy	$0.02	$1	0.0%	$0.01	$1	0.0%	(57.8%)
Emergency Load Response	$0.00	$0	0.0%	$0.00	$0	0.0%	0.0%
Energy Uplift (Operating Reserves)	$0.47	$34	0.8%	$2.95	$233	3.6%	528.3%
Marginal Loss Surplus Allocation	($0.50)	($36)	(0.9%)	($0.85)	($67)	(1.0%)	70.7%
Market to Market Payments	$0.02	$2	0.0%	$0.17	$13	0.2%	604.5%
Capacity	$3.31	$241	5.7%	$3.34	$263	4.0%	0.7%
Capacity (Capacity Market and FRR)	$3.22	$234	5.6%	$3.22	$254	3.9%	0.1%
Capacity Part V (RMR)	$0.10	$7	0.2%	$0.12	$9	0.1%	21.3%
Load Response - Capacity	$0.00	$0	0.0%	$0.00	$0	0.0%	0.0%
Transmission	$16.90	$1,230	29.3%	$16.79	$1,325	20.3%	(0.7%)
Transmission Service Charges	$14.28	$1,039	24.7%	$14.19	$1,119	17.2%	(0.7%)
Transmission Enhancement Cost Recovery	$2.52	$184	4.4%	$2.51	$198	3.0%	(0.6%)
Transmission Owner (Schedule 1A)	$0.09	$7	0.2%	$0.09	$7	0.1%	0.2%
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%
Ancillary	$0.84	$61	1.5%	$0.96	$76	1.2%	14.0%
Reactive	$0.48	$35	0.8%	$0.43	$34	0.5%	(10.0%)
Regulation	$0.22	$16	0.4%	$0.33	$26	0.4%	52.6%
Black Start	$0.08	$6	0.1%	$0.07	$6	0.1%	(10.7%)
Synchronized Reserves	$0.06	$5	0.1%	$0.12	$9	0.1%	85.2%
Secondary Reserves	$0.00	$0	0.0%	$0.00	$0	0.0%	45.3%
Non-Synchronized Reserves	$0.00	$0	0.0%	$0.01	$1	0.0%	254.3%
Day Ahead Scheduling Reserve (DASR)	$0.00	$0	0.0%	$0.00	$0	0.0%	0.0%
Administration	$0.64	$46	1.1%	$0.63	$49	0.8%	(1.7%)
PJM Administrative Fees	$0.59	$43	1.0%	$0.58	$46	0.7%	(1.1%)
NERC/RFC	$0.04	$3	0.1%	$0.04	$3	0.1%	1.2%
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%	(50.1%)
Total Price	$57.72	$4,201	100.0%	$82.49	$6,509	100.0%	42.9%
Total Day Ahead Load	71,816			77,617			8.1%
Total Balancing Load	(965)			(1,292)			33.9%
Total Real Time Load	72,780			78,909			8.4%
Total Cost ($ Billions)	$4.20			$6.51			55.0%

LOAD BIDDING

PJM Conclusion Overstated

PJM conclusion: Day-ahead demand was underbid 5% to 11% compared to the PJM original forecast.

	Valley			Morning Peak			Evening Peak		
January 2025	DA Demand	Org Forecast	DA Over/Under Bid	DA Demand	Org Forecast	DA Over/Under Bid	DA Demand	Org Forecast	DA Over/Under Bid
Sat. 18	85,794	91,395	**-5,601**	97,106	102,019	**-4,913**	100,771	104,269	**-3,498**
Sun. 19	87,028	90,593	**-3,565**	99,515	106,347	**-6,832**	106,899	118,847	**-11,948**
Mon. 20	101,331	106,589	**-5,258**	121,746	130,045	**-8,299**	129,722	139,089	**-9,367**
Tue. 21	115,082	122,245	**-7,163**	133,314	144,024	**-10,710**	131,214	142,740	**-11,526**
Wed. 22	115,521	124,306	**-8,785**	133,802	145,104	**-11,302**	127,562	138,475	**-10,913**
Thu. 23	109,801	117,834	**-8,033**	131,558	138,618	**-7,060**	119,316	131,365	**-12,049**

The difference between LSE DA and RT load is overstated by this calculation.

PJM Presentation: Cold Weather Operations January 18–23, 2025 , Slide 29, https://www.pjm.com/-/media/DotCom/committees-groups/task-forces/rcstf/2025/20250312/20250312-item-02---january-2025-cold-weather-update-rsctf.pdf

Issues

- No comparison of DA load or PJM forecast to RT load.
- The forecast data includes losses while DA Demand does not.
- The DA Demand (as posted by PJM) includes INCs, DECs and Economic DR.
- The 18:00 forecast data is after load bids submitted in DA market.
- The peak of RT load on Jan 22, 2025 was 8am not 7am.

LSE DA Load vs LSE RT load

LSE DA Load vs LSE RT load						
Date	Time	DA Demand (As Posted by PJM)	LSE DA Load	LSE RT Load	LSE DA Load - RT Load	Percent Difference
Valley						
Sunday, January 19, 2025	3:00:00 AM	87,028	85,999	87,762	(1,763)	(2.0%)
Monday, January 20, 2025	1:00:00 AM	101,331	101,371	104,083	(2,712)	(2.6%)
Tuesday, January 21, 2025	2:00:00 AM	115,082	115,156	117,870	(2,714)	(2.3%)
Wednesday, January 22, 2025	1:00:00 AM	115,521	115,771	120,984	(5,213)	(4.3%)
Thursday, January 23, 2025	2:00:00 PM	109,801	109,626	114,212	(4,586)	(4.0%)
Morning Peak						
Sunday, January 19, 2025	9:00:00 AM	99,514	98,397	99,713	(1,315)	(1.3%)
Monday, January 20, 2025	8:00:00 AM	121,746	122,346	122,725	(379)	(0.3%)
Tuesday, January 21, 2025	7:00:00 AM	133,314	134,695	134,973	(278)	(0.2%)
Wednesday, January 22, 2025	7:00:00 AM	133,802	137,123	138,768	(1,645)	(1.2%)
Wednesday, January 22, 2025	8:00:00 AM	132,060	136,343	140,043	(3,700)	(2.6%)
Thursday, January 23, 2025	7:00:00 AM	131,558	129,844	135,350	(5,506)	(4.1%)
Evening Peak						
Sunday, January 19, 2025	6:00:00 PM	106,844	110,459	113,091	(2,632)	(2.3%)
Monday, January 20, 2025	7:00:00 PM	129,722	129,528	129,782	(254)	(0.2%)
Tuesday, January 21, 2025	6:00:00 PM	131,214	133,231	135,100	(1,869)	(1.4%)
Wednesday, January 22, 2025	7:00:00 PM	127,562	130,785	132,526	(1,742)	(1.3%)
Thursday, January 23, 2025	6:00:00 PM	119,316	120,863	123,550	(2,687)	(2.2%)
Average		118,463	119,471	121,908	(2,437)	(2.0%)

Notes: DA demand = LSE DA load + Net virtuals + Economic DR

LSE DA Load vs LSE RT load

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Average		118,463	119,471	121,908	(2,437)	(2.0%)

LSE DA load is greater than DA demand calculated by PJM.

Notes: DA demand = LSE DA load + Net virtuals + Economic DR

LSE DA Load vs LSE RT load

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The difference is much less than PJM's calculation. On average, it is 2 percent instead of 5 percent to 11 percent.

Notes: DA demand = LSE DA load + Net virtuals + Economic DR

DA Forecast vs RT Load with Losses

DA Forecast vs RT Load with Losses					
Date	Time	PJM DA Forecast	LSE RT Load with Losses	PJM DA Forecast - RT Load with Losses	Percent Difference
Valley					
Sunday, January 19, 2025	3:00:00 AM	90,866	89,681	1,185	1.3%
Monday, January 20, 2025	1:00:00 AM	106,846	106,434	412	0.4%
Tuesday, January 21, 2025	2:00:00 AM	123,332	120,892	2,440	2.0%
Wednesday, January 22, 2025	1:00:00 AM	124,330	124,177	153	0.1%
Thursday, January 23, 2025	2:00:00 PM	118,916	117,070	1,846	1.6%
Morning Peak					
Sunday, January 19, 2025	9:00:00 AM	105,683	101,956	3,727	3.7%
Monday, January 20, 2025	8:00:00 AM	130,479	125,507	4,972	4.0%
Tuesday, January 21, 2025	7:00:00 AM	144,024	138,356	5,668	4.1%
Wednesday, January 22, 2025	7:00:00 AM	145,037	142,468	2,569	1.8%
Wednesday, January 22, 2025	8:00:00 AM	144,144	143,714	430	0.3%
Thursday, January 23, 2025	7:00:00 AM	138,923	138,799	124	0.1%
Evening Peak					
Sunday, January 19, 2025	6:00:00 PM	119,608	115,826	3,782	3.3%
Monday, January 20, 2025	7:00:00 PM	138,871	133,097	5,774	4.3%
Tuesday, January 21, 2025	6:00:00 PM	143,532	138,362	5,170	3.7%
Wednesday, January 22, 2025	7:00:00 PM	140,380	136,000	4,380	3.2%
Thursday, January 23, 2025	6:00:00 PM	131,365	126,600	4,765	3.8%
Average		127,896	124,934	2,962	2.4%

Notes: This DA forecast data is the 10 AM forecast.

DA Forecast vs RT Load with Losses

DA Forecast vs RT Load with Losses					
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Average		127,896	124,934	2,962	2.4%

PJM is over forecasting the load.

Notes: This DA forecast data is the 10 AM forecast.

Monitoring Analytics

DA Forecast vs RT Load with Losses

DA Forecast vs RT Load with Losses					
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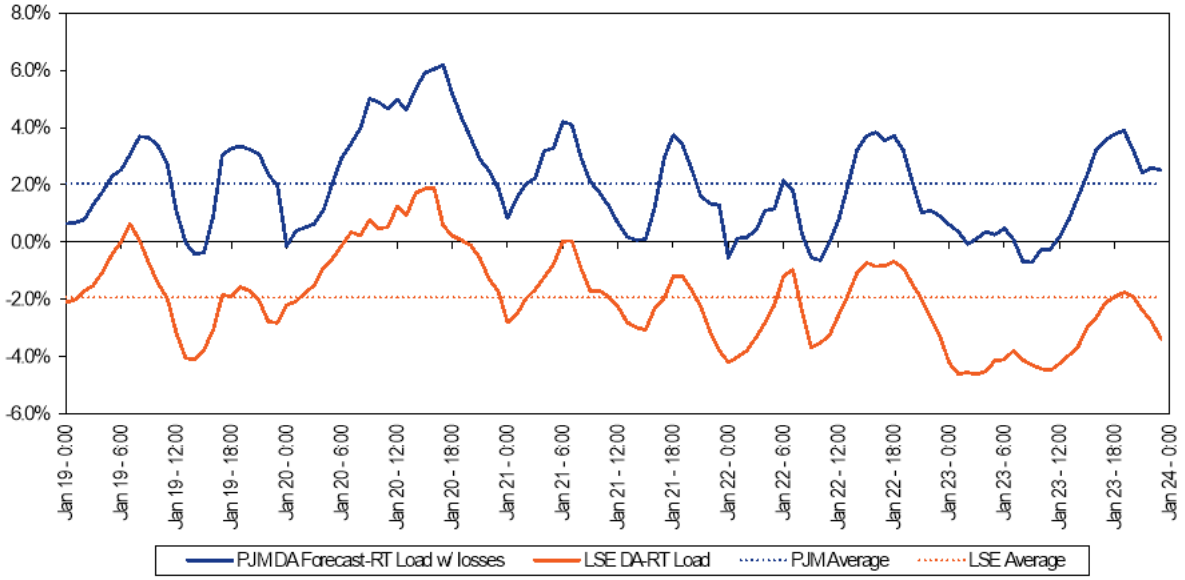
Notes: This DA forecast data is the 10 AM forecast.

