2025 Annual State of the Market Report for PJM

Special MC

April 24, 2026

IMM

Monitoring Analytics

Market Monitoring Unit

- **Monitoring Analytics, LLC**
  - **Independent company**
  - **Formed August 1, 2008**
- **Independent Market Monitor for PJM**
  - **Independent from Market Participants**
  - **Independent from RTO management**
  - **Independent from RTO board of managers**
- **MMU Accountability**
  - **To FERC (per FERC MMU Orders and MM Plan)**
  - **To PJM markets**
  - **To PJM Board for administration of the contract**

Role of Market Monitoring

- Market monitoring is required by FERC Orders
- Role of competition under FERC regulation
  - Mechanism to regulate prices
  - Competitive outcome = just and reasonable
  - Competitive markets replace traditional regulation
- FERC has enforcement authority
- Relevant model of competition is not laissez faire
- Competitive outcomes are not automatic
- Competitive outcomes require effective market power mitigation rules.

Role of Market Monitoring

- Detailed rules required
- Detailed monitoring required:
  - Of participants
  - Of RTO
  - Of rules
- Market monitoring is primarily analytical
  - Adequacy of market rules
  - Compliance with market rules
  - Exercise of market power
  - Market manipulation

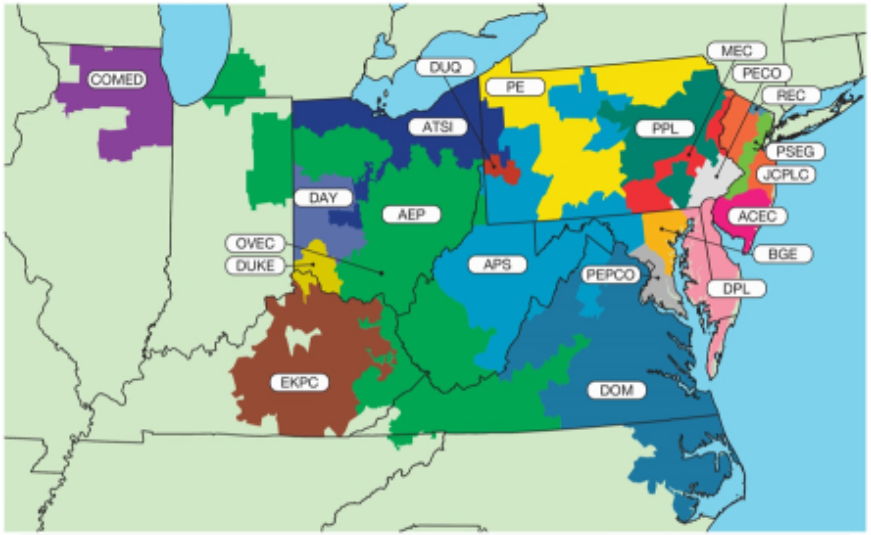
Role of Market Monitoring

- Market monitoring provides inputs to prospective mitigation
- Market monitoring provides retrospective mitigation
- Market monitoring provides information
  - To FERC
  - To state regulators
  - To market participants
  - To RTO

Market Monitoring Plan

- Monitor compliance with rules
  - Monitor the potential of market participants to exercise market power
  - Monitor for market manipulation
- Recommend changes to rules
  - Monitor actual or potential design flaws in rules
  - Monitor structural problems in the PJM market
- Report on market issues
  - State of the market reports
  - Other reports

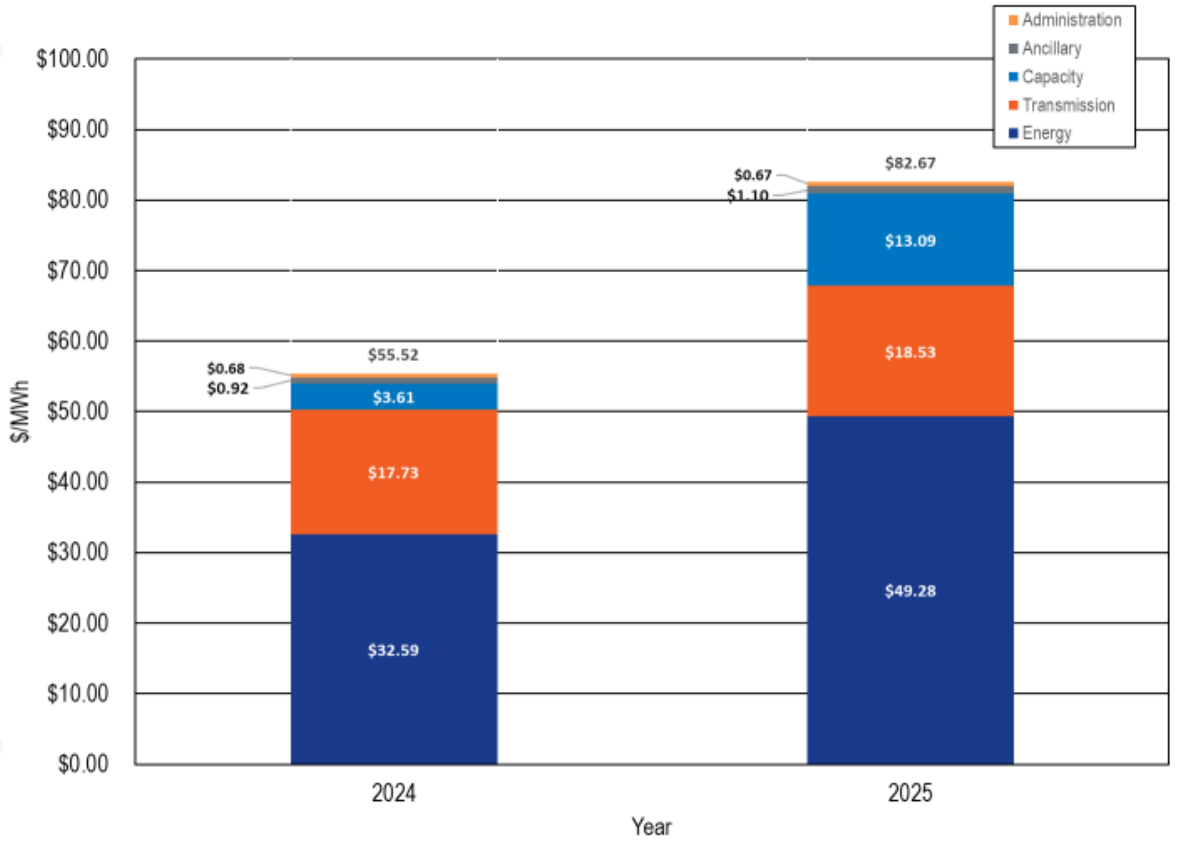
PJM's footprint



Legend

- Allegheny Power Company (APS)
- American Electric Power Co., Inc (AEP)
- American Transmission Systems, Inc. (ATSI)
- Atlantic Electric Company (ACEC)
- Baltimore Gas and Electric Company (BGE)
- ComEd (COMED)
- Dayton Power and Light Company (DAY)
- Delmarva Power and Light (DPL)
- Dominion (DOM)
- Duke Energy Ohio/Kentucky (DUKE)
- Duquesne Light (DUQ)
- Eastern Kentucky Power Cooperative (EKPC)
- Jersey Central Power and Light Company (JCPLC)
- Metropolitan Edison Company (MEC)
- Ohio Valley Electric Corporation (OVEC)
- PECO Energy (PECO)
- Pennsylvania Electric Company (PE)
- Pepco (PEPCO)
- PPL Electric Utilities (PPL)
- Public Service Electric and Gas Company (PSEG)
- Rockland Electric Company (REC)

Total cost of wholesale power



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Total Cost of Wholesale Power – 2025 Monthly

- **Monthly cost of capacity exceeded monthly cost of transmission in June through December, 2025.**
- **First time that capacity costs have exceeded transmission costs since transmission costs first exceeded capacity costs in 2019.**
- **Result of higher capacity market prices for 2025/2026 Delivery Year.**

Total Cost of Wholesale Power – 2025 Monthly

- For the period from January through May:
  - Energy costs averaged 64.5 percent of the monthly total.
  - Capacity costs averaged 5.4 percent of the monthly total.
  - Transmission costs averaged 27.6 percent of the monthly total.
- For the period from June through December:
  - Energy costs averaged 54.5 percent of the monthly total.
  - Capacity costs averaged 22.4 percent of the monthly total.
  - Transmission costs averaged 21.0 percent of the monthly total.

Total cost of wholesale power

Category	2024 $/MWh	2024 ($ Millions)	2024 Percent of Total	2025 $/MWh	2025 ($ Millions)	2025 Percent of Total	Percent Change
Energy	$32.59	$25,553	58.7%	$49.28	$39,959	59.6%	51.2%
Day Ahead Energy	$33.43	$26,215	60.2%	$50.16	$40,673	60.7%	50.0%
Balancing Energy	$0.57	$444	1.0%	$1.02	$824	1.2%	79.6%
ARR Credits	($1.24)	($970)	(2.2%)	($1.59)	($1,287)	(1.9%)	28.3%
Self Scheduled FTR Credits	($0.52)	($410)	(0.9%)	($1.31)	($1,061)	(1.6%)	150.0%
Balancing Congestion	$0.39	$304	0.7%	$0.58	$469	0.7%	49.2%
Emergency Energy	$0.00	$0	0.0%	$0.01	$6	0.0%	0.0%
Inadvertent Energy	$0.01	$9	0.0%	($0.01)	($10)	(0.0%)	(200.3%)
Load Response - Energy	$0.01	$11	0.0%	$0.03	$26	0.0%	116.9%
Emergency Load Response	$0.00	$0	0.0%	$0.08	$61	0.1%	0.0%
Energy Uplift (Operating Reserves)	$0.34	$268	0.6%	$0.94	$764	1.1%	175.7%
Marginal Loss Surplus Allocation	($0.45)	($357)	(0.8%)	($0.73)	($592)	(0.9%)	60.5%
Market to Market Payments	$0.05	$38	0.1%	$0.11	$86	0.1%	117.5%
Capacity	$3.61	$2,834	6.5%	$13.09	$10,616	15.8%	262.3%
Capacity (Capacity Market and FRR)	$3.56	$2,791	6.4%	$12.94	$10,490	15.6%	263.4%
Capacity Part V (RMR)	$0.04	$34	0.1%	$0.13	$108	0.2%	207.4%
Load Response - Capacity	$0.01	$8	0.0%	$0.02	$18	0.0%	116.8%
Transmission	$17.73	$13,900	31.9%	$18.53	$15,024	22.4%	4.5%
Transmission Service Charges	$15.04	$11,797	27.1%	$15.73	$12,753	19.0%	4.5%
Transmission Enhancement Cost Recovery	$2.59	$2,032	4.7%	$2.71	$2,194	3.3%	4.4%
Transmission Owner (Schedule 1A)	$0.09	$72	0.2%	$0.09	$77	0.1%	3.1%
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	$0.92	$721	1.7%	$1.10	$894	1.3%	20.0%
Reactive	$0.48	$377	0.9%	$0.44	$358	0.5%	(8.2%)
Regulation	$0.23	$182	0.4%	$0.38	$309	0.5%	64.0%
Black Start	$0.09	$74	0.2%	$0.06	$51	0.1%	(33.3%)
Synchronized Reserves	$0.10	$75	0.2%	$0.19	$151	0.2%	95.9%
Secondary Reserves	$0.00	$2	0.0%	$0.01	$8	0.0%	266.4%
Non-Synchronized Reserves	$0.01	$10	0.0%	$0.02	$16	0.0%	53.1%
Day Ahead Scheduling Reserve (DASR)	$0.00	$0	0.0%	$0.00	$0	0.0%	0.0%
Administration	$0.68	$531	1.2%	$0.67	$546	0.8%	(0.6%)
PJM Administrative Fees	$0.63	$491	1.1%	$0.62	$505	0.8%	(0.5%)
NERC/RFC	$0.04	$34	0.1%	$0.05	$37	0.1%	3.9%
RTO Startup and Expansion	$0.00	$0	0.0%	$0.00	$0	0.0%	0.0%
Other	$0.01	$5	0.0%	$0.00	$4	0.0%	(36.2%)
Total Price	$55.52	$43,538	100.0%	$82.67	$67,039	100.0%	48.9%
Total Day Ahead Load (GWh)	775,838			800,515			3.2%
Total Balancing Load (GWh)	(8,344)			(10,378)			24.4%
Total Real Time Load (GWh)	784,182			810,894			3.4%
Total Cost ($ Billions)	$43.54			$67.04			54.0%

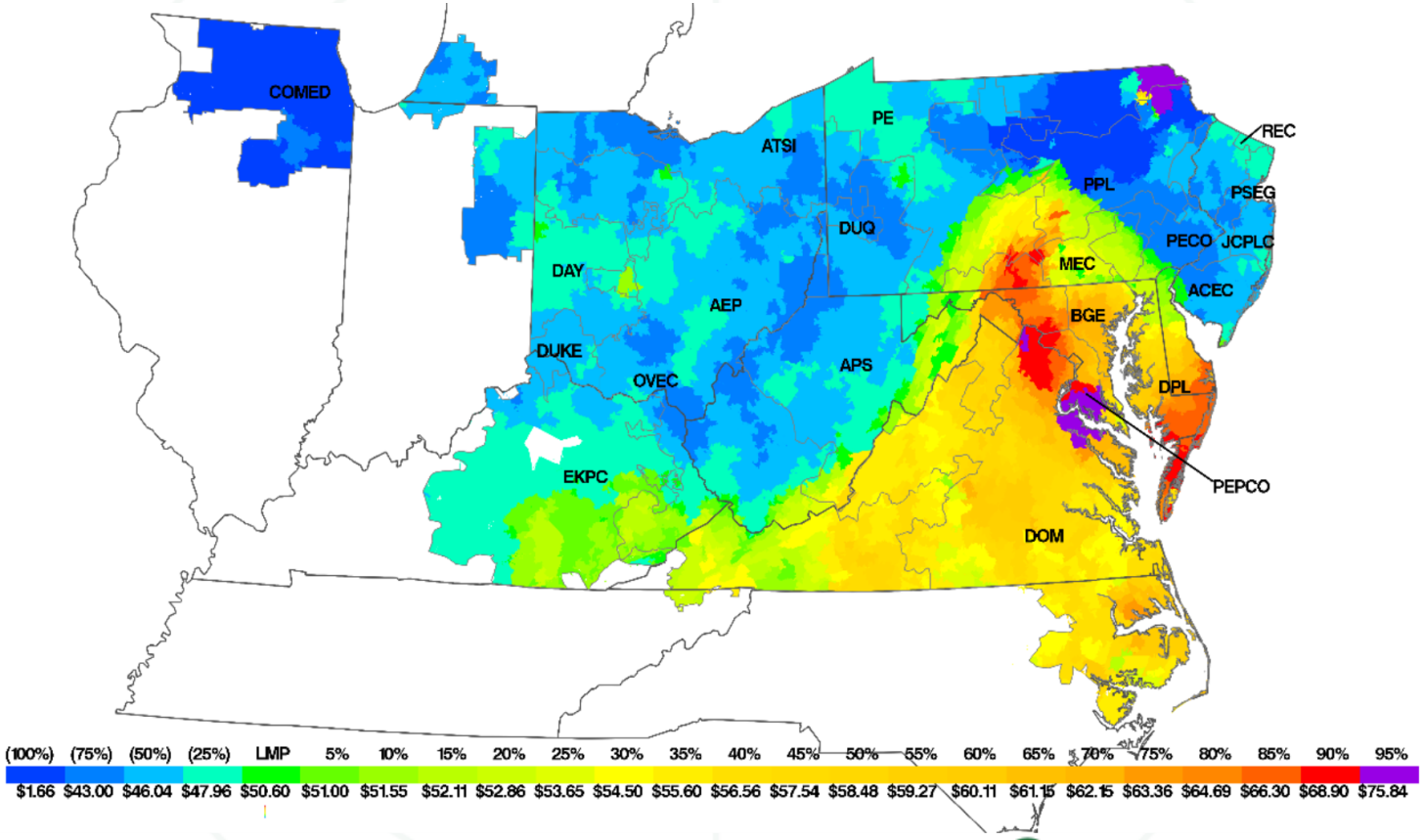
PJM market summary statistics

	2024	2025	Percent Change
Average Hourly Load Plus Exports (MWh)	94,787	98,613	4.0%
Average Hourly Generation Plus Imports (MWh)	96,605	100,529	4.1%
Peak Load Plus Net Export (MWh)	149,398	158,789	6.3%
Peak Load Excluding Export (MWh)	148,890	156,256	4.9%
Installed Capacity at December 31 (MW)	179,656	184,202	2.5%
Load Weighted Average Real Time LMP ($/MWh)	$33.74	$50.73	50.4%
Total Congestion Costs ($ Million)	$1,754.40	$3,173.50	80.9%
Total Uplift Credits ($ Million)	$269.8	$764.8	183.4%
Total PJM Billing ($ Billion)	$51.71	$80.49	55.7%

