



To ensure the future availability of the generating capacity and other resources needed to keep the power grid operating reliably for consumers, PJM Interconnection developed the Reliability Pricing Model, a method of pricing capacity.

## Background

In order to maintain the reliability and stability of the electric transmission system, grid operators match consumers' demand for electricity with the resources available to meet that demand.

Because electricity is a speed-of-light product that cannot be stored economically in large quantities, PJM must respond instantly to changes in demand and operating conditions across the grid in its territory. The PJM grid serves 61 million people in 13 states and the District of Columbia.

Capacity represents the need to have adequate supply resources to ensure that the demand for electricity can be met at all times. In PJM's case, a utility or other electricity supplier must have the resources to meet its customers' demand plus a reserve. Suppliers can meet that requirement with generating capacity they own, with capacity purchased from others under contract or with capacity obtained through PJM's capacity-market auctions.

Generators (or other resources such as demand response) must receive enough revenues to cover their costs, even if they operate infrequently. Payments for capacity provide a revenue stream to keep current resources operating and to develop new resources.

With its low capacity prices, the pre-2007 short-term capacity system did not produce sufficient new investment in the right locations to meet future needs. Although PJM as a whole had sufficient generating capacity, the pace of generation development had slowed because

revenues were not sufficient to cover the cost of investing in new generating plants, while electricity demand was rising. In addition, low prices had forced needed generation in certain areas to retire.

## A Capacity Market

The Reliability Pricing Model, implemented in 2007, uses a market approach to obtaining the capacity needed to ensure reliability, with incentives that stimulate investment both in maintaining existing generation and in encouraging the development of new sources of capacity – resources that include not just generating plants but also demand response and energy-efficiency programs.

Investors need sufficient long-term price signals to encourage the maintenance and development of generation and other resources. The RPM, based on making capacity commitments three years ahead, creates long-term price signals to attract needed investments in reliability in the PJM region.

The RPM capacity market works in conjunction with PJM's Regional Transmission Expansion Planning process to ensure the future reliability of the system.

The essential elements of the RPM capacity market are:

- Procurement of capacity three years before it is needed through a competitive auction.



- Locational pricing for capacity that varies to reflect limitations on the transmission system's ability to deliver electricity into an area and to account for the differing need for capacity in various areas of PJM.
- A variable resource requirement curve to help set the price for capacity.

The three-year forward auction allows for competition between new resources and existing resources.

Under the RPM, demand resources can compete with generation. Load-serving entities can supply their energy requirements through generation, demand response or energy-efficiency programs.

Demand resources can submit offers to reduce demand in the RPM capacity-market auctions, and those bids are eligible to set the market-clearing price for capacity.

### **Capacity Performance**

Against a backdrop of generation that was unexpectedly unable to perform during extremely cold weather, industry change and the coal-to-natural gas fuel transition, PJM developed the Capacity Performance product, a pay-for-performance standard for power supplies. Capacity resources must deliver energy whenever PJM declares that emergency conditions exist. If they do not, they will be assessed payments that will go to resources which over-perform.

The Capacity Performance product was approved by the Federal Energy Regulatory Commission and introduced into the August 2015 RPM capacity auction for the 2018/2019 delivery year.

Two transitional auctions also were held to incorporate the new product into the 2016/2017 and 2017/2018 delivery years.

### **The RPM Today**

PJM procured 165,109 MW of capacity in the May 2017 auction for the 2020/2021 delivery year, including 2,350 MW of new gas-fired generation. This was the first auction in which all resources had to meet capacity performance requirements.

This was also the first auction to have participation by Price Responsive Demand resources, which are demand response-like resources that react to market signals.

The auction procured 7,532 MW of demand response resources committed to year-round availability and higher performance standards. There were 119 MW of solar resources and 504.3 MW of wind resources that cleared the auction. In addition, 1,710 MW of energy efficiency resources cleared.

*June 1, 2017*