

**Analysis of APIR Investment and
MW Added Under RPM:
2007 - 2011 RPM Auctions**

Independent Market Monitor for PJM

September 8, 2008

Introduction

The purpose of this report is to provide details about investments in existing units that were reported to and reviewed by the MMU and to report details about MW of capacity added during the period of RPM auctions. The data on investments in existing units were provided by generation owners in support of offer caps under the market power mitigation provisions of the tariff. There is no tariff requirement to report such investments if not used to support an offer cap and thus the data presented do not necessarily reflect all investments made in existing units.

In summary, the data show that generation owners plan to spend \$5.1 billion on existing units through the 2011/2012 delivery year, under the APIR (Avoidable Project Investment Recovery Rate) option, of which about \$3.5 billion, or 67 percent, is on coal units. Total APIR expenditures in SWMAAC are about \$3.0 billion, or 58 percent of the total, of which about \$2. billion is for coal units.

In summary, the capacity resource data show that of the 12,566.1 MW total increase in capacity resources during the periods covered by RPM auctions, 3,139.2 MW were new generation, 2,587.6 MW were units which had retired and were reactivated or which postponed retirement/deactivation, 2,487.2 MW were an increase in demand side resources and 2,480.7 MW were an increase in net imports.

APIR

Avoidable costs are the costs that a generation owner would not incur if the generating unit did not operate for one year, in particular the delivery year.¹ In effect, avoidable costs are the costs that a generation owner would not incur if the generating unit were mothballed for the year. In the calculation of avoidable costs, there is no presumption that the unit would retire as the alternative to operating, although that possibility could be reflected if the owner documented that retirement was the alternative. Avoidable costs may also include annual capital recovery associated with investments required to maintain a unit as a capacity resource. Avoidable costs are defined to be net of net

¹ See PJM Open Access Transmission Tariff (OATT), "Attachment DD: Reliability Pricing Model," First Revised Sheet No. 617 (Effective January 19, 2008), section 6.8 (b).

revenues from all other PJM markets and unit-specific bilateral contracts. The specific components of avoidable costs are defined in the PJM Tariff.

Capacity resource owners can provide avoidable cost rate (ACR) data by providing their own unit-specific data, by selecting default ACR values, by submitting an opportunity cost for a possible export, by inputting a pre-defined transition adder or by using permitted combinations of these options. The default ACR values were calculated by the MMU based on available unit data and posted to the PJM web site in order to provide an alternative for owners that did not wish to calculate unit-specific ACR values or who believed that the default ACR values exceeded their unit-specific ACR values. When submitting their unit-specific data, resource owners could also include an APIR component. The project investment includable in APIR is the capital reasonably required to enable a capacity resource to continue operating or improve availability during peak-hour periods during the delivery year. Under the tariff, depending on the age and remaining life of the plant, the capital investment can be recovered over a period from one to twenty years.² Table 3 shows APIR investments by recovery period.

Table 1 shows the APIR results for the 2007/2008 through 2011/2012 RPM auctions. The weighted-average offer caps for units with APIR increased from \$38.58 per MW-day in 2007/2008 to \$147.77 per MW-day in 2011/2012. APIR investment peaked in 2009/2010 at \$2,540.3 million which was associated with 9,966.1 MW.³ The APIR component added \$18.50 per MW-day to the ACR value of the APIR units in 2007/2008 and added \$324.58 per MW-day in 2011/2012.⁴ The maximum APIR effect is the maximum amount by which an offer cap was increased by APIR. Actual offers did not always reflect the offer caps based on the APIR component.

² See PJM Open Access Transmission Tariff (OATT), "Attachment DD: Reliability Pricing Model," Original Sheet No. 614 (Effective June 1, 2007), section 6.8 (a).

³ The MW shown in Table 1 cannot be totaled for the auctions as several units had capital projects which extended over more than one year.

⁴ Note that the net revenue offset for an individual unit could exceed the corresponding ACR. In that case, the offer cap would be zero.

