

Market Monitor Report

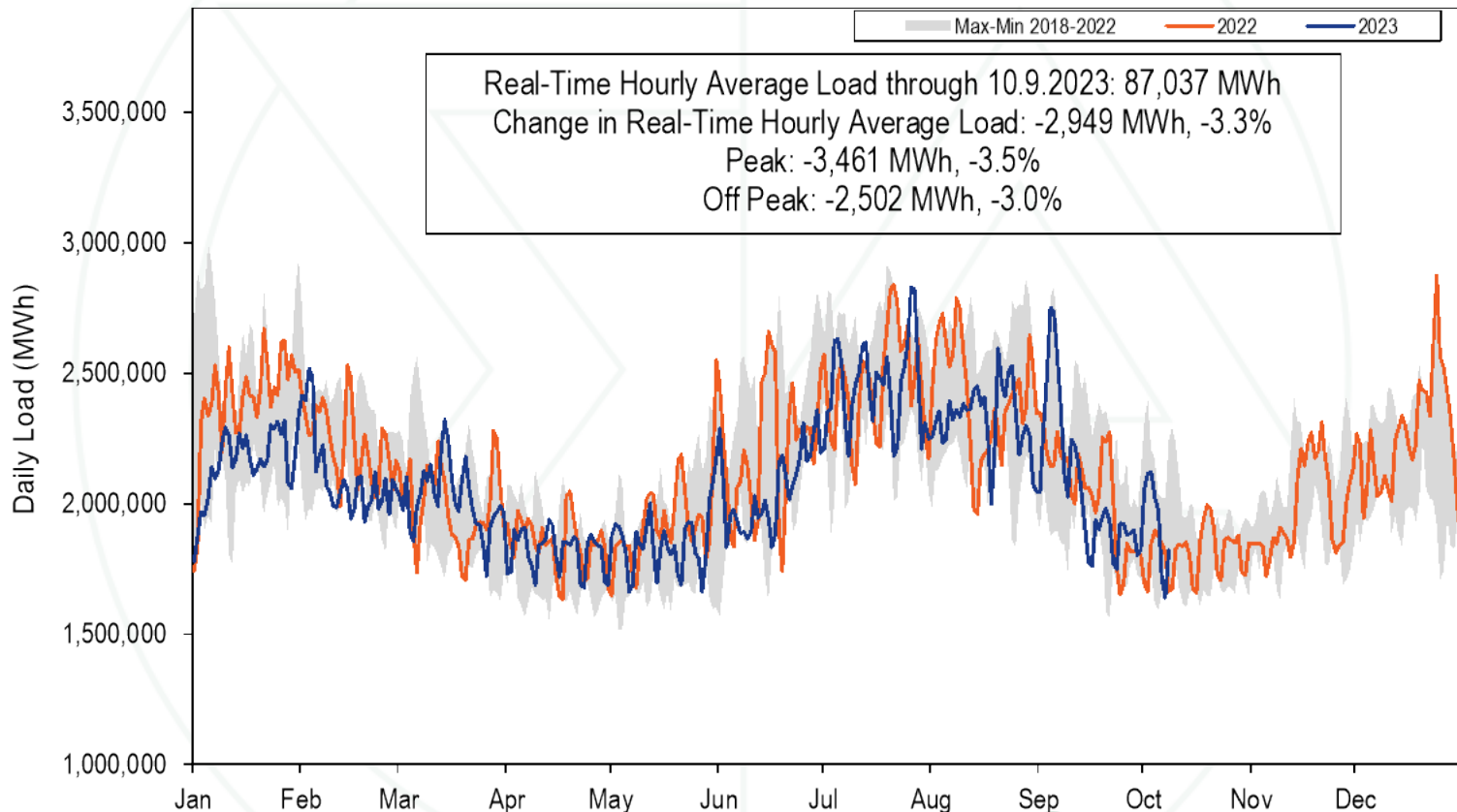
MC Webinar
10/23/2023

IMM

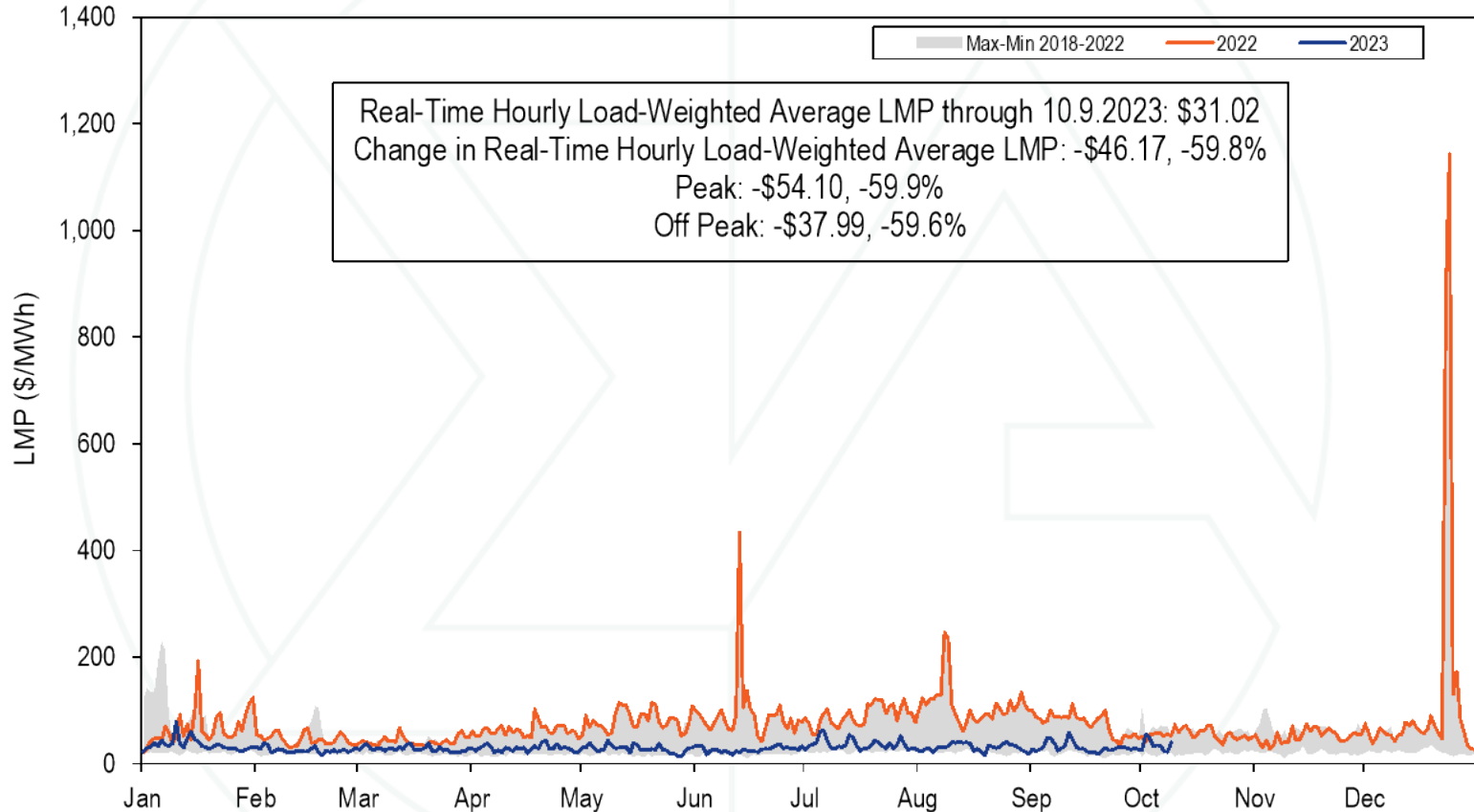


Monitoring Analytics

2023 YTD PJM Real-Time Daily Load



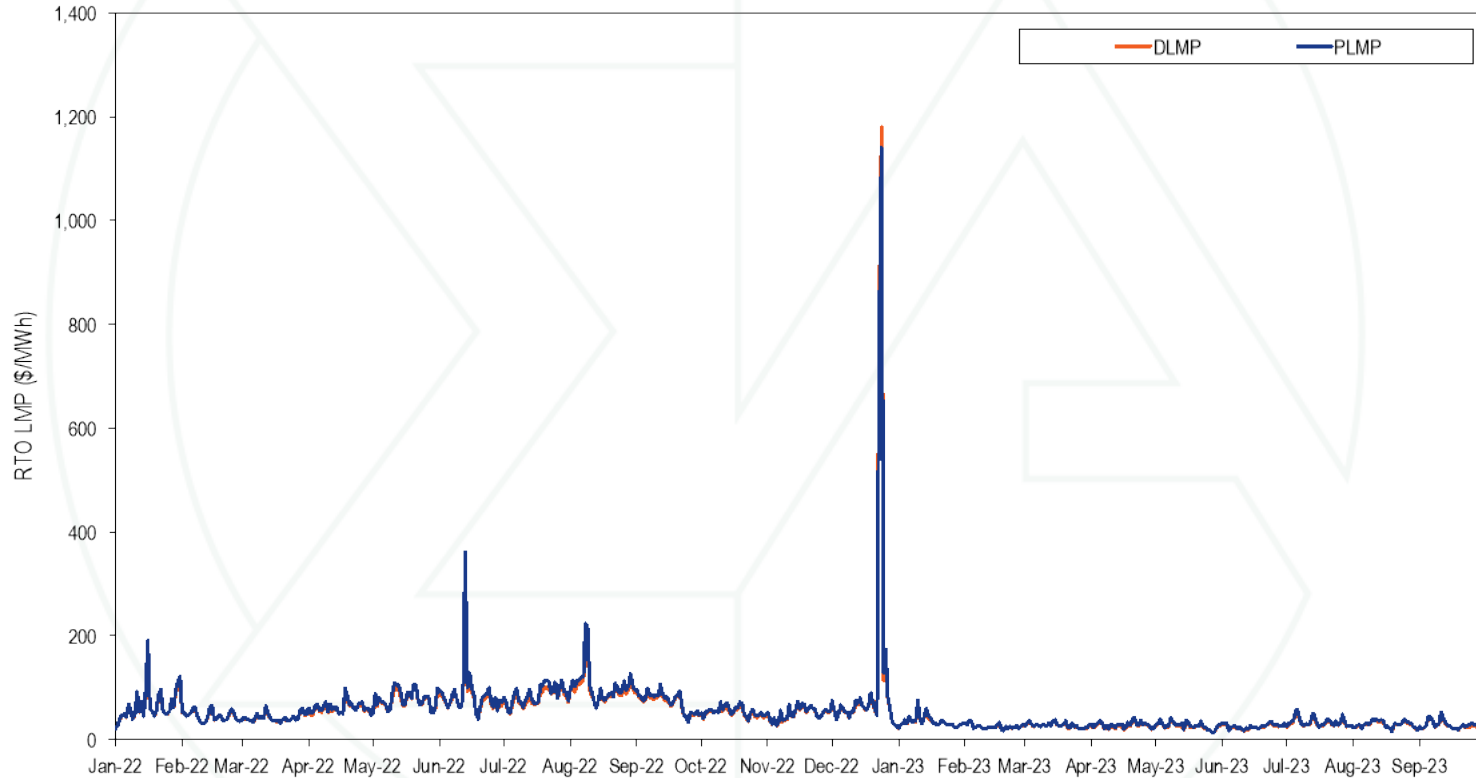
2023 YTD PJM Real-Time Daily LMP



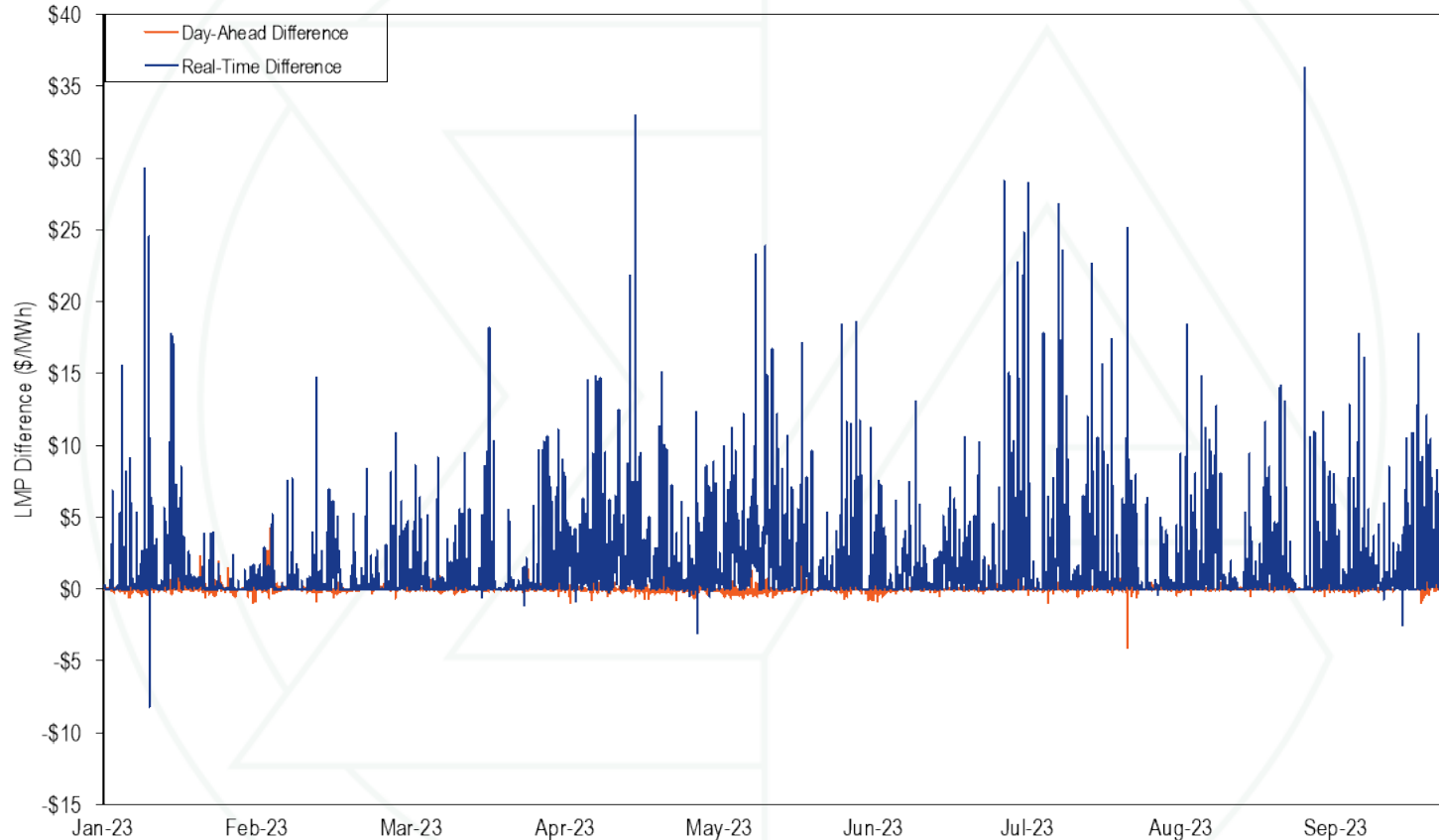
Monthly Average Load-Weighted DLMP and PLMP

Year	Month	Percent				Percent			
		DLMP	PLMP	Difference	Difference	DLMP	PLMP	Difference	Difference
2022	Jan	\$64.57	\$64.80	\$0.22	0.3%	\$66.43	\$69.06	\$2.64	4.0%
2022	Feb	\$49.96	\$50.35	\$0.39	0.8%	\$45.93	\$46.76	\$0.83	1.8%
2022	Mar	\$45.25	\$45.50	\$0.25	0.6%	\$41.83	\$43.56	\$1.73	4.1%
