

Analysis of Replacement Capacity for RPM Commitments

IASTF
January 19, 2018

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Replacement Capacity

- **Cleared sell offers and make whole MW in RPM Auctions are binding commitments to provide capacity for the delivery year.**
- **Replacement capacity is the vehicle used to reduce a capacity commitment on a resource which is not available.**
- **Replacement capacity can be used to fulfill a Capacity Resource commitment and avoid deficiency and penalty charges.**

Sources of Replacement Capacity

- **Cleared buy bids purchased in an RPM Incremental Auction**
- **Available, uncommitted capacity from Capacity Resources within a Capacity Market Seller's portfolio**
- **Locational UCAP transactions with another Capacity Market Seller**

Sources of Replacement Capacity

- **Excess Commitment Credits for the 2010/2011 Delivery Year forward**
- **Excess Interruptible Load for Reliability (ILR) MW Credits for the 2009/2010 through 2011/2012 Delivery Years**

Table 1 RPM commitments for all Capacity Resources: June 1, 2007 to June 1, 2017

				UCAP (MW)		RPM Commitment Shortages	RPM Commitments Less Commitment Shortages
	RPM Cleared	Adjustments to Cleared	Net Replacements	RPM Commitments			
01-Jun-07	129,409.2	0.0	0.0	129,409.2	(8.1)		129,401.1
01-Jun-08	130,629.8	0.0	(766.5)	129,863.3	(246.3)		129,617.0
01-Jun-09	134,030.2	0.0	(2,068.2)	131,962.0	(14.7)		131,947.3
01-Jun-10	134,036.2	0.0	(4,179.0)	129,857.2	(8.8)		129,848.4
01-Jun-11	134,182.6	0.0	(6,717.6)	127,465.0	(79.3)		127,385.7
01-Jun-12	141,295.6	(11.7)	(9,400.6)	131,883.3	(157.2)		131,726.1
01-Jun-13	159,844.5	0.0	(12,235.3)	147,609.2	(65.4)		147,543.8
01-Jun-14	161,214.4	(9.4)	(13,615.9)	147,589.1	(1,208.9)		146,380.2
01-Jun-15	173,845.5	(326.1)	(11,849.4)	161,670.0	(1,822.0)		159,848.0
01-Jun-16	179,773.6	(24.6)	(16,157.5)	163,591.5	(924.4)		162,667.1
01-Jun-17	180,590.5	0.0	(13,982.7)	166,607.8	(626.1)		165,981.7

Table 9 Net replacements to cleared capacity by resource classifications: June 1, 2007 to June 1, 2017

	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%

Table 10 Total replacements to cleared capacity by resource classification: June 1, 2007 to June 1, 2017

	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%)

Table 11 Sources of replacement capacity for all Capacity Resources: June 1, 2007 to June 1, 2017

	UCAP (MW)												
	Replacement Transactions				Locational UCAP Transactions				Excess Commitment Credits	Excess ILR MW Credits	Commitment Reductions using Replacements	Commitment Additions on Replacement Resources	Net Replacements
	Cleared Buy Bids	Gen	DR	EE	Gen	DR	EE						
01-Jun-07	0.0	118.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	118.5	118.5	0.0	
01-Jun-08	766.5	1,819.4	15.0	0.0	0.0	0.0	0.0	0.0	0.0	2,600.9	1,834.4	766.5	
01-Jun-09	1,708.6	3,253.1	31.1	0.0	35.8	0.0	0.0	0.0	359.7	5,388.3	3,320.1	2,068.2	
01-Jun-10	1,816.4	2,595.5	19.4	0.0	335.7	0.0	0.0	959.9	1,403.5	7,130.4	2,951.4	4,179.0	
01-Jun-11	1,805.2	3,467.1	98.3	1.0	538.1	12.7	0.0	2,735.2	2,177.2	10,834.8	4,117.2	6,717.6	
01-Jun-12	9,185.9	4,650.0	1,597.5	133.0	1,937.6	13.2	0.0	213.4	0.0	17,730.6	8,330.0	9,400.6	
01-Jun-13	12,021.2	3,214.3	4,403.9	708.2	798.6	26.3	48.9	214.2	0.0	21,435.6	9,200.3	12,235.3	
01-Jun-14	13,619.7	2,935.2	2,527.2	791.5	1,878.2	45.8	112.3	0.0	0.0	21,909.9	8,294.0	13,615.9	
01-Jun-15	11,850.0	2,736.2	2,237.6	651.3	750.5	201.5	153.9	0.0	0.0	18,581.0	6,731.6	11,849.4	
01-Jun-16	16,142.1	4,311.0	2,116.8	1,318.6	2,245.9	297.5	51.6	101.8	0.0	26,585.3	10,427.8	16,157.5	
01-Jun-17	11,873.3	5,221.2	1,339.8	733.6	972.6	180.9	147.6	2,153.0	0.0	22,622.0	8,639.3	13,982.7	