On average PJM is over forecasting by 2.4 percentage points.

Monitoring Analytics

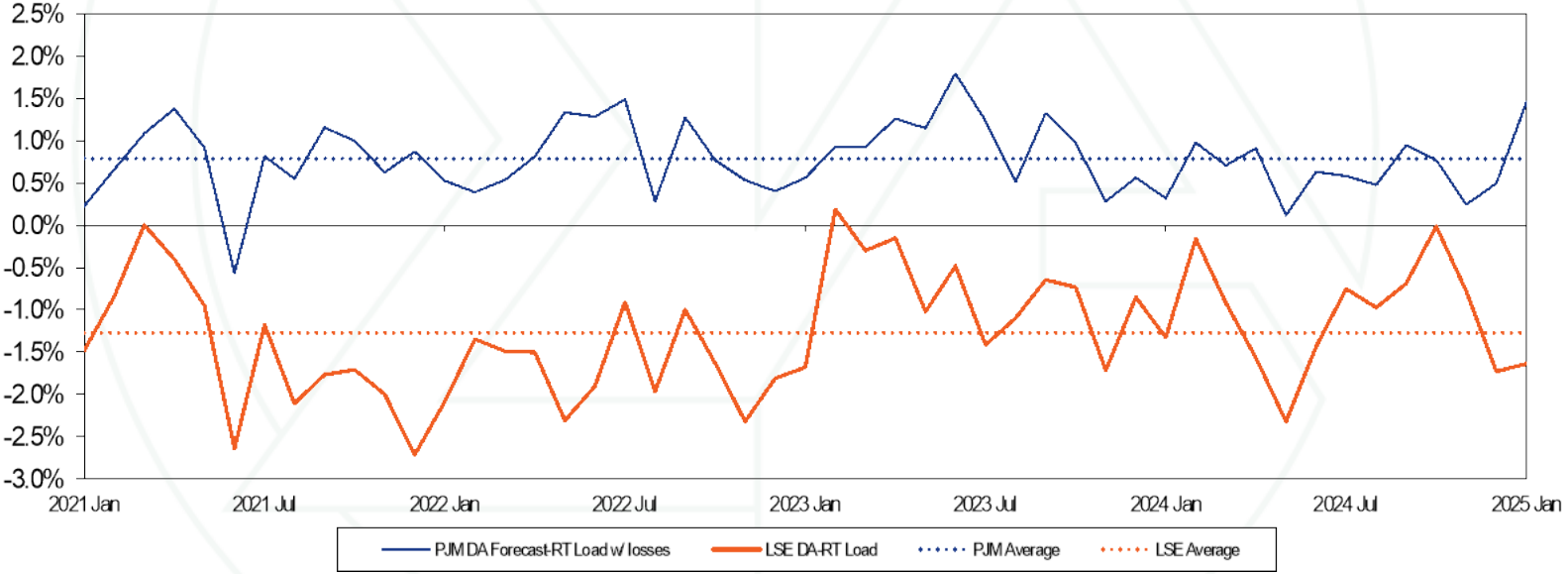
2025 Vortex Week

- **Actual differences between LSE DA load and LSE RT load was between 0 percent and 4 percent.**
- **PJM over forecasted equal to LSE RT load minus LSE DA load.**



Monthly Average Difference

- **Over the past 5 years, the average of LSE RT load minus LSE DA load was 1.3 percent. The largest difference was 2.7 percent.**
- **The average PJM forecast error was 0.8 percent. The largest difference was 1.8 percent.**



Monitoring Analytics

Conclusion

- **The average hourly difference between LSE DA load and LSE RT load was 1,135 MW (2021-2024).**
- **The IMM has asked the LSE accounts with the largest difference about their behavior. Of all the inquiries, there are 25 accounts with 1,160 MW that do not participate in DA market in the average hour.**
- **This behavior applies to normal days as well as critical days (i.e. high demand days) and peak hours of any day.**
- **Outside of the identified DA nonparticipation, the differences between LSE DA Load and LSE RT load appear to be driven by LSE load forecast error.**

Conclusion

- **On average, the difference between the LSE DA demand (as posted by PJM) and PJM's DA forecast is overstated because:**
  - **LSE DA demand = LSE DA load + Net virtuals + Economic DR**
  - **PJM DA forecast includes losses**
  - **PJM DA forecast tends to be higher than RT load.**

UPLIFT

Uplift Transparency

- **FERC Order 844 requires the publication of monthly unit specific uplift.**
- **The transparency is intended to enhance competition and help market participants "better evaluate possible solutions to the incurrence of uplift."**
- **PJM posts the unit specific uplift data in DataMiner on the 10th of each month with a one month lag. For example, the January 2025 data was published on March 10, 2025.**

Uplift Concentration

- **The data show that uplift is highly concentrated among a small subset of resources and owners, especially day ahead uplift.**
- **Most uplift is due to unit specific or location specific issues, rather than general market design issues.**
- **This was the case for the year 2024. The unit specific data for the year is published in the State of the Market Report.**
- **Uplift was also highly concentrated during the 2025 Polar Vortex, as shown by January 2025 uplift data.**

Top 10 Uplift Units: 2024

Rank	Unit Name	Zone	Total Uplift Credit	Share of Total Uplift Credits
1	BC BRANDON SHORES 2 F	BGE	$31,118,688	11.5%
2	BC BRANDON SHORES 1 F	BGE	$22,184,006	8.2%
3	PEP CHALKPOINT 3 F	PEPCO	$20,530,544	7.6%
4	PEP CHALKPOINT 4 F	PEPCO	$13,474,563	5.0%
5	BC WAGNER 3 F	BGE	$10,637,591	3.9%
6	BC WAGNER 4 F	BGE	$7,883,568	2.9%
7	PL BRUNNER ISLAND 3 F	PPL	$3,926,768	1.5%
8	BC WAGNER 1 F	BGE	$2,429,167	0.9%
9	PL MARTINS CREEK 4 F	PPL	$2,294,786	0.9%
10	DPL INDIAN RIVER 4 F	DPL	$2,151,960	0.8%
Total of Top 10			$116,631,640	43.2%
Total Uplift Credits			$269,850,402	100.0%

Top 10 Day- Ahead Uplift: 2024

Rank	Unit Name	Zone	Day-Ahead Operating Reserve Credit	Share of Day-Ahead Operating Reserve Credits
1	BC BRANDON SHORES 2 F	BGE	$28,788,893	25.0%
2	BC BRANDON SHORES 1 F	BGE	$20,838,396	18.1%
3	PEP CHALKPOINT 3 F	PEPCO	$19,124,583	16.6%
4	PEP CHALKPOINT 4 F	PEPCO	$12,921,378	11.2%
5	BC WAGNER 3 F	BGE	$8,821,749	7.7%
6	BC WAGNER 4 F	BGE	$5,587,916	4.9%
7	PL BRUNNER ISLAND 3 F	PPL	$3,133,526	2.7%
8	BC WAGNER 1 F	BGE	$1,770,914	1.5%
9	PL MARTINS CREEK 4 F	PPL	$1,423,855	1.2%
10	PL MARTINS CREEK 3 F	PPL	$1,413,194	1.2%
Total of Top 10			$103,824,405	90.2%
Total day-ahead operating reserve credits			$115,153,646	100.0%

Top 10 Balancing Uplift: 2024

Rank	Unit Name	Zone	Balancing Generator Credits	Share of Balancing Generator Credits
1	BC BRANDON SHORES 2 F	BGE	$2,328,766	2.0%
2	BC WAGNER 4 F	BGE	$2,295,652	2.0%
3	DPL INDIAN RIVER 4 F	DPL	$2,105,787	1.8%
4	AEP ROBERT P MONE 1 CT	AEP	$1,821,171	1.6%
5	BC WAGNER 3 F	BGE	$1,815,820	1.6%
6	AEP ROBERT P MONE 3 CT	AEP	$1,601,057	1.4%
7	EKPC JK SMITH 2 CT	EKPC	$1,516,635	1.3%
8	EKPC JK SMITH 1 CT	EKPC	$1,491,609	1.3%
9	AEP ROBERT P MONE 2 CT	AEP	$1,489,111	1.3%
10	EKPC JK SMITH 3 CT	EKPC	$1,432,485	1.2%
Total of Top 10			$17,898,092	15.5%
Total balancing operating reserve credits			$120,478,033	100.0%

Top 10 Uplift Units: January 2025

Rank	Unit Name	Total Uplift Credit	Share of Total Uplift Credits
1	PEP CHALKPOINT 4 F	$102,131,655	26.0%
2	PEP CHALKPOINT 3 F	$33,971,870	8.7%
3	JC REDOAK 1 CC	$13,459,037	3.4%
4	PS NEWARK ENERGY CENTER 10 CC	$11,653,550	3.0%
5	ME IRONWOOD 1 CC	$6,707,463	1.7%
6	PE PHILLIPS ISL LINWOOD 1 CC	$6,277,247	1.6%
7	DPL WILDCAT POINT 1 CC	$6,072,714	1.5%
8	COM 929 JACKSON 2 CC	$5,182,768	1.3%
9	COM 929 JACKSON 1 CC	$5,079,458	1.3%
10	JC SOUTH RIVER 2 F	$4,752,809	1.2%
Total of Top 10		$195,288,569	49.7%
Total Uplift Credits		$392,583,695	100.0%