2022	Apr	\$64.10	\$64.18	\$0.08	0.1%	\$60.38	\$63.91	\$3.52	5.8%
2022	May	\$83.17	\$83.24	\$0.06	0.1%	\$79.04	\$83.16	\$4.12	5.2%
2022	Jun	\$90.24	\$90.54	\$0.29	0.3%	\$91.44	\$97.89	\$6.46	7.1%
2022	Jul	\$96.07	\$96.38	\$0.32	0.3%	\$84.03	\$92.48	\$8.45	10.1%
2022	Aug	\$106.18	\$106.07	(\$0.10)	(0.1%)	\$105.68	\$113.74	\$8.06	7.6%
2022	Sep	\$82.86	\$82.80	(\$0.06)	(0.1%)	\$74.08	\$78.29	\$4.22	5.7%
2022	Oct	\$58.30	\$58.37	\$0.07	0.1%	\$52.27	\$55.90	\$3.63	6.9%
2022	Nov	\$56.29	\$55.24	(\$1.05)	(1.9%)	\$50.86	\$52.93	\$2.07	4.1%
2022	Dec	\$93.02	\$93.39	\$0.37	0.4%	\$143.65	\$142.22	(\$1.42)	(1.0%)
2022	Jan - Dec	\$75.35	\$75.44	\$0.08	0.1%	\$76.34	\$80.14	\$3.80	5.0%