Table 21 Sources of replacement capacity to total replacements for all Capacity Resources: June 1, 2007 to June 1, 2017

	Replacement Transactions				Locational UCAP Transactions			Excess Commitment Credits	Excess ILR MW Credits	Total Replacements	Major Source of Replacements
	Cleared Buy Bids	Gen	DR	EE	Gen	DR	EE				
01-Jun-07	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Replacement Transactions - Gen
01-Jun-08	29.5%	70.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	Replacement Transactions - Gen
01-Jun-09	31.7%	60.4%	0.6%	0.0%	0.7%	0.0%	0.0%	0.0%	6.7%	100.0%	Replacement Transactions - Gen
01-Jun-10	25.5%	36.4%	0.3%	0.0%	4.7%	0.0%	0.0%	13.5%	19.7%	100.0%	Replacement Transactions - Gen
01-Jun-11	16.7%	32.0%	0.9%	0.0%	5.0%	0.1%	0.0%	25.2%	20.1%	100.0%	Replacement Transactions - Gen
01-Jun-12	51.8%	26.2%	9.0%	0.8%	10.9%	0.1%	0.0%	1.2%	0.0%	100.0%	Cleared Buy Bids
01-Jun-13	56.1%	15.0%	20.5%	3.3%	3.7%	0.1%	0.2%	1.0%	0.0%	100.0%	Cleared Buy Bids
01-Jun-14	62.2%	13.4%	11.5%	3.6%	8.6%	0.2%	0.5%	0.0%	0.0%	100.0%	Cleared Buy Bids
01-Jun-15	63.8%	14.7%	12.0%	3.5%	4.0%	1.1%	0.8%	0.0%	0.0%	100.0%	Cleared Buy Bids
01-Jun-16	60.7%	16.2%	8.0%	5.0%	8.4%	1.1%	0.2%	0.4%	0.0%	100.0%	Cleared Buy Bids
01-Jun-17	52.5%	23.1%	5.9%	3.2%	4.3%	0.8%	0.7%	9.5%	0.0%	100.0%	Cleared Buy Bids

Table 19 RPM Base Residual Auction cleared MW adjustments: June 1, 2007 to June 1, 2017

	UCAP (MW)			
	Cleared BRA	BRA Adjustments to Cleared	BRA CP Adjustments to Cleared	Adjusted Cleared BRA
01-Jun-07	129,409.2	0.0	0.0	129,409.2
01-Jun-08	129,597.6	0.0	0.0	129,597.6
01-Jun-09	132,231.8	0.0	0.0	132,231.8
01-Jun-10	132,190.4	0.0	0.0	132,190.4
01-Jun-11	132,264.5	0.0	0.0	132,264.5
01-Jun-12	136,365.6	(11.7)	0.0	136,353.9
01-Jun-13	152,757.3	0.0	0.0	152,757.3
01-Jun-14	150,087.3	(9.4)	0.0	150,077.9
01-Jun-15	164,563.9	(325.9)	0.0	164,238.0
01-Jun-16	169,159.7	(23.8)	(88,786.4)	80,349.5
01-Jun-17	167,068.9	0.0	(102,177.5)	64,891.4

Table 20 RPM commitment changes from Base Residual Auction to start of delivery year: June 1, 2007 to June 1, 2017

