



Forward Capacity Auctions:
Financial, Physical, or Both
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Forward Capacity Needs

In forward capacity market designs, future capacity requirements are determined by planners based on projections, then contracted for by the ISO.

	PJM Projected Peak Load	Weather Adjusted Peak Load
2010-2011	144,592	135,080
2011-2012	145,208	134,325
2012-2013	144,857	136,595
2013-2014	147,270	

Projected capacity needs often turn out to differ from actual capacity needs, even on a weather adjusted basis.



Forward Capacity Needs

Projections of weather adjusted capacity needs generally become more accurate as the operating year approaches.

- The level of economic activity can be projected more accurately.
- The level of fuel prices and power prices can be estimated more accurately.
- Hence, as the operating year approaches, it may become apparent that not all of the capacity contracted for in forward auctions will be needed to maintain reliability, or perhaps, that having additional capacity would be valuable.



PJM Incremental Auctions

PJM has moved to a design in which changes in capacity needs are accounted for in its incremental auctions.

PJM: Changes in RTO Capacity Obligation (megawatts)

	2012-2013	2013-2014	2014-2015	2015-2016
1st Incremental	-60.3	-2494.9	-2610.0	-1815.9
2nd Incremental	-2376.8	-3602.1	-1566.9	
3rd Incremental	-1979.3	-465.0	NA	
Total	-4416.4	-6562.0	-4176.9	

PJM has a quasi financial forward auction design that has allowed capacity suppliers to buy out of their forward supply obligation when PJM scales back its load forecast.



PJM Incremental Auctions

There has been a tendency for capacity prices in the PJM incremental auctions to fall well below prices in the base auction, particularly for the broader regions such as RTO and Eastern MAAC.

2012-2013

	(\$ per day)			MW Change		
	RTO	EMAAC	PSE&G	RTO	EMAAC	PSE&G
Base	16.46	139.73	185			
1st Incremental	16.46	153.67	153.67	-60.3	1172.4	NA
2nd Incremental	13.01	48.91	48.91	-2376.50	-305.50	NA
3rd Incremental	2.51	2.51	2.51	-1979.30	NA	NA

PJM Incremental Auctions

2013-2014

(\$ per day)

MW Change

	RTO	EMAAC	PSE&G	RTO	EMAAC	PSE&G
Base	27.73	245	245			
1st Incremental	20.0	178.85	178.85	-2494.9	316.60	NA
2nd Incremental	7.01	40.00	40.00	-3602.10	-770.50	NA
3rd Incremental	4.05	188.44	188.44	-465.00	-514.00	NA

2014-2015

(\$ per day)

MW Change

	RTO	EMAAC	PSE&G	RTO	EMAAC	PSE&G
Base	125.99	136.5	225			
1st Incremental	5.54	16.56	410.95	-2610.00	-1154.30	92.40
2nd Incremental	25.00	56.94	310.00	-1566.90	-1028.60	0.00



PJM Incremental Auctions

Low capacity prices in the incremental auctions relative to the base auctions create an opportunity for arbitrage profits.

- This is an efficient design that can serve to reduce the cost to power consumers of overstated forward load projections.
- Incremental prices are not always lower, however.
- In such a design, the ISO has to take steps to ensure that forward capacity market sales are supported by real-resources that *could be available*, if they are needed.



Demand Response

It has been observed that much of the capacity that is bought back in the incremental auctions has been demand response, with a suggestion that this pattern suggests a design problem.

- It is important that capacity resources clearing in the base auction be able to perform if needed.
- However, my view is that what is surprising about the outcomes in the incremental auctions is not that so much demand response was bought back, but that more was not bought back.



Demand Response

Since the cost of providing demand response should be mostly the cost of interrupting power consumption on a high load day, most of the cost of providing it should not be sunk prior to the operating year, i.e. most of the cost should be avoidable if the demand response is not needed.

- Why does any demand response stay in the capacity market when capacity prices fall to extremely low levels in incremental auctions, this implies most of the costs of providing demand response are sunk prior to the operating year?
- Are there state programs that procure demand response and require that it be provided in the operating year regardless of incremental capacity prices?



Demand Response

Artificially low capacity prices in incremental auctions does not benefit consumers, it victimizes them.

- When PJM buys capacity at a high price in the base auction and the capacity is later sold back at a low price, the low price raises consumer costs, because PJM recovers only a small portion of the money spent to procure the capacity in the base auction.
- RTO's should analyze whether requirements on demand response procured by state programs are artificially depressing incremental auction prices, inflating capacity supplier profits, and raising costs for power consumers.

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