The energy market results were competitive

Market Element	Evaluation	Market Design
Market Structure: Aggregate Market	Partially Competitive	
Market Structure: Local Market	Not Competitive	
Participant Behavior	Competitive	
Market Performance	**Competitive**	**Effective**

Real-time load-weighted average LMP: 2025



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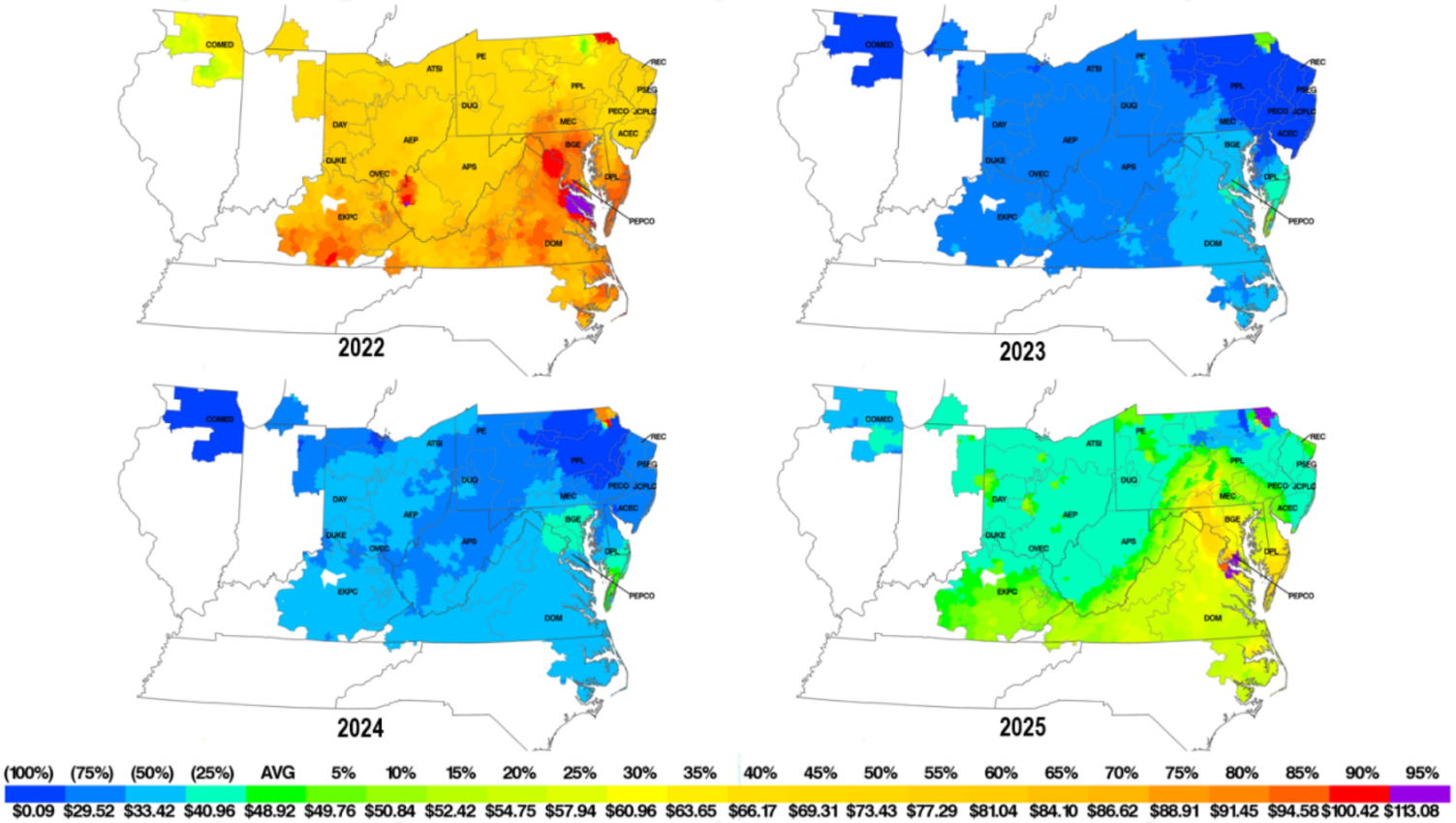
Real-time load-weighted average LMP map



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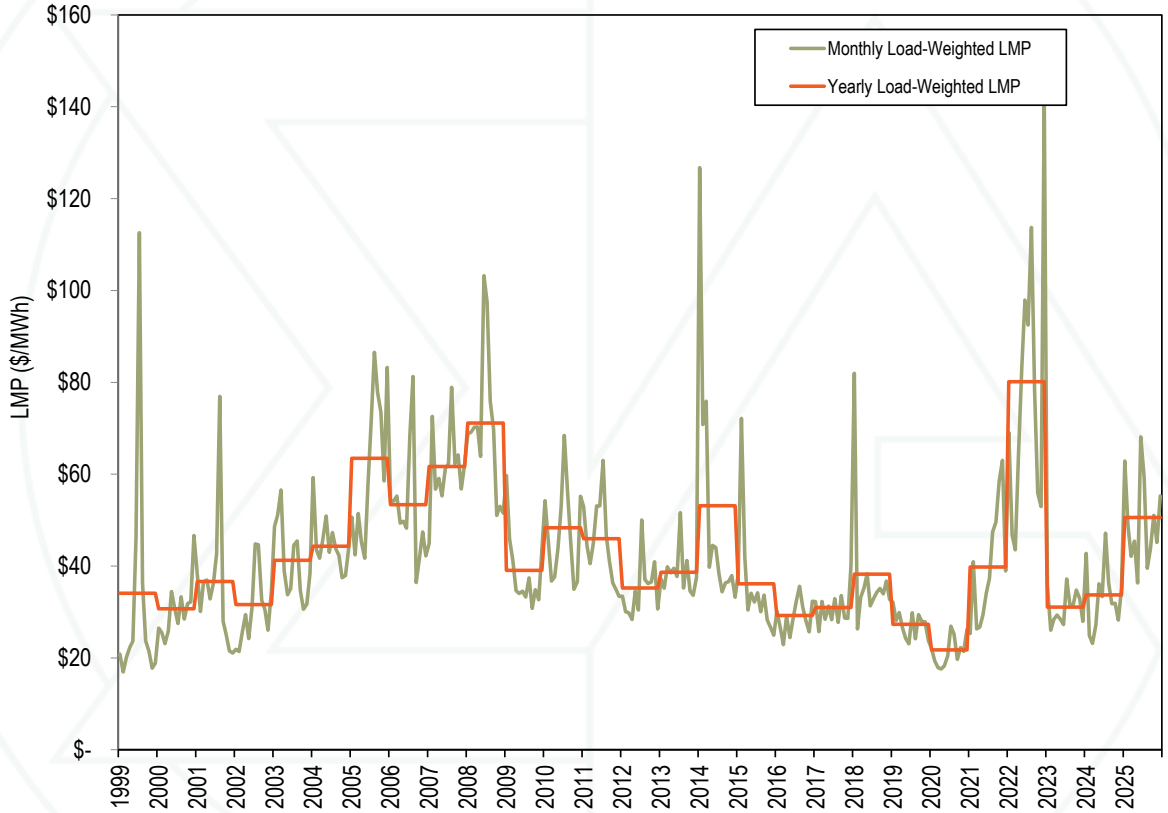
RT monthly and yearly load-weighted average LMP



RT load-weighted average LMP (Dollars per MWh)

	Real-Time Load-Weighted Average LMP			Year to Year Change			
	Average	Median	Standard Deviation	Average	Average Percent	Median	Standard Deviation
1998	$24.16	$17.60	$39.29	NA	NA	NA	NA
1999	$34.07	$19.02	$91.49	$9.91	41.0%	8.1%	132.8%
2000	$30.72	$20.51	$28.38	($3.34)	(9.8%)	7.9%	(69.0%)
2001	$36.65	$25.08	$57.26	$5.93	19.3%	22.3%	101.8%
2002	$31.60	$23.40	$26.75	($5.06)	(13.8%)	(6.7%)	(53.3%)
2003	$41.23	$34.96	$25.40	$9.64	30.5%	49.4%	(5.0%)
2004	$44.34	$40.16	$21.25	$3.10	7.5%	14.9%	(16.3%)
2005	$63.46	$52.93	$38.10	$19.12	43.1%	31.8%	79.3%
2006	$53.35	$44.40	$37.81	($10.11)	(15.9%)	(16.1%)	(0.7%)
2007	$61.66	$54.66	$36.94	$8.31	15.6%	23.1%	(2.3%)
2008	$71.13	$59.54	$40.97	$9.47	15.4%	8.9%	10.9%
2009	$39.05	$34.23	$18.21	($32.09)	(45.1%)	(42.5%)	(55.6%)
2010	$48.35	$39.13	$28.90	$9.30	23.8%	14.3%	58.7%
2011	$45.94	$36.54	$33.47	($2.41)	(5.0%)	(6.6%)	15.8%
2012	$35.23	$30.43	$23.66	($10.71)	(23.3%)	(16.7%)	(29.3%)
2013	$38.66	$33.25	$23.78	$3.43	9.7%	9.3%	0.5%
2014	$53.14	$36.20	$76.20	$14.47	37.4%	8.9%	220.4%
2015	$36.16	$27.66	$31.06	($16.98)	(31.9%)	(23.6%)	(59.2%)
2016	$29.23	$25.01	$16.12	($6.93)	(19.2%)	(9.6%)	(48.1%)
2017	$30.99	$26.35	$19.32	$1.76	6.0%	5.4%	19.9%
2018	$38.24	$29.55	$32.89	$7.25	23.4%	12.1%	70.2%
2019	$27.32	$23.63	$23.12	($10.92)	(28.6%)	(20.0%)	(29.7%)
2020	$21.77	$19.07	$12.50	($5.55)	(20.3%)	(19.3%)	(45.9%)
2021	$39.78	$32.11	$27.72	$18.02	82.8%	68.4%	121.8%
2022	$80.14	$60.09	$135.55	$40.36	101.4%	87.2%	389.1%
2023	$31.08	$26.83	$19.77	($49.06)	(61.2%)	(55.3%)	(85.4%)
2024	$33.74	$26.85	$27.54	$2.66	8.5%	0.1%	39.3%
2025	$50.73	$38.11	$58.74	$16.99	50.4%	42.0%	113.3%

Components of RT load-weighted average LMP

	2024		2025		Change in
Element	Contribution to LMP	Percent	Contribution to LMP	Percent	Percent
Gas	$13.41	39.7%	$22.21	43.8%	4.0%
Transmission Constraint Penalty Factor	$3.01	8.9%	$5.65	11.1%	2.2%
Coal	$4.09	12.1%	$3.89	7.7%	(4.4%)
Positive Markup	$3.56	10.6%	$3.56	7.0%	(3.5%)
Variable Maintenance	$3.18	9.4%	$3.40	6.7%	(2.7%)
Ten Percent Adder	$2.00	5.9%	$3.12	6.1%	0.2%
Oil	$1.08	3.2%	$2.46	4.8%	1.7%
CO_2 Cost	$1.94	5.8%	$2.23	4.4%	(1.4%)
Variable Operations	$1.43	4.2%	$1.34	2.6%	(1.6%)
Opportunity Cost Adder	$1.24	3.7%	$1.28	2.5%	(1.2%)
Ancillary Service Redispatch Cost	$1.33	3.9%	$1.27	2.5%	(1.4%)
NA	$0.09	0.3%	$1.20	2.4%	2.1%
Scarcity	$0.17	0.5%	$1.00	2.0%	1.5%
Emergency Demand Response	$0.00	0.0%	$0.67	1.3%	1.3%
Market-to-Market	$0.34	1.0%	$0.62	1.2%	0.2%
Increase Generation Differential	$0.24	0.7%	$0.46	0.9%	0.2%
LPA Rounding Difference	$0.18	0.5%	$0.32	0.6%	0.1%
Landfill Gas	$0.05	0.2%	$0.10	0.2%	0.0%
NO_x Cost	$0.09	0.3%	$0.09	0.2%	(0.1%)
Other	$0.02	0.0%	$0.03	0.1%	0.0%
SO_2 Cost	$0.00	0.0%	$0.00	0.0%	(0.0%)
LPA-SCED Differential	($0.00)	(0.0%)	($0.00)	(0.0%)	0.0%
Uranium	$0.00	0.0%	($0.00)	(0.0%)	(0.0%)
PJM Administrative Cap	$0.00	0.0%	($0.08)	(0.2%)	(0.2%)
Renewable Energy Credits	($0.07)	(0.2%)	($0.15)	(0.3%)	(0.1%)
Decrease Generation Differential	($0.04)	(0.1%)	($0.20)	(0.4%)	(0.3%)
Negative Markup	($3.58)	(10.6%)	($3.72)	(7.3%)	3.3%
Total	$33.74	100.0%	$50.73	100.0%	0.0%

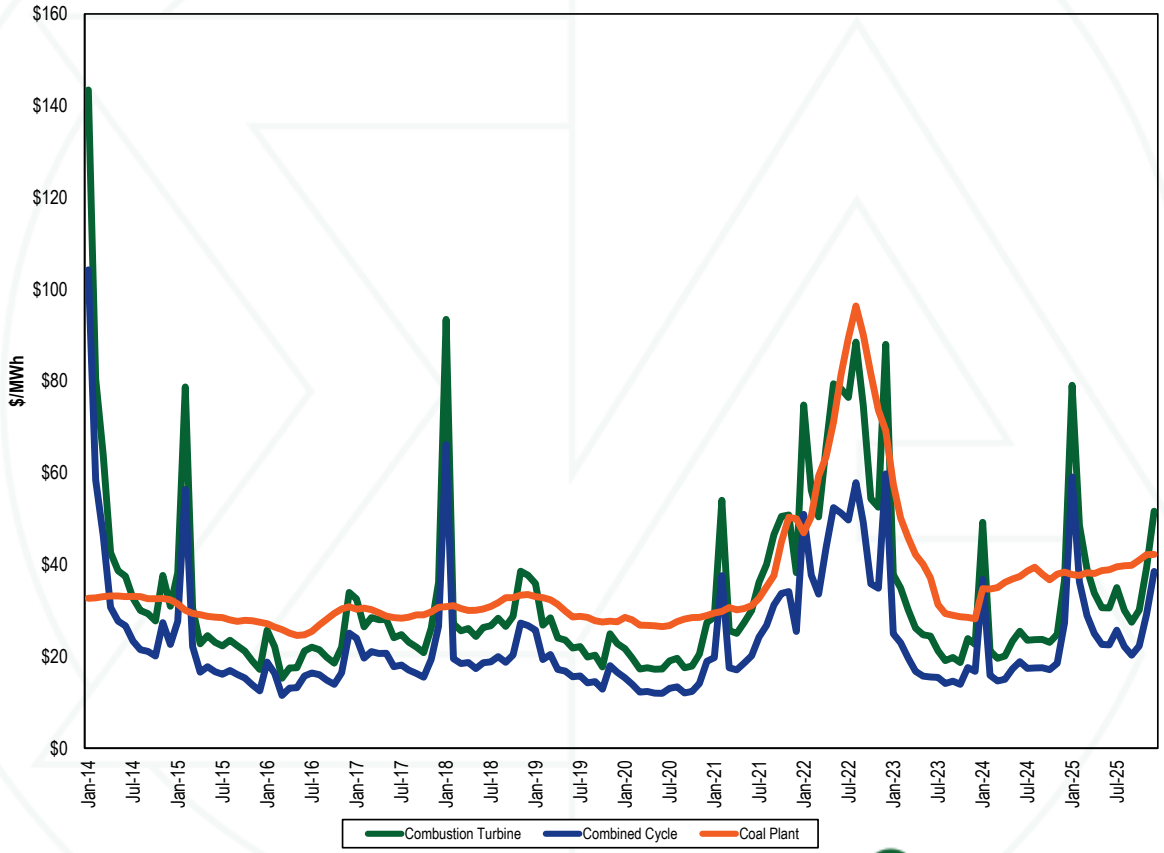
Components of change in RT load-weighted average LMP

Component	2024	2025	Change in LMP	Percent of Total Change
Fuel and Consumables	$20.06	$29.99	$9.94	58.5%
Emission Related	$3.19	$3.44	$0.25	1.5%
Market Power Related	$5.16	$6.35	$1.20	7.1%
Scarcity	$0.17	$1.00	$0.83	4.9%
Transmission Constraint Penalty Factor	$3.01	$5.65	$2.64	15.5%
Ancillary Service Redispatch Cost	$1.33	$1.27	($0.06)	(0.3%)
Pre-emergency Demand Response	$0.00	$0.67	$0.67	4.0%
PJM Administrative Cap	$0.00	($0.08)	($0.08)	(0.5%)
All Other	$0.82	$2.43	$1.60	9.4%
Total Change	$33.74	$50.73	$16.99	100.0%

