



# Demand Side Update for PJM Interconnection

National Town Meeting on Demand  
Response and Smart Grid

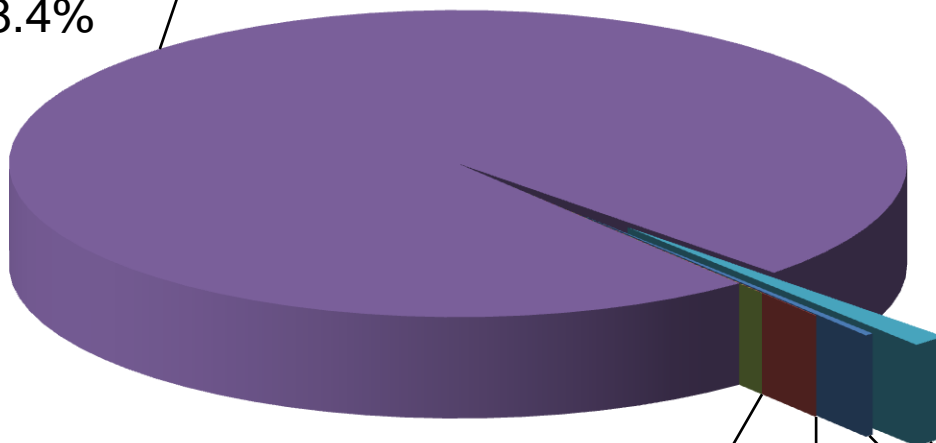
Washington, D.C.

June 24, 2010

<h2>Energy</h2>	<h2>Capacity</h2> <p><i>PJM capacity procured via RPM</i></p>	<h2>Ancillary Services</h2>
<ul style="list-style-type: none"> <li>• Economic</li> <li>• Emergency – Energy Only</li> </ul> <p>Voluntary load reductions for <u>energy</u>, even during a PJM emergency event</p>	<ul style="list-style-type: none"> <li>• Emergency – Capacity Only</li> <li>• Emergency – Full (also gets an energy payment)</li> </ul> <p><b>Mandatory</b> reduction for PJM Load Management emergency event if committed in RPM</p> <hr/> <ul style="list-style-type: none"> <li>• Energy Efficiency</li> </ul> <p>Continuous reductions that are fully implemented at all times during the delivery year</p>	<ul style="list-style-type: none"> <li>• Synchronized Reserves               <ul style="list-style-type: none"> <li>• Regulation</li> </ul> </li> <li>• Day Ahead Scheduling Reserves</li> </ul> <p>Load bids into these markets and responds to an event similarly to a generator</p> <p><b>Mandatory</b> response to a Synchronous Reserve event if cleared in Synch market</p> <p><b>Mandatory</b> response to a PJM regulation signal if cleared in Reg market</p>

Capacity Net Revenue,  
\$301,273,000,  
98.4%

**Total: \$306,321,000**



UDS Dispatched Energy,  
\$31,000, 0.0%

Day-Ahead Energy,  
\$92,000, 0.0%

Synchronized Reserves,  
\$3,977,000, 1.3%

Self Scheduled Energy,  
\$948,000, 0.3%

Capacity Net Revenue inclusive of Capacity Credits and Charges. Charges were billed in December, 2009 for Compliance Test results.

- Tool for collaboration of the wholesale and retail markets to develop demand response
- Endorsed by the Mid-Atlantic Distributed Resources Initiative in 2007
- Use of 5 key functions to organize an integrated wholesale/retail effort to support demand response
- Check list of wholesale and retail “to dos” identified through a collaborative process
- Record of wholesale and retail market accomplishment and of requirements memorialized in the DR Roadmap

- Roll of Relevant Electric Retail Regulatory Authorities (RERRAs)
- 25% limit on DR provision of market requirement for synchronized reserve, regulation and day-ahead scheduled reserve
- Bid offer thresholds
- Aggregation
- Normal operations review of Economic Load Response registrations

