

Market Monitor Report

MC Webinar

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Monitoring Analytics

Replacement Capacity

- **New IMM Report**
- **Analysis of Replacement Capacity for RPM Commitments: June 1, 2007 to June 1, 2019**
- **Only definitive report on capacity replacement behavior**
- **Full report is posted at:**
http://www.monitoringanalytics.com/reports/Reports/2019/IMM_Analysis_of_Replacement_Capacity_for_RPM_Commitments_June_1_2007_to_June_1_2019_20190913.pdf

Replacement Capacity

- **Sellers of demand resources in RPM auctions disproportionately replace those commitments on a consistent basis compared to sellers of other resource types. External generation and internal generation not in service had high rates of replacement in some years and those are also of concern.**
- **The Market Monitor recommends that, in addition to the other recommendations, replacement capacity transactions be permitted only for resources that have physical reasons that require them to be replaced.**

Replacement Capacity

- **The Market Monitor recommends that retroactive replacement transactions associated with a failure to perform during a PAH/PAI not be allowed and that, more generally, retroactive replacement capacity transactions not be permitted.**
- **The lack of an enforced specific requirement that all capacity resources be demonstrably specific physical assets when offered into PJM capacity auctions continues to provide strong incentives to offer speculative paper capacity.**

Table 1 RPM commitments for all capacity resources: June 1, 2007 to June 1, 2019

				UCAP (MW)			
	RPM Cleared	Adjustments to Cleared	Net Replacements	RPM Commitments	RPM Commitment Shortages	RPM Commitments Less Commitment Shortages	RPM Commitment Shortages
01-Jun-07	129,409.2	0.0	0.0	129,409.2	(8.1)	129,401.1	129,401.1
01-Jun-08	130,629.8	0.0	(766.5)	129,863.3	(246.3)	129,617.0	129,617.0
01-Jun-09	134,030.2	0.0	(2,068.2)	131,962.0	(14.7)	131,947.3	131,947.3
01-Jun-10	134,036.2	0.0	(4,179.0)	129,857.2	(8.8)	129,848.4	129,848.4
01-Jun-11	134,182.6	0.0	(6,717.6)	127,465.0	(79.3)	127,385.7	127,385.7
01-Jun-12	141,295.6	(11.7)	(9,400.6)	131,883.3	(157.2)	131,726.1	131,726.1
01-Jun-13	159,844.5	0.0	(12,235.3)	147,609.2	(65.4)	147,543.8	147,543.8
01-Jun-14	161,214.4	(9.4)	(13,615.9)	147,589.1	(1,208.9)	146,380.2	146,380.2
01-Jun-15	173,845.5	(326.1)	(11,849.4)	161,670.0	(1,822.0)	159,848.0	159,848.0
01-Jun-16	179,773.6	(24.6)	(16,157.5)	163,591.5	(924.4)	162,667.1	162,667.1
01-Jun-17	180,590.5	0.0	(13,982.7)	166,607.8	(625.3)	165,982.5	165,982.5
01-Jun-18	175,996.0	0.0	(12,057.8)	163,938.2	(150.5)	163,787.7	163,787.7
01-Jun-19	177,064.2	0.0	(12,300.3)	164,763.9	(9.3)	164,754.6	164,754.6

Table 2 RPM commitments for generation resources: June 1, 2007 to June 1, 2019

				UCAP (MW)		RPM Commitments Less Commitment Shortages
	RPM Cleared	Adjustments to Cleared	Net Replacements	RPM Commitments	RPM Commitment Shortages	
01-Jun-07	129,281.6	0.0	0.0	129,281.6	(8.1)	129,273.5
01-Jun-08	130,070.4	0.0	(726.5)	129,343.9	(187.9)	129,156.0
01-Jun-09	133,137.3	0.0	(1,593.5)	131,543.8	(0.4)	131,543.4
01-Jun-10	133,073.3	0.0	(3,662.7)	129,410.6	(1.1)	129,409.5
01-Jun-11	132,279.6	0.0	(5,665.4)	126,614.2	(79.3)	126,534.9
01-Jun-12	131,876.9	0.0	(7,112.1)	124,764.8	(117.2)	124,647.6
01-Jun-13	148,160.7	0.0	(9,041.5)	139,119.2	(21.4)	139,097.8
01-Jun-14	145,193.7	(9.4)	(7,088.8)	138,095.5	(989.3)	137,106.2
01-Jun-15	156,881.1	(5.0)	(7,355.6)	149,520.5	(1,759.3)	147,761.2
01-Jun-16	164,765.7	(5.2)	(11,417.9)	153,342.6	(468.5)	152,874.1
01-Jun-17	166,797.5	0.0	(10,307.5)	156,490.0	(587.6)	155,902.4
01-Jun-18	162,264.3	0.0	(9,124.2)	153,140.1	(149.5)	152,990.6
01-Jun-19	163,832.6	0.0	(10,111.5)	153,721.1	(8.9)	153,712.2