Generation by fuel source

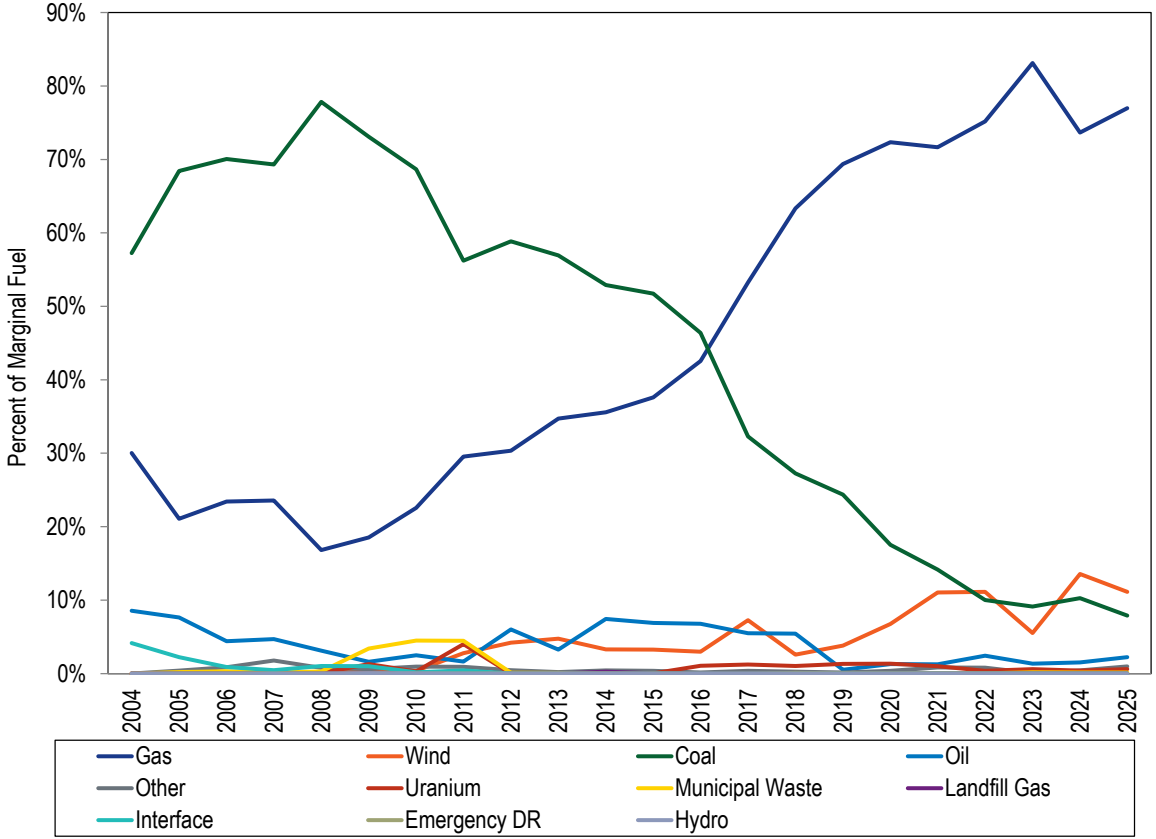
	2024		2025		Change in
	GWh	Percent	GWh	Percent	Output
Coal	122,583.3	14.5%	145,830.3	16.7%	19.0%
Bituminous	107,270.7	12.7%	123,310.7	14.1%	15.0%
Sub Bituminous	9,548.2	1.1%	15,776.3	1.8%	65.2%
Other Coal	5,764.4	0.7%	6,743.3	0.8%	17.0%
Nuclear	272,744.4	32.2%	270,642.3	31.0%	(0.8%)
Gas	376,249.8	44.5%	373,837.1	42.8%	(0.6%)
Natural Gas CC	340,951.1	40.3%	334,542.6	38.3%	(1.9%)
Natural Gas CT	20,916.2	2.5%	23,005.8	2.6%	10.0%
Natural Gas Other Units	13,250.0	1.6%	15,205.1	1.7%	14.8%
Other Gas	1,132.6	0.1%	1,083.6	0.1%	(4.3%)
Hydroelectric	16,001.4	1.9%	15,509.6	1.8%	(3.1%)
Pumped Storage	6,430.5	0.8%	6,739.8	0.8%	4.8%
Run of River	7,624.6	0.9%	6,931.1	0.8%	(9.1%)
Other Hydro	1,946.3	0.2%	1,838.8	0.2%	(5.5%)
Wind	31,384.5	3.7%	32,156.2	3.7%	2.5%
Waste	3,912.1	0.5%	3,950.9	0.5%	1.0%
Oil	4,098.6	0.5%	5,320.4	0.6%	29.8%
Heavy Oil	156.8	0.0%	207.4	0.0%	32.3%
Light Oil	2,188.2	0.3%	3,280.2	0.4%	49.9%
Diesel	32.4	0.0%	116.5	0.0%	259.6%
Other Oil	1,721.2	0.2%	1,716.2	0.2%	(0.3%)
Solar	17,547.7	2.1%	24,782.1	2.8%	41.2%
Battery	51.7	0.0%	80.4	0.0%	55.5%
Biofuel	1,249.4	0.1%	1,229.5	0.1%	(1.6%)
Total	845,823.0	100.0%	873,338.8	100.0%	3.3%

Average short run marginal costs

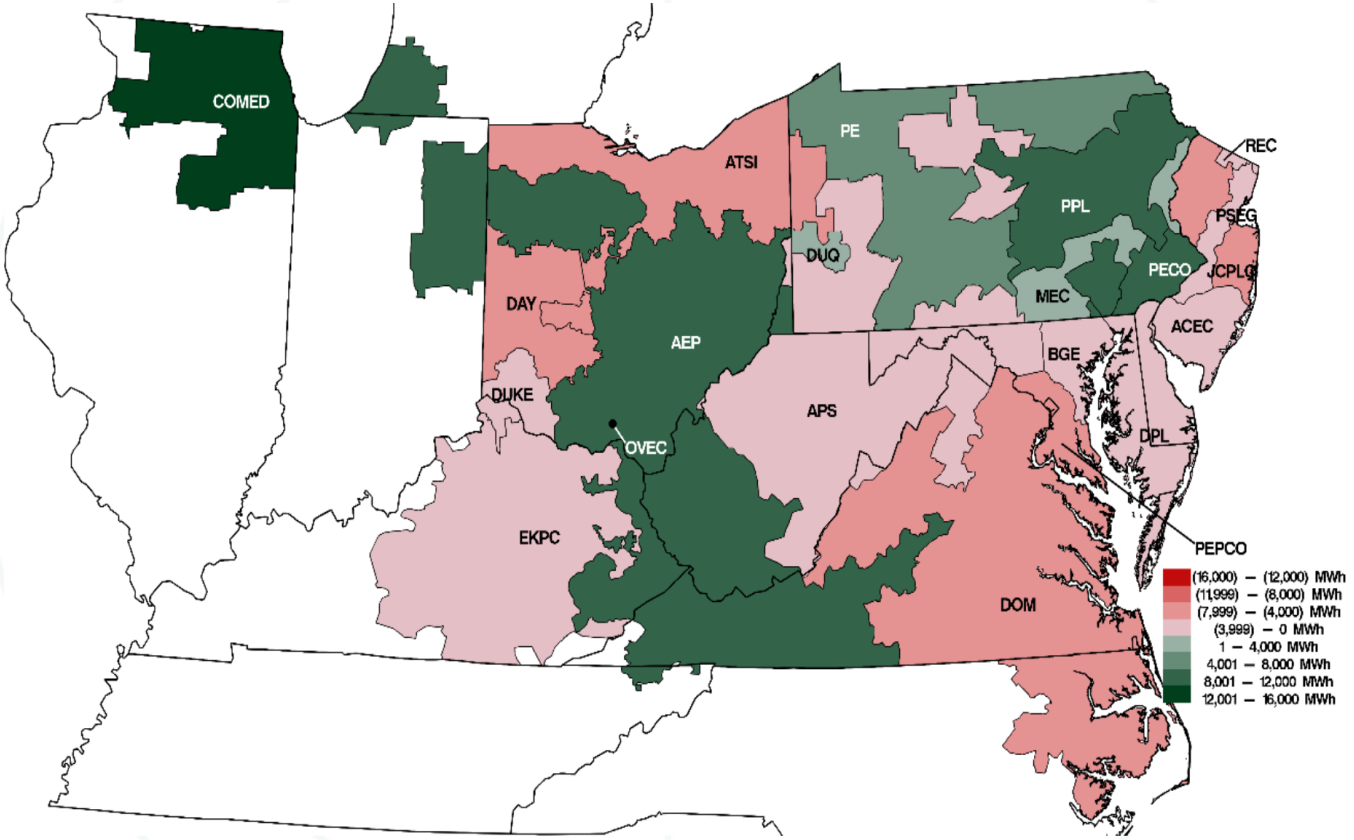


Monitoring Analytics

Type of fuel used by RT marginal units

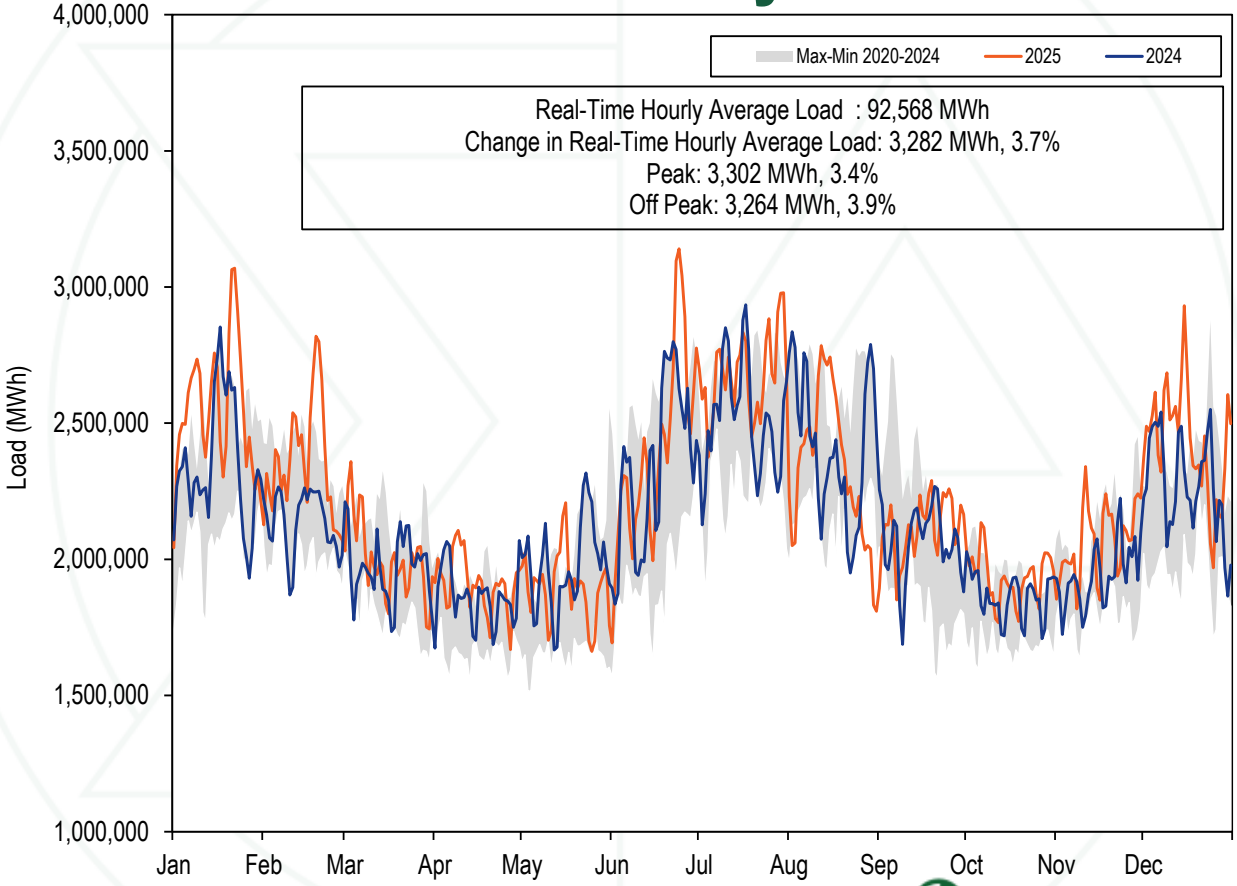


Map of RT generation less RT load by zone



Monitoring Analytics

Real-time daily load



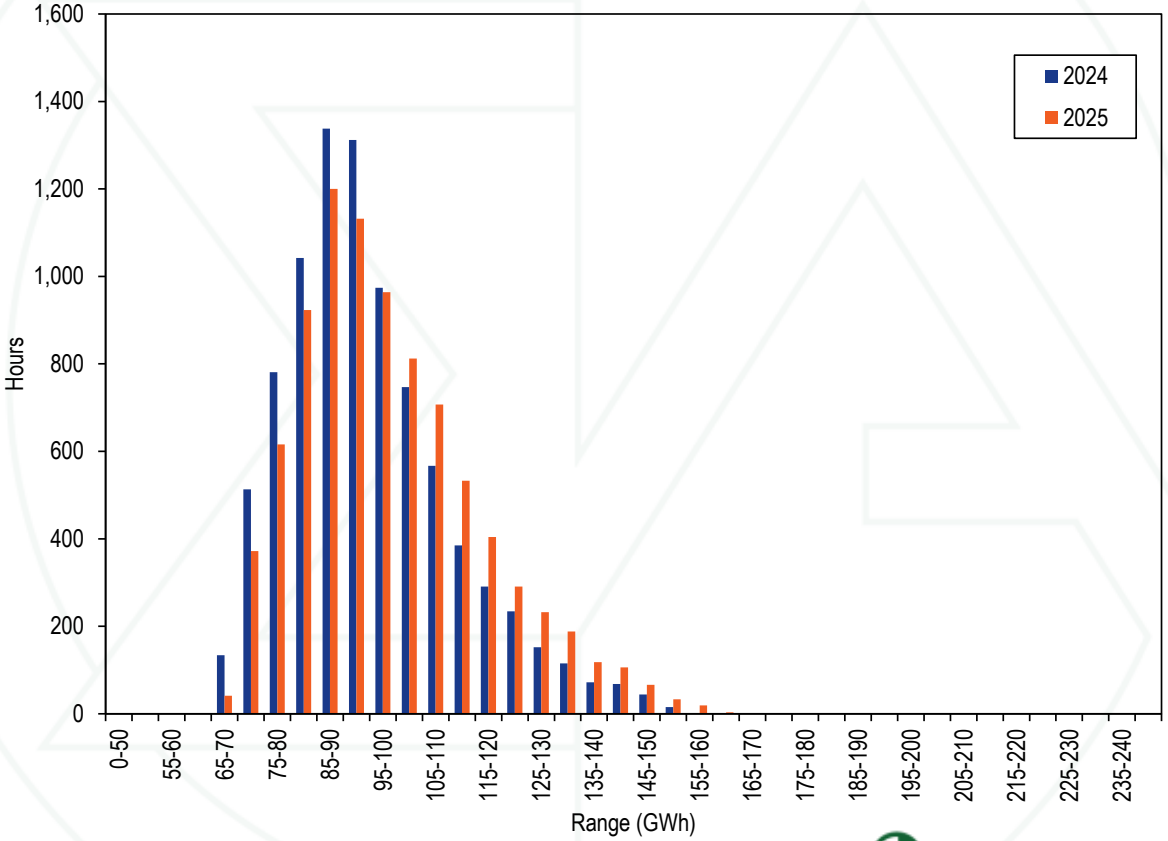
RT hourly average load and load plus exports