Offer caps for units without an APIR component, which includes units for which the default value was selected, also increased, from \$14.33 per MW-day to \$47.37 per MW-day.⁵ The increase from \$20.33 per MW-day in 2010/2011 to \$47.37 per MW-day in 2011/2012 for non-APIR units was due to an increase in the number and values of opportunity cost offers submitted.

Table 2 shows APIR investments by technology type and by major LDA, based on auction results to date. Generation owners planned to spend \$5,185.5 million on existing units through the 2011/2012 delivery year, under the APIR option. Comparing technologies, total APIR expenditures are greatest for coal units, equal to \$3,481.0 million, or 67 percent of all APIR expenditures, for all auctions to date. Comparing LDAs, total APIR expenditures are greatest in SWMAAC, equal to \$3,012.7 million, or 58 percent of all APIR expenditures, for all auctions to date. Of the total APIR expenditures in SWMAAC, \$2,608.2 million, or 87 percent, were for coal units.

Table 3 shows APIR investments by recovery period, by year, by LDA. The recovery periods correspond to the CRF table in the tariff.⁶ About 98 percent of total APIR investment is being recovered over four, five and ten year periods and about 78 percent is being recovered over five and ten year periods. Less than one percent of APIR investment is being recovered over a one year period and less than two percent of APIR investment is being recovered over the 15 and 20 year periods combined.

⁵ The default ACR values include an average APIR of \$0.91 per MW-day.

⁶ See PJM Open Access Transmission Tariff (OATT), "Attachment DD: Reliability Pricing Model," Original Sheet No. 614 (Effective June 1, 2007), section 6.8 (a).

Table 1 APIR results: 2007 – 2011 RPM auctions⁷

	Weighted-Average (\$ per MW-day UCAP)				
	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
Non-APIR units					
ACR	\$74.69	\$80.03	\$81.07	\$84.04	\$76.53
Net revenues	\$162.21	\$171.70	\$158.45	\$157.33	\$183.61
Offer caps	\$14.33	\$21.84	\$28.00	\$20.33	\$47.37
APIR units					
ACR	\$106.48	\$130.80	\$285.82	\$360.27	\$424.49
Net revenues	\$92.51	\$90.07	\$173.54	\$263.27	\$286.80
Offer caps	\$38.58	\$58.98	\$121.02	\$110.25	\$147.77
APIR	\$18.50	\$48.83	\$197.10	\$272.18	\$324.58
Maximum APIR effect	\$133.86	\$211.28	\$383.79	\$577.03	\$523.26
Total generating units offered	1,061	1,076	1,093	1,104	1,125
Total offer caps calculated	566	567	550	532	472
Offer caps with APIR	69	80	129	134	133
APIR MW (UCAP)	6,022.0	6,832.1	9,966.1	13,111.0	8,813.7
Capital (\$millions)	\$141.5	\$421.1	\$2,540.3	\$1,468.6	\$614.0
Capital (\$)/MW	\$23,497	\$61,636	\$254,894	\$112,013	\$69,664

⁷ APIR MW (UCAP) values shown are different than the values reported in the 2007 State of the Market Report (SOM). These values have been updated to reflect capacity modifications and EFORds used in each auction.