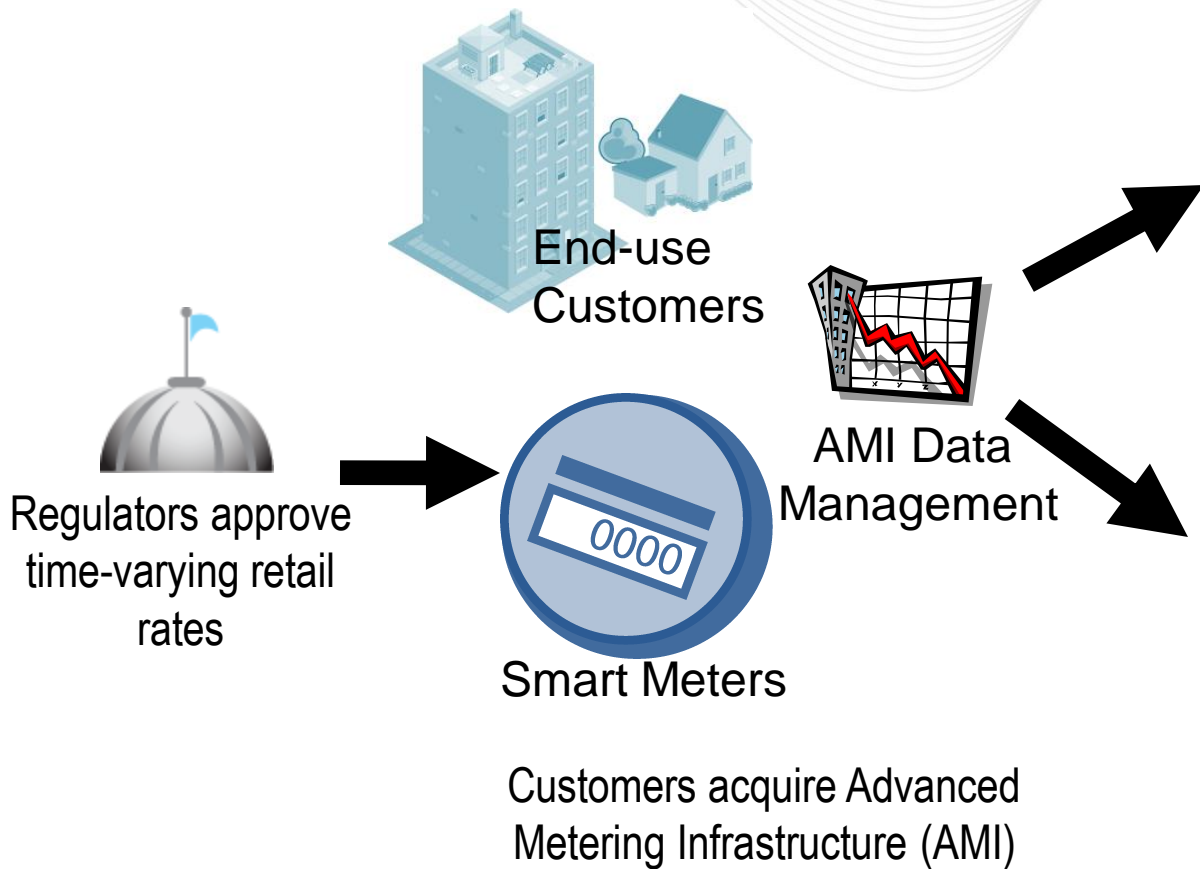
- Shortage Pricing Working Group = stakeholder process for Order 719 reserve shortage pricing compliance
- Goal of more granular dispatch of Load Management resources that also addresses the CSPs' fairness and administrative concerns
- Goal of improving status of Load Management resources available to PJM operations from CSPs

- Participation in the PJM capacity market permitted beginning with May 2009 Base Residual Auction for 2012/2013 delivery year
  - 652.7 MW offered in May 2009 BRA
  - 568.9 MW cleared in May 2009 BRA
- Measurement and Verification Plan requirements in Manual 18B
- Interest limited to EE impact in hours ending 1500 to 1800 on weekday summer afternoons
- Requirement to exceed EE standards in effect during the delivery year

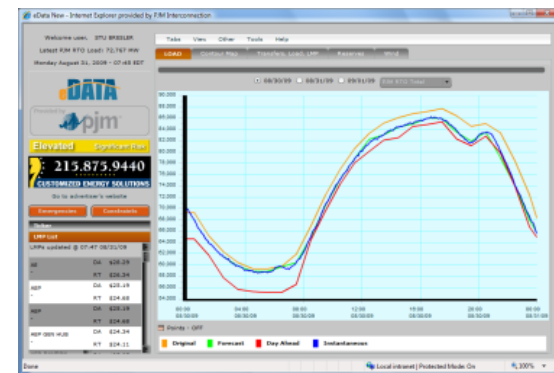
- March 2009 white paper by Andy Ott and Ohio Commissioner Paul Centolella
- Added to Demand Response Roadmap for the PJM Region
- Theme of Demand Response Symposium III
- Wholesale rules and processes before the Markets Implementation Committee
- Ongoing outreach to ensure alignment with retail plans and timeline

- Interruptible load was DR 1.0
  - No response at all to prices, but response as the LSE/EDC needed it as a capacity resource only
  - Treats DR effectively as a supply-side resource from a planning perspective
- Current wholesale/retail paradigm is DR 2.0
  - Responses to wholesale market prices with activity at the wholesale level as both a capacity and energy resource
  - Little integration and coordination with actions at retail level as CBL and wholesale prices are treated as a proxy for a dynamic retail rate
  - DR still treated as a supply-side resource
- Price Responsive Demand is DR 3.0
  - Integrates/coordinates wholesale/retail activities through AMI and dynamic rates

# PRD: Accounting for Usage Reduction Capability as a Reduction in Load



Customers respond to price and manage consumption



PJM incorporates price-responsive load into forecasts and operations

- Vision of Smart Grid rests on demand response
- Flatten the customer's usage profile using:
  - Hourly interval meters
  - Dynamic Retail Rates
  - Automation to implement customer decisions about usage when prices are high or when required by system conditions
- Foundation for integrating intermittent renewable resources and storage including electric vehicles

**PRICES TO DEVICES**  
**AUTOMATED CONTROL**