2023	Jan	\$36.53	\$36.58	\$0.05	0.1%	\$34.66	\$35.75	\$1.09	3.1%
2023	Feb	\$31.16	\$31.22	\$0.06	0.2%	\$25.47	\$26.04	\$0.57	2.2%
2023	Mar	\$28.39	\$28.41	\$0.02	0.1%	\$27.58	\$28.42	\$0.85	3.1%
2023	Apr	\$29.81	\$29.81	(\$0.00)	(0.0%)	\$27.09	\$29.32	\$2.22	8.2%
2023	May	\$28.86	\$28.80	(\$0.05)	(0.2%)	\$25.91	\$28.44	\$2.53	9.7%
2023	Jun	\$27.82	\$27.82	(\$0.00)	(0.0%)	\$25.69	\$27.29	\$1.60	6.2%
2023	Jul	\$40.46	\$40.56	\$0.10	0.3%	\$34.34	\$37.21	\$2.87	8.4%
2023	Aug	\$30.49	\$30.54	\$0.05	0.2%	\$29.77	\$31.33	\$1.55	5.2%
2023	Sep	\$30.82	\$30.91	\$0.09	0.3%	\$29.33	\$31.55	\$2.22	7.6%
2023	Jan - Sep	\$31.86	\$31.90	\$0.04	0.1%	\$29.14	\$30.87	\$1.73	5.9%