	Cleared Offers IAs										UCAP (MW)		Non-Cleared Buy Bid Based Replacements										Net Change	RPM Commitments	
	Cleared CP					IAs					Cleared Buy Bids IAs		Replacement Commitment		UCAP		Unutilized Localational UCAP		Excess Commitment		Excess ILR MW				
	Adjusted Cleared BRA	Transition IAs	Resource Swap	Net PJM Procurement	Make Whole IAs	Adjustments to Cleared	IAs CP Adjustments to Cleared	Resource Swap	Net PJM Release	Unutilized Cleared Buy Bids	Replacement Commitment Reductions	Replacement Commitment Additions	UCAP Commitment Reductions	UCAP Commitment Additions	Unutilized Localational UCAP	Excess Commitment Credits	Excess ILR MW Credits								
01-Jun-07	129,409.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(118.5)	118.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	129,409.2	
01-Jun-08	129,597.6	0.0	1,032.2	0.0	0.0	0.0	0.0	(1,032.2)	0.0	265.7	(1,834.4)	1,834.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	265.7	129,863.3
01-Jun-09	132,231.8	0.0	1,798.4	0.0	0.0	0.0	0.0	(1,798.4)	0.0	89.8	(3,284.2)	3,284.2	(35.8)	35.8	0.1	0.0	(359.7)	(269.8)	0.0	0.0	0.0	0.0	(269.8)	131,962.0	
01-Jun-10	132,190.4	0.0	1,845.8	0.0	0.0	0.0	0.0	(1,845.8)	0.0	29.4	(2,614.9)	2,614.9	(335.7)	335.7	0.8	(959.9)	(1,403.5)	(2,333.2)	0.0	0.0	0.0	0.0	(2,333.2)	129,857.2	
01-Jun-11	132,264.5	0.0	1,918.1	0.0	0.0	0.0	0.0	(1,918.1)	0.0	112.9	(3,566.4)	3,566.4	(550.8)	550.8	0.0	(2,735.2)	(2,177.2)	(4,799.5)	0.0	0.0	0.0	0.0	(4,799.5)	127,465.0	
01-Jun-12	136,353.9	0.0	4,930.0	0.0	0.0	0.0	0.0	(4,930.0)	(4,416.4)	160.5	(6,380.5)	6,380.5	(1,950.8)	1,950.8	(1.3)	(213.4)	0.0	(4,470.6)	0.0	0.0	0.0	0.0	(4,470.6)	131,883.3	
01-Jun-13	152,757.3	0.0	7,087.2	0.0	0.0	0.0	0.0	(7,087.2)	(6,562.0)	1,628.0	(8,326.4)	8,326.4	(873.8)	873.8	0.1	(214.2)	0.0	(5,148.1)	0.0	0.0	0.0	0.0	(5,148.1)	147,609.2	
01-Jun-14	150,077.9	0.0	11,127.1	0.0	0.0	0.0	0.0	(11,127.1)	(2,881.4)	388.8	(6,253.9)	6,253.9	(2,036.3)	2,036.3	3.8	0.0	0.0	(2,488.8)	0.0	0.0	0.0	0.0	(2,488.8)	147,589.1	
01-Jun-15	164,238.0	0.0	9,252.3	0.0	29.3	(0.2)	0.0	(9,252.3)	(2,727.1)	129.4	(5,625.1)	5,625.1	(1,105.9)	1,105.9	0.6	0.0	0.0	(2,568.0)	0.0	0.0	0.0	0.0	(2,568.0)	161,670.0	
01-Jun-16	80,349.5	95,096.6	6,368.1	0.0	0.0	(0.8)	(2,064.4)	(6,368.1)	(10,268.7)	494.7	(7,746.4)	7,746.4	(2,595.0)	2,595.0	86.4	(101.8)	0.0	83,242.0	0.0	0.0	0.0	0.0	83,242.0	163,591.5	
01-Jun-17	64,891.4	112,194.5	3,504.6	0.0	0.0	0.0	0.0	(3,504.6)	(8,909.7)	541.0	(7,294.6)	7,294.6	(1,301.1)	1,301.1	43.6	(2,153.0)	0.0	101,716.4	0.0	0.0	0.0	0.0	101,716.4	166,607.8	