Top 10 Day-Ahead Uplift: January 2025

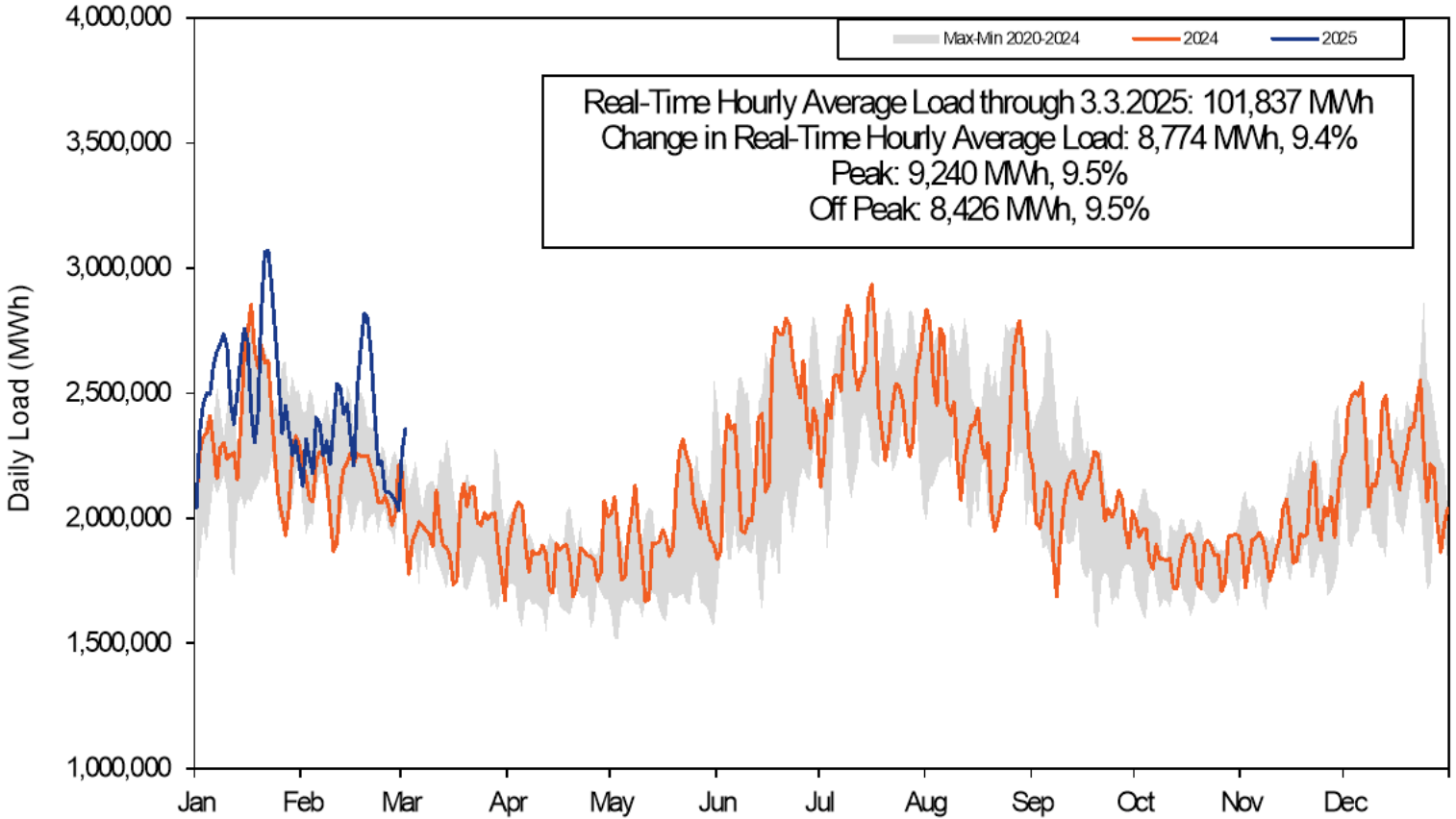
Rank	Unit Name	Day-Ahead Operating Reserve Credits	Share of Day-Ahead Operating Reserve Credits
1	PEP CHALKPOINT 4 F	$102,096,331	66.3%
2	PEP CHALKPOINT 3 F	$33,766,761	21.9%
3	BC BRANDON SHORES 2 F	$3,399,676	2.2%
4	AEP CLINCH RIVER 2 F	$3,292,283	2.1%
5	AEP CLINCH RIVER 1 F	$3,119,506	2.0%
6	BC BRANDON SHORES 1 F	$2,372,519	1.5%
7	BC WAGNER 3 F	$1,647,930	1.1%
8	BC WAGNER 4 F	$1,462,385	1.0%
9	PEP PANDA 1 F	$431,654	0.3%
10	PEP PANDA 2 F	$430,148	0.3%
Total of Top 10		$152,019,191	98.8%
Total day-ahead operating reserve credits		$153,895,589	100.0%

Top 10 Balancing Uplift: January 2025

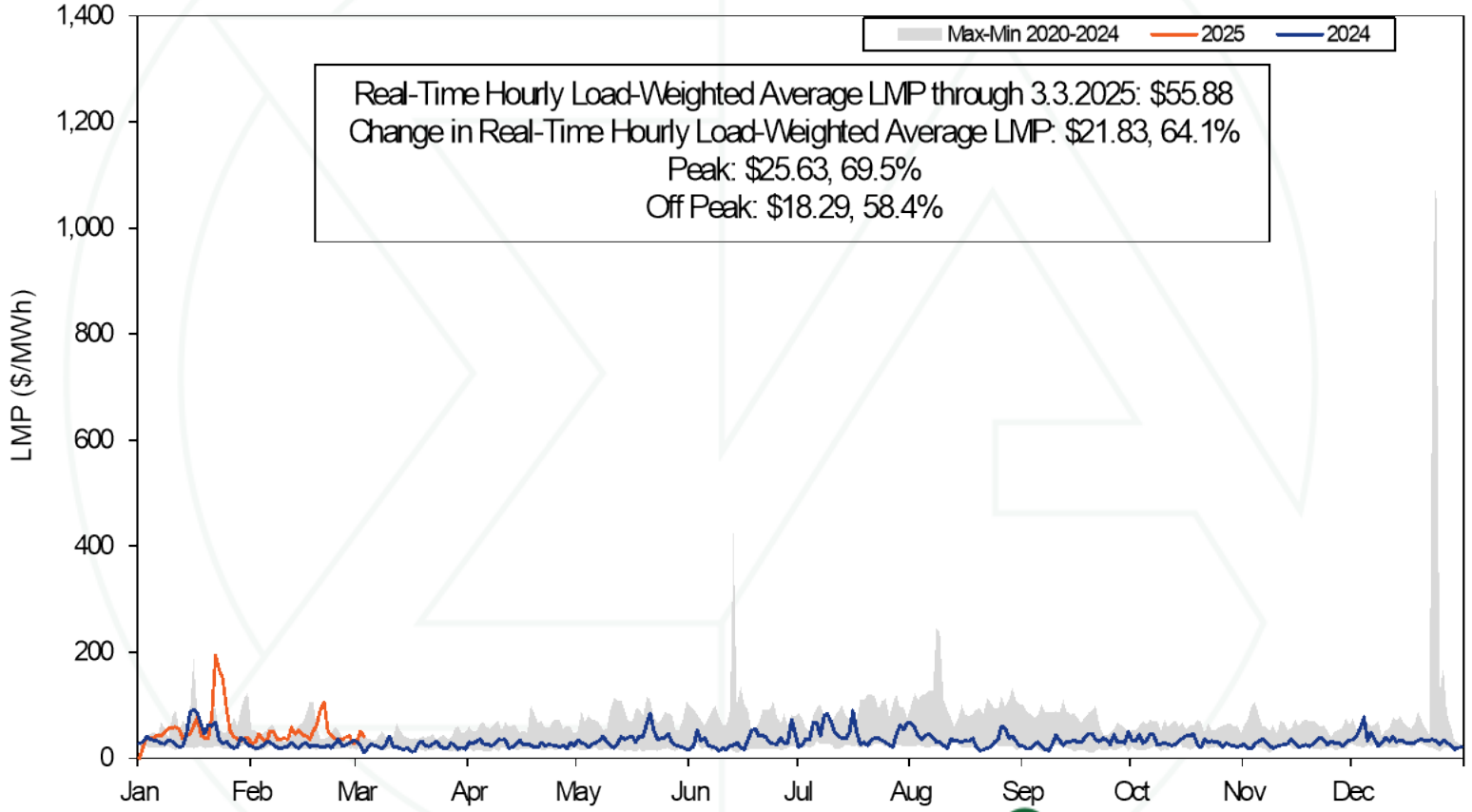
Rank	Unit Name	Balancing Generator Credits	Share of Balancing Generator Credits
1	JC REDOAK 1 CC	$13,459,037	5.8%
2	PS NEWARK ENERGY CENTER 10 CC	$11,653,510	5.0%
3	ME IRONWOOD 1 CC	$6,707,438	2.9%
4	PE PHILLIPS ISL LINWOOD 1 CC	$6,271,104	2.7%
5	DPL WILDCAT POINT 1 CC	$6,033,202	2.6%
6	COM 929 JACKSON 2 CC	$5,182,140	2.2%
7	COM 929 JACKSON 1 CC	$5,079,022	2.2%
8	JC SOUTH RIVER 2 F	$4,752,703	2.1%
9	JC SOUTH RIVER 1 F	$4,730,261	2.0%
10	VP FLUVANNA CC	$4,122,200	1.8%
Total of Top 10		$67,990,618	29.4%
Total balancing generator credits		$231,363,242	100.0%

YEAR TO DATE UPDATE

2024 YTD PJM Real-Time Daily Load

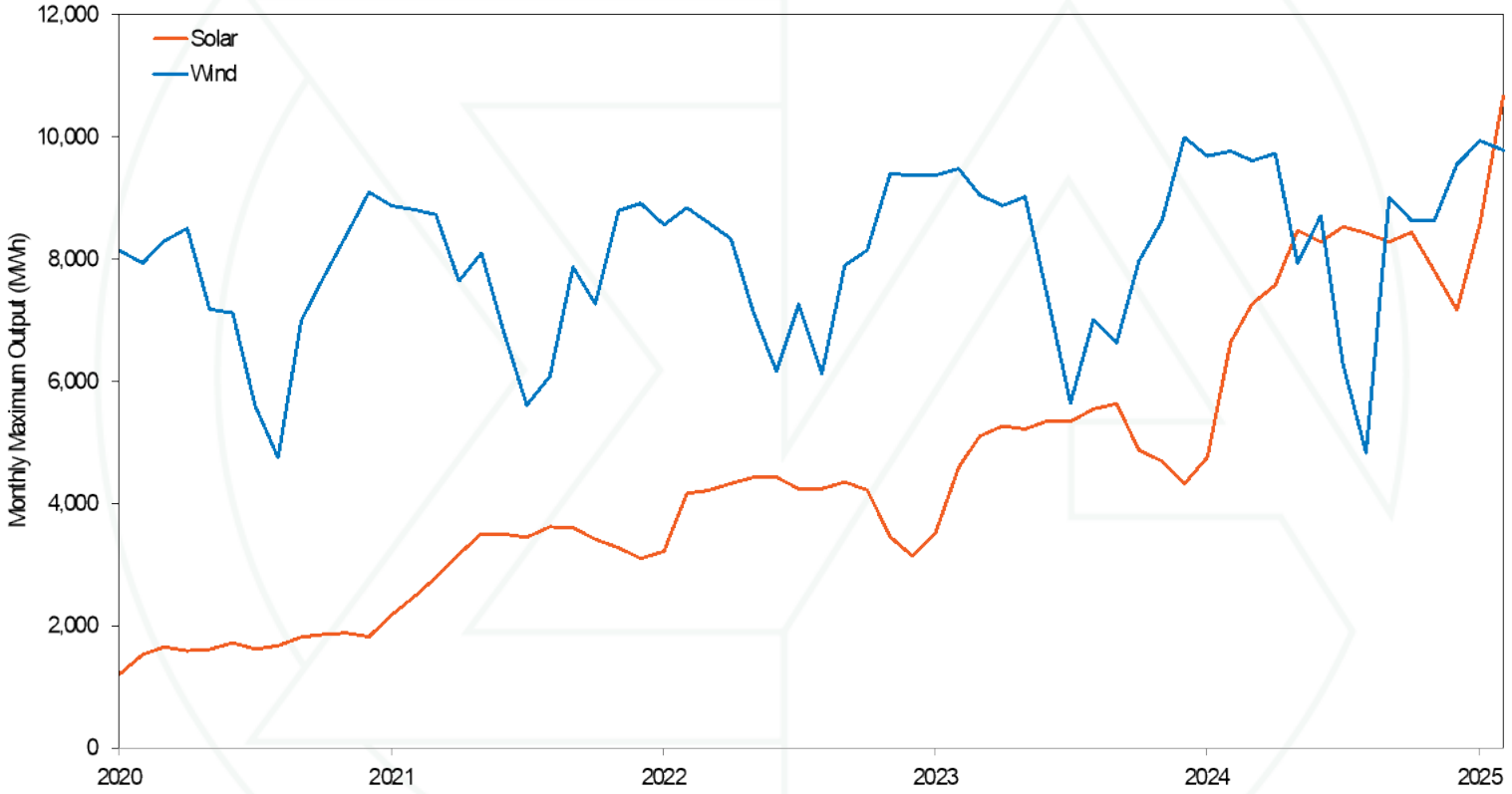


2024 YTD PJM Real-Time Daily LMP



Monitoring Analytics

Monthly Maximum Solar and Wind Hourly Output



Monitoring Analytics

Annual Maximum Hourly Solar and Wind Output

	Solar Maximum Hourly Output				Wind Maximum Hourly Output			
Year	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	10,665	2,134	25.0%	11.0%	9,937	169	1.7%	8.9%