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	All Fast Start Units	CT	Diesel	Wind	All Fast Start Units
2022	Jan	1.3%	0.3%	0.2%	1.8%	4.9%	0.9%	0.2%	6.2%
2022	Feb	0.6%	0.2%	0.3%	1.1%	3.2%	0.5%	0.3%	4.0%
2022	Mar	0.5%	0.2%	0.4%	1.1%	3.4%	0.5%	0.4%	4.4%
2022	Apr	0.8%	0.1%	0.1%	1.2%	4.4%	0.3%	0.1%	5.0%
2022	May	1.4%	0.7%	0.1%	2.4%	6.6%	1.2%	0.1%	8.1%
2022	Jun	2.3%	0.3%	0.1%	2.6%	9.3%	0.8%	0.1%	10.2%
2022	Jul	2.7%	0.6%	0.1%	3.3%	16.3%	1.4%	0.0%	17.7%
2022	Aug	2.0%	0.4%	0.0%	2.4%	12.0%	1.3%	0.0%	13.3%
2022	Sep	0.8%	0.3%	0.1%	1.2%	5.6%	1.0%	0.1%	6.7%
2022	Oct	2.2%	0.2%	0.3%	2.6%	6.6%	0.9%	0.2%	7.7%
2022	Nov	1.3%	0.2%	0.2%	1.7%	5.1%	0.9%	0.2%	6.1%
2022	Dec	1.3%	0.7%	0.2%	2.2%	6.3%	1.5%	0.2%	8.0%
2022	Jan - Dec	1.4%	0.3%	0.2%	2.0%	7.0%	0.9%	0.1%	8.1%
2023	Jan	1.6%	0.5%	0.1%	2.1%	6.2%	2.8%	0.0%	9.0%
2023	Feb	0.9%	0.2%	0.0%	1.1%	3.1%	0.6%	0.0%	3.7%
2023	Mar	0.8%	0.4%	0.1%	1.2%	3.0%	0.7%	0.1%	3.8%
2023	Apr	2.5%	0.4%	0.2%	3.2%	8.1%	0.8%	0.2%	9.1%
2023	May	1.0%	0.3%	0.1%	1.3%	4.8%	0.7%	0.1%	5.6%
2023	Jun	0.5%	0.2%	0.0%	0.7%	2.5%	0.5%	0.0%	3.0%
2023	Jul	1.4%	0.9%	0.0%	2.4%	8.6%	1.6%	0.0%	10.3%
2023	Aug	0.9%	1.5%	0.0%	2.4%	5.1%	2.3%	0.0%	7.4%
2023	Sep	0.4%	0.8%	0.1%	1.3%	5.1%	1.4%	0.1%	6.6%
2023	Jan - Sep	1.2%	0.3%	0.1%	1.6%	4.6%	1.0%	0.1%	5.7%

Fast Start Impacts: Zonal Average Differences

Zone	2023 Jan - Sep							
	Day-Ahead				Real-Time			
	Average DLMP	Average PLMP	Difference	Percent Difference	Average DLMP	Average PLMP	Difference	Percent Difference
ACEC	\$46.22	\$46.33	\$0.10	0.2%	\$45.61	\$47.58	\$1.97	4.3%
AEP	\$53.22	\$53.32	\$0.10	0.2%	\$51.40	\$53.96	\$2.56	5.0%
APS	\$54.07	\$54.21	\$0.14	0.3%	\$52.01	\$54.68	\$2.67	5.1%
ATSI	\$52.71	\$52.82	\$0.12	0.2%	\$50.45	\$52.97	\$2.52	5.0%
BGE	\$62.78	\$62.90	\$0.11	0.2%	\$60.40	\$63.59	\$3.20	5.3%
COMED	\$45.93	\$46.02	\$0.09	0.2%	\$43.65	\$45.95	\$2.30	5.3%
DAY	\$55.29	\$55.39	\$0.10	0.2%	\$53.18	\$55.85	\$2.67	5.0%
DUKE	\$54.31	\$54.41	\$0.10	0.2%	\$52.09	\$54.71	\$2.62	5.0%
DOM	\$63.15	\$62.84	(\$0.31)	(0.5%)	\$63.22	\$66.03	\$2.81	4.4%
DPL	\$50.12	\$50.22	\$0.11	0.2%	\$49.71	\$52.62	\$2.91	5.9%
DUQ	\$51.81	\$51.93	\$0.12	0.2%	\$49.79	\$52.29	\$2.50	5.0%
EKPC	\$53.47	\$53.56	\$0.10	0.2%	\$52.09	\$54.67	\$2.58	4.9%
JCPLC	\$47.16	\$47.27	\$0.11	0.2%	\$46.64	\$48.73	\$2.09	4.5%
MEC	\$53.21	\$53.31	\$0.10	0.2%	\$51.52	\$53.96	\$2.44	4.7%
OVEC	\$52.17	\$52.27	\$0.10	0.2%	\$50.30	\$52.80	\$2.51	5.0%
PECO	\$45.18	\$45.28	\$0.10	0.2%	\$44.60	\$46.48	\$1.88	4.2%
PE	\$51.76	\$51.87	\$0.11	0.2%	\$49.67	\$52.06	\$2.39	4.8%
PEPCO	\$60.45	\$60.56	\$0.11	0.2%	\$58.21	\$61.23	\$3.02	5.2%
PPL	\$49.15	\$49.25	\$0.10	0.2%	\$47.86	\$50.06	\$2.20	4.6%
PSEG	\$47.73	\$47.83	\$0.11	0.2%	\$47.29	\$49.39	\$2.10	4.4%
REC	\$49.79	\$49.89	\$0.11	0.2%	\$49.01	\$51.23	\$2.22	4.5%