Table 37 RPM revenue for all Capacity Resources: June 1, 2007 to June 1, 2017

	Revenue (\$ per Day)					
	RPM Cleared	Adjustments to Cleared	Net Replacements	RPM Commitments	Capacity Resource Deficiency Charges	RPM Commitments Less Commitment Shortages
01-Jun-07	\$11,618,272	\$0	\$0	\$11,618,272	(\$3,202)	\$11,615,069
01-Jun-08	\$16,677,117	\$0	(\$12,070)	\$16,665,046	(\$95,058)	\$16,569,988
01-Jun-09	\$20,556,762	\$0	(\$149,837)	\$20,406,925	(\$3,570)	\$20,403,354
01-Jun-10	\$23,149,733	\$0	(\$208,950)	\$22,940,783	(\$1,743)	\$22,939,040
01-Jun-11	\$14,576,741	\$0	(\$50,990)	\$14,525,750	(\$2,293)	\$14,523,457
01-Jun-12	\$10,607,630	(\$193)	(\$97,767)	\$10,509,670	(\$9,922)	\$10,499,749
01-Jun-13	\$18,629,529	\$0	(\$410,457)	\$18,219,072	(\$10,229)	\$18,208,842
01-Jun-14	\$20,377,819	(\$1,743)	(\$479,406)	\$19,896,670	(\$167,933)	\$19,728,737
01-Jun-15	\$27,809,631	(\$45,350)	(\$1,476,240)	\$26,288,042	(\$342,238)	\$25,945,804
01-Jun-16	\$21,905,287	(\$4,222)	(\$814,068)	\$21,086,997	(\$117,849)	\$20,969,148
01-Jun-17	\$25,497,744	\$0	(\$732,187)	\$24,765,558	(\$112,066)	\$24,653,491

Table 45 Weighted average RPM price for all Capacity Resources: June 1, 2007 to June 1, 2017

	Weighted Average Price (\$ per MW-Day)						RPM Commitments Less Commitment Shortages
	RPM Cleared	Adjustments to Cleared	Adjusted RPM Cleared	Net Replacements	RPM Commitments	Capacity Resource Deficiency Charges	
01-Jun-07	\$89.78		\$89.78		\$89.78	(\$395.34)	\$89.76
01-Jun-08	\$127.67		\$127.67	(\$15.75)	\$128.33	(\$385.94)	\$127.84
01-Jun-09	\$153.37		\$153.37	(\$72.45)	\$154.64	(\$242.87)	\$154.63
01-Jun-10	\$172.71		\$172.71	(\$50.00)	\$176.66	(\$198.08)	\$176.66
01-Jun-11	\$108.63		\$108.63	(\$7.59)	\$113.96	(\$28.91)	\$114.01
01-Jun-12	\$75.07	(\$16.46)	\$75.08	(\$10.40)	\$79.69	(\$63.11)	\$79.71
01-Jun-13	\$116.55		\$116.55	(\$33.55)	\$123.43	(\$156.41)	\$123.41
01-Jun-14	\$126.40	(\$185.46)	\$126.40	(\$35.21)	\$134.81	(\$138.91)	\$134.78
01-Jun-15	\$159.97	(\$139.07)	\$160.01	(\$124.58)	\$162.60	(\$187.84)	\$162.32
01-Jun-16	\$121.85	(\$171.63)	\$121.84	(\$50.38)	\$128.90	(\$127.49)	\$128.91
01-Jun-17	\$141.19		\$141.19	(\$52.36)	\$148.65	(\$178.99)	\$148.53