	PJM Real-Time Demand (MWh)				Year to Year Change			
	Load		Load Plus Exports		Load		Load Plus Exports	
	Load	Standard Deviation	Demand	Standard Deviation	Load	Standard Deviation	Demand	Standard Deviation
2001	30,297	5,873	32,165	5,564	NA	NA	NA	NA
2002	35,776	7,976	37,676	8,145	18.1%	35.8%	17.1%	46.4%
2003	37,395	6,834	39,380	6,716	4.5%	(14.3%)	4.5%	(17.5%)
2004	49,963	13,004	54,953	14,947	33.6%	90.3%	39.5%	122.6%
2005	78,150	16,296	85,301	16,546	56.4%	25.3%	55.2%	10.7%
2006	79,471	14,534	85,696	15,133	1.7%	(10.8%)	0.5%	(8.5%)
2007	81,681	14,618	87,897	15,199	2.8%	0.6%	2.6%	0.4%
2008	79,515	13,758	86,306	14,322	(2.7%)	(5.9%)	(1.8%)	(5.8%)
2009	76,034	13,260	81,227	13,792	(4.4%)	(3.6%)	(5.9%)	(3.7%)
2010	79,611	15,504	85,518	15,904	4.7%	16.9%	5.3%	15.3%
2011	82,541	16,156	88,466	16,313	3.7%	4.2%	3.4%	2.6%
2012	87,011	16,212	92,135	16,052	5.4%	0.3%	4.1%	(1.6%)
2013	88,332	15,489	92,879	15,418	1.5%	(4.5%)	0.8%	(3.9%)
2014	89,099	15,763	94,471	15,677	0.9%	1.8%	1.7%	1.7%
2015	88,594	16,663	92,665	16,784	(0.6%)	5.7%	(1.9%)	7.1%
2016	88,601	17,229	93,551	17,498	0.0%	3.4%	1.0%	4.3%
2017	86,618	15,170	91,015	15,083	(2.2%)	(11.9%)	(2.7%)	(13.8%)
2018	90,308	15,982	94,351	16,142	4.3%	5.4%	3.7%	7.0%
2019	88,120	15,867	92,920	16,085	(2.4%)	(0.7%)	(1.5%)	(0.4%)
2020	84,584	16,016	90,059	16,233	(4.0%)	0.9%	(3.1%)	0.9%
2021	87,606	15,725	92,774	16,485	3.6%	(1.8%)	3.0%	1.6%
2022	88,884	15,689	94,301	16,047	1.5%	(0.2%)	1.6%	(2.7%)
2023	86,193	13,926	92,455	14,324	(3.0%)	(11.2%)	(2.0%)	(10.7%)
2024	89,274	15,630	94,787	15,766	3.6%	12.2%	2.5%	10.1%
2025	92,568	16,609	98,613	17,191	3.7%	6.3%	4.0%	9.0%

PJM peak load by season

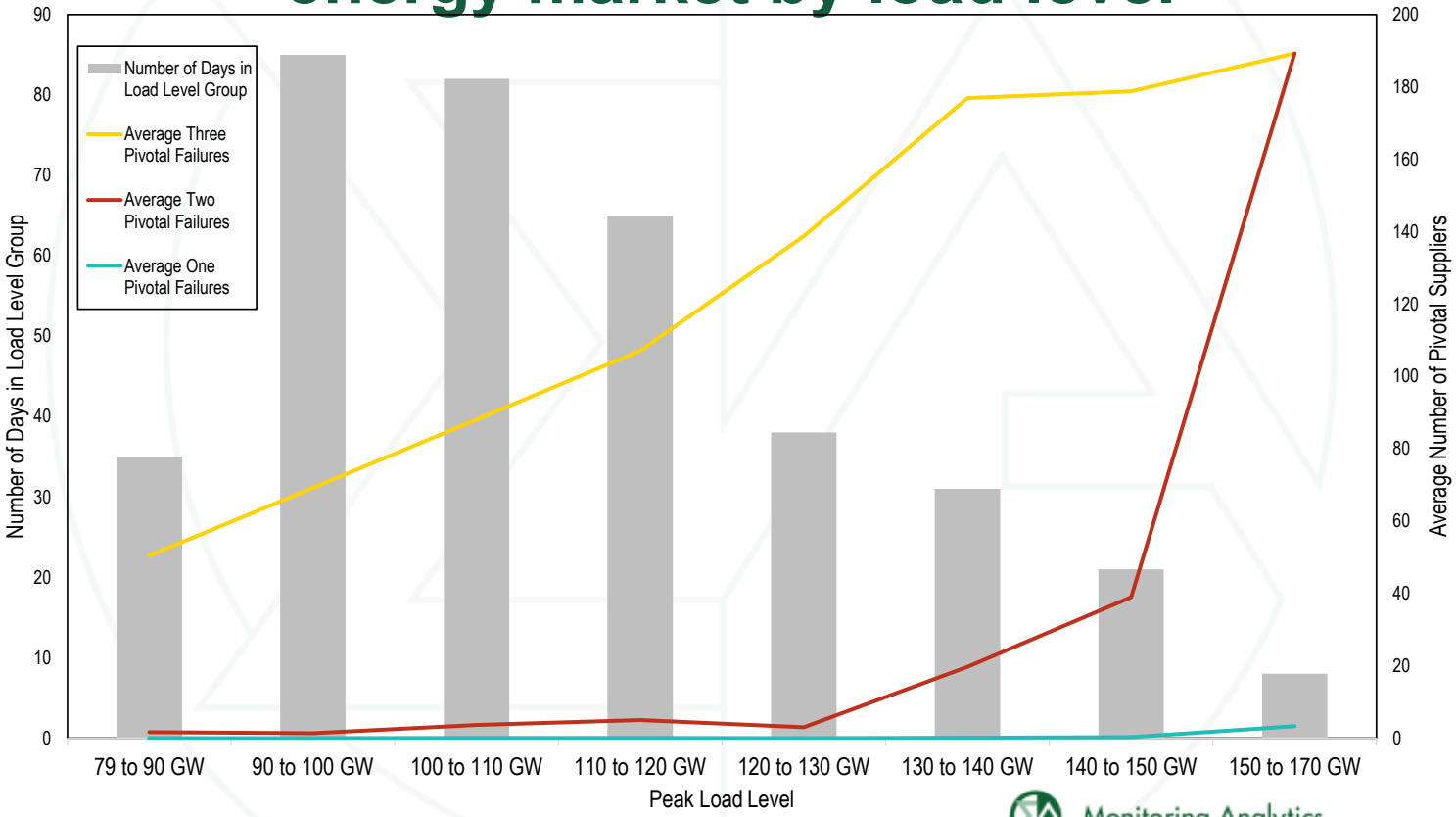
Peak Load by Season											
Summer Peak Load Hour						Winter Peak Load Hour					
Date	Hour Ending	RT Load (MWh)	Net Export (MWh)	RT Generation (MWh)	LMP ($/MWh)	Date	Hour Ending	RT Load (MWh)	Net Export (MWh)	RT Generation (MWh)	LMP ($/MWh)
Tuesday, August 3, 2004	17	77,950	435	78,666	$90.55	Monday, December 20, 2004	19	96,838	1,796	98,797	$129.90
Tuesday, July 26, 2005	16	134,017	(2,206)	131,975	$156.02	Wednesday, December 14, 2005	19	110,632	(376)	110,406	$163.45
Wednesday, August 2, 2006	17	144,904	(782)	143,957	$404.80	Friday, December 8, 2006	19	106,866	873	108,002	$83.17
Wednesday, August 8, 2007	16	136,368	404	140,170	$471.98	Monday, February 5, 2007	20	119,072	(3,964)	115,252	$178.18
Monday, June 9, 2008	17	127,216	2,862	125,804	$155.67	Thursday, January 3, 2008	19	109,239	(641)	112,339	$130.11
Monday, August 10, 2009	17	123,900	163	127,229	$85.64	Friday, January 16, 2009	19	114,765	(2,316)	115,093	$80.73
Tuesday, July 6, 2010	17	133,297	(247)	136,442	$194.02	Tuesday, December 14, 2010	19	113,121	(1,688)	115,284	$137.02
Thursday, July 21, 2011	17	154,095	(5,906)	151,790	$162.28	Monday, January 24, 2011	8	108,156	(1,218)	109,394	$176.49
Tuesday, July 17, 2012	17	150,879	(4,825)	149,582	$203.72	Tuesday, January 3, 2012	19	119,450	109	122,802	$67.07
Thursday, July 18, 2013	17	153,790	(7,607)	149,806	$244.92	Tuesday, January 22, 2013	19	123,473	(3,412)	123,283	$119.20
Tuesday, June 17, 2014	18	138,448	(7,382)	134,914	$113.51	Tuesday, January 7, 2014	19	136,932	(9,127)	131,731	$386.36
Tuesday, July 28, 2015	17	140,266	(3,942)	139,450	$101.40	Friday, February 20, 2015	8	139,647	(6,994)	137,504	$381.93
Thursday, August 11, 2016	16	148,577	1,235	153,820	$128.83	Thursday, December 15, 2016	19	127,759	(2,946)	128,979	$107.06
Wednesday, July 19, 2017	18	142,387	3,166	148,409	$59.49	Monday, January 9, 2017	8	124,210	(1,054)	126,761	$67.72
Tuesday, August 28, 2018	17	147,042	3,238	154,067	$131.36	Friday, January 5, 2018	19	133,851	(403)	137,173	$164.15
Friday, July 19, 2019	18	148,228	3,253	154,542	$37.47	Thursday, January 31, 2019	8	134,060	1,077	138,744	$85.21
Monday, July 20, 2020	17	141,449	6,013	150,667	$74.91	Wednesday, January 22, 2020	8	116,761	4,230	123,609	$31.76
Tuesday, August 24, 2021	17	145,563	2,984	151,708	$243.98	Friday, January 29, 2021	9	114,457	3,200	120,648	$27.87
Wednesday, July 20, 2022	18	144,356	3,190	151,620	$204.29	Friday, December 23, 2022	19	131,474	3,340	136,132	$2,011.80
Thursday, July 27, 2023	18	144,215	7,211	151,896	$110.52	Friday, February 3, 2023	20	117,705	746	121,952	$56.22
Tuesday, July 16, 2024	18	148,890	508	152,864	$384.56	Wednesday, January 17, 2024	9	130,293	9,291	143,324	$103.66
Monday, June 23, 2025	**18**	**156,256**	**2,533**	**162,599**	**$273.39**	**Wednesday, January 22, 2025**	**9**	**140,043**	**7,660**	**151,437**	**$355.76**

Distribution of real-time load plus exports



Monitoring Analytics

Average number of pivotal suppliers in the DA energy market by load level



Recommendations: Energy Market

- **The MMU recommends, in order to ensure effective market power mitigation, that PJM commit all resources that fail the TPS test on their cost-based offers, that the Market Seller designate the cost-based offer if there is more than one, and that PJM implement this solution as soon as possible. (Priority: High. First reported Q3 2024. Status: Not adopted.)**
- **The MMU recommends that PJM document how LMPs are calculated when demand response is marginal. (Priority: Low. First reported 2014. Status: Not adopted.)**

Total energy uplift charges by category

Category	2024 Charges (Millions)	2025 Charges (Millions)	Change (Millions)	Percent Change
Day-Ahead Operating Reserves	$114.7	$200.9	$86.2	75.1%
Balancing Operating Reserves	$152.0	$562.5	$410.5	270.0%
Reactive Services	$1.5	$0.7	($0.8)	(56.5%)
Synchronous Condensing	$1.5	$0.0	($1.5)	(100.0%)
Black Start Services	$0.4	$0.4	$0.0	4.7%
Local Congestion Charges	$1.3	$0.3	($1.0)	(77.9%)
Total	$271.5	$764.8	$493.3	181.7%
Energy Uplift as a Percent of Total PJM Billing	0.5%	1.0%	0.9%	175.8%

Monthly energy uplift charges

	2024 Charges (Millions)						2025 Charges (Millions)					
	Day-Ahead	Balancing	Reactive Services	Local Congestion	Black Start Services	Total	Day-Ahead	Balancing	Reactive Services	Local Congestion	Black Start Services	Total
Jan	$32.7	$23.9	$0.9	$0.2	$0.0	$57.7	$153.9	$245.8	$0.0	$0.1	$0.0	$399.8
Feb	$1.2	$5.4	$0.0	$0.0	$0.1	$6.8	$2.5	$32.50	$0.0	$0.0	$0.1	$35.2
Mar	$1.1	$10.8	$0.0	$0.0	$0.0	$12.0	$6.1	$28.58	$0.5	$0.0	$0.1	$35.3
Apr	$12.1	$19.3	$0.0	$0.1	$0.0	$31.5	$3.9	$36.62	$0.0	$0.0	$0.1	$40.6
May	$12.5	$21.0	$0.0	$0.0	$0.0	$33.6	$2.9	$16.64	$0.0	$0.0	$0.0	$19.6
Jun	$14.4	$12.6	$0.0	$1.0	$0.0	$28.1	$5.8	$31.48	$0.0	$0.0	$0.0	$37.3
Jul	$8.4	$11.5	$0.0	$0.0	$0.0	$19.9	$2.3	$45.82	$0.0	$0.0	$0.0	$48.1
Aug	$6.9	$10.9	$0.1	$0.0	$0.0	$17.9	$3.1	$24.04	$0.0	$0.0	$0.0	$27.1
Sep	$4.4	$6.9	$0.0	$0.0	$0.0	$11.3	$0.9	$16.09	$0.0	$0.0	$0.0	$17.1
Oct	$6.4	$9.0	$0.0	$0.0	$0.0	$15.4	$0.6	$19.7	$0.0	$0.1	$0.0	$20.5
Nov	$3.2	$8.8	$0.0	$0.0	$0.1	$12.1	$0.7	$32.2	$0.0	$0.0	$0.0	$32.9
Dec	$11.3	$12.1	$0.5	$0.0	$0.0	$23.9	$18.2	$33.1	$0.0	$0.0	$0.0	$51.3
Total	$114.7	$152.0	$1.5	$1.3	$0.4	$270.0	$200.9	$562.5	$0.7	$0.3	$0.4	$764.8
Share	42.5%	56.3%	0.6%	0.5%	0.2%	100.0%	26.3%	73.6%	0.1%	0.0%	0.1%	100.0%

Top 10 recipients of total uplift

Rank	Unit Name	Zone	Total Uplift Credit	Share of Total Uplift Credits
1	PEP CHALKPOINT 4 F	PEPCO	$115,074,444	15.0%
2	PEP CHALKPOINT 3 F	PEPCO	$55,901,647	7.3%
3	BC BRANDON SHORES 1 F	BGE	$28,406,386	3.7%
4	BC BRANDON SHORES 2 F	BGE	$20,068,270	2.6%
5	JC REDOAK 1 CC	JCPL	$13,770,402	1.8%
6	BC WAGNER 3 F	BGE	$12,946,541	1.7%
7	PS NEWARK ENERGY CENTER 10 CC	PSEG	$12,465,654	1.6%
8	ME IRONWOOD 1 CC	METED	$8,396,715	1.1%
9	ACE WEST DEPTFORD CROWN POINT 1 CC	AECO	$6,842,204	0.9%
10	DPL WILDCAT POINT 1 CC	DPL	$6,474,686	0.8%
Total of Top 10			$280,346,950	36.7%
Total Uplift Credits			$764,779,836	100.0%

Recommendations: Energy Market Uplift

- **The MMU recommends that PJM not pay uplift to units not following dispatch, including uplift related to fast start pricing, and require refunds where it has made such payments. This includes units whose offers are flagged for fixed generation in Markets Gateway because such units are not dispatchable. (Priority: Medium. First reported 2018. Status: Not adopted.)**
- **The MMU recommends that PJM pay uplift based on the offer at the lower of the actual unit output or the dispatch signal MW. (Priority: Medium. First reported 2018. Status: Not adopted.)**

Capacity market issues

- 2025/2026 BRA results: Parts A, B, C, D, E, F, G, H
- 2026/2027 BRA results: Parts A, B
- 2027/2028 BRA results: Part A
- PJM ELCC issues
- DR
- Reserve margin
- ELCC

Recommendations: Capacity

- Reference resource should be a CT.
  - Bonus depreciation impact on Gross CONE
  - Paydown schedule impact on Gross CONE
- All capacity should be physical resources.
  - DR only current exception
- Must offer requirement for all capacity resources.
  - DR only remaining exception
- RMR resources should be treated consistently.
- Max VRR price should be max of 1.5 * Net CONE or Gross CONE.
  - Curve should reflect changes in Net CONE