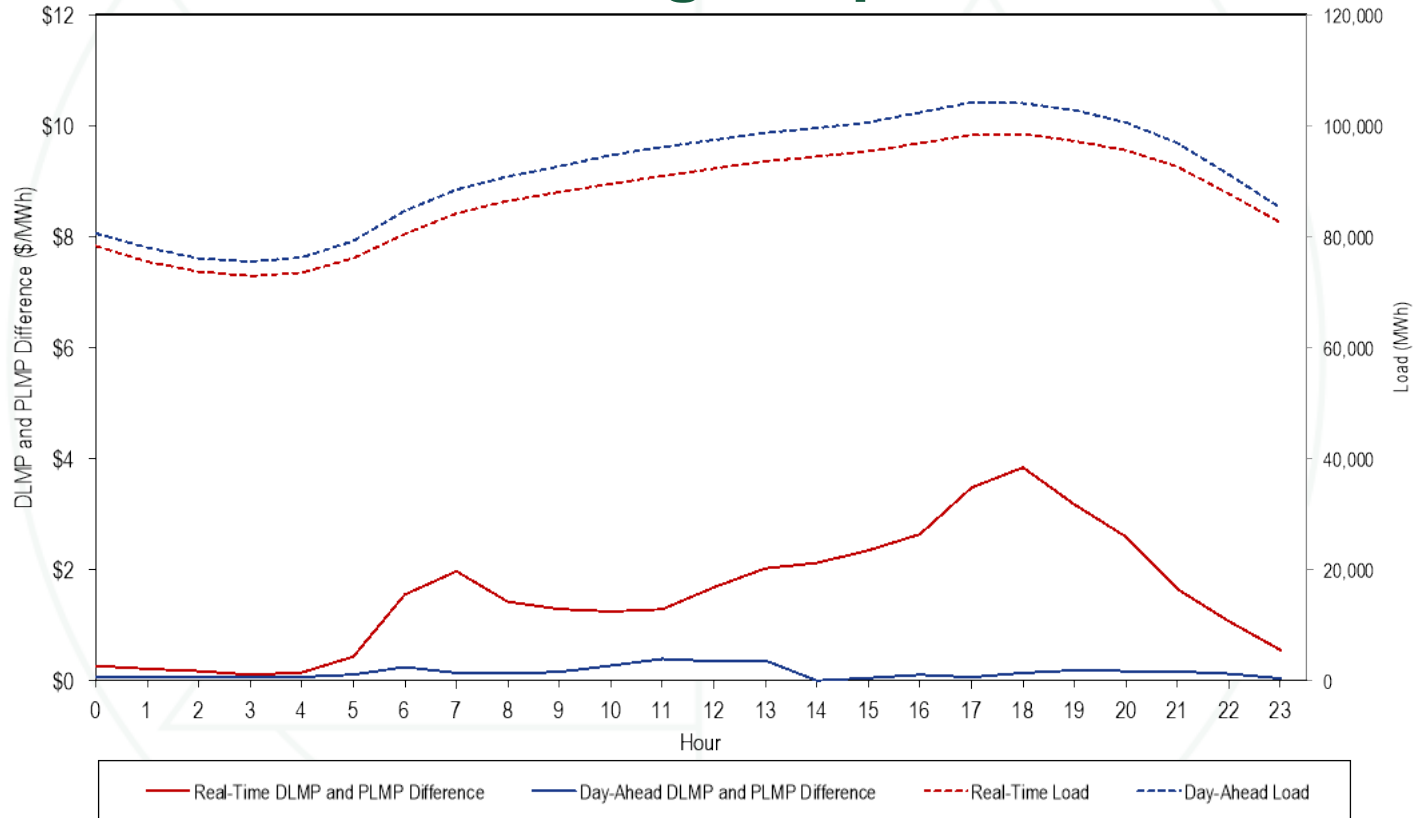
Fast Start Impacts: Hub Average Differences

Hub	2023 Jan - Sep							
	Average DLMP	Day-Ahead			Average DLMP	Real-Time		
		Average PLMP	Difference	Percent Difference		Average PLMP	Difference	Percent Difference
AEP GEN HUB	\$51.68	\$51.78	\$0.10	0.2%	\$49.58	\$52.04	\$2.46	5.0%
AEP-DAYTON HUB	\$52.72	\$52.82	\$0.10	0.2%	\$50.58	\$53.10	\$2.53	5.0%
ATSI GEN HUB	\$51.67	\$51.78	\$0.12	0.2%	\$49.26	\$51.72	\$2.46	5.0%
CHICAGO GEN HUB	\$45.20	\$45.29	\$0.09	0.2%	\$42.83	\$45.11	\$2.28	5.3%
CHICAGO HUB	\$46.12	\$46.21	\$0.09	0.2%	\$43.76	\$46.07	\$2.31	5.3%
DOMINION HUB	\$57.99	\$58.02	\$0.03	0.0%	\$56.55	\$59.29	\$2.74	4.8%
EASTERN HUB	\$50.24	\$50.34	\$0.11	0.2%	\$49.31	\$52.13	\$2.82	5.7%
N ILLINOIS HUB	\$45.79	\$45.88	\$0.09	0.2%	\$43.57	\$45.86	\$2.29	5.3%
NEW JERSEY HUB	\$47.23	\$47.34	\$0.11	0.2%	\$46.72	\$48.79	\$2.07	4.4%
OHIO HUB	\$52.64	\$52.74	\$0.10	0.2%	\$50.47	\$52.99	\$2.52	5.0%
WEST INT HUB	\$54.02	\$54.08	\$0.07	0.1%	\$51.91	\$54.48	\$2.57	4.9%
WESTERN HUB	\$55.38	\$55.50	\$0.11	0.2%	\$52.88	\$55.54	\$2.67	5.0%

