

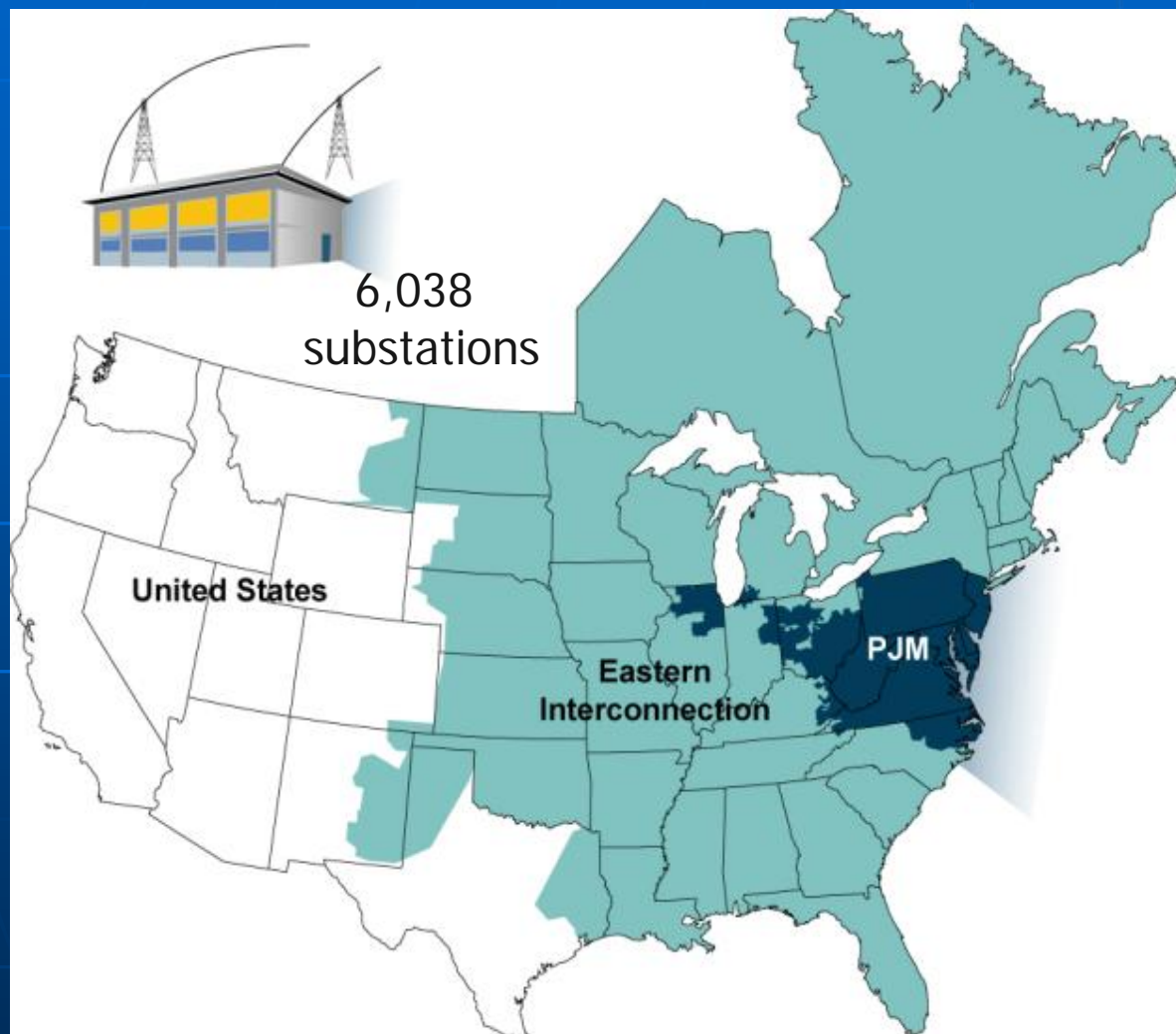
# **2010 ISO/RTO Metrics Report**

## **PJM Highlights**

**Terry Boston**  
**January 20, 2011**



# PJM as Part of the Eastern Interconnection



## KEY STATISTICS

PJM member companies	660+
millions of people served	54
peak load in megawatts	144,644
MW of generating capacity	164,895
miles of transmission lines	56,500
GWh of annual energy generation sources	745,000
square miles of territory area served	164,260
Internal/external tie lines	13 states + DC 250