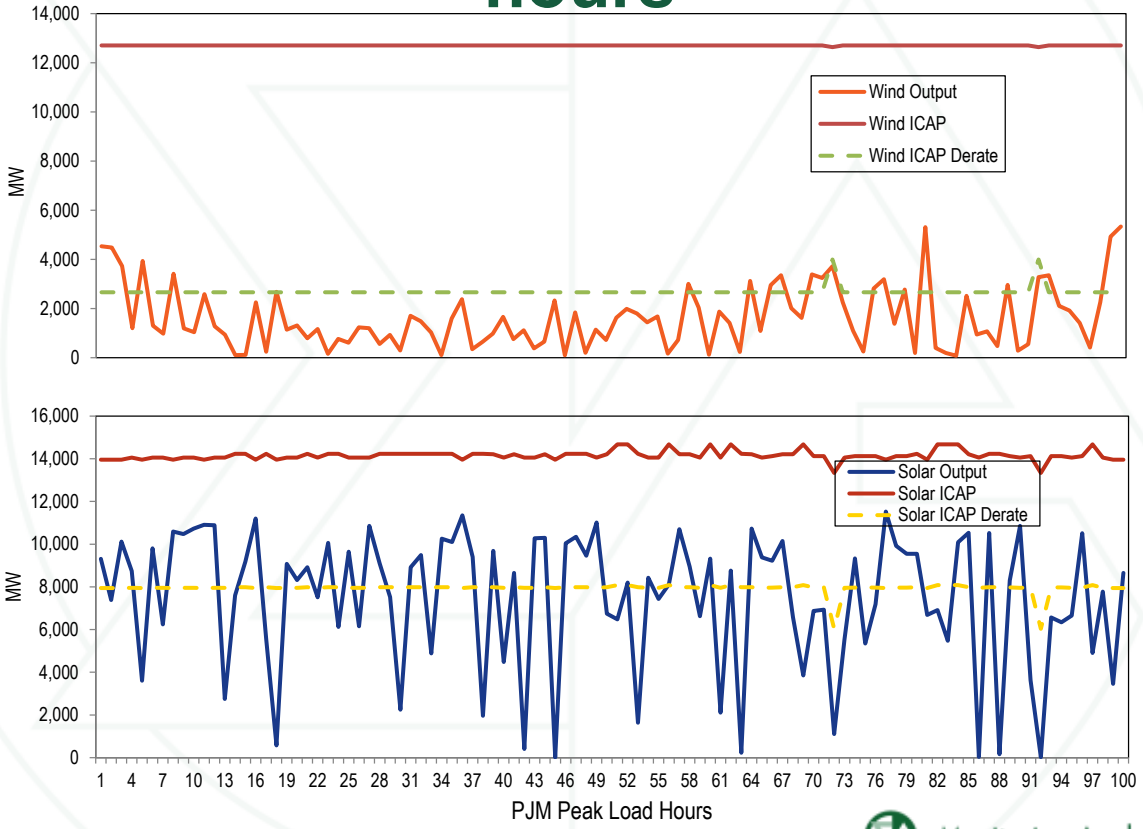
Recommendations: Capacity

- **Large data centers should be required to bring their own new generation with locational and temporal characteristics reasonably matched to their load profile and that this approach include an expedited queue option that would permit both the load and the generation to be added without delays.**
- **A backstop auction should include only data centers and result in bilateral contracts.**
- **Other customer should not be the counter party to these contracts. EDC/LSE/PJM should not be counterparty.**

Installed capacity by fuel source

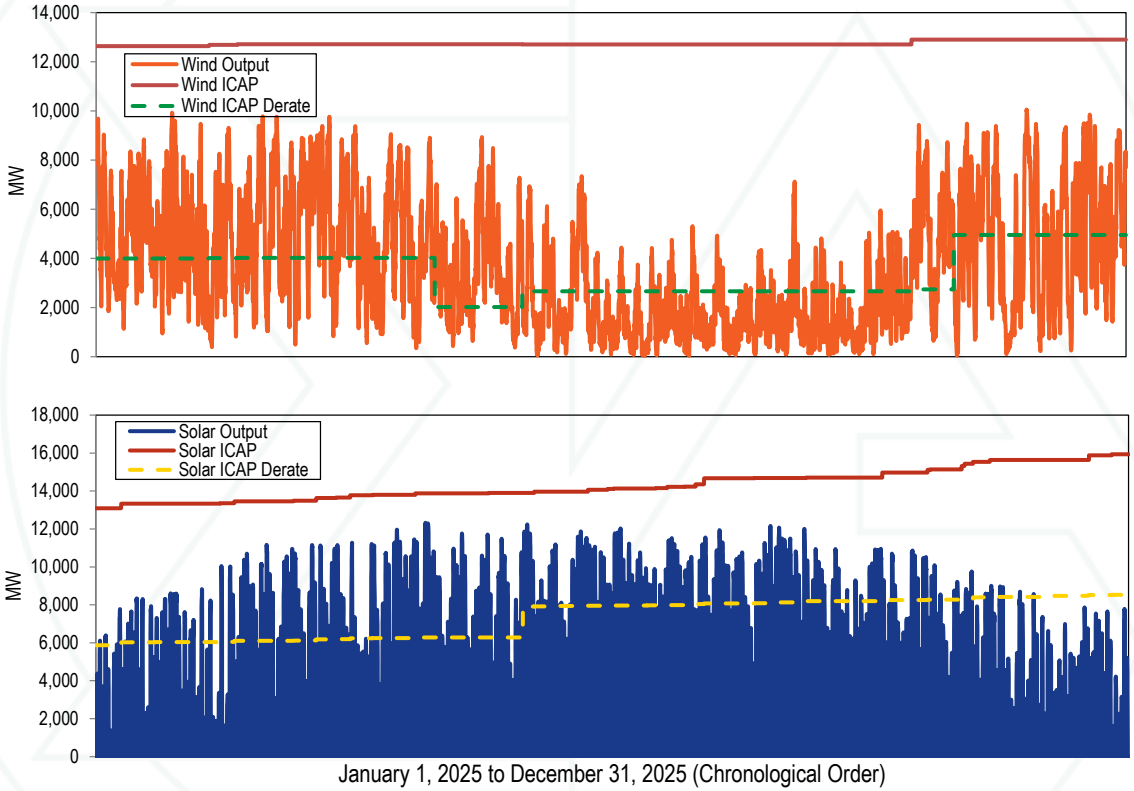
	01-Jan-25		31-May-25		01-Jun-25		31-Dec-25	
	MW	Percent	MW	Percent	MW	Percent	MW	Percent
Battery	21.5	0.0%	21.5	0.0%	24.0	0.0%	24.0	0.0%
Coal	37,793.7	21.0%	37,364.6	21.1%	37,544.6	20.7%	37,544.6	20.4%
Gas	88,760.5	49.4%	88,762.7	50.1%	88,828.3	49.0%	88,888.4	48.3%
Hybird	9.3	0.0%	9.3	0.0%	10.2	0.0%	10.2	0.0%
Hydroelectric	7,674.7	4.3%	7,673.1	4.3%	8,183.4	4.5%	8,215.2	4.5%
Nuclear	32,179.9	17.9%	32,147.1	18.1%	32,149.3	17.7%	32,176.2	17.5%
Oil	3,965.9	2.2%	3,689.0	2.1%	3,762.9	2.1%	4,066.5	2.2%
Solar	5,046.5	2.8%	5,171.8	2.9%	7,843.8	4.3%	8,296.8	4.5%
Solid waste	609.4	0.3%	609.4	0.3%	609.4	0.3%	609.4	0.3%
Wind	3,594.8	2.0%	1,717.1	1.0%	2,265.7	1.3%	4,370.6	2.4%
Total	179,656.2	100.0%	177,165.6	100.0%	181,221.6	100.0%	184,201.9	100.0%

Wind and solar output during the top 100 load hours

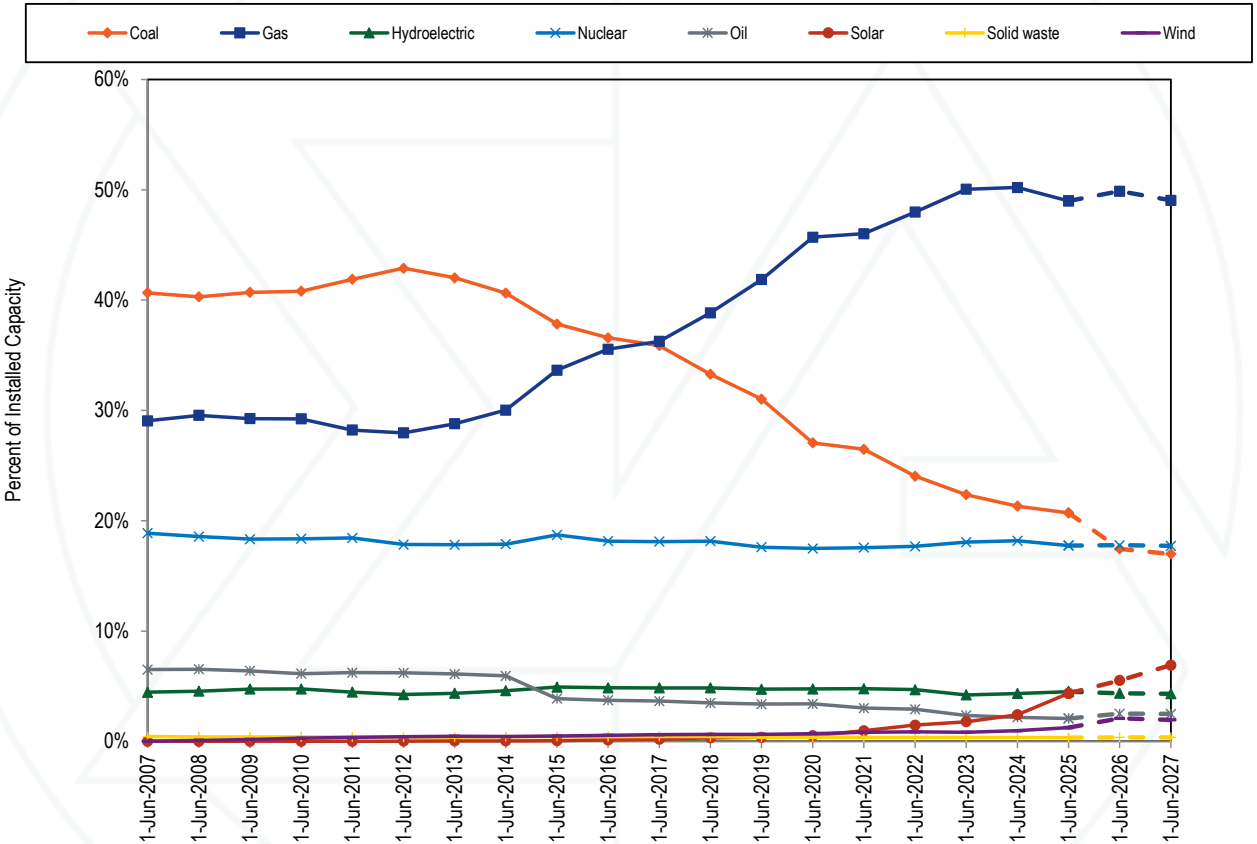


Monitoring Analytics

Wind and solar output



Percent of installed capacity by fuel source



Monitoring Analytics

RPM reserve margin

	01-Jun-23	01-Jun-24	01-Jun-25	01-Jun-26	01-Jun-27	
Forecast peak load ICAP (MW)	149,382.2	151,631.1	154,534.1	156,760.6	164,579.0	A
FRR peak load ICAP (MW)	29,554.6	30,431.0	11,720.3	11,668.7	12,201.9	B
PRD ICAP (MW)	235.0	305.0	224.0	115.0	115.0	C
Installed reserve margin (IRM)	14.9%	17.7%	17.8%	18.6%	20.0%	D
Pool wide average EFORd	4.87%	5.10%				E
Pool wide accredited UCAP factor			79.63%	78.34%	77.17%	F
Forecast pool requirement (FPR)	1.0930	1.1170	0.9380	0.9291	0.9260	G=(1+D)*(1-E) or G=(1+D)*F
RPM committed less deficiency UCAP (MW) (generation and DR)	136,401.8	138,318.6	133,544.1	134,205.3	134,478.1	H
RPM committed less deficiency ICAP (MW) (generation and DR)	143,384.6	145,751.9	167,705.8	171,311.3	174,262.1	J=H/(1-E) or J=H/F
RPM peak load ICAP (MW)	119,592.6	120,895.1	142,589.7	144,976.9	152,262.1	K=A-B-C
Reserve margin ICAP (MW)	23,792.0	24,856.9	25,116.0	26,334.4	22,000.0	L=J-K
Reserve margin (%)	19.9%	20.6%	17.6%	18.2%	14.4%	M=L/K
Reserve margin in excess of IRM ICAP (MW)	5,972.7	3,458.4	(264.9)	(631.3)	(8,452.4)	N=L-D*K
Reserve margin in excess of IRM (%)	5.0%	2.9%	(0.2%)	(0.4%)	(5.6%)	P=N/K
RPM peak load UCAP (MW)	113,768.4	114,729.4	113,544.2	113,574.9	117,500.7	Q=K*(1-E) or Q=K*F
RPM reliability requirement UCAP (MW)	130,714.7	135,039.8	133,749.2	134,698.0	140,994.7	R=K*G
Reserve margin UCAP (MW)	22,633.4	23,589.2	19,999.9	20,630.4	16,977.4	S=H-Q
Reserve cleared in excess of IRM UCAP (MW)	5,687.1	3,278.8	(205.1)	(492.7)	(6,516.6)	T=H-R
Projected replacement capacity UCAP (MW)	0.0	0.0	0.0	0.0	0.0	U
Projected reserve margin	19.9%	20.6%	17.6%	18.2%	14.4%	V=(J-U/(1-E))/K-1 or V=(J-U/F)/K-1