Zonal Real-Time PLMP-DLMP Difference Frequency

Zone	2023 Jan - Sep										
	< (\$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%	0.6%	47.4%	48.5%	2.8%	0.6%	0.0%	0.0%	0.0%	
ACEC	0.0%	0.0%	7.5%	48.0%	41.9%	2.0%	0.5%	0.0%	0.0%	0.0%	
AEP	0.0%	0.0%	1.0%	47.9%	47.4%	3.0%	0.6%	0.0%	0.0%	0.0%	
APS	0.0%	0.0%	0.8%	47.7%	47.7%	3.0%	0.7%	0.1%	0.0%	0.0%	
ATSI	0.0%	0.0%	1.0%	47.6%	47.9%	2.9%	0.6%	0.0%	0.0%	0.0%	
BGE	0.0%	0.0%	3.8%	47.3%	43.4%	3.9%	1.3%	0.1%	0.0%	0.0%	
COMED	0.0%	0.1%	2.6%	48.2%	45.8%	2.7%	0.6%	0.0%	0.0%	0.0%	
DAY	0.0%	0.0%	1.0%	47.8%	47.2%	3.3%	0.7%	0.1%	0.0%	0.0%	
DUKE	0.0%	0.0%	1.1%	47.8%	47.2%	3.2%	0.7%	0.1%	0.0%	0.0%	
DOM	0.0%	0.1%	2.3%	47.6%	45.4%	3.4%	1.0%	0.1%	0.0%	0.0%	
DPL	0.0%	0.0%	11.7%	47.9%	37.1%	1.9%	0.5%	0.2%	0.6%	0.0%	
DUQ	0.0%	0.0%	0.8%	47.6%	48.1%	2.9%	0.6%	0.0%	0.0%	0.0%	
EKPC	0.0%	0.0%	1.1%	47.8%	47.3%	3.1%	0.6%	0.0%	0.0%	0.0%	
JCPLC	0.0%	0.0%	3.4%	47.9%	46.1%	2.0%	0.5%	0.0%	0.0%	0.0%	
MEC	0.0%	0.0%	3.9%	47.5%	45.5%	2.5%	0.6%	0.1%	0.0%	0.0%	
OVEC	0.0%	0.0%	1.2%	47.9%	47.3%	3.0%	0.6%	0.0%	0.0%	0.0%	
PECO	0.0%	0.0%	10.3%	48.0%	39.2%	2.0%	0.5%	0.0%	0.0%	0.0%	
PE	0.0%	0.0%	1.4%	47.3%	48.1%	2.6%	0.6%	0.1%	0.0%	0.0%	
PEPCO	0.0%	0.0%	2.8%	47.6%	44.8%	3.6%	1.1%	0.1%	0.0%	0.0%	
PPL	0.0%	0.0%	4.2%	47.5%	45.7%	2.1%	0.5%	0.0%	0.0%	0.0%	
PSEG	0.0%	0.0%	3.3%	47.9%	46.3%	2.0%	0.4%	0.0%	0.0%	0.0%	
REC	0.0%	0.0%	2.8%	47.6%	46.9%	2.1%	0.5%	0.0%	0.0%	0.0%	

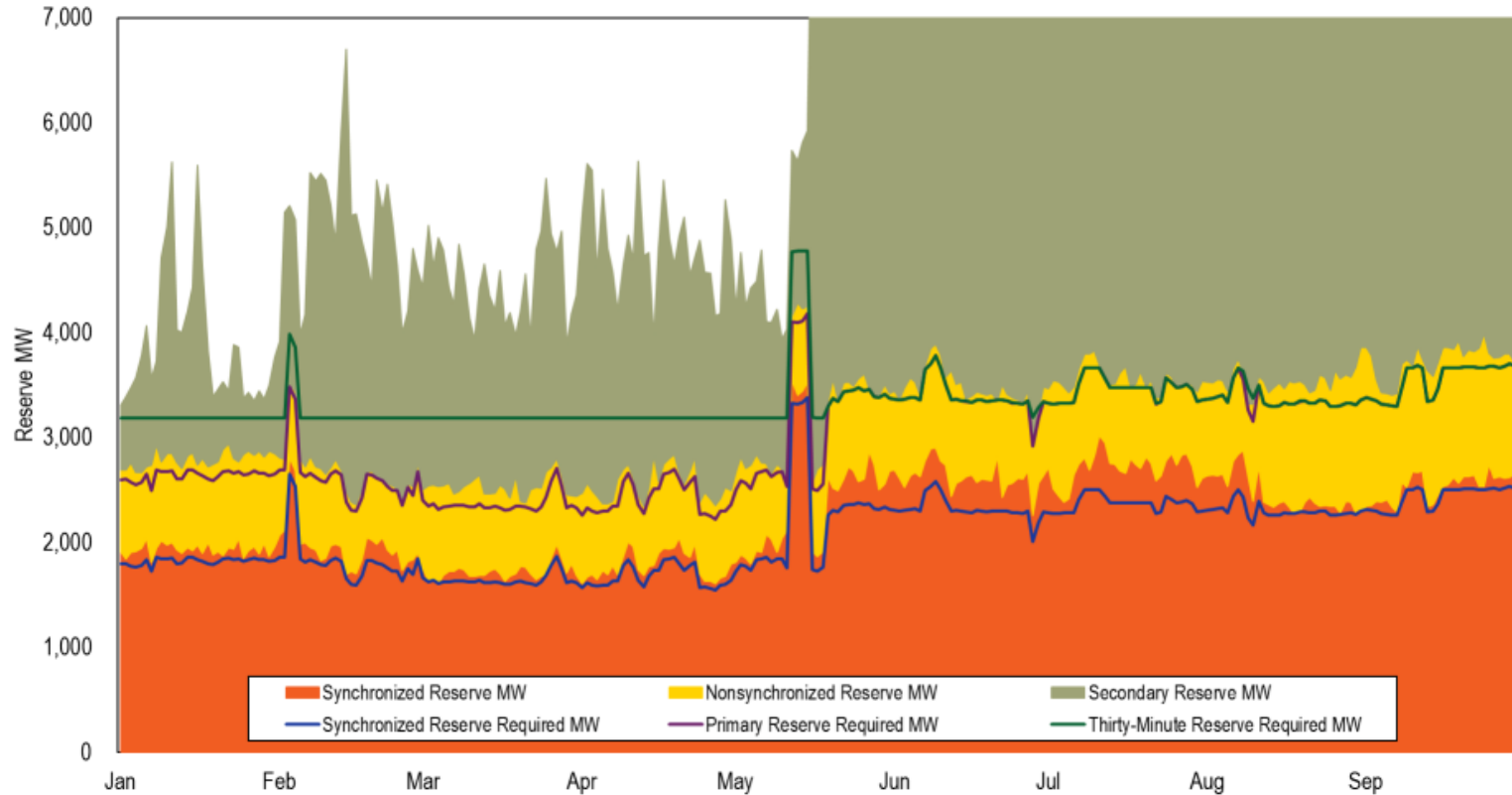
Hourly Average Load and LMP Difference: Jan through Sep 2023