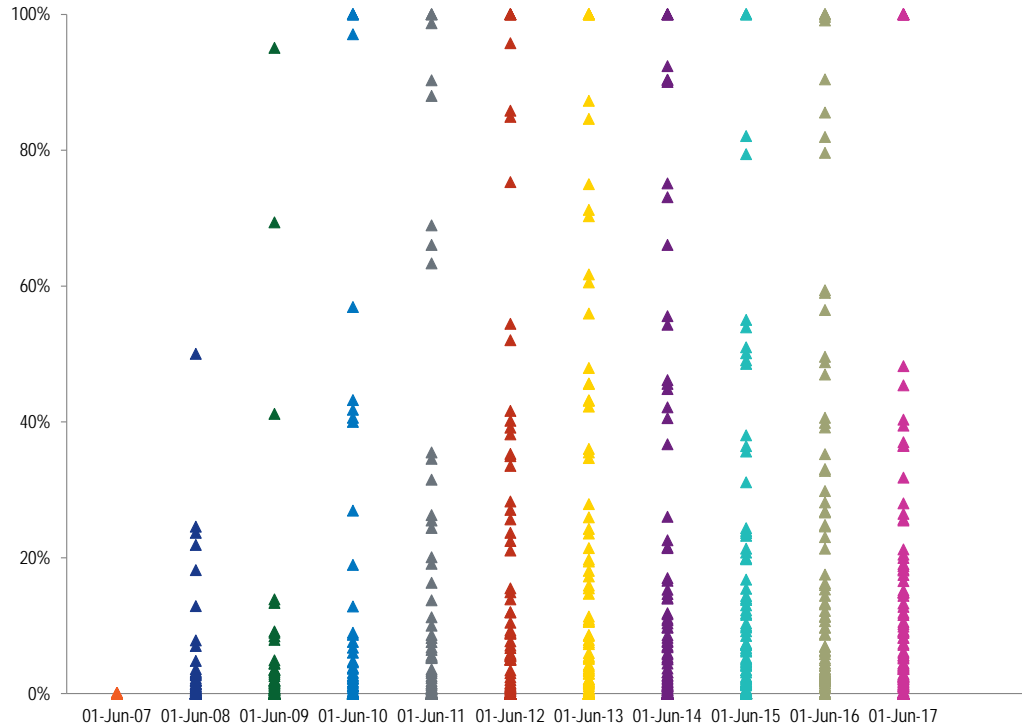
Table 53 Number of parent companies by replacement percentage for all Capacity Resources: June 1, 2007 to June 1, 2017

	Number of Companies					
	0 Percent	> 0 Percent and ≤ 25 Percent	> 25 Percent and ≤ 50 Percent	> 50 Percent and ≤ 75 Percent	> 75 Percent and < 100 Percent	100 Percent
01-Jun-07	63	0	0	0	0	0
01-Jun-08	34	35	1	0	0	0
01-Jun-09	41	36	1	1	1	0
01-Jun-10	43	28	5	1	1	5
01-Jun-11	46	36	5	3	3	3
01-Jun-12	62	40	10	2	4	6
01-Jun-13	69	45	11	6	2	8
01-Jun-14	71	52	7	4	5	6
01-Jun-15	68	63	6	4	2	4
01-Jun-16	69	56	14	3	6	4
01-Jun-17	68	68	12	0	0	9

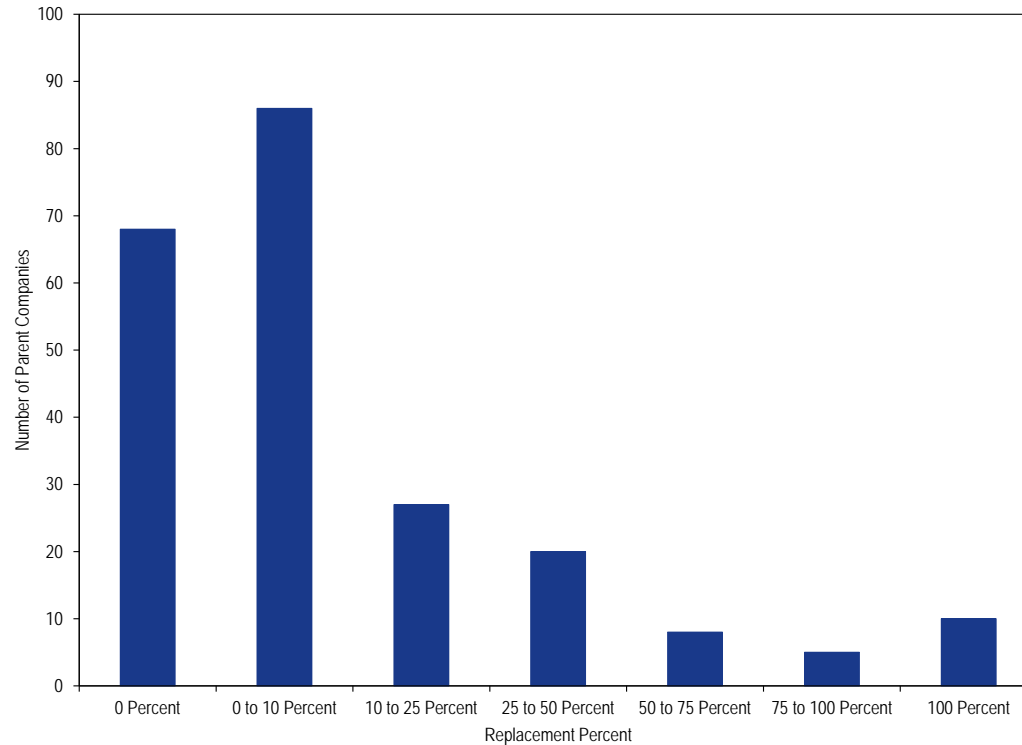
Table 61 RPM cleared and replacement capacity by replacement percentage at parent company level for all Capacity Resources: June 1, 2007 to June 1, 2017