Table 3 RPM commitments for internal generation resources: June 1, 2007 to June 1, 2019

				UCAP (MW)			
	RPM Cleared	Adjustments to Cleared	Net Replacements	RPM Commitments	RPM Commitment Shortages	RPM Commitments Less Commitment Shortages	RPM Commitment Shortages
01-Jun-07	127,660.8	0.0	0.0	127,660.8	(8.1)	127,652.7	
01-Jun-08	128,444.0	0.0	(715.7)	127,728.3	(187.9)	127,540.4	
01-Jun-09	131,415.2	0.0	(1,827.8)	129,587.4	(0.4)	129,587.0	
01-Jun-10	130,952.3	0.0	(3,445.7)	127,506.6	(1.1)	127,505.5	
01-Jun-11	130,457.6	0.0	(5,651.0)	124,806.6	(79.3)	124,727.3	
01-Jun-12	130,360.4	0.0	(6,988.8)	123,371.6	(60.8)	123,310.8	
01-Jun-13	145,732.2	0.0	(8,562.3)	137,169.9	(21.4)	137,148.5	
01-Jun-14	141,515.8	(9.4)	(6,277.2)	135,229.2	(989.3)	134,239.9	
01-Jun-15	151,528.2	(5.0)	(7,515.5)	144,007.7	(1,735.8)	142,271.9	
01-Jun-16	157,004.8	(5.2)	(8,479.5)	148,520.1	(467.1)	148,053.0	
01-Jun-17	161,816.5	0.0	(10,043.2)	151,773.3	(587.6)	151,185.7	
01-Jun-18	157,485.8	0.0	(8,311.0)	149,174.8	(149.5)	149,025.3	
01-Jun-19	161,014.7	0.0	(9,665.5)	151,349.2	(8.9)	151,340.3	

Table 4 RPM commitments for internal generation resources in service: June 1, 2007 to June 1, 2019

				UCAP (MW)		
	RPM Cleared	Adjustments to Cleared	Net Replacements	RPM Commitments	RPM Commitment Shortages	RPM Commitments Less Commitment Shortages
01-Jun-07	127,614.0	0.0	0.0	127,614.0	(8.1)	127,605.9
01-Jun-08	128,334.1	0.0	(707.2)	127,626.9	(182.8)	127,444.1
01-Jun-09	130,930.7	0.0	(2,030.3)	128,900.4	(0.4)	128,900.0
01-Jun-10	130,251.4	0.0	(3,403.1)	126,848.3	(1.1)	126,847.2
01-Jun-11	127,769.6	0.0	(4,871.1)	122,898.5	(2.2)	122,896.3
01-Jun-12	127,361.1	0.0	(7,055.9)	120,305.2	(13.2)	120,292.0
01-Jun-13	141,712.5	0.0	(8,082.8)	133,629.7	(21.4)	133,608.3
01-Jun-14	138,240.4	(9.4)	(6,304.1)	131,926.9	(365.2)	131,561.7
01-Jun-15	146,096.4	(5.0)	(6,656.8)	139,434.6	(395.5)	139,039.1
01-Jun-16	147,892.8	(5.2)	(6,137.9)	141,749.7	(121.6)	141,628.1
01-Jun-17	148,243.0	0.0	(5,881.3)	142,361.7	(50.5)	142,311.2
01-Jun-18	142,540.7	0.0	(4,354.3)	138,186.4	(11.0)	138,175.4
01-Jun-19	145,197.4	0.0	(8,972.1)	136,225.3	(8.9)	136,216.4