Real-Time Load-Weighted Average LMP

	2022				2023			
	Off Peak	On Peak	Difference	Percent Difference	Off Peak	On Peak	Difference	Percent Difference
Jan	\$74.99	\$62.54	(\$12.46)	(16.6%)	\$33.20	\$38.53	\$5.32	16.0%
Feb	\$45.70	\$47.86	\$2.16	4.7%	\$23.45	\$28.67	\$5.22	22.3%
Mar	\$41.58	\$45.41	\$3.83	9.2%	\$26.96	\$29.78	\$2.82	10.5%
Apr	\$55.93	\$71.89	\$15.96	28.5%	\$24.08	\$35.00	\$10.92	45.4%
May	\$66.12	\$100.85	\$34.73	52.5%	\$22.65	\$33.84	\$11.19	49.4%
Jun	\$61.63	\$126.83	\$65.20	105.8%	\$21.64	\$32.16	\$10.52	48.6%
Jul	\$71.83	\$114.14	\$42.31	58.9%	\$26.86	\$48.04	\$21.18	78.9%
Aug	\$85.89	\$136.31	\$50.42	58.7%	\$26.60	\$35.30	\$8.70	32.7%
Sep	\$66.36	\$89.76	\$23.40	35.3%	\$24.76	\$38.65	\$13.88	56.1%
Oct	\$47.61	\$64.50	\$16.90	35.5%				
Nov	\$45.48	\$60.50	\$15.01	33.0%				
Dec	\$153.54	\$129.51	(\$24.03)	(15.7%)				

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
2023	Jan	1,904	1,935	1,404	861	3,309	2,796	11,941	1,100	15,249	3,895
2023	Feb	1,889	1,975	1,311	718	3,200	2,693	16,793	2,295	19,993	4,988
2023	Mar	1,682	1,722	1,179	812	2,861	2,535	15,073	1,964	17,934	4,498
2023	Apr	1,766	1,788	968	771	2,734	2,559	10,955	2,266	13,689	4,825
2023	May	2,399	2,425	1,094	804	3,493	3,229	12,489	9,635	15,983	12,864
2023	Jun	2,848	2,628	987	848	3,835	3,476	13,484	17,101	17,319	20,578
2023	Jul	2,829	2,710	971	846	3,801	3,556	13,263	15,579	17,064	19,135
2023	Aug	2,875	2,464	1,019	1,079	3,894	3,543	13,357	17,406	17,251	20,949
2023	Sep	2,905	2,531	936	1,204	3,841	3,735	13,689	17,963	17,530	21,697