	UCAP (MW)														Total Net Replacements
	0 Percent		> 0 Percent and <= 25 Percent		> 25 Percent and <= 50 Percent		> 50 Percent and <= 75 Percent		> 75 Percent and < 100 Percent		100 Percent				
	RPM Cleared	Net Replacements	RPM Cleared	Net Replacements	RPM Cleared	Net Replacements	RPM Cleared	Net Replacements	RPM Cleared	Net Replacements	RPM Cleared	Net Replacements			
01-Jun-07	129,409.2	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	0.0
01-Jun-08	56,585.2	0.0	73,954.8	(721.6)	89.8	(44.9)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	(766.5)
01-Jun-09	33,239.4	13.3	100,326.4	(1,656.9)	6.8	(2.8)	51.6	(35.8)	406.0	(386.0)	0.0	0.0	0.0	0.0	(2,068.2)
01-Jun-10	46,273.6	208.1	86,310.7	(3,360.1)	721.0	(299.3)	5.8	(3.3)	23.9	(23.2)	701.2	(701.2)	0.0	0.0	(4,179.0)
01-Jun-11	39,079.7	209.8	89,596.7	(4,309.9)	3,645.1	(942.5)	523.6	(351.2)	255.0	(241.3)	1,082.5	(1,082.5)	0.0	0.0	(6,717.6)
01-Jun-12	14,679.9	1,001.0	113,707.7	(4,689.9)	8,818.1	(3,098.3)	3,055.1	(1,659.5)	476.6	(407.4)	546.5	(546.5)	0.0	0.0	(9,400.6)
01-Jun-13	13,663.4	153.4	134,954.5	(7,203.5)	6,378.9	(2,010.0)	4,055.1	(2,432.7)	334.9	(284.8)	457.7	(457.7)	0.0	0.0	(12,235.3)
01-Jun-14	10,534.3	326.2	138,549.4	(7,834.0)	10,078.5	(4,435.9)	1,019.1	(706.6)	556.9	(498.8)	466.8	(466.8)	0.0	0.0	(13,615.9)
01-Jun-15	11,596.3	611.1	157,393.8	(9,863.9)	1,651.2	(719.9)	2,144.6	(1,154.8)	63.7	(52.1)	669.8	(669.8)	0.0	0.0	(11,849.4)
01-Jun-16	7,230.5	278.4	155,295.5	(8,961.1)	14,597.1	(5,311.8)	918.5	(527.8)	956.6	(884.4)	750.8	(750.8)	0.0	0.0	(16,157.5)
01-Jun-17	10,205.9	253.0	162,247.1	(9,935.0)	5,958.0	(2,121.2)	0.0	0.0	0.0	0.0	2,179.5	(2,179.5)	0.0	0.0	(13,982.7)