FAST START

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

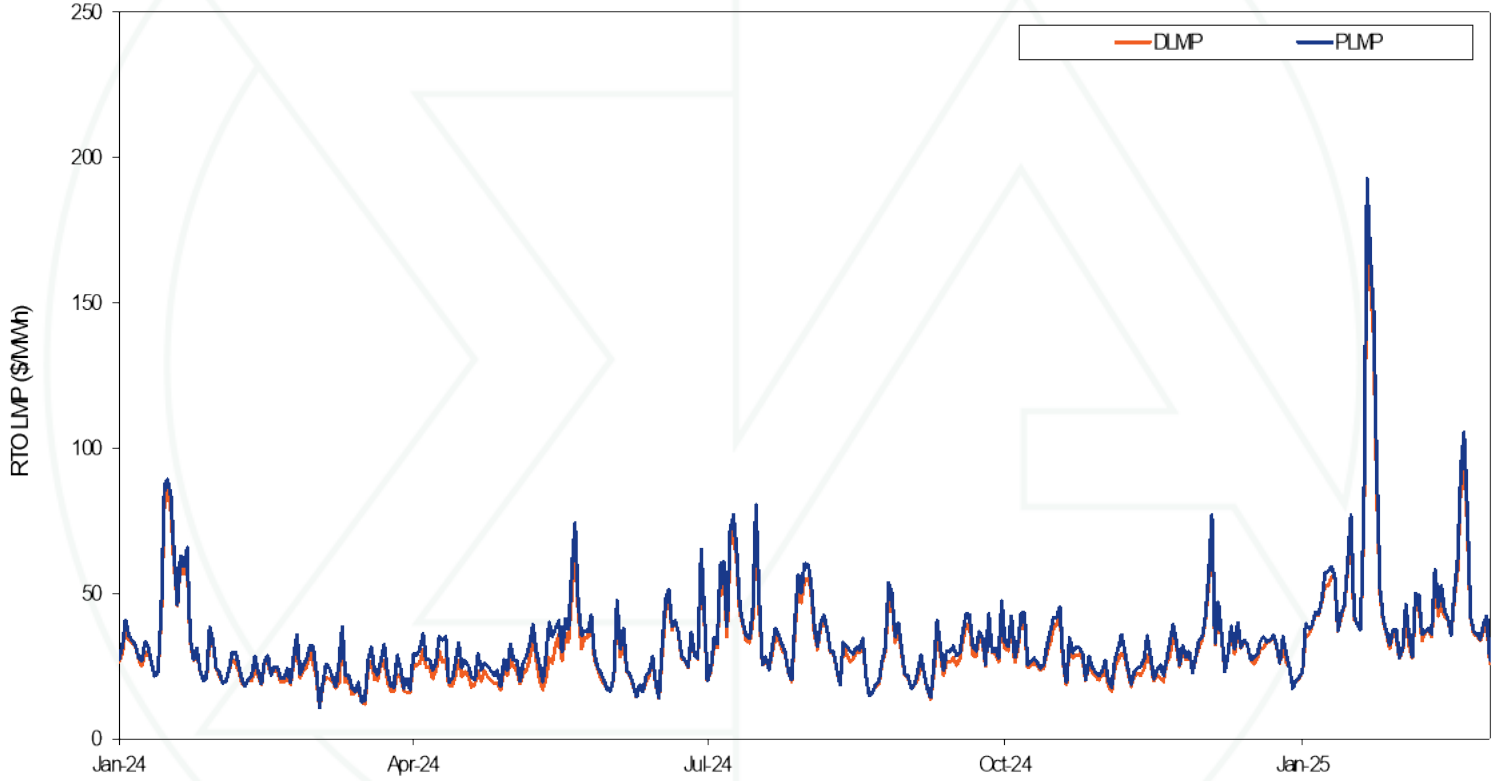
		Day-Ahead Load-Weighted Average				Real-Time Load-Weighted Average			
Year	Month	DLMP	PLMP	Difference	Percent Difference	DLMP	PLMP	Difference	Percent Difference
2024	Jan	$48.45	$48.65	$0.20	0.4%	$40.82	$42.78	$1.95	4.8%
2024	Feb	$23.67	$23.70	$0.03	0.1%	$23.20	$24.86	$1.66	7.2%
2024	Mar	$21.89	$21.93	$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	Jan-Feb	$36.95	$37.08	$0.12	0.3%	$32.71	$34.53	$1.82	5.6%
2024		$33.72	$31.93	$0.04	0.1%	$29.11	$31.08	$1.97	6.8%
2025	Jan	$67.53	$67.74	$0.21	0.3%	$59.93	$62.87	$2.94	4.9%
2025	Feb	$48.85	$49.02	$0.16	0.3%	$46.27	$48.90	$2.62	5.7%
2025	Jan-Feb	$59.01	$59.20	$0.19	0.3%	$53.71	$56.51	$2.80	5.2%

Real Time Fast Start Impact

Month	2022 (In Millions)	2023 (In Millions)	2024 (In Millions)	2025 (In Millions)
Jan	$196.33	$72.89	$142.06	$232.11
Feb	$52.11	$33.74	$103.17	$173.03
Mar	$106.74	$53.11	$172.59	
Apr	$195.22	$121.28	$217.50	
May	$247.03	$143.80	$272.73	
Jun	$429.42	$98.31	$98.74	
Jul	$643.44	$217.56	$238.39	
Aug	$602.88	$112.21	$142.81	
Sep	$259.08	$137.94	$153.65	
Oct	$204.26	$239.25	$116.28	
Nov	$122.77	$152.91	$149.38	
Dec	($99.68)	$104.53	$95.35	
Total	$2,959.60	$1,487.52	$1,902.66	

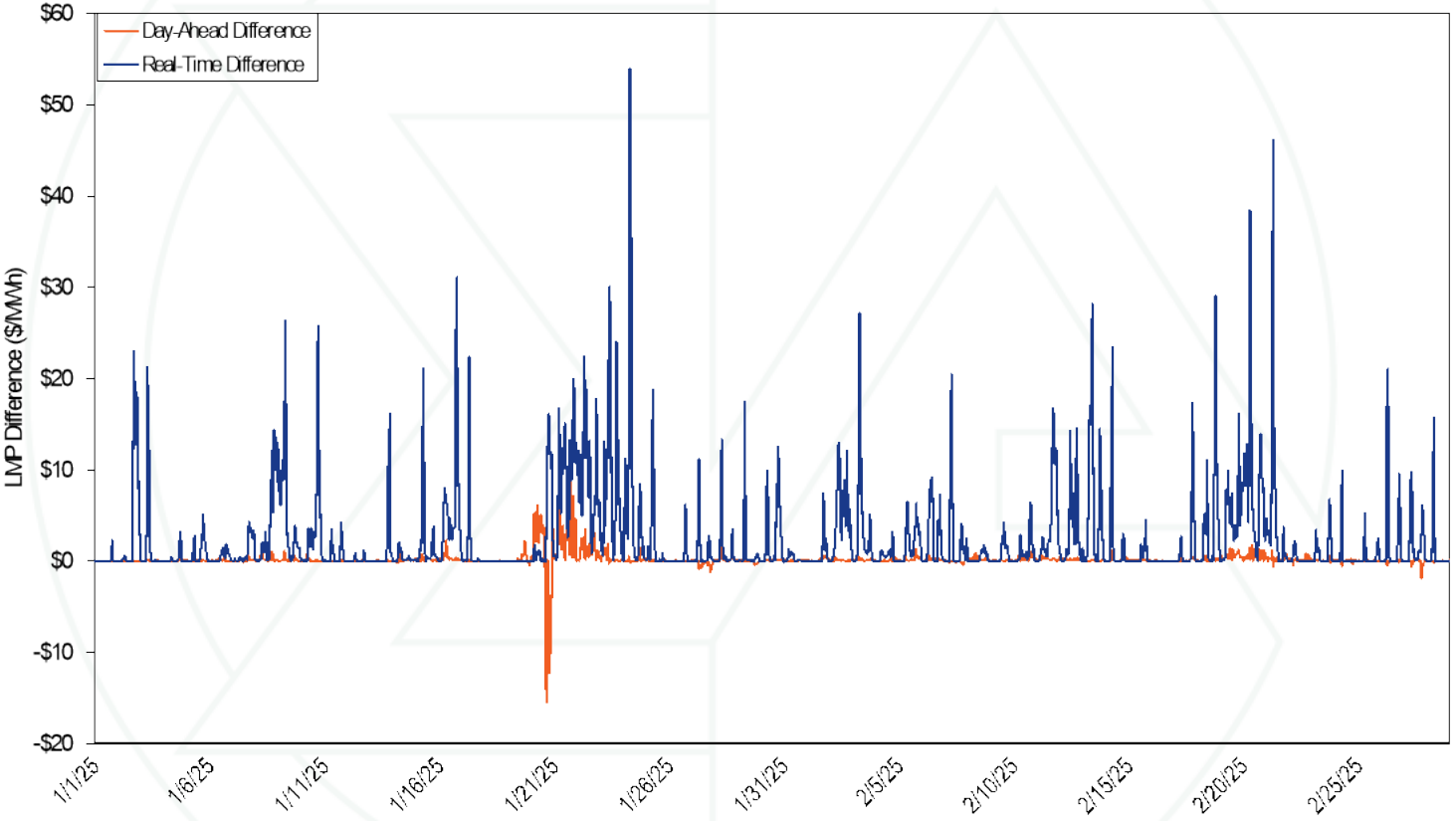
The impact is calculated by the difference between DLMP and PLMP, multiplied by the real-time load for the hour.