Day-Ahead & Real-Time MAD Reserve MW

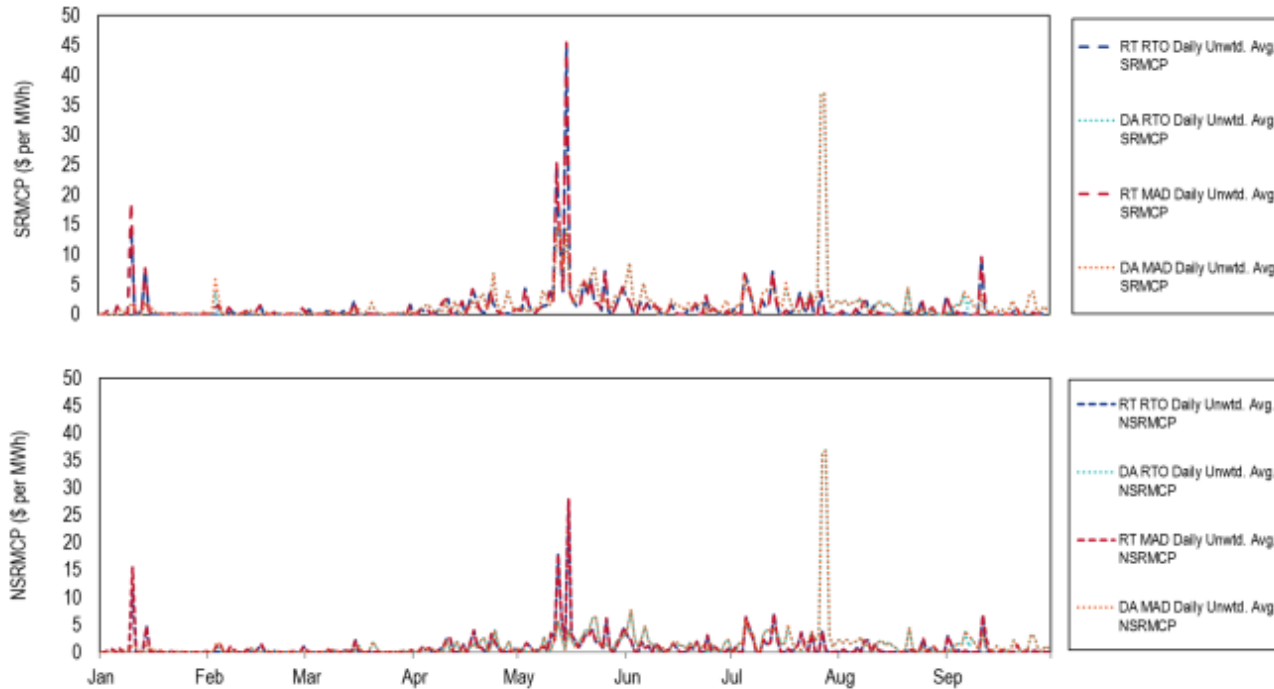
		Synchronized Reserve MW		Nonsynchronized Reserve MW		Total Primary Reserve MW		Secondary Reserve MW		Total Thirty-Minute Reserve MW	
Year	Month	DA	RT	DA	RT	DA	RT	DA	RT	DA	RT
2023	Jan	1,891	1,933	1,119	792	3,009	2,725	NA	NA	NA	NA
2023	Feb	1,874	1,955	992	673	2,866	2,628	NA	NA	NA	NA
2023	Mar	1,671	1,696	839	678	2,510	2,374	NA	NA	NA	NA
2023	Apr	1,690	1,664	684	615	2,374	2,279	NA	NA	NA	NA
2023	May	1,937	1,940	847	685	2,784	2,625	NA	NA	NA	NA
2023	Jun	2,023	1,973	817	688	2,839	2,661	NA	NA	NA	NA
2023	Jul	2,028	1,958	804	714	2,832	2,673	NA	NA	NA	NA
2023	Aug	2,099	1,966	844	764	2,943	2,729	NA	NA	NA	NA
2023	Sep	2,035	1,925	760	731	2,795	2,657	NA	NA	NA	NA

Reserve Settlements by Month

Year	Month	Total Day-Ahead Credits			Total Balancing MCP Credits			Total LOC Credits		
		SR	NSR	SecR	SR	NSR	SecR	SR	NSR	SecR
2023	Jan	\$505,429	\$73,610	\$0	(\$114,061)	(\$155,466)	\$0	\$976,799	\$4,850	\$5,114
2023	Feb	\$735,351	\$72,133	\$0	\$99,577	(\$113,200)	\$0	\$493,619	\$31,094	\$34,129
2023	Mar	\$439,364	\$72,194	\$0	(\$5,106)	(\$37,214)	\$0	\$744,883	\$3,368	\$12,363
2023	Apr	\$2,088,876	\$220,075	\$0	\$55,121	(\$112,776)	\$0	\$701,874	\$59,662	\$15,125
2023	May	\$8,590,787	\$764,690	\$0	(\$1,102,233)	(\$601,863)	\$0	\$1,523,223	\$477,365	\$64,711
2023	Jun	\$4,061,466	\$648,961	\$0	(\$136,555)	(\$134,616)	\$0	\$503,423	\$48,934	\$137,270
2023	Jul	\$10,125,951	\$1,697,877	\$0	(\$209,684)	(\$227,351)	\$0	\$842,992	\$30,765	\$351,998
2023	Aug	\$2,822,099	\$422,257	\$0	(\$101,170)	(\$17,911)	\$0	\$583,173	\$1,642	\$134,975
2023	Sep	\$2,808,344	\$503,832	\$0	(\$352,447)	\$68,227	\$0	\$743,196	\$2,149	\$158,351
Year	Month	Total Shortfall Charges			Total Credits					
		SR	NSR	SecR	SR	NSR	SecR			
2023	Jan	\$336,246	NA	\$0	\$1,031,922	(\$77,007)	\$5,114			
2023	Feb	\$0	NA	\$0	\$1,328,546	(\$9,973)	\$34,129			
2023	Mar	\$0	NA	\$0	\$1,179,141	\$38,348	\$12,363			
2023	Apr	\$0	NA	\$0	\$2,845,871	\$166,961	\$15,125			
2023	May	\$0	NA	\$0	\$9,011,777	\$640,193	\$64,711			
2023	Jun	\$0	NA	\$0	\$4,428,335	\$563,279	\$137,270			
2023	Jul	\$0	NA	\$0	\$10,759,259	\$1,501,292	\$351,998			
2023	Aug	\$0	NA	\$0	\$3,304,101	\$405,988	\$134,975			
2023	Sep	\$0	NA	\$0	\$3,199,093	\$574,208	\$158,351			

- For secondary reserve, the shortfall charge is part of the balancing MCP credit. For synchronized reserve, it is separate.
- The only spin events that were 10 minutes or longer happened in January, so only January has SR shortfall charges.

Reserve Prices



- SecRMCP always \$0 per MWh, so far in 2023
- Spikes on Jan. 10th due to shortage pricing
- Spikes on Feb. 3rd & 4th due to conservative operations
- Spikes on May 12th & 15th due to increased requirements
- Spikes of DA & RT MCPs on Jul. 27th & 28th during Hot Weather Alerts on Jul. 26th – Jul. 29th.
- Spikes on Sep. 11th due to shortage pricing.

Monitoring Analytics, LLC

2621 Van Buren Avenue

Suite 160

Eagleville, PA

19403

(610) 271-8050

MA@monitoringanalytics.com

www.MonitoringAnalytics.com