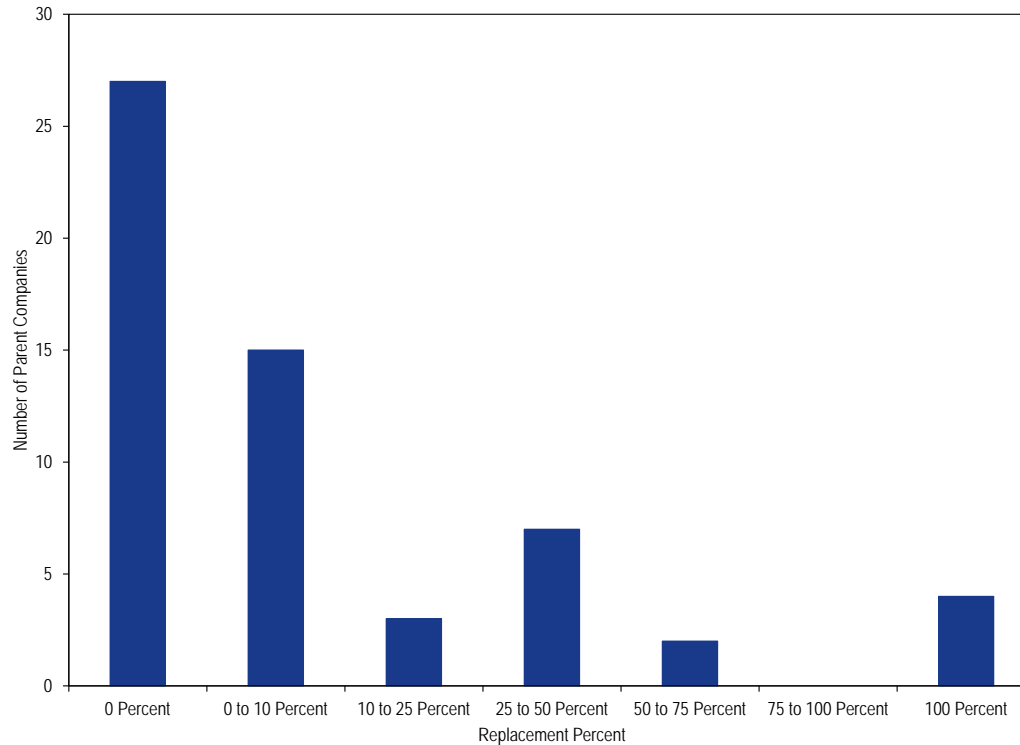
Figure 2 Company replacement percentages for all Capacity Resources: June 1, 2007 to June 1, 2017



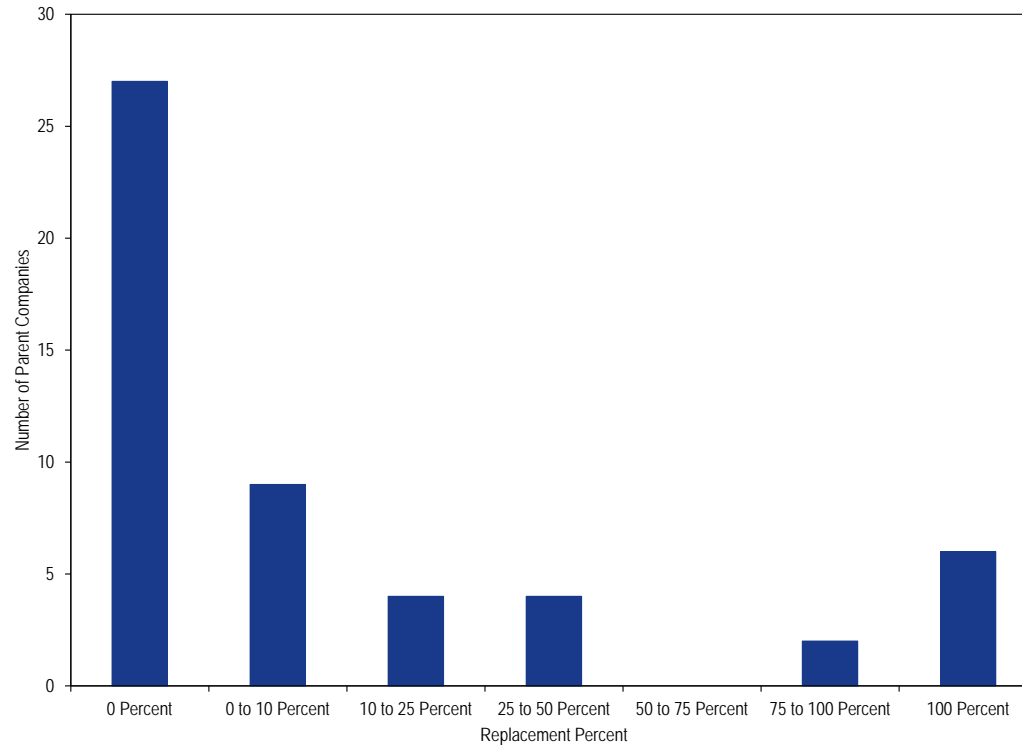
Number of companies by replacement percent for all Capacity Resources