Table 2 APIR totals: 2007 – 2011 RPM auctions⁸

	Capital (\$millions)					Total
	Combined Cycle	Combustion Turbine	Oil or Gas Steam	Coal	Other	
2007/2008						
RTO	\$0.3	\$0.3	\$0.0	\$0.0	\$0.0	\$0.6
MAAC	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
EMAAC	\$2.8	\$11.3	\$24.4	\$39.6	\$0.0	\$78.1
DPL-SOUTH	\$0.0	\$0.0	\$0.0	\$5.9	\$0.0	\$5.9
SWMAAC	\$0.0	\$3.0	\$15.0	\$38.9	\$0.0	\$56.9
Total	\$3.1	\$14.6	\$39.4	\$84.4	\$0.0	\$141.5
2008/2009						
RTO	\$0.0	\$0.6	\$0.0	\$2.0	\$18.1	\$20.7
MAAC	\$0.0	\$0.0	\$0.0	\$12.0	\$0.0	\$12.0
EMAAC	(\$0.1)	(\$6.6)	\$17.9	\$335.3	\$0.0	\$346.5
DPL-SOUTH	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
SWMAAC	\$0.0	\$2.0	\$0.3	\$39.6	\$0.0	\$41.9
Total	(\$0.1)	(\$4.0)	\$18.2	\$388.9	\$18.1	\$421.1
2009/2010						
RTO	\$0.0	\$0.0	\$0.0	\$4.6	\$1.6	\$6.2
MAAC	\$0.0	\$0.0	\$0.0	\$9.3	\$0.0	\$9.3
EMAAC	\$0.0	\$18.2	\$26.8	\$13.4	\$0.0	\$58.4
DPL-SOUTH	\$0.0	\$1.6	\$0.0	\$12.1	\$0.0	\$13.7
SWMAAC	\$0.0	\$28.2	\$5.6	\$2,418.9	\$0.0	\$2,452.7
Total	\$0.0	\$48.0	\$32.4	\$2,458.3	\$1.6	\$2,540.3
2010/2011						
RTO	\$0.0	\$0.0	\$0.0	\$43.6	\$36.7	\$80.3
MAAC	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
EMAAC	\$2.2	\$1,095.1	\$9.5	\$1.4	\$0.0	\$1,108.2
DPL-SOUTH	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
SWMAAC	\$0.0	\$283.9	\$3.2	(\$7.0)	\$0.0	\$280.1
Total	\$2.2	\$1,379.0	\$12.7	\$38.0	\$36.7	\$1,468.6
2011/2012						
RTO	\$0.0	\$0.0	\$0.0	\$269.7	(\$3.5)	\$266.2
MAAC	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
EMAAC	\$3.2	\$2.1	\$37.5	\$123.9	\$0.0	\$166.7
DPL-SOUTH	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
SWMAAC	\$0.0	\$14.5	\$48.8	\$117.8	\$0.0	\$181.1
Total	\$3.2	\$16.6	\$86.3	\$511.4	(\$3.5)	\$614.0
All RPM auctions						
RTO	\$0.3	\$0.9	\$0.0	\$319.9	\$52.9	\$374.0
MAAC	\$0.0	\$0.0	\$0.0	\$21.3	\$0.0	\$21.3
EMAAC	\$8.1	\$1,120.1	\$116.1	\$513.6	\$0.0	\$1,757.9
DPL-SOUTH	\$0.0	\$1.6	\$0.0	\$18.0	\$0.0	\$19.6
SWMAAC	\$0.0	\$331.6	\$72.9	\$2,608.2	\$0.0	\$3,012.7
Total	\$8.4	\$1,454.2	\$189.0	\$3,481.0	\$52.9	\$5,185.5

⁸ Some planned capital expenditures are negative because resource owners could update their APIR estimates for each auction and made downward revisions to estimated expenditures