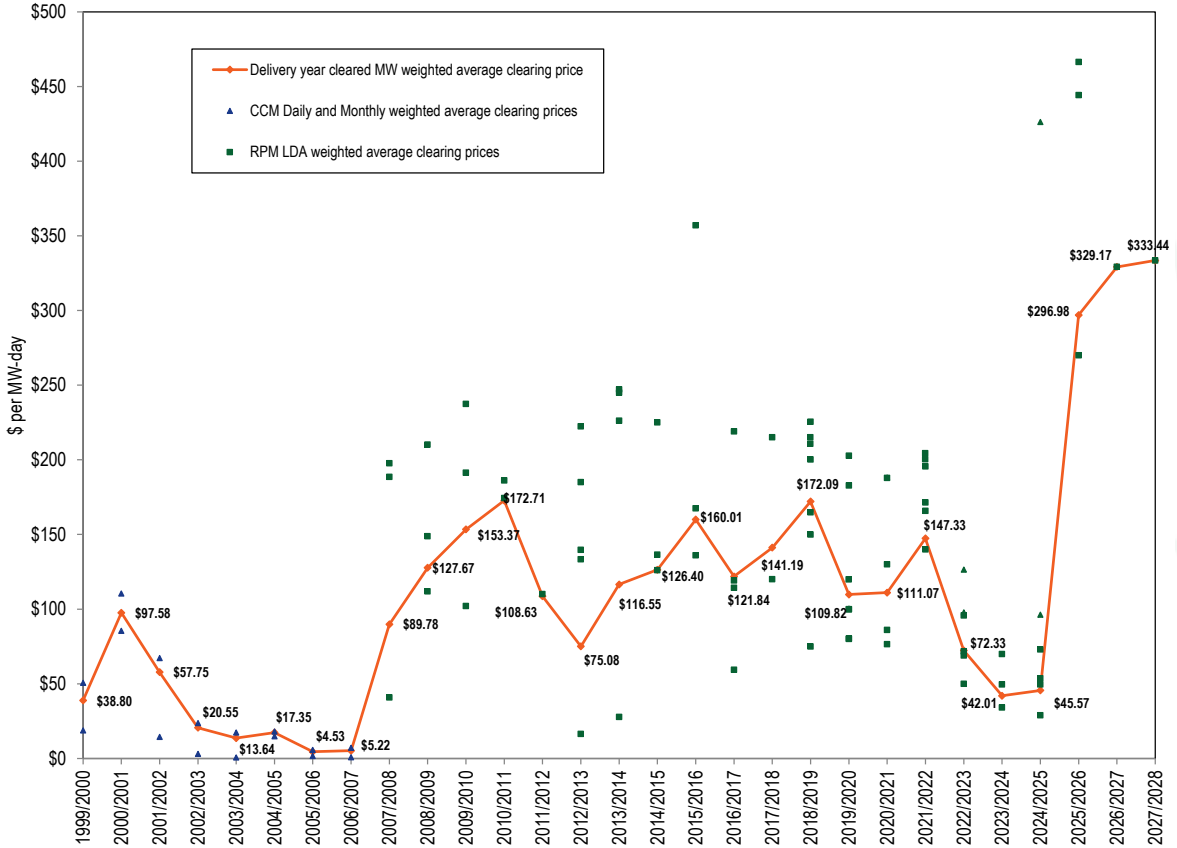
Part V reliability service summary

Unit Names	Owner	Fuel Type	ICAP (MW)	Cost Recovery Method	Docket Numbers	Start of Term	End of Term
Brandon Shores 1	Talen Energy Corporation	Coal	635.0	Cost of Service Recovery Rate	ER24-1790	01-Jun-25	31-Dec-28
Brandon Shores 2	Talen Energy Corporation	Coal	638.0	Cost of Service Recovery Rate	ER24-1790	01-Jun-25	31-Dec-28
Wagner 3	Talen Energy Corporation	Coal	305.0	Cost of Service Recovery Rate	ER24-1787	01-Jun-25	31-Dec-28
Wagner 4	Talen Energy Corporation	Oil	397.0	Cost of Service Recovery Rate	ER24-1787	01-Jun-25	31-Dec-28
Indian River 4	NRG Power Marketing LLC	Coal	410.0	Cost of Service Recovery Rate	ER22-1539	01-Jun-22	24-Feb-25
B.L. England 2	RC Cape May Holdings, LLC	Coal	150.0	Cost of Service Recovery Rate	ER17-1083	01-May-17	01-May-19
Yorktown 1	Dominion Virginia Power	Coal	159.0	Deactivation Avoidable Cost Rate	ER17-750	06-Jan-17	13-Mar-18
Yorktown 2	Dominion Virginia Power	Coal	164.0	Deactivation Avoidable Cost Rate	ER17-750	06-Jan-17	13-Mar-18
B.L. England 3	RC Cape May Holdings, LLC	Oil	148.0	Cost of Service Recovery Rate	ER17-1083	01-May-17	24-Jan-18
Ashtabula	FirstEnergy Service Company	Coal	210.0	Deactivation Avoidable Cost Rate	ER12-2710	01-Sep-12	11-Apr-15
Eastlake 1	FirstEnergy Service Company	Coal	109.0	Deactivation Avoidable Cost Rate	ER12-2710	01-Sep-12	15-Sep-14
Eastlake 2	FirstEnergy Service Company	Coal	109.0	Deactivation Avoidable Cost Rate	ER12-2710	01-Sep-12	15-Sep-14
Eastlake 3	FirstEnergy Service Company	Coal	109.0	Deactivation Avoidable Cost Rate	ER12-2710	01-Sep-12	15-Sep-14
Lakeshore	FirstEnergy Service Company	Coal	190.0	Deactivation Avoidable Cost Rate	ER12-2710	01-Sep-12	15-Sep-14
Elrama 4	GenOn Power Midwest, LP	Coal	171.0	Cost of Service Recovery Rate	ER12-1901	01-Jun-12	01-Oct-12
Niles 1	GenOn Power Midwest, LP	Coal	109.0	Cost of Service Recovery Rate	ER12-1901	01-Jun-12	01-Oct-12
Cromby 2 and Diesel	Exelon Generation Company, LLC	Natural gas/oil, Diesel	203.7	Cost of Service Recovery Rate	ER10-1418	01-Jun-11	01-Jan-12
Eddystone 2	Exelon Generation Company, LLC	Coal	309.0	Cost of Service Recovery Rate	ER10-1418	01-Jun-11	01-Jun-12
Brunot Island CT2A, CT2B, CT3 and CC4	Orion Power MidWest, L.P.	Natural gas	244.0	Cost of Service Recovery Rate	ER06-993	16-May-06	05-Jul-07
Hudson 1	PSEG Energy Resources & Trade LLC and PSEG Fossil LLC	Natural gas	355.0	Cost of Service Recovery Rate	ER05-644, ER11-2688	25-Feb-05	08-Dec-11
Sewaren 1-4	PSEG Energy Resources & Trade LLC and PSEG Fossil LLC	Natural gas	453.0	Cost of Service Recovery Rate	ER05-644	25-Feb-05	01-Sep-08

Part V reliability service cost summary

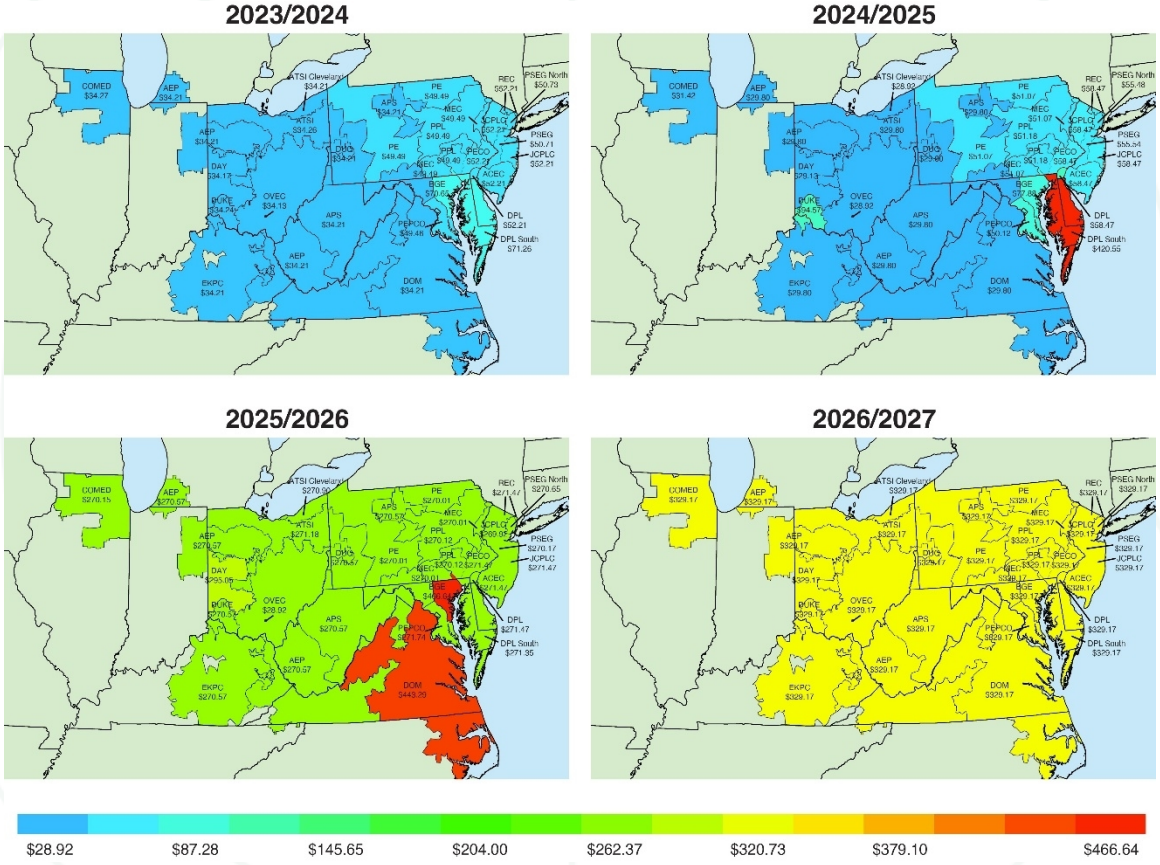
Unit Names	Owner	Initial Filing Total Cost	Initial Filing Cost per MW-day	Actual Total Cost	Actual Cost per MW-day	Weighted Average RPM Clearing Price ($ per MW-day)
Brandon Shores 1	Talen Energy Corporation	$327,039,342	$393.45	$28,072,999	$241.58	$319.88
Brandon Shores 2	Talen Energy Corporation	$328,584,409	$393.45	$28,205,627	$241.58	$319.88
Wagner 3	Talen Energy Corporation	$64,791,528	$162.29	$7,207,620	$129.13	$319.88
Wagner 4	Talen Energy Corporation	$84,335,202	$162.29	$9,381,721	$129.13	$319.88
Indian River 4	NRG Power Marketing LLC	$357,065,662	$871.76	$194,115,142	$473.93	$54.04
B.L. England 2	RC Cape May Holdings, LLC	$35,953,561	$328.34	$51,779,892	$472.88	$154.51
Yorktown 1	Dominion Virginia Power	$9,739,434	$142.12	$8,427,011	$122.97	$134.64
Yorktown 2	Dominion Virginia Power	$10,045,705	$142.12	$9,529,149	$134.81	$134.64
B.L. England 3	RC Cape May Holdings, LLC	$28,710,481	$723.84	$10,058,665	$253.60	$138.95
Ashtabula	FirstEnergy Service Company	$35,236,541	$176.25	$25,177,042	$125.94	$107.91
Eastlake 1	FirstEnergy Service Company	$20,842,416	$257.01	$18,484,399	$227.93	$102.73
Eastlake 2	FirstEnergy Service Company	$20,182,025	$248.87	$17,683,994	$218.06	$102.73
Eastlake 3	FirstEnergy Service Company	$20,192,938	$249.00	$17,391,797	$214.46	$102.73
Lakeshore	FirstEnergy Service Company	$33,993,468	$240.47	$20,532,969	$145.25	$102.73
Elrama 4	GenOn Power Midwest, LP	$15,435,472	$739.88	$7,576,435	$363.17	$75.08
Niles 1	GenOn Power Midwest, LP	$9,510,580	$715.19	$4,829,423	$363.17	$75.08
Cromby 2 and Diesel	Exelon Generation Company, LLC	$20,213,406	$463.70	$17,776,658	$407.80	$108.63
Eddystone 2	Exelon Generation Company, LLC	$165,993,135	$1,467.74	$85,364,570	$754.81	$108.63
Brunot Island CT2A, CT2B, CT3 and CC4	Orion Power MidWest, L.P.	$60,933,986	$601.76	$23,507,795	$232.15	$89.78
Hudson 1	PSEG Energy Resources & Trade LLC and PSEG Fossil LLC	$28,934,341	$32.90	$62,364,359	$70.92	$132.72
Sewaren 1-4	PSEG Energy Resources & Trade LLC and PSEG Fossil LLC	$47,633,115	$81.89	$79,580,435	$136.82	$97.39

History of capacity prices



Monitoring Analytics

Map of RPM capacity prices



Monitoring Analytics

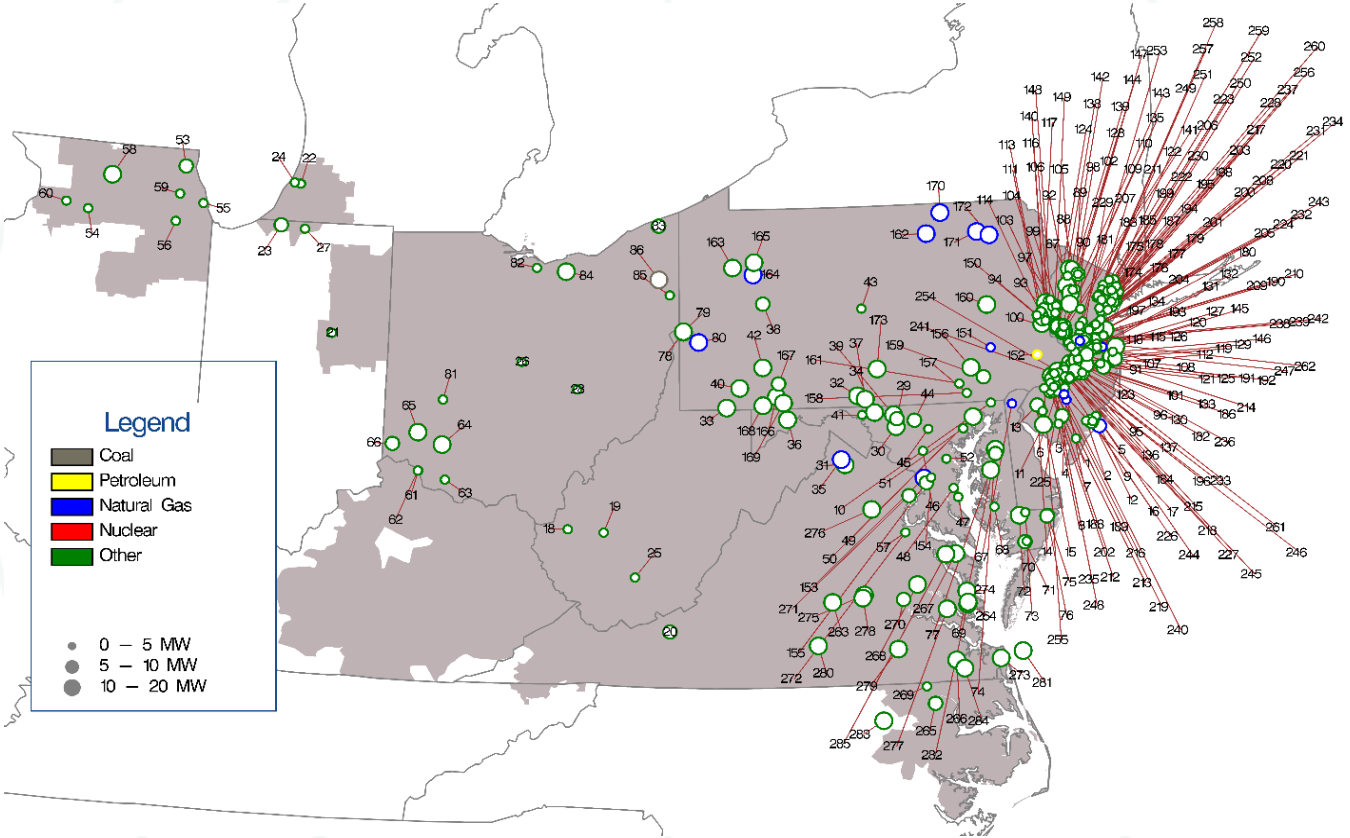
Nuclear unit surplus (shortfall)

	ICAP	Surplus (Shortfall) ($/MWh)																	
	(MW)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Beaver Valley	1,808	$26.3	$6.3	$10.5	$8.8	($3.3)	$1.4	$11.7	$3.2	($0.4)	$2.6	$13.9	$3.7	($2.7)	$15.0	$42.4	$2.1	$12.0	$21.6
Braidwood	2,337	$24.9	$2.5	$6.4	$3.4	($6.1)	($2.6)	$7.2	($1.2)	($3.2)	($1.6)	$5.9	$3.9	($0.0)	$15.1	$35.0	($1.5)	$10.3	$13.9
Byron	2,300	$24.5	($1.3)	$3.4	($0.6)	($9.4)	($3.6)	$4.9	($6.1)	($9.6)	($2.8)	$5.8	$3.2	($0.6)	$14.1	$34.5	($1.9)	$10.6	$13.9
Calvert Cliffs	1,726	$60.6	$20.9	$28.6	$17.9	$4.5	$14.6	$31.6	$14.1	$7.2	$6.1	$16.3	$5.4	($0.9)	$19.4	$54.6	$9.1	$13.5	$32.9
Cook	2,177	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Davis Besse	894	NA	NA	NA	NA	($13.2)	($7.0)	$6.6	($1.2)	($4.0)	($8.4)	($0.9)	($6.3)	($15.1)	$5.9	$31.6	($10.0)	($0.0)	$11.7
Dresden	1,797	$25.6	$3.0	$7.6	$4.4	($5.2)	($1.0)	$9.1	$0.3	($1.6)	($0.1)	$7.1	$4.5	$0.5	$15.7	$36.2	($2.1)	$10.8	$14.0
Hope Creek	1,172	$54.0	$17.0	$24.5	$16.9	$2.6	$12.4	$26.0	$6.3	($1.9)	$1.6	$12.3	$8.8	$7.8	$21.0	$48.0	$6.9	$11.7	$23.0
LaSalle	2,265	$24.8	$2.5	$6.4	$3.3	($6.1)	($1.9)	$7.7	($0.9)	($3.6)	($1.9)	$6.0	$3.7	($0.2)	$14.8	$34.7	($1.8)	$10.0	$13.9
Limerick	2,242	$54.1	$17.1	$24.7	$16.6	$2.6	$12.2	$25.7	$6.5	($2.1)	$1.5	$12.1	$1.6	($2.6)	$11.6	$38.2	($3.3)	$11.2	$18.4
North Anna	1,892	$52.0	$14.6	$25.5	$16.8	$0.2	$5.7	$23.2	$10.9	$3.0	$4.7	$16.0	$4.8	($2.0)	$17.9	NA	NA	NA	$34.5
Oyster Creek	608	$47.5	$8.4	$15.9	$7.2	($8.2)	$3.3	$16.4	($4.7)	($11.6)	($9.9)	NA	NA	NA	NA	NA	NA	NA	NA
Peach Bottom	2,550	$53.7	$16.9	$24.2	$16.1	$2.3	$12.3	$25.5	$5.8	($2.2)	$1.4	$11.9	$0.6	($2.8)	$11.4	$38.3	($3.3)	$11.3	$18.5
Perry	1,240	NA	NA	NA	NA	($13.2)	($6.4)	$5.5	($0.3)	($4.0)	($7.4)	$1.9	($5.9)	($15.2)	$6.2	$32.0	($9.3)	$0.0	$11.3
Quad Cities	1,819	$24.1	($0.4)	$2.4	($1.8)	($13.2)	($6.9)	$0.6	($7.7)	($9.5)	($3.5)	$4.3	$18.8	$14.4	$29.4	$51.3	$14.4	$12.1	$29.2
Salem	2,285	$54.0	$17.1	$24.5	$16.9	$2.6	$12.4	$26.0	$6.2	($2.1)	$1.5	$12.2	$8.5	$7.5	$20.7	$47.6	$6.6	$11.4	$22.7
Surry	1,676	$48.8	$13.8	$24.2	$16.4	($0.0)	$5.1	$21.6	$10.8	$2.6	$4.5	$16.0	$4.2	($2.5)	$17.4	NA	NA	NA	$31.9
Susquehanna	2,494	$46.8	$15.2	$22.4	$16.1	$1.4	$11.1	$24.6	$6.3	($1.6)	$1.8	$10.1	($1.7)	($6.9)	$8.3	$35.9	($2.8)	$10.7	$14.3
Three Mile Island	803	$40.7	$6.5	$13.3	$4.6	($9.6)	$0.9	$13.7	($6.8)	($12.4)	($10.3)	($3.8)	NA	NA	NA	NA	NA	NA	NA