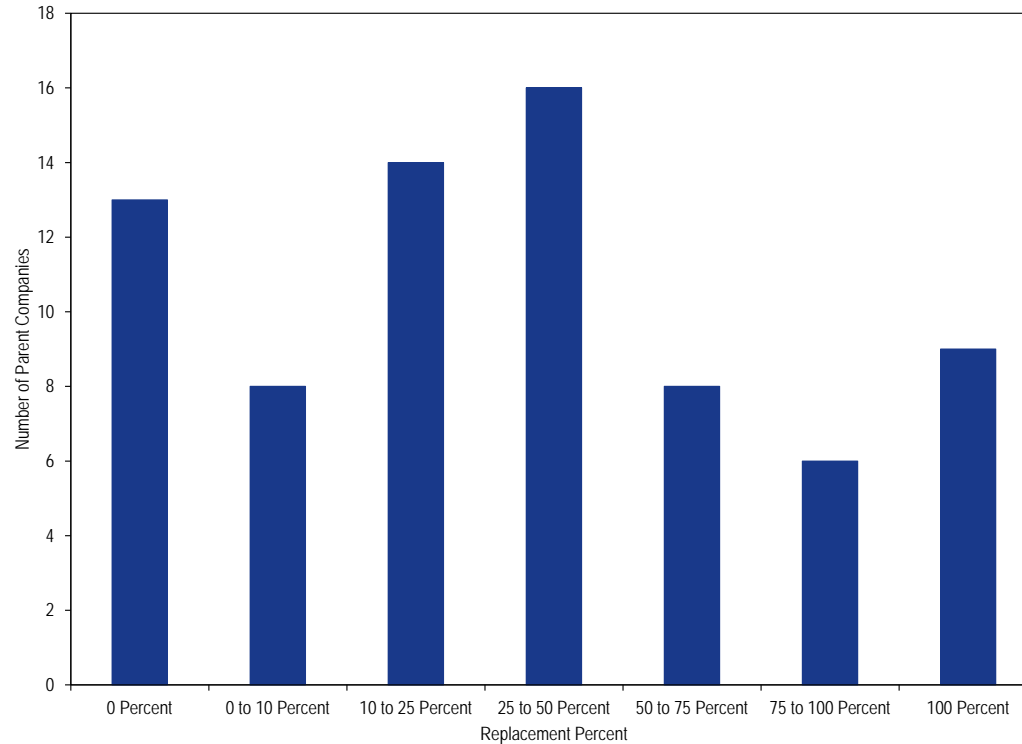
Number of companies by replacement percent for internal Generation Resources not in service



Number of companies by replacement percent for external Generation Resources



Number of companies by replacement percent for Demand Resources



Persistence metric for RPM replacement activity: June 1, 2007 to June 1, 2017

	Number of Market Sellers	Average Persistence	Number of Market Sellers with Persistence = 0	Number of Market Sellers with Persistence = 55	Percent of Market Sellers with Persistence = 0	Percent of Market Sellers with Persistence = 55
All Capacity Resources	224	10.2	62	10	27.7%	4.5%
Generation Resources	182	7.7	53	6	29.1%	3.3%
Demand Resources	74	20.9	13	9	17.6%	12.2%
Energy Efficiency Resources	27	15.0	13	5	48.1%	18.5%

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 = 55	Percent of Market Sellers with Persistence = 0	Percent of Market Sellers with Persistence = 55
Generation Resources	159	6.4	39	0	24.5%	0.0%
Demand Resources	63	20.7	7	6	11.1%	9.5%
Energy Efficiency Resources	22	15.9	9	4	40.9%	18.2%

Conclusion

- **The pattern of consistently extraordinarily high levels of replacement by DR providers and very high levels of replacement by external generation and internal generation not in service continues.**
- **The lack of an enforced specific requirement that all capacity resources be demonstrably physical assets when offered into PJM capacity auctions continues to provide strong incentives to offer speculative paper capacity.**

Conclusion

- **The Market Monitor recommends that DR providers be required to have a signed contract with specific customers for specific facilities for specific levels of DR at least six months prior to any capacity auction in which the DR is offered.**
- **The Market Monitor recommends that replacement capacity transactions be permitted only for resources that have physical reasons that require them to be replaced.**

Conclusion

- **The Market Monitor recommends that retroactive replacement transactions associated with a failure to perform during a PAH not be allowed and that, more generally, retroactive replacement capacity transactions not be permitted.**

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