Table 3 CRF totals: 2007 – 2011 RPM auctions

	Remaining Plant Life (\$ millions & MW UCAP)											
	1 Year		4 Years		5 Years		10 Years		15 Years		20 Years	
	\$	MW	\$	MW	\$	MW	\$	MW	\$	MW	\$	MW
2007/2008												
RTO	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.6	430.1
MAAC	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
EMAAC	\$0.0	0.0	\$0.0	0.0	\$68.2	3,065.2	\$9.3	81.9	\$0.0	0.0	\$0.6	533.9
DPL-SOUTH	\$0.0	0.0	\$0.0	0.0	\$5.9	389.8	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
SWMAAC	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$56.9	1,521.1
Total	\$0.0	0.0	\$0.0	0.0	\$74.1	3,455.0	\$9.3	81.9	\$0.0	0.0	\$58.1	2,485.1
2008/2009												
RTO	\$0.0	0.0	\$0.0	0.0	\$20.1	1,169.6	\$0.0	0.0	\$0.6	117.0	\$0.0	296.0
MAAC	\$0.0	0.0	\$0.0	0.0	\$5.3	126.0	\$6.7	173.3	\$0.0	0.0	\$0.0	0.0
EMAAC	\$0.0	0.0	\$0.0	0.0	\$342.3	3,141.1	\$4.1	81.9	\$0.0	0.0	\$0.0	234.6
DPL-SOUTH	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
SWMAAC	\$0.0	0.0	\$0.0	0.0	\$42.0	1,492.6	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
Total	\$0.0	0.0	\$0.0	0.0	\$409.7	5,929.3	\$10.8	255.2	\$0.6	117.0	\$0.0	530.6
2009/2010												
RTO	\$0.0	0.0	\$0.0	0.0	\$6.2	227.3	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
MAAC	\$0.0	0.0	\$0.0	0.0	\$9.3	41.6	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
EMAAC	\$0.0	0.0	\$17.5	754.1	\$31.5	2,561.5	\$9.4	29.6	\$0.0	0.0	\$0.0	232.3
DPL-SOUTH	\$0.0	0.0	\$13.7	742.7	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
SWMAAC	\$0.0	0.0	\$631.4	1,064.1	\$827.6	3,068.3	\$993.7	1,244.6	\$0.0	0.0	\$0.0	0.0
Total	\$0.0	0.0	\$662.6	2,560.9	\$874.6	5,898.7	\$1,003.1	1,274.2	\$0.0	0.0	\$0.0	232.3
2010/2011												
RTO	\$0.0	0.0	\$0.0	0.0	\$80.3	1,822.1	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
MAAC	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
EMAAC	\$6.8	583.2	\$7.4	729.1	\$136.9	2,526.2	\$930.0	1,064.0	\$0.0	0.0	\$27.1	1,239.5
DPL-SOUTH	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
SWMAAC	\$0.0	0.0	\$82.1	1,055.7	\$204.3	2,851.0	(\$6.3)	1,240.2	\$0.0	0.0	\$0.0	0.0
Total	\$6.8	583.2	\$89.5	1,784.8	\$421.5	7,199.3	\$923.7	2,304.2	\$0.0	0.0	\$27.1	1,239.5
2011/2012												
RTO	\$0.0	0.0	\$269.7	702.9	(\$3.5)	398.7	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
MAAC	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
EMAAC	\$0.9	583.2	\$0.0	0.0	\$155.8	2,214.1	\$10.0	87.0	\$0.0	0.0	\$0.0	0.0
DPL-SOUTH	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
SWMAAC	\$0.0	0.0	\$40.1	750.8	\$126.0	2,836.8	\$15.0	1,240.2	\$0.0	0.0	\$0.0	0.0
Total	\$0.9	583.2	\$309.8	1,453.7	\$278.3	5,449.6	\$25.0	1,327.2	\$0.0	0.0	\$0.0	0.0
All RPM auctions												
RTO	\$0.0	0.0	\$269.7	702.9	\$103.1	3,617.7	\$0.0	0.0	\$0.6	117.0	\$0.6	726.1
MAAC	\$0.0	0.0	\$0.0	0.0	\$14.6	167.6	\$6.7	173.3	\$0.0	0.0	\$0.0	0.0
EMAAC	\$7.7	1,166.4	\$24.9	1,483.2	\$734.7	13,508.1	\$962.8	1,344.4	\$0.0	0.0	\$27.7	2,240.3
DPL-SOUTH	\$0.0	0.0	\$13.7	742.7	\$5.9	389.8	\$0.0	0.0	\$0.0	0.0	\$0.0	0.0
SWMAAC	\$0.0	0.0	\$753.6	2,870.6	\$1,199.9	10,248.7	\$1,002.4	3,725.0	\$0.0	0.0	\$56.9	1,521.1
Total	\$7.7	1,166.4	\$1,061.9	5,799.4	\$2,058.2	27,931.9	\$1,971.9	5,242.7	\$0.6	117.0	\$85.2	4,487.5

from previous auctions.