Daily Average Real-Time DLMP and PLMP



Monitoring Analytics

Hourly Difference: PLMP – DLMP



Monitoring Analytics

Fast Start Units as a Percent of Marginal Units

		Dispatch Run					Pricing Run				
Year	Month	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%
2024	Jan-Feb	0.6%	0.3%	0.0%	0.0%	0.9%	2.8%	0.6%	0.1%	0.0%	3.5%
2024		0.8%	0.3%	0.2%	0.0%	1.2%	4.9%	0.7%	0.2%	0.0%	5.8%
2025	Jan	0.8%	0.6%	0.1%	0.0%	1.5%	4.5%	2.1%	0.1%	0.0%	6.8%
2025	Feb	1.5%	0.1%	0.4%	0.0%	2.0%	3.9%	0.6%	0.4%	0.0%	4.8%
2025	Jan-Feb	1.1%	0.4%	0.3%	0.0%	1.8%	4.2%	1.3%	0.2%	0.0%	5.8%

Fast Start Impacts: Zone Average Differences

	2025 Jan-Feb							
	Day-Ahead				Real-Time			
Zone	Average DLMP	Average PLMP	Difference	Percent Difference	Average DLMP	Average PLMP	Difference	Percent Difference
ACEC	$31.67	$31.76	$0.08	0.3%	$29.26	$31.02	$1.76	6.0%
AEP	$34.27	$34.34	$0.07	0.2%	$31.92	$34.24	$2.32	7.3%
APS	$35.58	$35.65	$0.07	0.2%	$32.98	$35.40	$2.41	7.3%
ATSI	$34.60	$34.60	($0.00)	(0.0%)	$31.57	$33.81	$2.24	7.1%
BGE	$43.28	$43.38	$0.09	0.2%	$39.87	$42.75	$2.88	7.2%
COMED	$27.51	$27.61	$0.09	0.3%	$24.71	$26.64	$1.93	7.8%
DAY	$35.53	$35.60	$0.07	0.2%	$32.54	$34.96	$2.42	7.4%
DUKE	$33.98	$34.06	$0.07	0.2%	$31.04	$33.33	$2.29	7.4%
DOM	$40.63	$40.70	$0.07	0.2%	$37.47	$40.12	$2.64	7.1%
DPL	$35.43	$35.55	$0.12	0.3%	$31.82	$34.42	$2.60	8.2%
DUQ	$33.71	$33.76	$0.05	0.1%	$31.39	$33.60	$2.21	7.0%
EKPC	$33.52	$33.59	$0.07	0.2%	$31.27	$33.56	$2.29	7.3%
JCPLC	$31.69	$31.78	$0.09	0.3%	$29.37	$31.17	$1.80	6.1%
MEC	$32.72	$32.81	$0.08	0.3%	$29.47	$31.44	$1.97	6.7%
OVEC	$32.56	$32.62	$0.07	0.2%	$29.64	$31.81	$2.17	7.3%
PECO	$31.24	$31.33	$0.08	0.3%	$28.88	$30.58	$1.71	5.9%
PE	$36.08	$36.13	$0.05	0.1%	$33.10	$35.34	$2.25	6.8%
PEPCO	$41.73	$41.81	$0.09	0.2%	$38.43	$41.18	$2.74	7.1%
PPL	$30.55	$30.64	$0.09	0.3%	$27.93	$29.75	$1.82	6.5%
PSEG	$32.02	$32.11	$0.09	0.3%	$29.96	$31.81	$1.85	6.2%
REC	$34.60	$34.69	$0.09	0.3%	$32.16	$34.12	$1.96	6.1%

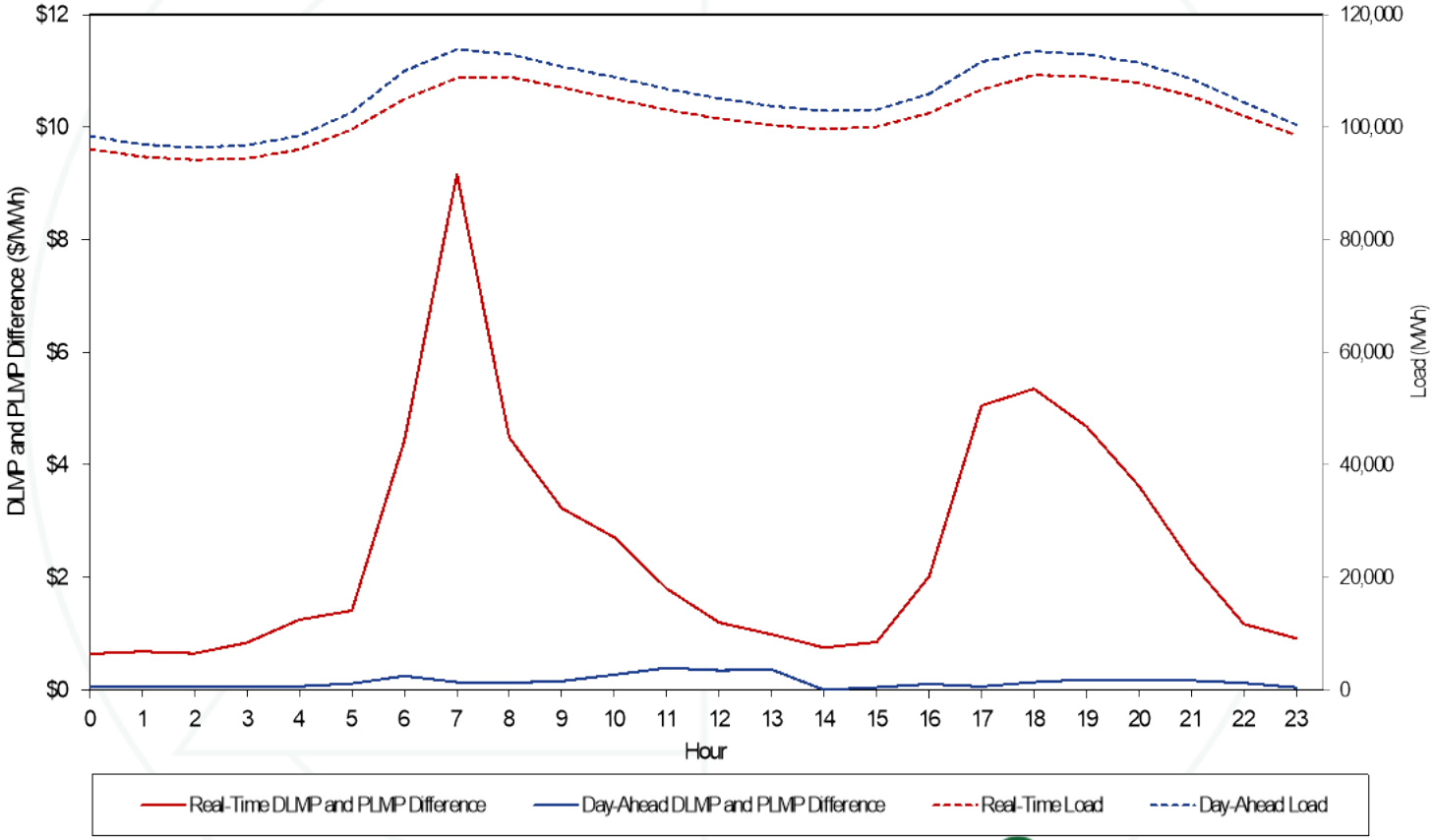
Fast Start Impacts: Hub Average Differences

	2025 Jan-Feb							
	Day-Ahead				Real-Time			
Hub	Average DLMP	Average PLMP	Difference	Percent Difference	Average DLMP	Average PLMP	Difference	Percent Difference
AEP GEN HUB	$32.49	$32.53	$0.04	0.1%	$29.68	$31.88	$2.20	7.4%
AEP-DAYTON HUB	$33.63	$33.67	$0.04	0.1%	$30.77	$33.02	$2.25	7.3%
ATSI GEN HUB	$34.09	$34.09	$0.00	0.0%	$30.80	$32.99	$2.19	7.1%
CHICAGO GEN HUB	$26.83	$26.93	$0.11	0.4%	$23.78	$25.75	$1.96	8.3%
CHICAGO HUB	$27.78	$27.82	$0.04	0.2%	$24.91	$26.85	$1.94	7.8%
DOMINION HUB	$37.92	$37.96	$0.04	0.1%	$35.51	$38.06	$2.56	7.2%
EASTERN HUB	$35.33	$35.41	$0.07	0.2%	$31.64	$34.22	$2.58	8.2%
N ILLINOIS HUB	$27.40	$27.52	$0.12	0.4%	$24.72	$26.65	$1.93	7.8%
NEW JERSEY HUB	$31.86	$31.92	$0.06	0.2%	$29.62	$31.44	$1.82	6.1%
OHIO HUB	$33.60	$33.64	$0.04	0.1%	$30.74	$32.99	$2.25	7.3%
WEST INT HUB	$35.41	$35.42	$0.01	0.0%	$32.72	$35.07	$2.35	7.2%
WESTERN HUB	$37.22	$37.26	$0.04	0.1%	$34.09	$36.53	$2.44	7.2%

Zonal Real-Time PLMP-DLMP Difference Frequency

	2025 Jan-Feb									
Zone	< ($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%	1.1%	48.7%	42.3%	5.1%	2.4%	0.3%	0.0%	0.0%
ACEC	0.0%	0.0%	1.7%	48.8%	41.7%	4.6%	2.5%	0.5%	0.0%	0.0%
AEP	0.0%	0.0%	2.2%	48.8%	41.4%	4.9%	2.3%	0.3%	0.0%	0.0%
APS	0.0%	0.0%	1.5%	48.7%	41.6%	5.0%	2.8%	0.3%	0.0%	0.0%
ATSI	0.0%	0.0%	2.4%	48.8%	41.9%	4.5%	2.1%	0.3%	0.0%	0.0%
BGE	0.0%	0.3%	2.5%	48.8%	40.4%	4.8%	2.8%	0.4%	0.0%	0.0%
COMED	0.0%	0.0%	8.8%	50.7%	34.6%	3.7%	1.8%	0.3%	0.0%	0.0%
DAY	0.0%	0.3%	3.1%	48.9%	40.8%	4.4%	2.1%	0.3%	0.0%	0.0%
DUKE	0.0%	0.2%	3.3%	48.9%	41.0%	4.3%	2.0%	0.3%	0.0%	0.0%
DOM	0.0%	0.1%	3.1%	48.8%	39.6%	4.8%	3.0%	0.6%	0.0%	0.0%
DPL	0.0%	0.0%	1.7%	48.7%	40.2%	5.0%	3.5%	0.8%	0.1%	0.0%
DUQ	0.0%	0.0%	3.6%	48.8%	40.6%	4.7%	2.1%	0.3%	0.0%	0.0%
EKPC	0.0%	0.0%	2.7%	48.8%	41.1%	4.9%	2.2%	0.3%	0.0%	0.0%
JCPLC	0.0%	0.0%	2.1%	48.7%	41.5%	4.6%	2.5%	0.5%	0.0%	0.0%
MEC	0.0%	0.1%	1.7%	48.7%	42.0%	4.6%	2.4%	0.5%	0.0%	0.0%
OVEC	0.0%	0.6%	3.8%	49.0%	40.2%	4.2%	1.9%	0.3%	0.0%	0.0%
PECO	0.0%	0.0%	1.8%	48.7%	41.9%	4.6%	2.4%	0.5%	0.0%	0.0%
PE	0.1%	0.2%	2.4%	48.5%	39.4%	5.6%	3.3%	0.4%	0.0%	0.0%
PEPCO	0.0%	0.1%	2.9%	48.9%	39.9%	4.8%	2.9%	0.4%	0.1%	0.0%
PPL	0.0%	0.0%	2.2%	48.8%	41.7%	4.6%	2.3%	0.5%	0.0%	0.0%
PSEG	0.0%	0.0%	1.7%	48.8%	41.3%	4.8%	2.8%	0.6%	0.1%	0.0%
REC	0.0%	0.1%	2.4%	48.6%	40.1%	5.0%	3.1%	0.6%	0.1%	0.0%