Nuclear unit forward annual surplus (shortfall)

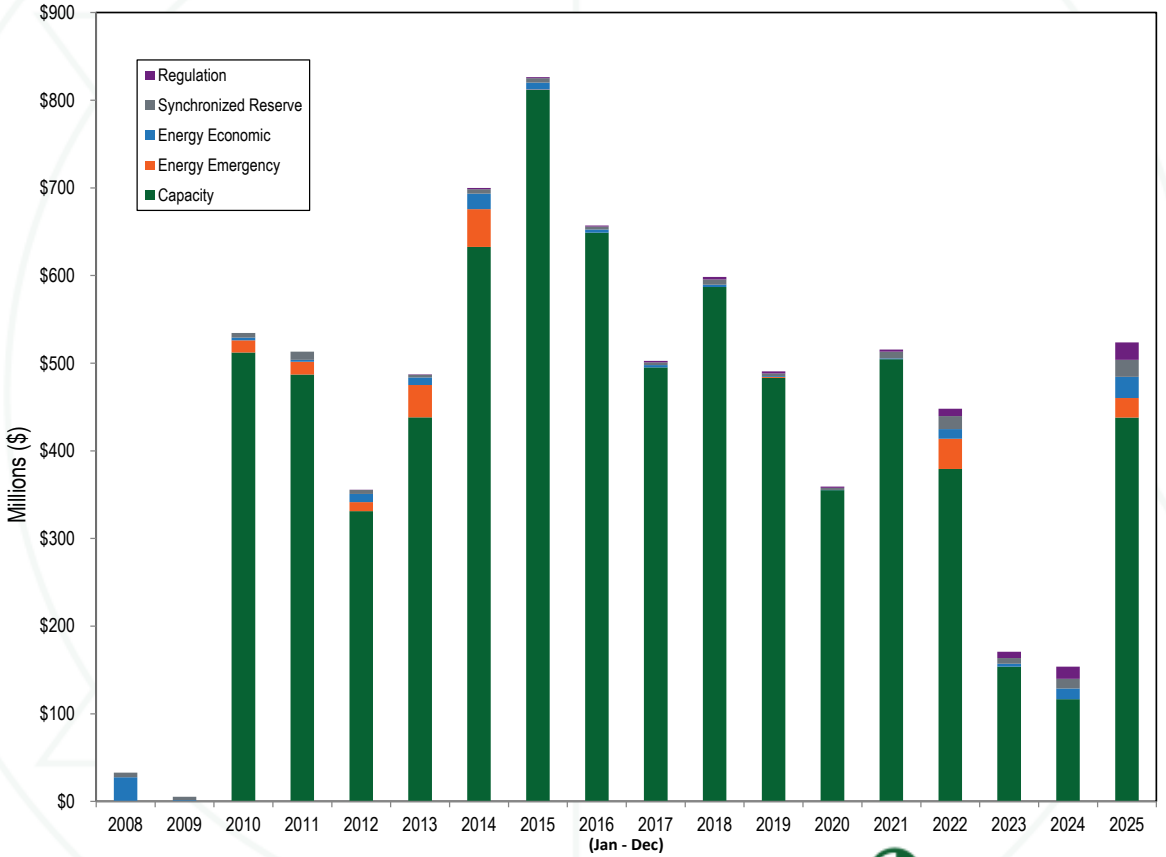
	Surplus (Shortfall) ($/MWh)			Subsidy ($/MWh)			Surplus (Shortfall) Excluding Subsidy ($ in millions)			Surplus (Shortfall) Including Subsidy ($ in millions)		
	2026	2027	2028	2026	2027	2028	2026	2027	2028	2026	2027	2028
Beaver Valley	$34.05	$39.36	$38.49	$0.00	$5.15	$0.00	$424.9	$575.21	$579.56	$424.9	$652.8	$579.6
Braidwood	$21.77	$25.37	$24.96	$0.00	$9.85	$0.00	$310.1	$470.97	$485.03	$310.1	$662.7	$485.0
Byron	$23.88	$27.57	$27.10	$0.00	$9.10	$0.00	$345.5	$505.83	$518.35	$345.5	$680.2	$518.4
Calvert Cliffs	$41.25	$47.73	$46.64	$0.00	$2.35	$0.00	$514.5	$669.47	$670.77	$514.5	$703.3	$670.8
Cook	NA	NA	NA	$0.00	$0.00	$0.00	NA	NA	NA	NA	NA	NA
Davis Besse	$22.50	$27.67	$26.81	$0.00	$5.00	$0.00	$124.0	$197.30	$199.36	$124.0	$234.5	$199.4
Dresden	$24.66	$28.39	$27.92	$0.00	$8.80	$0.00	$281.7	$407.49	$417.32	$281.7	$539.2	$417.3
Hope Creek	$29.22	$35.33	$34.60	$4.17	$0.00	$0.00	$232.6	$333.46	$337.63	$273.3	$333.5	$337.6
LaSalle	$22.20	$25.80	$25.43	$0.00	$9.70	$0.00	$308.6	$464.68	$478.96	$308.6	$647.7	$479.0
Limerick	$28.72	$34.93	$34.22	$0.00	$6.70	$0.00	$435.5	$630.49	$638.65	$435.5	$755.6	$638.7
North Anna	$44.11	$47.69	$46.62	$0.00	$2.40	$0.00	$615.6	$782.57	$735.03	$615.6	$820.4	$735.0
Peach Bottom	$28.75	$34.91	$34.21	$0.00	$6.55	$0.00	$496.1	$716.72	$726.15	$496.1	$855.9	$726.1
Perry	$23.52	$29.05	$28.16	$0.00	$4.55	$0.00	$182.6	$288.00	$290.50	$182.6	$335.0	$290.5
Quad Cities	$24.41	$28.24	$27.72	$16.50	$16.50	$0.00	$281.4	$410.21	$419.49	$531.4	$660.2	$419.5
Salem	$29.15	$35.30	$34.57	$4.17	$0.00	$0.00	$452.0	$649.58	$657.73	$531.3	$649.6	$657.7
Surry	$40.93	$44.61	$43.59	$0.00	$3.45	$0.00	$500.9	$650.30	$608.59	$500.9	$698.5	$608.6
Susquehanna	$24.83	$30.51	$29.79	$0.00	$8.00	$0.00	$402.1	$609.55	$618.26	$402.1	$775.8	$618.3

Map of unit retirements



Monitoring Analytics

Demand response revenue by market



Monitoring Analytics

Energy efficiency resources (MW)

Delivery Year	EE Paid (MW)	Total RPM Cleared (UCAP MW)	EE MW/ Capacity MW	EE Revenue
2011/2012	76.4	134,182.6	0.1%	$139,812
2012/2013	666.1	141,295.6	0.5%	$11,408,552
2013/2014	904.2	159,844.5	0.6%	$21,598,174
2014/2015	1,077.7	161,214.4	0.7%	$42,308,549
2015/2016	1,189.6	173,845.5	0.7%	$66,652,986
2016/2017	1,723.2	179,773.6	1.0%	$68,709,670
2017/2018	1,922.3	180,590.5	1.1%	$86,147,605
2018/2019	2,296.3	175,996.0	1.3%	$103,105,796
2019/2020	2,528.5	177,064.2	1.4%	$92,569,666
2020/2021	3,569.5	174,023.8	2.1%	$101,348,169
2021/2022	4,806.2	174,713.0	2.8%	$185,755,803
2022/2023	5,734.8	150,465.2	3.8%	$135,265,303
2023/2024	5,896.4	150,143.9	3.9%	$93,603,058
2024/2025	7,716.0	154,362.5	5.0%	$130,780,274
2025/2026	1,493.2	137,733.6	1.1%	$147,950,487

Recommendations: Planning

- **The MMU recommends that PJM establish an expedited PJM managed queue process to identify commercially viable projects that could help eliminate or reduce the need for specific RMRs or that could address specific reliability needs and allow the identified projects to advance in the queue ahead of projects which have failed to make progress, subject to rules to prevent gaming.**
- **PJM's RRI option.**

Recommendations: Planning

- **The MMU recommends that the implementation of Grid Enhancing Technology (GET) be opened to competition from third parties, subject to NERC standards and guidelines, subject to review by NERC, PJM and the MMU, and approval by FERC. (Priority: Medium. Q2 2024. Status: Not adopted.)**
- **The MMU recommends that transmission line ratings be consistent across all TOs.**

Recommendations: Planning

- **The MMU recommends that all PJM transmission owners investigate the applicability and potential cost savings of Grid Enhancing Technology (GET) and that all PJM transmission owners implement cost effective GET, subject to NERC standards and guidelines, subject to review by NERC, PJM and the MMU, and approval by FERC. (Priority: Medium. Q2 2024. Status: Not adopted.)**

RT scheduled net interchange volume by interface (GWh)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
CPLE	(181.1)	(25.4)	(49.1)	47.3	33.7	(29.3)	(42.4)	21.3	9.7	12.1	20.2	(13.5)	(196.4)
CPLW	0.0	0.0	0.0	0.5	0.0	0.1	0.0	0.0	(0.8)	0.4	0.1	(3.7)	(3.3)
DUK	(132.8)	340.7	91.3	294.4	227.6	56.4	(5.2)	200.5	268.6	612.7	498.6	408.0	2,860.8
LGEE	(10.7)	(44.1)	(103.5)	(37.7)	(41.5)	(85.5)	(89.9)	(123.4)	(89.3)	(46.6)	(128.8)	(95.0)	(895.9)
MISO	(735.0)	(875.9)	(1,261.2)	(698.1)	(1,923.9)	(1,995.2)	(2,257.9)	(3,225.4)	(2,080.2)	(282.3)	(148.2)	(700.6)	(16,183.9)
ALTE	(123.6)	(143.9)	(154.2)	(42.5)	(207.1)	(238.2)	(330.7)	(448.1)	(156.5)	8.4	(1.5)	(43.5)	(1,881.3)
ALTW	(6.9)	(6.6)	(13.5)	10.0	(15.9)	(22.3)	(23.2)	(52.3)	(40.9)	(6.0)	33.0	26.5	(118.1)
AMIL	570.9	313.2	117.2	196.8	14.5	(43.5)	(30.7)	(55.0)	(24.7)	(6.1)	42.0	35.1	1,129.8
CIN	(789.3)	(574.9)	(600.0)	(145.3)	(619.1)	(749.9)	(1,092.3)	(1,331.6)	(751.2)	126.2	103.5	(121.9)	(6,545.9)
CWLP	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IPL	60.7	5.5	57.0	78.1	(54.3)	18.8	18.6	(24.1)	(8.2)	48.5	69.8	48.3	318.6
MEC	(425.0)	(333.2)	(402.7)	(575.1)	(633.3)	(571.4)	(507.6)	(624.6)	(614.3)	(523.2)	(464.1)	(531.3)	(6,205.7)
MECS	156.7	(23.6)	(113.0)	55.7	(209.1)	(223.3)	(157.1)	(434.2)	(312.4)	68.7	56.9	(55.2)	(1,189.9)
NIPS	(72.7)	(45.6)	(74.8)	(278.0)	(103.8)	(64.6)	(48.5)	(59.6)	(52.2)	(31.7)	(13.4)	(43.7)	(888.4)
WEC	(105.7)	(66.8)	(77.2)	2.1	(95.9)	(100.8)	(86.4)	(196.0)	(119.7)	32.9	25.4	(14.8)	(802.9)
NYISO	(1,867.7)	(2,237.3)	(2,076.2)	(1,260.6)	(1,451.9)	(1,476.9)	(1,742.0)	(1,982.1)	(1,775.5)	(1,647.1)	(1,986.1)	(2,563.6)	(22,067.1)
HUDS	(173.6)	(275.1)	(342.4)	(258.9)	(178.4)	(368.7)	(456.8)	(438.3)	(410.0)	(300.3)	(350.5)	(465.0)	(4,017.9)
LIND	(210.9)	(209.6)	(221.1)	(148.8)	(210.8)	(206.6)	(229.0)	(227.7)	(203.3)	(230.1)	(173.1)	(236.4)	(2,507.3)
NEPT	(493.1)	(450.8)	(478.2)	(419.7)	(400.4)	(471.1)	(501.0)	(471.4)	(473.3)	(415.6)	(469.9)	(481.7)	(5,526.1)
NYIS	(990.1)	(1,301.9)	(1,034.6)	(433.2)	(662.3)	(430.5)	(555.1)	(844.7)	(688.9)	(701.1)	(992.7)	(1,380.5)	(10,015.7)
TVA	(97.2)	85.5	185.0	(11.5)	223.8	(71.7)	41.2	45.1	221.3	671.8	933.5	1,044.3	3,271.1
Total	(3,024.5)	(2,756.5)	(3,213.6)	(1,665.8)	(2,932.2)	(3,602.1)	(4,096.1)	(5,063.9)	(3,446.1)	(679.1)	(810.8)	(1,924.1)	(33,214.7)

New Recommendations: Reserve Markets

- **The MMU recommends that PJM remove the 30 percent increase to the synchronized reserve reliability requirement. (Priority: High. First reported 2024. Status: Not adopted.)**

The synchronized reserve market results were not competitive

Market Element	Evaluation	Market Design
Market Structure: Regional Markets	Not Competitive	
Participant Behavior	Competitive	
Market Performance	**Not Competitive**	**Flawed**

Average synchronized reserve response

Year	Number of Events of Any Length	Number of Events Longer than 10 Minutes	Average Percent of Scheduled Synchronized Reserve MW that Responded to Events Longer than 10 Minutes	Percent of Events that were Longer than 10 Minutes
2017	16	6	87.6%	37.5%
2018	18	8	74.2%	44.4%
2019	13	3	86.8%	23.1%
2020	17	5	59.5%	29.4%
2021	18	5	83.1%	27.8%
2022 (Jan - Sep)	14	3	71.2%	21.4%
2022 (Oct - Dec)	9	7	50.3%	77.8%
2023	12	3	55.6%	25.0%
2024	19	5	58.2%	26.3%
2025	28	7	78.3%	25.0%

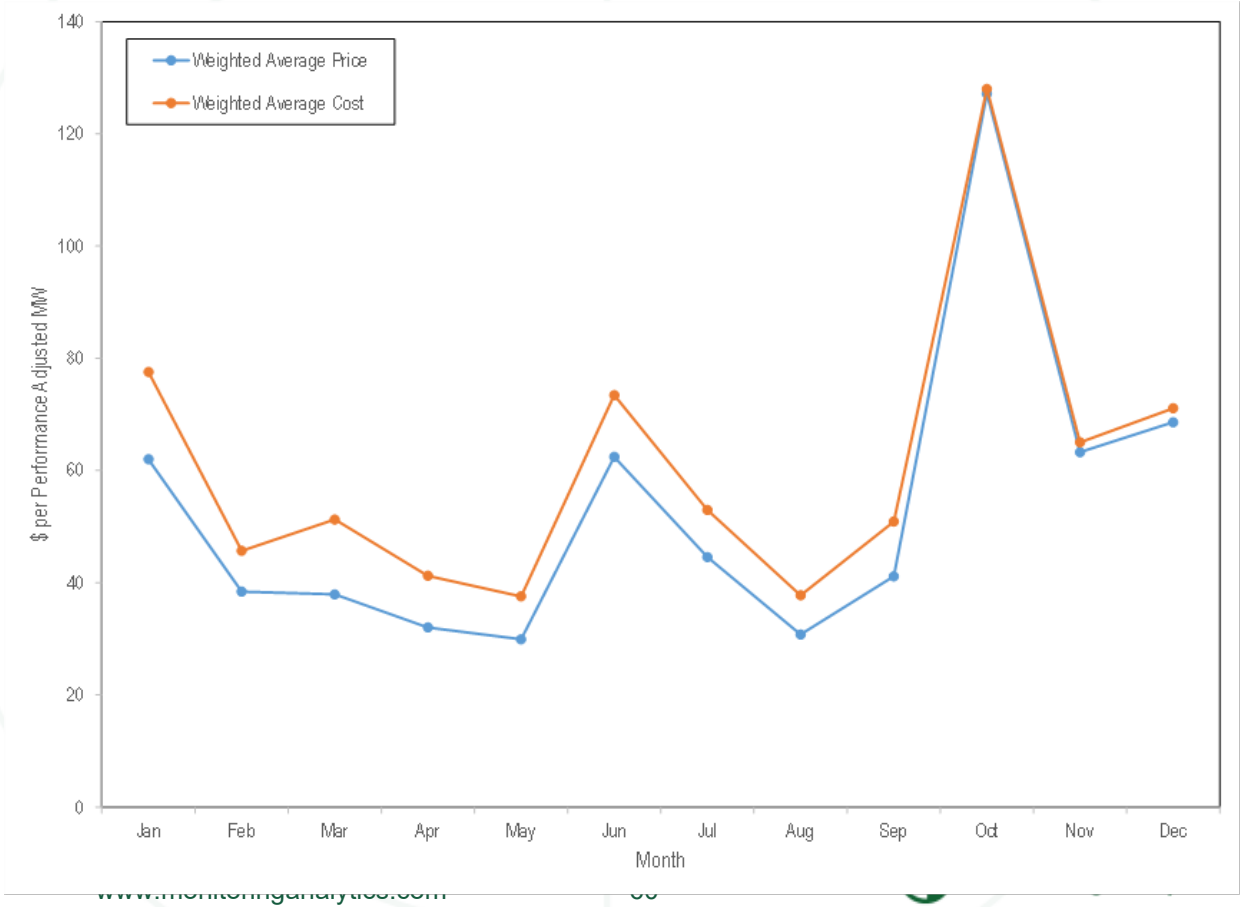
The regulation market results were not competitive

Market Element	Evaluation	Market Design
Market Structure	Not Competitive	
Participant Behavior	Competitive	
Market Performance	**Not Competitive**	**Flawed**

Regulation Market Redesign

- **Phase 1 went live on October 1, 2025, and included several substantial changes to the regulation market.**
  - **Replaced the RegA/RegD signals with a single signal and product; no longer a benefit factor to equate effective MW.**
  - **Performance score calculation simplified: removed the accuracy and delay components.**
  - **LOC calculation has been modified to account for ramp rate limitations of units.**
    - Tracks what each unit would have done in the energy market, based on their ramp capabilities.