Table 5 RPM commitments for internal generation resources not in service: June 1, 2007 to June 1, 2019

				UCAP (MW)		RPM Commitment Shortages	RPM Commitments Less Commitment Shortages
	RPM Cleared	Adjustments to Cleared	Net Replacements	RPM Commitments			
01-Jun-07	46.8	0.0	0.0	46.8	0.0	46.8	
01-Jun-08	109.9	0.0	(8.5)	101.4	(5.1)	96.3	
01-Jun-09	484.5	0.0	202.5	687.0	0.0	687.0	
01-Jun-10	700.9	0.0	(42.6)	658.3	0.0	658.3	
01-Jun-11	2,688.0	0.0	(779.9)	1,908.1	(77.1)	1,831.0	
01-Jun-12	2,999.3	0.0	67.1	3,066.4	(47.6)	3,018.8	
01-Jun-13	4,019.7	0.0	(479.5)	3,540.2	0.0	3,540.2	
01-Jun-14	3,275.4	0.0	26.9	3,302.3	(624.1)	2,678.2	
01-Jun-15	5,431.8	0.0	(858.7)	4,573.1	(1,340.3)	3,232.8	
01-Jun-16	9,112.0	0.0	(2,341.6)	6,770.4	(345.5)	6,424.9	
01-Jun-17	13,573.5	0.0	(4,161.9)	9,411.6	(537.1)	8,874.5	
01-Jun-18	14,945.1	0.0	(3,956.7)	10,988.4	(138.5)	10,849.9	
01-Jun-19	15,817.3	0.0	(693.4)	15,123.9	0.0	15,123.9	

Table 6 RPM commitments for external generation resources: June 1, 2007 to June 1, 2019

	UCAP (MW)			RPM Commitments	RPM Commitment Shortages	RPM Commitments Less Commitment Shortages
	RPM Cleared	Adjustments to Cleared	Net Replacements			
01-Jun-07	1,620.8	0.0	0.0	1,620.8	0.0	1,620.8
01-Jun-08	1,626.4	0.0	(10.8)	1,615.6	0.0	1,615.6
01-Jun-09	1,722.1	0.0	234.3	1,956.4	0.0	1,956.4
01-Jun-10	2,121.0	0.0	(217.0)	1,904.0	0.0	1,904.0
01-Jun-11	1,822.0	0.0	(14.4)	1,807.6	0.0	1,807.6
01-Jun-12	1,516.5	0.0	(123.3)	1,393.2	(56.4)	1,336.8
01-Jun-13	2,428.5	0.0	(479.2)	1,949.3	0.0	1,949.3
01-Jun-14	3,677.9	0.0	(811.6)	2,866.3	0.0	2,866.3
01-Jun-15	5,352.9	0.0	159.9	5,512.8	(23.5)	5,489.3
01-Jun-16	7,760.9	0.0	(2,938.4)	4,822.5	(1.4)	4,821.1
01-Jun-17	4,981.0	0.0	(264.3)	4,716.7	0.0	4,716.7
01-Jun-18	4,778.5	0.0	(813.2)	3,965.3	0.0	3,965.3
01-Jun-19	2,817.9	0.0	(446.0)	2,371.9	0.0	2,371.9

Table 7 RPM commitments and registrations for demand resources: June 1, 2007 to June 1, 2019

