

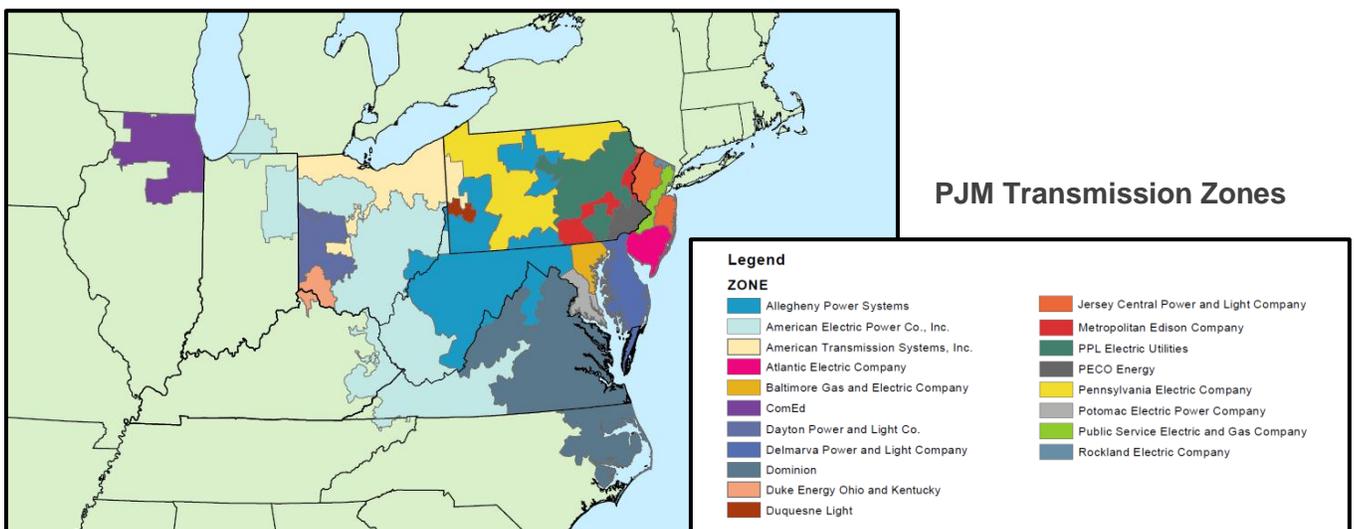
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PJM’s Forward Capacity Auction Attracts Significant New Generating Capacity

PJM Interconnection LLC (PJM)—the regional transmission organization (RTO) serving all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia—recently announced the results of its forward capacity auction—known as the Reliability Pricing Model (RPM). The following issue brief discusses the results of the auction, which secured record amounts of new generation, demand response, and energy efficiency.

Background

PJM’s forward capacity auction—RPM—is designed to ensure that there are sufficient generation and demand-side resources available to meet customers’ current and projected electricity needs—with an added margin of safety. Many regions in the U.S. that have transitioned to competitive electricity markets have adopted forward capacity auctions to ensure resource adequacy. PJM procures capacity through the RPM three years in advance of its delivery year. For example, the most recent capacity auction held in May 2012 obtained capacity for June 1, 2015 through May 31, 2016. Incremental auctions are held closer to the delivery year. The auction establishes capacity prices (\$/MW-day) through competitive bidding that will be paid to resources committed for the future delivery year. PJM announced the results of its annual RPM auction on May 18, 2012.



Source: PJM Interconnection, LLC

Latest Auction Results

The 2015/2016 RPM auction produced a robust market response, ensuring a 20 percent reserve capacity margin in the PJM region. Record amounts of new generation and demand side resources were offered in the auction: 8,207 MW of new generating capacity (Installed Capacity—ICAP), and 5,000 MW of additional demand response and energy efficiency resources.