Hourly Average Load and LMP Difference



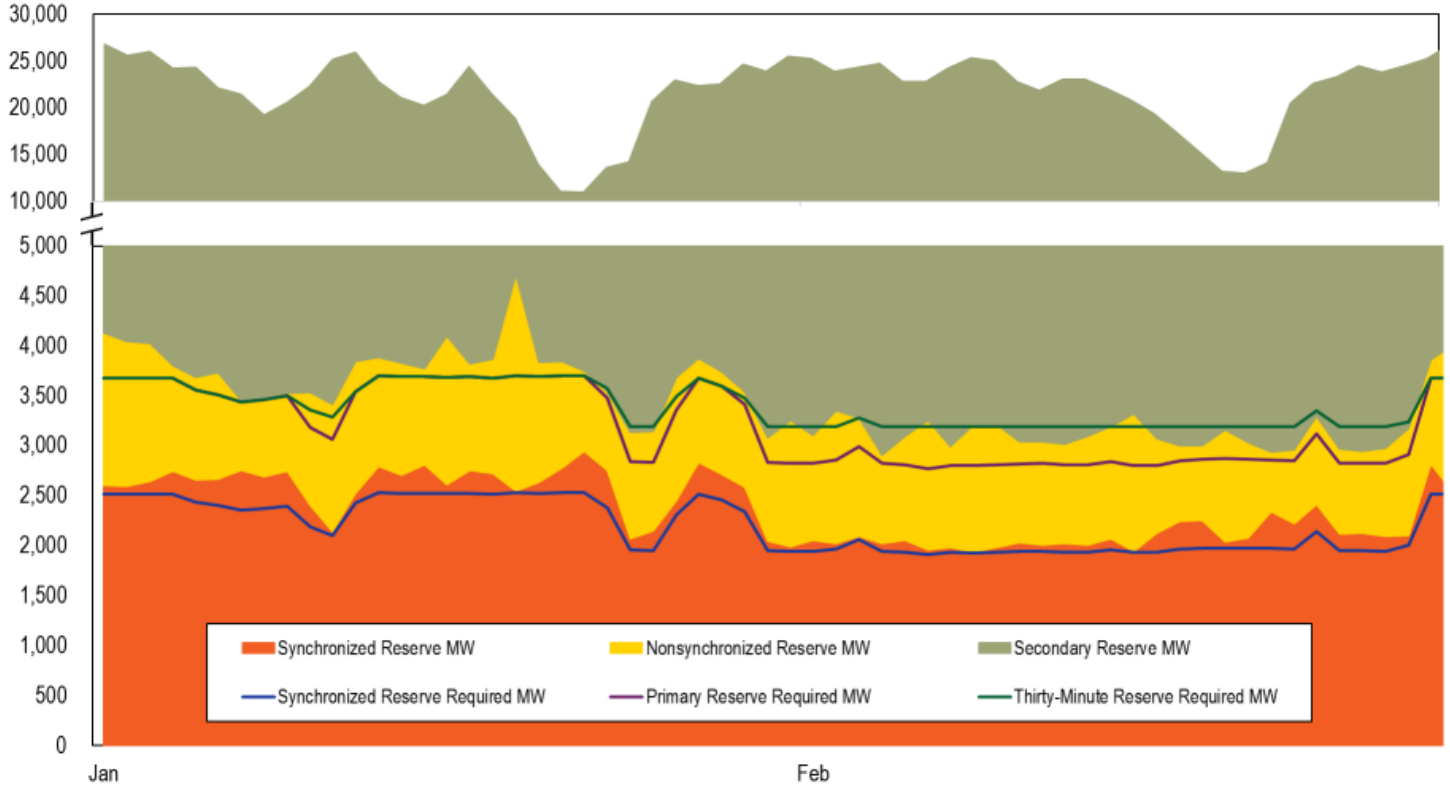
Monitoring Analytics

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%	$43.75	$54.12	$10.37	23.7%
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%				