	UCAP (MW)						Registered DR UCAP Conversion		
	RPM Cleared	Adjustments to Cleared	Net Replacements	RPM Commitments	RPM Commitment Shortages	RPM Commitments Less Commitment Shortages	ICAP (MW)	Factor	UCAP (MW)
01-Jun-07	127.6	0.0	0.0	127.6	0.0	127.6	0.0	1.03260	0.0
01-Jun-08	559.4	0.0	(40.0)	519.4	(58.4)	461.0	488.0	1.03426	504.7
01-Jun-09	892.9	0.0	(474.7)	418.2	(14.3)	403.9	570.3	1.03308	589.2
01-Jun-10	962.9	0.0	(516.3)	446.6	(7.7)	438.9	572.8	1.03455	592.6
01-Jun-11	1,826.6	0.0	(1,052.4)	774.2	0.0	774.2	1,117.9	1.03455	1,156.5
01-Jun-12	8,752.6	(11.7)	(2,253.6)	6,487.3	(34.9)	6,452.4	7,443.7	1.03690	7,718.4
01-Jun-13	10,779.6	0.0	(3,314.4)	7,465.2	(30.5)	7,434.7	8,240.1	1.04208	8,586.8
01-Jun-14	14,943.0	0.0	(6,731.8)	8,211.2	(219.4)	7,991.8	8,923.4	1.04234	9,301.2
01-Jun-15	15,774.8	(321.1)	(4,829.7)	10,624.0	(61.8)	10,562.2	10,946.0	1.03783	11,360.0
01-Jun-16	13,284.7	(19.4)	(4,800.7)	8,464.6	(455.4)	8,009.2	8,961.2	1.04154	9,333.4
01-Jun-17	11,870.7	0.0	(3,870.8)	7,999.9	(30.3)	7,969.6	8,681.4	1.03857	9,016.3
01-Jun-18	11,435.4	0.0	(3,182.4)	8,253.0	(1.0)	8,252.0	8,512.0	1.09050	9,282.4
01-Jun-19	10,703.1	0.0	(2,138.8)	8,564.3	(0.4)	8,563.9	9,229.9	1.08950	10,056.0

Table 8 RPM commitments for energy efficiency resources: June 1, 2007 to June 1, 2019

	UCAP (MW)				RPM Commitment Shortages	RPM Commitments Less Commitment Shortages
	RPM Cleared	Adjustments to Cleared	Net Replacements	RPM Commitments		
01-Jun-07	0.0	0.0	0.0	0.0	0.0	0.0
01-Jun-08	0.0	0.0	0.0	0.0	0.0	0.0
01-Jun-09	0.0	0.0	0.0	0.0	0.0	0.0
01-Jun-10	0.0	0.0	0.0	0.0	0.0	0.0
01-Jun-11	76.4	0.0	0.2	76.6	0.0	76.6
01-Jun-12	666.1	0.0	(34.9)	631.2	(5.1)	626.1
01-Jun-13	904.2	0.0	120.6	1,024.8	(13.5)	1,011.3
01-Jun-14	1,077.7	0.0	204.7	1,282.4	(0.2)	1,282.2
01-Jun-15	1,189.6	0.0	335.9	1,525.5	(0.9)	1,524.6
01-Jun-16	1,723.2	0.0	61.1	1,784.3	(0.5)	1,783.8
01-Jun-17	1,922.3	0.0	195.6	2,117.9	(7.4)	2,110.5
01-Jun-18	2,296.3	0.0	248.8	2,545.1	0.0	2,545.1
01-Jun-19	2,528.5	0.0	(50.0)	2,478.5	0.0	2,478.5

Table 9 Net replacements to cleared capacity by resource classifications: June 1, 2007 to June 1, 2019

	All Capacity Resources	Generation	Internal Generation	Internal Generation in Service	Internal Generation Not in Service	External Generation	Demand Resources	Energy Efficiency Resources
01-Jun-07	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
01-Jun-08	(0.6%)	(0.6%)	(0.6%)	(0.6%)	(7.7%)	(0.7%)	(7.2%)	
01-Jun-09	(1.5%)	(1.2%)	(1.4%)	(1.6%)	41.8%	13.6%	(53.2%)	
01-Jun-10	(3.1%)	(2.8%)	(2.6%)	(2.6%)	(6.1%)	(10.2%)	(53.6%)	
01-Jun-11	(5.0%)	(4.3%)	(4.3%)	(3.8%)	(29.0%)	(0.8%)	(57.6%)	0.3%
01-Jun-12	(6.7%)	(5.4%)	(5.4%)	(5.5%)	2.2%	(8.1%)	(25.8%)	(5.2%)
01-Jun-13	(7.7%)	(6.1%)	(5.9%)	(5.7%)	(11.9%)	(19.7%)	(30.7%)	13.3%
01-Jun-14	(8.4%)	(4.9%)	(4.4%)	(4.6%)	0.8%	(22.1%)	(45.0%)	19.0%
01-Jun-15	(6.8%)	(4.7%)	(5.0%)	(4.6%)	(15.8%)	3.0%	(31.3%)	28.2%
01-Jun-16	(9.0%)	(6.9%)	(5.4%)	(4.2%)	(25.7%)	(37.9%)	(36.2%)	3.5%
01-Jun-17	(7.7%)	(6.2%)	(6.2%)	(4.0%)	(30.7%)	(5.3%)	(32.6%)	10.2%
01-Jun-18	(6.9%)	(5.6%)	(5.3%)	(3.1%)	(26.5%)	(17.0%)	(27.8%)	10.8%
01-Jun-19	(6.9%)	(6.2%)	(6.0%)	(6.2%)	(4.4%)	(15.8%)	(20.0%)	(2.0%)