The latest PJM auction procured 164,561 MW of capacity resources at a base price of \$136 per MW-day.¹ (See table below for historical comparison.) This represents a 20% reserve margin for the region and an 8% increase over the resource clearing price for the 2014/2015 delivery year. Prices were higher in northern Ohio (ATSI) and the Mid-Atlantic region (MAAC).² The clearing price in northern Ohio increased from \$125.99 in the 2014/2015 Delivery Year to \$357.00 in the 2015/2016 Delivery year. The clearing price in the MAAC region increased from \$136.50 in the 2014/2015 Delivery Year to \$167.46 in the 2015/2016 Delivery Year. The clearing price in the Northern PSEG area decreased from \$225.00 in the 2014/2015 Delivery year to \$167.46 in the 2015/2016 Delivery year (26% decrease).

RPM Base Residual Auction Resource Clearing Price Results in the RTO

Auction Results	2008/2009	2009/2010	2010/2011	2011/2012*	2012/2013	2013/2014**	2014/2015***	2015/2016
Resource Clearing Price	\$111.92	\$102.04	\$174.29	\$110.00	\$16.46	\$27.73	\$125.99	\$136.00
Cleared UCAP (MW)	129,597.6	132,231.8	132,190.4	132,221.5	136,143.5	152,743.3	149,974.7	164,561.2
Reserve Margin	17.5%	17.8%	16.5%	18.1%	20.9%	20.2%	19.6%	20.2%

*2011/2012 BRA was conducted without Duquesne zone load.

**2013/2014 BRA includes ATSI zone load

***2014/2015 BRA includes Duke zone

****2015/2016 BRA includes a significant portion of AEP and DEOK zone load previously under FRR Alternative

All new generation capacity resource offers were subject to the Minimum Offer Price Rule (MOPR). The MOPR is designed to prevent extremely low and uncompetitive power sale bids from entering the capacity market. The PJM Independent Market Monitor (IMM) had submitted a complaint to FERC on May 1, 2012 regarding its concerns with the application of the MOPR exception process. According to PJM, “[t]he issues specified in the IMM complaint regarding application of the MOPR exception process had no impact on the auction results...The complaint was withdrawn by the IMM on May 17, 2012.”

Key Takeaways

Moderate Increase in Capacity Prices. The base capacity price of \$136 per MW-day rose 8% compared to the 2014/2015 results, but overall, capacity payments constitute a relatively small

¹¹ PJM’s all-time peak demand is 158,448 MW.

² The MAAC area consists of the transmission system of Atlantic City Electric, Baltimore Gas and Electric Company, Delmarva Power, Jersey Central Power and Light Company (JCP&L), Metropolitan Edison Company (Met-Ed), PECO, Pennsylvania Electric Company (Penelec), Pepco, PPL Electric Utilities, Public Service Electric and Gas Company (PSE&G), and Rockland Electric Company.

share (less than 10 percent) of retail electricity prices. According to Andy Ott, Senior Vice President, PJM: “[c]apacity is a fairly small component of the retail price of electricity, and the cost of capacity at the retail level tends to be averaged out over several years. In addition, if natural gas prices remain low, that would tend to restrain retail electricity prices.” In 2011, capacity payments accounted for less than 16 percent of total electricity procurement costs in PJM. See table below. These are the costs to procure power for customers. In terms of customer bills, which include distribution costs, capacity payments account for less than 10 percent of a typical customer’s monthly electric bill.

Auction Results Reveal Ample Capacity to Meet PJM Demand. The auction attracted record amounts of new generation, demand response, and energy efficiency. PJM attributes the increase to (1) EPA’s Mercury and Air Toxics Standards (MATS), (2) New Jersey air pollution rules, and (3) competitiveness of natural gas. Natural gas CTs and NGCC facilities accounted for about 90% of new generation offers. There are over 14,000 MW of generation retirements pending by the beginning of the 2015/2016 Delivery Year. While the retirements in PJM are primarily coal-fired plants, the new capacity added to the supply curve included a mix of resources. Ten percent of the capacity that cleared the auction was from demand response and energy efficiency resources.