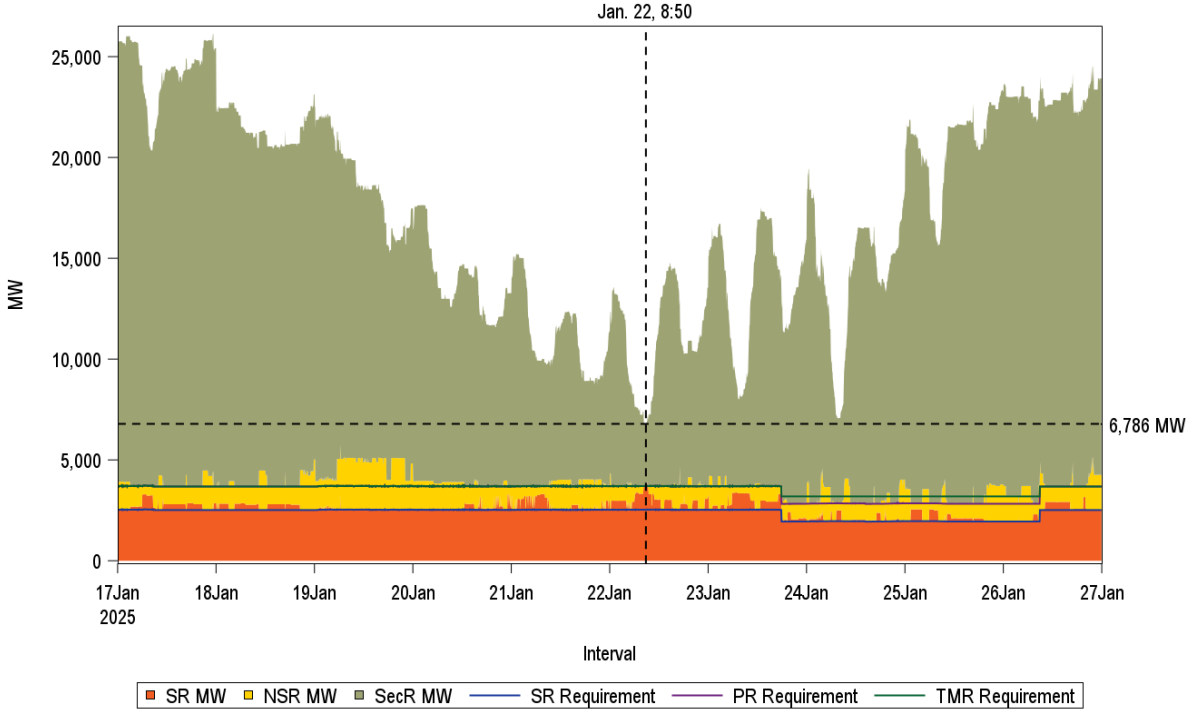
RESERVES

Real-Time Average Cleared Reserves and Requirements



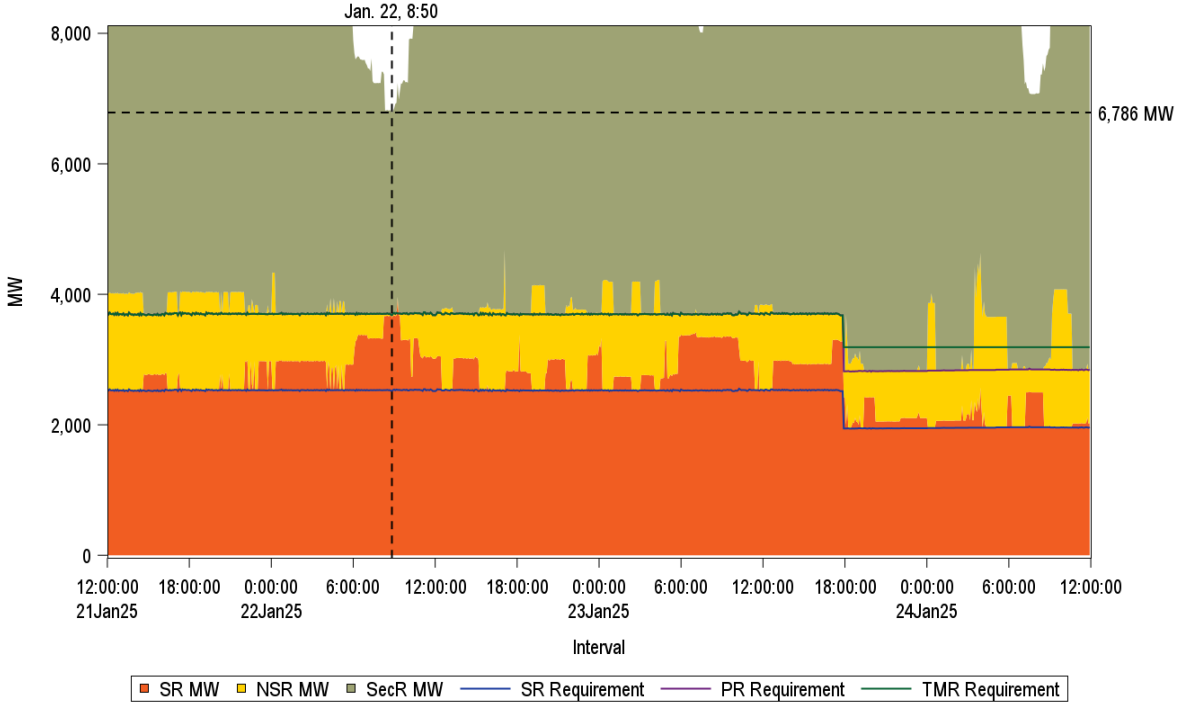
Monitoring Analytics

Real-Time Interval Cleared Reserves and Requirements



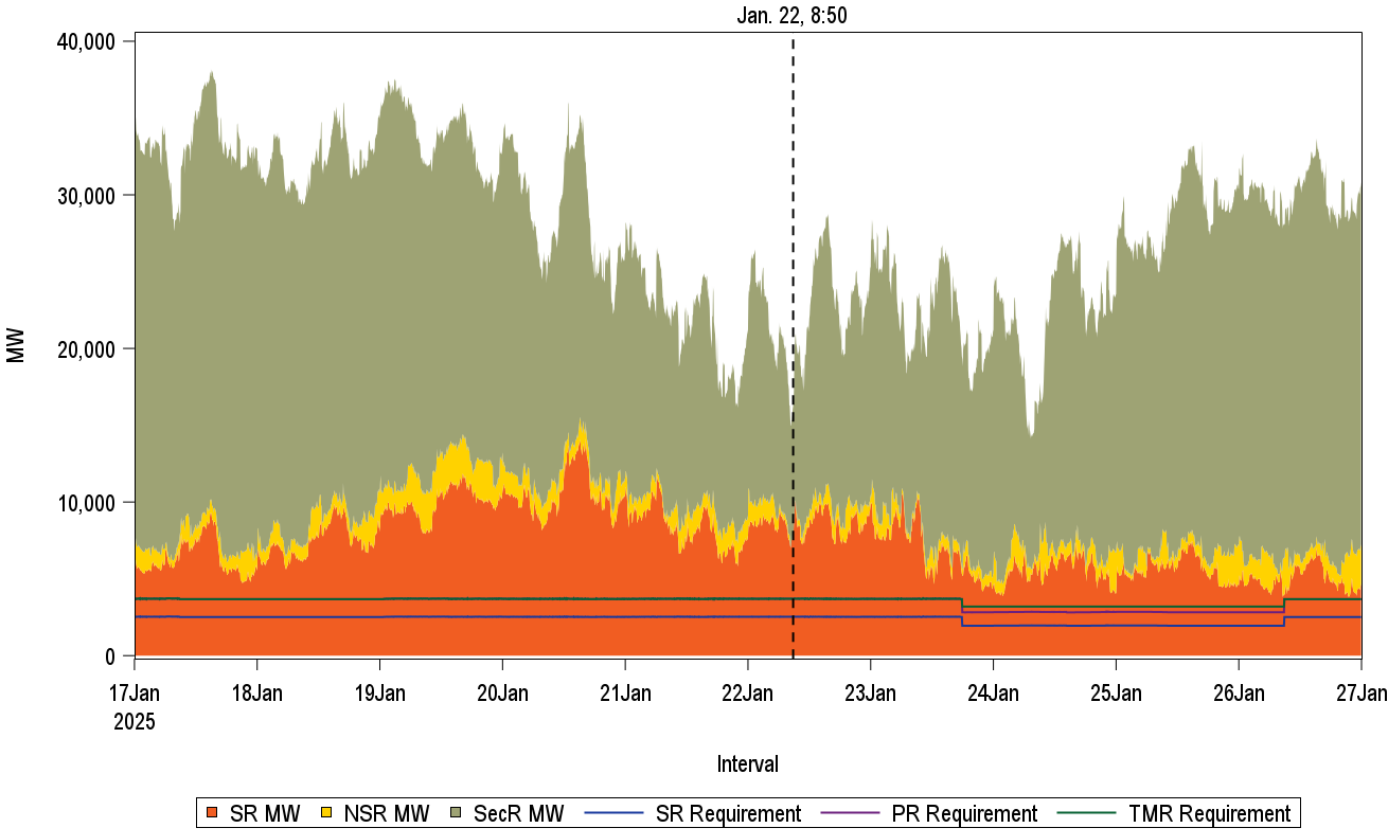
- Dashed lines show the lowest point of cleared 30-minute reserve. Even at the lowest point, cleared 30-minute reserve exceeded the requirement by thousands of MW.

Close-up of Real-Time Minimum Cleared 30-Minute Reserves

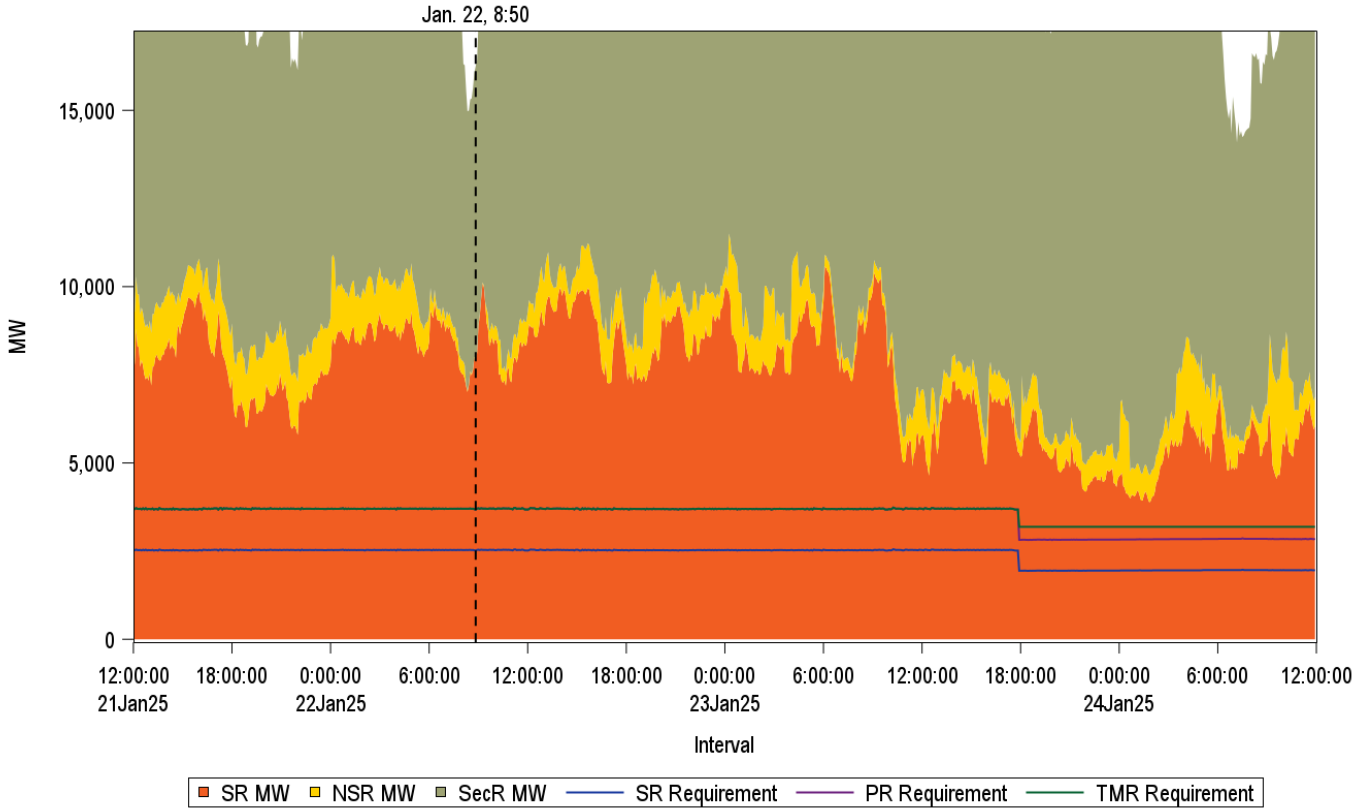


- Dashed lines show the lowest point of cleared 30-minute reserve. Even at the lowest point, cleared 30-minute reserve exceeded the requirement by thousands of MW.

Real-Time Available Reserve Supply and Requirements



Close-up of Available Reserve Supply and Requirements



- Approximately 34 MW of available NSR during point of minimum cleared 30-minute reserve.

Monitoring Analytics

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
2025	Jan	2,637	2,582	1,313	1,130	3,950	3,712	13,079	17,602	17,028	21,313
2025	Feb	2,180	2,111	1,220	1,013	3,400	3,124	13,024	18,628	16,424	21,752

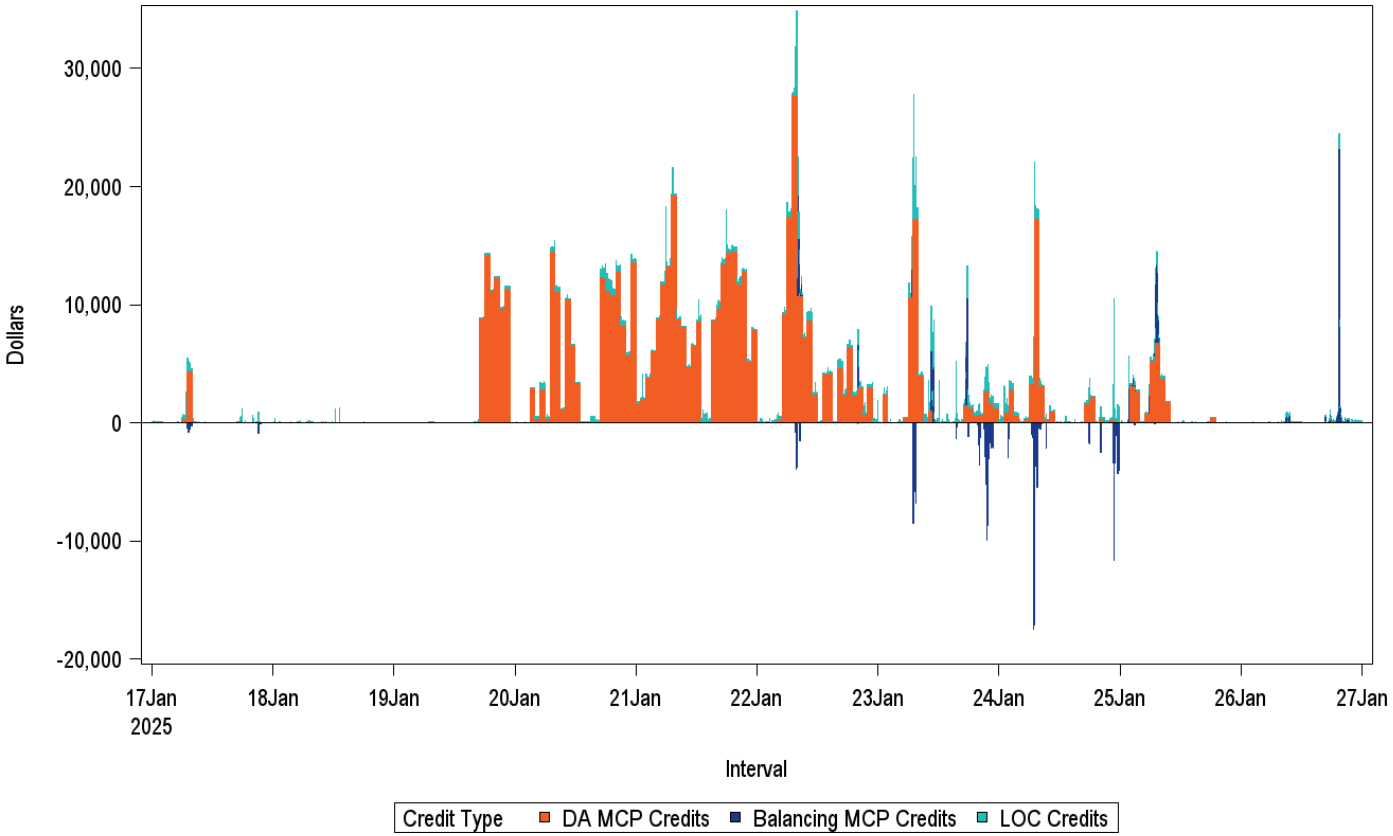
Day-Ahead & Real-Time MAD Reserve MW

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
2025	Jan	2,004	1,985	985	925	2,989	2,909	NA	NA	NA	NA
2025	Feb	1,968	1,971	890	839	2,858	2,810	NA	NA	NA	NA

