Market Factors Influencing Nuclear Power Economics

The author's views do not necessarily represent the views of the Federal Energy Regulatory Commission.

Nuclear Power Plants Operate under Varied Market Regimes

Plants under Cost of Service Regulation in Non-restructured regions

- Receive guaranteed cost recovery including a regulated return
- Costs are recovered primarily from retail customers, but can also be recovered through wholesale power contracts
- Cost recovery not substantially affected by market rates

Plants under Market-based Regulation in Restructured Regions

- Receive market rates through the markets administered by system operators or arms-length bilateral contracts
- Costs are recovered through the market or bilateral contract
- Cost Recovery affected by market rates

Plants with cost of service equivalence in a Restructured Region
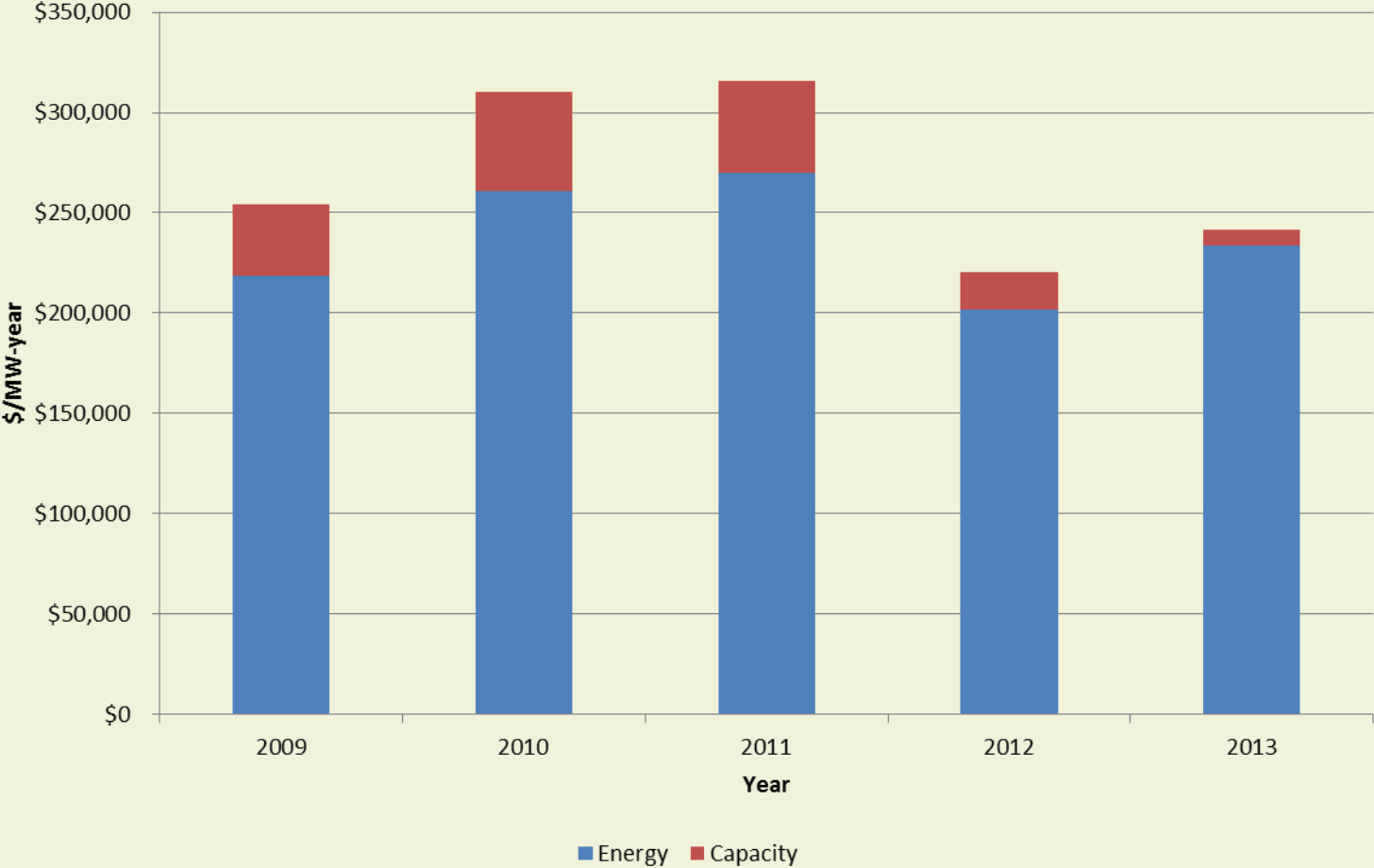
Wholesale Organized Electricity Markets

Energy Markets

- Select the lowest cost set of resources needed to serve load
- Market price for all resources in an area is based on the highest cost resource needed to serve load
- Any difference between the market price and a resource specific cost is considered a contribution to recover fixed costs

Capacity Markets

- Designed to ensure adequate resources
- Price is:
  - highest going forward cost of an existing resource when no new resources are needed
  - cost of new entry when new resources are needed

Nuclear Power Plant Net Revenues in PJM 2009 - 2012

Source: 2013 State of the Market Report for PJM, Figure 7-15

Market Dynamics Influencing Market Prices

Energy market drivers

- Low fuel prices

- Low load growth

- Wind output, particularly in low load periods
  - Increased competition from low cost resource
  - Increased transmission congestion affecting resource deliverability
  - Willingness to operate when energy prices are very low

Capacity market drivers - low cost alternatives (e.g., demand response and energy efficiency) to new generation have been displacing relatively expensive existing