Table 10 Total replacements to cleared capacity by resource classification: June 1, 2007 to June 1, 2019

	All Capacity Resources	Generation	Internal Generation	Internal Generation in Service	Internal Generation Not in Service	External Generation	Demand Resources	Energy Efficiency Resources
01-Jun-07	(0.1%)	(0.1%)	(0.1%)	(0.1%)	0.0%	0.0%	0.0%	
01-Jun-08	(2.0%)	(2.0%)	(2.0%)	(2.0%)	(7.7%)	(1.3%)	(9.8%)	
01-Jun-09	(4.0%)	(3.7%)	(3.6%)	(3.5%)	(4.8%)	(12.5%)	(56.6%)	
01-Jun-10	(5.3%)	(5.0%)	(4.8%)	(4.8%)	(6.2%)	(12.1%)	(55.6%)	
01-Jun-11	(8.1%)	(7.3%)	(7.2%)	(6.8%)	(29.4%)	(13.1%)	(63.7%)	(1.0%)
01-Jun-12	(12.5%)	(10.4%)	(10.3%)	(10.4%)	(3.4%)	(19.2%)	(44.2%)	(25.2%)
01-Jun-13	(13.4%)	(8.8%)	(8.6%)	(8.5%)	(12.5%)	(21.4%)	(71.8%)	(70.4%)
01-Jun-14	(13.6%)	(8.2%)	(7.5%)	(7.5%)	(7.2%)	(36.8%)	(62.3%)	(64.9%)
01-Jun-15	(10.7%)	(6.9%)	(6.9%)	(6.5%)	(17.4%)	(6.8%)	(47.0%)	(39.5%)
01-Jun-16	(14.8%)	(10.9%)	(8.9%)	(7.8%)	(26.1%)	(52.9%)	(54.4%)	(77.8%)
01-Jun-17	(12.5%)	(9.9%)	(9.4%)	(7.2%)	(34.0%)	(24.8%)	(45.4%)	(37.6%)
01-Jun-18	(14.3%)	(12.3%)	(11.9%)	(9.6%)	(33.8%)	(25.0%)	(36.8%)	(45.1%)
01-Jun-19	(12.4%)	(10.5%)	(10.4%)	(10.6%)	(8.1%)	(16.4%)	(35.2%)	(41.9%)

Table 72 Persistence metric for RPM replacement activity: June 1, 2007 to June 1, 2019

	Number of Market Sellers	Average Persistence	Number of Market Sellers with Persistence = 0	Number of Market Sellers with Persistence = 65	Percent of Market Sellers with Persistence = 0	Percent of Market Sellers with Persistence = 65
All Capacity Resources	246	13.1	59	12	24.0%	4.9%
Generation Resources	203	10.5	51	8	25.1%	3.9%
Internal Generation	188	10.1	42	6	22.3%	3.2%
Internal Generation in Service	176	8.8	42	4	23.9%	2.3%
Internal Generation not in Service	70	14.2	19	5	27.1%	7.1%
External Generation	53	13.6	22	6	41.5%	11.3%
Demand Resources	75	26.1	12	10	16.0%	13.3%
Energy Efficiency Resources	28	18.7	12	5	42.9%	17.9%

Table 73 Persistence metric for RPM replacement activity, excluding companies with one year of participation in a resource classification

	Number of Market Sellers	Average Persistence	Number of Market Sellers with Persistence = 0	Number of Market Sellers with Persistence = 65	Percent of Market Sellers with Persistence = 0	Percent of Market Sellers with Persistence = 65
All Capacity Resources	222	12.3	43	5	19.4%	2.3%
Demand Resources	64	25.9	6	6	9.4%	9.4%
Energy Efficiency Resources	23	20.0	8	4	34.8%	17.4%

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