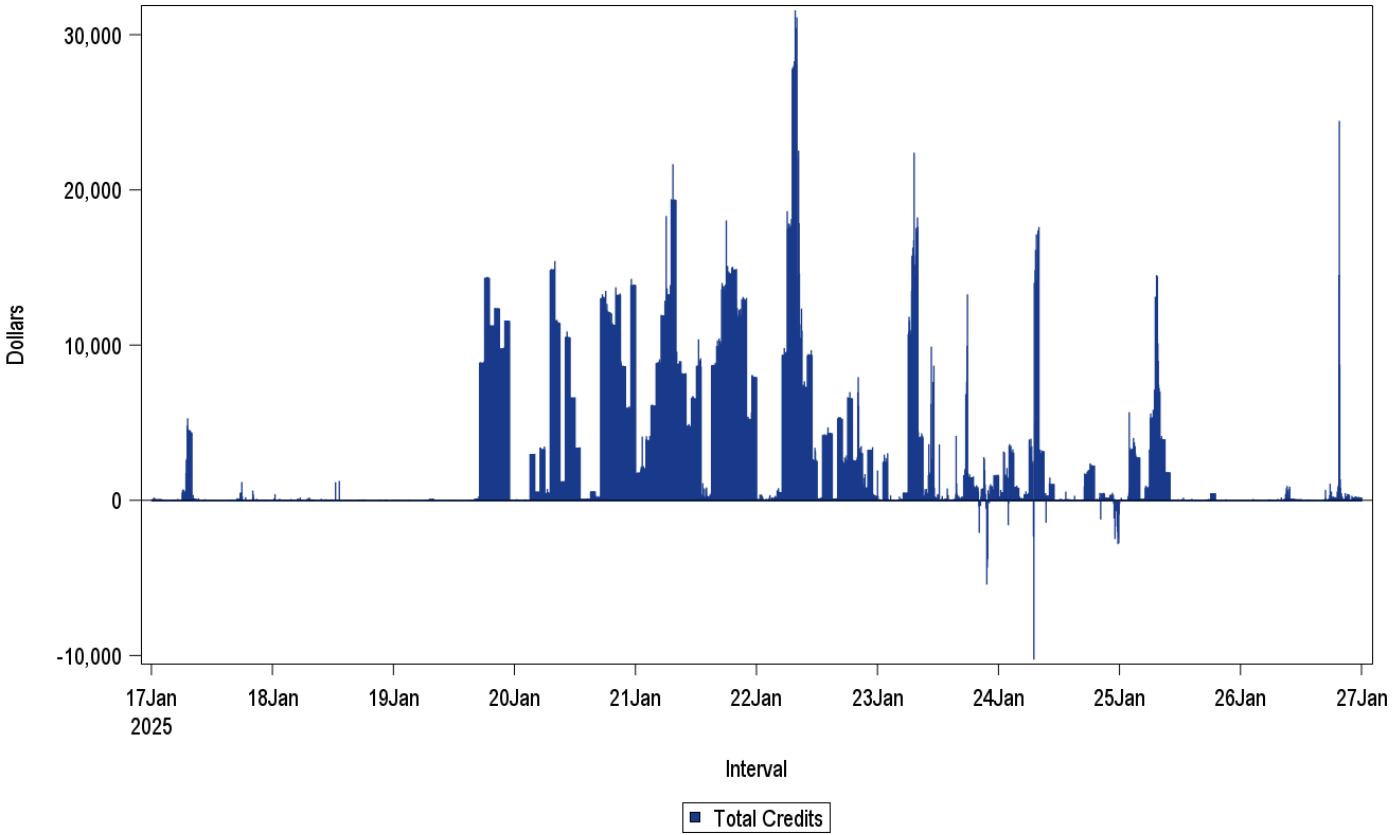
Reserve Settlements by Month

Product	Year	Month	Total Day-Ahead Credits	Total Balancing MCP Credits	Total LOC Credits	Total Shortfall Charges	Total Credits
Synchronized Reserve	2025	Jan	$9,766,362	($93,903)	$1,087,573	$0	$10,760,032
	2025	Feb	$5,437,781	($126,526)	$779,761	$118,161	$5,972,855
Nonsynchronized Reserve	2025	Jan	$1,310,758	($792,148)	$185,918	NA	$704,528
	2025	Feb	$698,931	($296,390)	$97,106	NA	$499,648
Secondary Reserve	2025	Jan	$0	$0	$255,127	$0	$255,127
	2025	Feb	$0	$0	$142,547	$0	$142,547

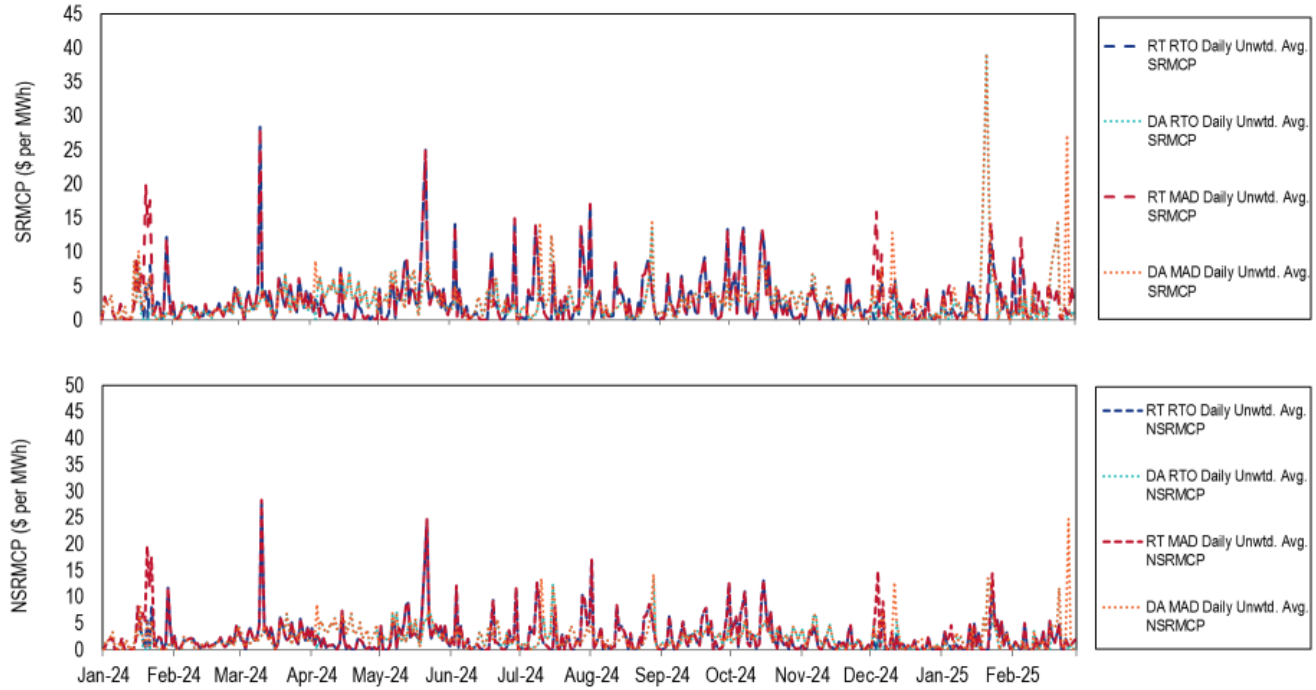
Categorized Synchronized Reserve Credits by Interval



Total Synchronized Reserve Credits by Interval

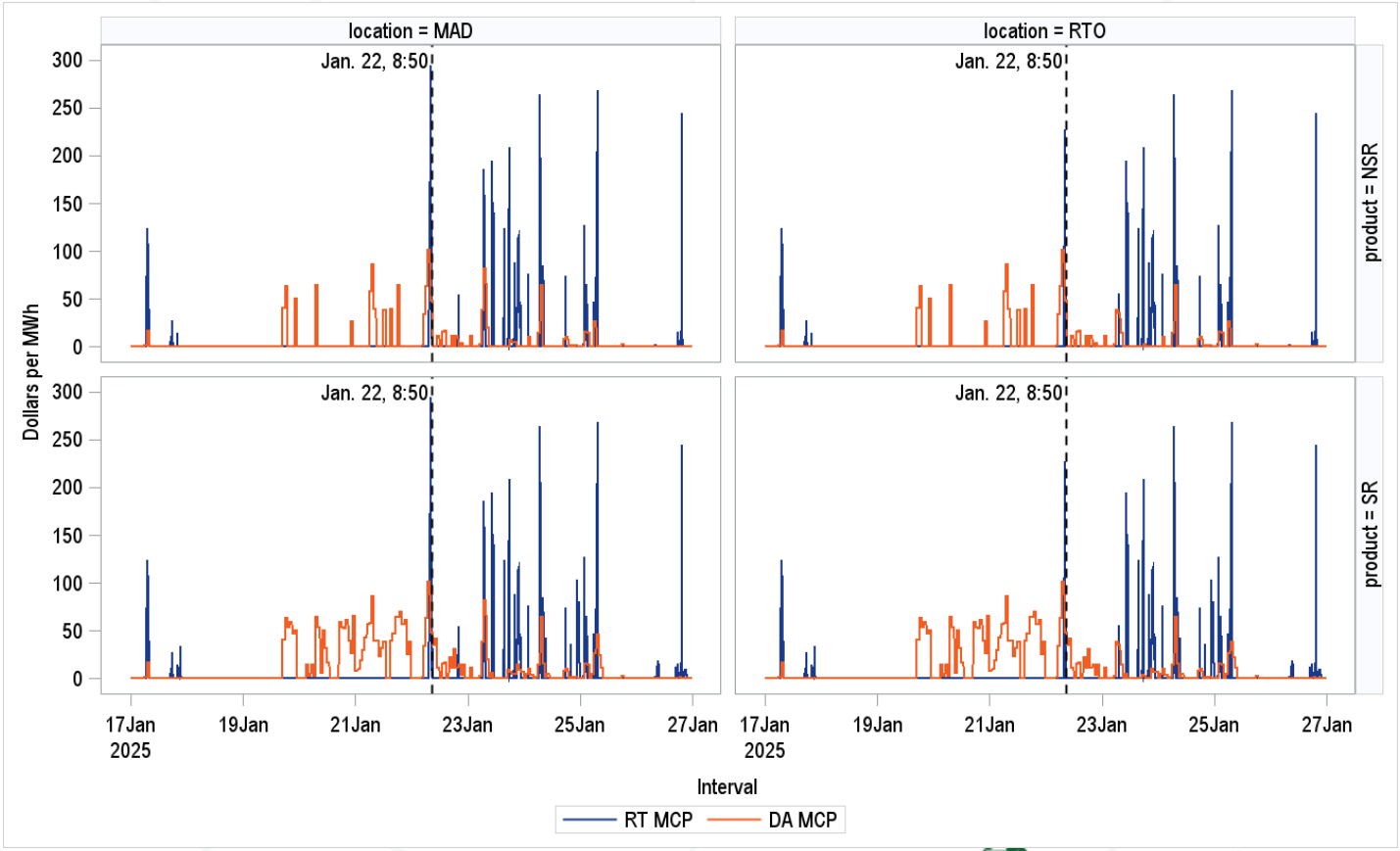


Reserve Prices: 2024 and January 2025



- Higher prices in January 2025 during winter storms, cold weather alerts, and conservative operations.
- Higher prices for February 25 due to shortage in DA MAD market.

Reserve Prices by Interval



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