Summary of Resources Offered and Cleared for the 2015/2016 Delivery Year

Unforced Capacity – UCAP; Resources that clear in the auction are eligible for capacity payments

Resource	MW Offered (% of total)	MW Cleared (% of total)	% Cleared
Generation	157,691.1 (88%)	148,805.9 (90%)	94%
Demand Response	19,956.3 (11%)	14,832.8 (9%)	74%
Energy Efficiency	940.3 (1%)	922.5 (1%)	98%
Total All Resources	178,587.7	164,561.2	92%
New Generation and Uprates*	7,322.3 (4%)	5,346.3 (3%)	73%

The changes in the PJM capacity supply mix are reflected in the auction prices but according to PJM, “many of these units submitting retirement notices were not committed as Capacity Resources in the 2014/2015 Delivery Year, so while the unprecedented level of unit retirements has the effect, all else equal, of placing upward pressure on prices, the effect is likely muted by the fact many of the units retiring were not needed as capacity resources in the previous [Base Residual Auction].”

Demand Response Gains Momentum as a Capacity Resource. Demand side participation in the PJM capacity market has steadily increased since the RPM was implemented for the 2007/2008 Delivery Year. The quantity of demand side resources offered into the auction rose from 15,545.6 for the 2014/2015 Delivery Year to 19,956.3 for the 2015/2016 Delivery Year. Although the total quantity offered between these periods rose 28%, the amount clearing the auction only increased 5% with a total of 14,833 MW clearing for the 2015/2016 Delivery Year. Demand side resources represent 9% of the total resources clearing the latest auction. This will continue the debate around the use of emergency on-site generators in demand response programs.

Natural Gas Fired-Generation Supplies Majority of New Generation Capacity. New natural gas generation accounted for 95% of new generation: 1,382.5 MW of natural gas CTs and 5,914.5 MW of natural gas combined cycle facilities. Most of the new generation offered in the auction cleared (70%). Capacity that failed to clear can offer into the incremental auctions.

Total Cost of Electricity Procurement in PJM in 2010 and 2011

Category	2010 \$/MWh	2011 \$/MWh	2010 Percent of Total	2011 Percent of Total
Energy	\$48.35	\$45.94	72.5%	73.4%
Capacity	\$12.15	\$9.72	18.2%	15.5%
Transmission Service Charges	\$4.00	\$4.42	6.0%	7.1%
Operating Reserves (Uplift)	\$0.79	\$0.79	1.2%	1.3%
Reactive	\$0.44	\$0.42	0.7%	0.7%
PJM Administrative Fees	\$0.36	\$0.37	0.5%	0.6%
Regulation	\$0.35	\$0.32	0.5%	0.5%
Transmission Enhancement Cost Recovery	\$0.21	\$0.29	0.3%	0.5%
Synchronized Reserves	\$0.06	\$0.09	0.1%	0.1%
Transmission Owner (Schedule 1A)	\$0.09	\$0.09	0.1%	0.1%
Day Ahead Scheduling Reserve (DASR)	\$0.01	\$0.05	0.0%	0.1%
Black Start	\$0.02	\$0.02	0.0%	0.0%
NERC/RFC	\$0.02	\$0.02	0.0%	0.0%
RTO Startup and Expansion	\$0.01	\$0.01	0.0%	0.0%
Load Response	\$0.00	\$0.01	0.0%	0.0%
Transmission Facility Charges	\$0.00	\$0.00	0.0%	0.0%
Total	\$66.72	\$62.56	100.0%	100.0%

PJM Capacity Auction Results: (for RTO, \$/MW-day)	2009/10 \$102	2010/11 \$174	2011/12 \$110	2015/16 \$136
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Sources: PJM RPM Base Residual Auction Results; Monitoring Analytics, State of the Market Report for PJM, March 2012

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