Generation owners did not always offer existing capacity at the APIR offer caps. Table 4 shows the MW offered with an APIR component that were offered at less than the maximum APIR offer cap, that were offered at zero when there was a positive offer cap and that were offered at zero when there was a zero offer cap, by year and by LDA.⁹ About 25 percent of all APIR offers were at less than the offer cap for the 2008/2009, 2009/2010 and 2010/2011 auctions, increasing to about 50 percent for the 2011/2012 auction. Note that for each of these comparisons, the results vary by LDA. Less than 10 percent of all APIR offers with offer caps greater than zero were at zero for the 2007/2008, 2008/2009 and 2009/2010 auctions, increasing to about 11 percent for the 2010/2011 auction and decreasing to about one percent for the 2011/2012 auction. On average over the five base residual auctions to date, about 35 percent of all units with APIR investments had offer caps of zero, after accounting for net revenue. Over the five base residual auctions to date, the largest volumes of MW with APIR offer caps that were offered at less than APIR offer caps were in SWMAAC and EMAAC. Over the five base residual auctions to date, the largest volumes of MW with APIR offer caps greater than zero that were offered at zero were in the RTO and EMAAC.

⁹ The MW offered at zero when the APIR offer cap was greater than zero are show separately but are included in the MW offered at less than the APIR offer cap.

Table 4 2007-2011 Offer cap comparisons for units with APIR component of offers (MW)¹⁰

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012
Offer < APIR offer cap					
RTO	136.9	126.5	27.5	1,465.2	702.9
MAAC	0.0	216.7	0.0	0.0	0.0
EMAAC	675.7	1,254.7	705.7	1,223.7	878.9
DPL-SOUTH	0.0	0.0	0.0	0.0	0.0
SWMAAC	28.3	0.0	2,211.0	268.2	2,888.9
Total	840.9	1,597.9	2,944.2	2,957.1	4,470.7
Offer = 0 (APIR offer cap > 0)					
RTO	136.9	9.5	27.5	1,465.2	0.0
MAAC	0.0	0.0	0.0	0.0	0.0
EMAAC	138.2	561.6	676.1	0.0	0.0
DPL-SOUTH	0.0	0.0	0.0	0.0	0.0
SWMAAC	28.3	0.0	0.0	0.0	94.0
Total	303.4	571.1	703.6	1,465.2	94.0
Offer = 0 (APIR offer cap = 0)					
RTO	293.2	1,456.1	199.8	356.9	398.7
MAAC	0.0	0.0	41.6	0.0	0.0
EMAAC	1,309.8	843.5	849.5	1,277.7	121.0
DPL-SOUTH	389.8	0.0	742.7	0.0	0.0
SWMAAC	812.5	499.2	754.9	3,705.9	1,509.2
Total	2,805.3	2,798.8	2,588.5	5,340.5	2,028.9
Total APIR offer caps					
RTO	430.1	1,582.6	227.3	1,822.1	1,101.6
MAAC	0.0	299.3	41.6	0.0	0.0
EMAAC	3,681.0	3,457.6	3,577.5	6,142.0	2,884.3
DPL-SOUTH	389.8	0.0	742.7	0.0	0.0
SWMAAC	1,521.1	1,492.6	5,377.0	5,146.9	4,827.8
Total	6,022.0	6,832.1	9,966.1	13,111.0	8,813.7

MW Added Under RPM

Table 5 shows the 12,566.1 MW increase in total capacity resources which has occurred during the periods covered by RPM auctions.^{11, 12} Table 6 shows the total MW by year,

¹⁰ Approximately \$124 million of capital investment will be spent on units which have zero as their offer cap.

¹¹ All MW values are in terms of unforced capacity (UCAP).

by new versus reactivated and by technology.) While it is not possible to conclude that all behavior related to capacity resources during this period was a direct result of RPM, it is reasonable to conclude that much of this behavior took account of the positive and negative incentives associated with RPM. Some decisions, reflected in additional capacity resources during this period, were made prior to RPM and may have reflected expectations about capacity market design. Some decisions, made as a result of RPM incentives, have not yet been reflected in additional capacity resources. Some decisions to reduce the capacity of existing resources reflected the performance incentives and penalties included in the RPM rules as did some decisions to increase the capacity of existing resources.