Weighted average price and cost of regulation



Recommendations: Ancillary Services

- **Use of Net CONE in payment for black start base formula rate.**
- **The procurement for fuel assured black start units should be reevaluated in order to prevent overpayment and double procurement of fuel assured resources.**
- **The MMU recommends that the fuel assurance rules be modified to recognize actual fuel assured resources within and across zones.**
- **The MMU recommends that the Reliability Backstop for black start service be eliminated. There is no reason that PJM cannot acquire black start resources if the TOs can acquire black start resources.**

Recommendations: FTR/ARR

- **Rights to all congestion revenues should be assigned to load.**

The FTR/ARR markets results were partially competitive

Market Element	Evaluation	Market Design
Market Structure	Competitive	
Participant Behavior	Partially Competitive	
Market Performance	**Partially Competitive**	**Flawed**

Total congestion costs

	Congestion Cost	Percent Change	Total PJM Billing	Percent of PJM Billing
2008	$2,052	NA	$34,300	6.0%
2009	$719	(65.0%)	$26,550	2.7%
2010	$1,423	98.0%	$34,770	4.1%
2011	$999	(29.8%)	$35,890	2.8%
2012	$529	(47.0%)	$29,180	1.8%
2013	$677	28.0%	$33,860	2.0%
2014	$1,932	185.5%	$50,030	3.9%
2015	$1,385	(28.3%)	$42,630	3.2%
2016	$1,024	(26.1%)	$39,050	2.6%
2017	$698	(31.9%)	$40,170	1.7%
2018	$1,310	87.8%	$49,790	2.6%
2019	$583	(55.5%)	$41,690	1.4%
2020	$529	(9.4%)	$36,300	1.5%
2021	$995	88.2%	$54,100	1.8%
2022	$2,501	151.3%	$86,240	2.9%
2023	$1,069	(57.3%)	$48,500	2.2%
2024	$1,754	64.2%	$51,710	3.4%
2025	$3,170	80.7%	$80,490	3.9%

ARR and self scheduled FTR total congestion offset (in millions) for ARR holders

	Revenue								Pre 2017/2018 (Without Balancing)		2017/2018 (With Balancing)		Post 2017/2018 (With Balancing and Surplus)		Effective Offset	
Planning Period	ARR Credits	Unadjusted SS FTR Credits	Day Ahead Congestion	Balancing + M2M Congestion	Total Congestion	Surplus Revenue Pre 2017/2018 Rules	Surplus Revenue 2017/2018 Rules	Post 2017/2018 Rules	Total ARR/FTR Offset	Percent Offset	Current Revenue Received	Percent Offset	New Revenue Received	New Offset	Cumulative Revenue	Offset
2011/2012	$515.6	$310.0	$1,025.4	($275.7)	$749.7	($50.6)	$35.6	$113.9	$775.0	103.4%	$585.5	78.1%	$663.8	88.5%	$775.0	103.4%
2012/2013	$356.4	$268.4	$904.7	($379.9)	$524.8	($94.0)	$18.4	$62.1	$530.7	101.1%	$263.2	50.2%	$306.9	58.5%	$530.7	101.1%
2013/2014	$339.4	$626.6	$2,231.3	($360.6)	$1,870.6	($139.4)	($49.0)	($49.0)	$826.5	44.2%	$556.3	29.7%	$556.3	29.7%	$826.5	44.2%
2014/2015	$487.4	$348.1	$1,625.9	($268.3)	$1,357.6	$36.7	$111.2	$400.6	$872.2	64.2%	$678.4	50.0%	$967.8	71.3%	$872.2	64.2%
2015/2016	$641.8	$209.2	$1,098.7	($147.6)	$951.1	$9.2	$42.1	$188.9	$860.2	90.4%	$745.5	78.4%	$892.3	93.8%	$860.2	90.4%
2016/2017	$648.1	$149.9	$885.7	($104.8)	$780.8	$15.1	$36.5	$179.0	$813.1	104.1%	$729.6	93.4%	$872.1	111.7%	$813.1	104.1%
2017/2018	$429.6	$212.3	$1,322.1	($129.5)	$1,192.6	$52.3	$80.4	$370.7	$694.2	58.2%	$592.8	49.7%	$883.1	74.1%	$592.8	49.7%
2018/2019	$531.6	$130.1	$832.7	($152.6)	$680.0	($5.8)	$16.2	$112.2	$655.87	96.4%	$525.3	77.2%	$621.3	91.4%	$621.3	91.4%
2019/2020	$547.6	$91.9	$612.1	($169.4)	$442.7	($1.6)	$21.6	$157.8	$637.9	144.1%	$491.7	111.1%	$627.9	141.8%	$627.9	141.8%
2020/2021	$392.7	$179.9	$899.6	($256.2)	$643.4	($43.2)	($0.0)	($0.0)	$529.31	82.3%	$316.4	49.2%	$316.4	49.2%	$316.4	49.2%
2021/2022	$469.7	$500.5	$2,069.2	($457.4)	$1,611.8	($104.6)	($2.9)	($2.9)	$865.6	53.7%	$509.9	31.6%	$509.9	31.6%	$509.9	31.6%
2022/2023	$998.7	$630.0	$2,223.5	($526.5)	$1,697.1	($80.6)	$65.1	$235.2	$1,548.2	91.2%	$1,167.4	68.8%	$1,337.5	78.8%	$1,337.5	78.8%
2023/2024	$912.1	$371.4	$1,618.9	($327.0)	$1,291.9	($44.1)	$24.6	$117.2	$1,239.4	95.9%	$981.2	76.0%	$1,073.7	83.1%	$1,073.7	83.1%
2024/2025	$954.7	$658.0	$2,494.8	($475.5)	$2,019.4	($124.2)	($9.6)	($9.6)	$1,488.6	73.7%	$1,127.7	55.8%	$1,127.7	55.8%	$1,127.7	55.8%
2025/2026*	$704.9	$697.4	$2,507.8	($277.8)	$2,230.0	($22.4)	$58.3	$200.7	$1,379.9	61.9%	$1,182.8	53.0%	$1,325.1	59.4%	$1,325.1	59.4%
Total	$8,930.2	$5,383.8	$22,352.3	($4,308.8)	$18,043.5	($597.3)	$448.4	$2,076.7	$13,716.8	76.0%	$10,453.7	57.9%	$12,082.0	67.0%	$12,210.1	67.7%

*First seven months of the 2025/2026 planning period

Zonal ARR and self scheduled FTR total congestion offset (in millions) for ARR holders

Zone	ARR Credits	Adjusted FTR Credits	Balancing+ M2M Charge	Surplus Allocation	Total Offset	Day Ahead Congestion	Balancing Congestion	M2M Payments	Total Congestion	Offset
ACEC	$1.4	$0.1	($3.08)	$0.3	($1.3)	$28.3	($2.6)	($0.5)	$25.2	(5.0%)
AEP	$51.9	$63.7	($42.7)	$23.1	$96.1	$384.1	($35.7)	($7.0)	$341.4	28.1%
APS	$50.3	$38.2	($17.8)	$13.5	$84.3	$159.8	($15.3)	($2.4)	$142.1	59.3%
ATSI	$35.5	$2.1	($20.1)	$6.5	$24.0	$183.2	($16.8)	($3.4)	$163.1	14.7%
BGE	$124.5	$11.1	($9.9)	$23.2	$148.9	$100.5	($8.4)	($1.5)	$90.6	164.3%
COMED	$63.6	$2.3	($29.1)	$11.4	$48.3	$282.1	($24.3)	($4.8)	$253.0	19.1%
DAY	$8.2	$1.3	($5.4)	$1.6	$5.6	$46.5	($4.6)	($0.9)	$41.0	13.6%
DOM	$97.9	$527.1	($46.6)	$4.4	$582.8	$459.6	($40.0)	($6.7)	$413.0	141.1%
DPL	$63.5	$14.1	($7.6)	$1.3	$71.3	$68.9	($6.7)	($0.9)	$61.2	116.4%
DUKE	$24.1	$1.7	($8.5)	$68.6	$85.9	$72.8	($7.2)	($1.3)	$64.3	133.7%
DUQ	$7.1	$0.3	($3.9)	$12.6	$16.0	$32.0	($3.3)	($0.7)	$28.1	56.9%
EKPC	$4.4	$0.0	($4.4)	$0.8	$0.8	$38.5	($3.7)	($0.7)	$34.1	2.3%
EXT	$0.6	$0.0	($6.7)	$0.1	($5.9)	$42.0	($6.7)	$0.0	$35.3	(16.8%)
JCPLC	$3.5	$3.3	($8.3)	$0.9	($0.6)	$77.8	($7.2)	($1.1)	$69.5	(0.9%)
MEC	$9.1	$1.7	($11.0)	$1.8	$1.5	$50.3	($10.2)	($0.7)	$39.3	3.9%
OVEC	$0.0	$0.0	($0.3)	$0.0	($0.3)	$2.7	($0.3)	($0.0)	$2.5	(11.7%)
PE	$30.5	$17.1	($4.9)	$6.6	$49.4	$46.4	($4.1)	($0.8)	$41.5	119.0%
PECO	$7.3	$0.2	($12.0)	$1.3	($3.2)	$103.4	($10.0)	($1.9)	$91.4	(3.5%)
PEPCO	$52.5	$8.5	($9.2)	$10.2	$62.1	$94.6	($7.8)	($1.4)	$85.4	72.7%
PPL	$36.9	$2.9	($12.5)	$6.8	$34.1	$110.7	($10.5)	($2.0)	$98.2	34.7%
PSEG	$30.5	$1.5	($13.4)	$5.5	$24.0	$119.2	($11.2)	($2.2)	$105.8	22.7%
REC	$1.4	$0.0	($0.5)	$0.2	$1.1	$4.2	($0.4)	($0.1)	$3.7	30.6%
Total	$704.9	$697.3	($277.8)	$200.7	$1,325.0	$2,507.7	($236.8)	($41.0)	$2,229.9	59.4%

Offset available to load if all ARRs are held

	23/24 Planning Period				24/25 Planning Period				25/26 Planning Period*			
	ARR Held TA	Bal+M2M Charges	Congestion +M2M	Offset	ARR Held TA	Bal+M2M Charges	Congestion +M2M	Offset	ARR Held TA	Bal+M2M Charges	Congestion +M2M	Offset
ACEC	$4.9	($3.8)	$10.8	9.7%	$4.5	($5.4)	$18.8	(5.1%)	$1.5	($3.1)	$25.2	(6.4%)
AEP	$185.2	($50.4)	$201.8	66.8%	$160.6	($72.1)	$327.3	27.1%	$131.3	($42.7)	$341.4	26.0%
APS	$85.5	($22.4)	$87.6	72.1%	$96.9	($33.3)	$149.2	42.6%	$76.7	($17.8)	$142.1	41.5%
ATSI	$50.3	($25.6)	$99.4	24.8%	$61.9	($33.8)	$169.2	16.6%	$36.6	($20.1)	$163.1	10.1%
BGE	$145.8	($12.5)	$44.4	300.4%	$153.0	($18.2)	$79.9	168.7%	$131.4	($9.9)	$90.6	134.1%
COMED	$44.9	($31.4)	$215.9	6.3%	$55.3	($42.4)	$232.2	5.5%	$64.9	($29.1)	$253.0	14.1%
DAY	$13.3	($6.7)	$23.7	27.7%	$13.7	($8.8)	$39.1	12.5%	$9.0	($5.4)	$41.0	8.6%
DOM	$642.0	($52.0)	$181.8	324.6%	$430.5	($82.9)	$323.2	107.6%	$389.6	($46.6)	$413.0	83.1%
DPL	$69.6	($8.4)	$51.2	119.7%	$90.8	($13.9)	$70.7	108.8%	$71.2	($7.6)	$61.2	103.9%
DUKE	$52.1	($10.3)	$37.7	110.9%	$49.2	($13.3)	$55.2	64.9%	$25.1	($8.5)	$64.3	25.8%
DUQ	$8.6	($5.2)	$15.1	22.5%	$12.1	($6.8)	$25.1	21.0%	$7.3	($3.9)	$28.1	12.1%
EKPC	$6.5	($5.7)	$20.6	4.0%	$8.3	($8.1)	$32.2	0.7%	$4.4	($4.4)	$34.1	0.0%
EXT	$1.9	($9.6)	$26.4	(29.1%)	$1.2	($12.7)	$27.2	(42.1%)	$0.9	($6.7)	$35.3	(16.3%)
JCPLC	$4.6	($10.4)	$32.4	(18.1%)	$9.1	($14.6)	$54.8	(10.0%)	$5.2	($8.3)	$69.5	(4.5%)
MEC	$34.2	($6.7)	$21.8	126.3%	$24.2	($12.7)	$35.5	32.4%	$10.1	($11.0)	$39.3	(2.3%)
OVEC	($0.0)	($0.4)	$2.1	(19.1%)	$0.0	($0.5)	$3.6	(13.6%)	$0.0	($0.3)	$2.5	(11.7%)
PE	$22.2	($6.5)	$28.3	55.6%	$50.0	($9.6)	$43.7	92.5%	$37.6	($4.9)	$41.5	78.9%
PECO	$21.2	($14.9)	$42.3	14.8%	$29.8	($22.0)	$75.6	10.3%	$7.6	($12.0)	$91.4	(4.8%)
PEPCO	$65.4	($11.6)	$38.3	140.7%	$65.3	($17.0)	$69.3	69.8%	$58.1	($9.2)	$85.4	57.2%
PPL	$80.0	($15.6)	$57.9	111.2%	$68.1	($23.2)	$97.0	46.3%	$38.4	($12.5)	$98.2	26.4%
PSEG	$69.3	($16.4)	$50.3	105.0%	$81.1	($23.5)	$87.2	66.1%	$31.1	($13.4)	$105.8	16.7%
REC	$2.7	($0.6)	$2.2	98.8%	$3.1	($0.8)	$3.5	66.0%	$1.4	($0.5)	$3.7	24.1%
Total	$1,610.1	($327.0)	$1,291.9	99.3%	$1,468.7	($475.4)	$2,019.4	49.2%	$1,139.3	($277.8)	$2,229.9	38.6%

* First seven months of the 2025/2026 planning period

Monitoring Analytics, LLC
2621 Van Buren Avenue
Suite 160
Eagleville, PA
19403
(610) 271-8050

MA@monitoringanalytics.com
www.MonitoringAnalytics.com