Of the 12,566.1 MW total increase in capacity resources during the periods covered by RPM auctions, 3,139.2 MW were new generation, 796.8 MW were reactivated units and 1,713.5 MW were net positive capacity modifications, or a total of 5,649.5 MW. Owners submitted both positive and negative generation capacity modifications (capmods) and DR modifications (DR mods) that were the result of owner reevaluation of the capabilities of their generation and DR. There was a net RTO increase of 2,117.2 MW of DR mods. The net EFORd effect of 157.9 MW was due to lower sell offer EFORds. In addition to these increases in internal capacity: PJM has become a net importer under RPM while PJM was a net exporter under the previous capacity market, resulting in an increase of 2,480.7 MW in net exchange;¹³ ILR increased by 370.0 MW over the level of ALM under the pre-RPM capacity credit markets; and units which postponed retirement/deactivation added 1,790.8 MW.¹⁴

¹² The MW added under RPM calculated by the MMU differs from the impact calculated by The Brattle Group in their “Review of PJM’s Reliability Pricing Model” as of June 30, 2008 primarily because the Brattle MW are in ICAP while MMU MW are in UCAP and Brattle included additional postponed retirements/deactivations, based on Brattle’s phone conversations, which were not included in the PJM Generation Retirement Survey II - October 2007 and which are not included here.

¹³ The change in net exchange was calculated based on the average daily net exchange value for the planning period June 2006 through May 2007 (-2228.6 MW).

¹⁴ Based on PJM Generation Retirement Survey II - October 2007.

Table 5 MW added under RPM: 2007 – 2011 RPM auctions¹⁵

	UCAP (MW)
Total internal capacity @ 31-May-07	154,967.6
New generation	3,139.2
Reactivated units	796.8
Generation capmods	1,713.5
DR mods	2,117.2
Reclassification of Duquesne units	(3,009.5)
Net EFORd effect	157.9
Total internal capacity changes	4,915.1
Total internal capacity @ 01-Jun-11	159,882.7
Reclassification of Duquesne units	3,009.5
Adjusted internal capacity @ 01-Jun-11	162,892.2
Net exchange (imports-exports) @ 01-Jun-11	2,480.7
ALM/ILR @ 01-Jun-11	370.0
Postponed/withdrawn retirements/deactivations @ 01-Jun-11	1,790.8
Total MW added under RPM @ 01-Jun-11	12,566.1

Table 6 MW added under RPM: 2007 – 2011 new/reactivated units

	2007/2008		2008/2009		2009/2010		2010/2011		2011/2012		Total	
	Units	UCAP (MW)	Units	UCAP (MW)	Units	UCAP (MW)	Units	UCAP (MW)	Units	UCAP (MW)	Units	UCAP (MW)
New units												
CC	0	0.0	0	0.0	0	0.0	0	0.0	1	556.5	1	556.5
CT	0	0.0	0	0.0	8	380.2	7	270.5	11	728.7	26	1,379.4
Diesel	0	0.0	3	23.3	2	9.2	3	16.4	1	4.2	9	53.1
Solar	0	0.0	0	0.0	0	0.0	0	0.0	1	1.1	1	1.1
Steam	0	0.0	0	0.0	1	49.8	0	0.0	2	838.0	3	887.8
Wind	0	0.0	5	66.1	0	0.0	5	120.0	4	75.2	14	261.3
Total	0	0.0	8	89.4	11	439.2	15	406.9	20	2,203.7	54	3,139.2
Reactivated units												
CT	0	0.0	0	0.0	0	0.0	3	161.7	2	319.5	5	481.2
Diesel	0	0.0	0	0.0	0	0.0	1	3.3	0	0.0	1	3.3
Steam	1	32.3	2	112.6	0	0.0	0	0.0	2	167.4	5	312.3
Total	1	32.3	2	112.6	0	0.0	4	165.0	4	486.9	11	796.8

¹⁵ Total internal RTO unforced capacity includes all generating units and DR that qualified as PJM capacity resources for an auction, excluding external units, and also includes owners' modifications to installed capacity ratings which are permitted under the PJM Reliability Assurance Agreement (RAA) and associated manuals. See "Reliability Assurance Agreement among Load-Serving Entities in the PJM Region," (June 1, 2007) (Accessed July 19, 2007) <<http://www.pjm.com/documents/downloads/agreements/raa.pdf>> (1.92 MB).