26% of generation in Eastern Interconnection

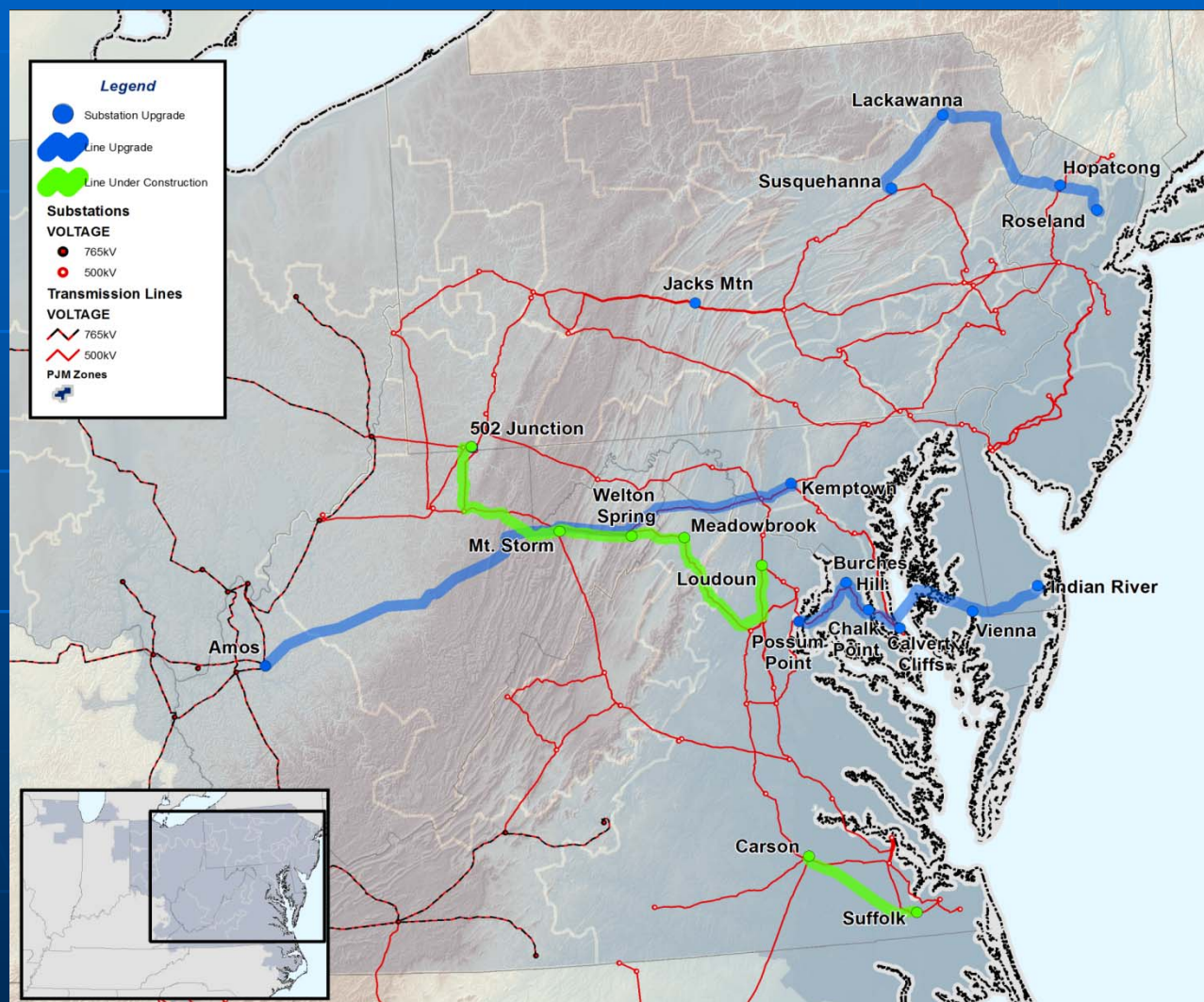
23% of load in Eastern Interconnection

19% of transmission assets in Eastern Interconnection

**19% of U.S. GDP produced in PJM**



# Reliability – Transmission Planning

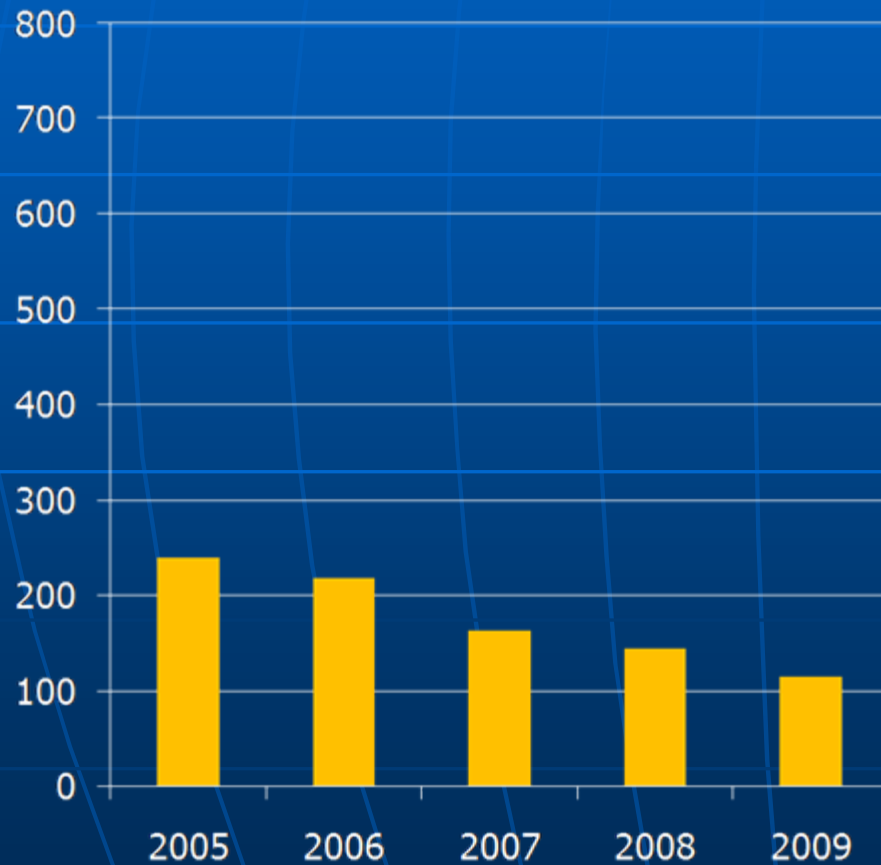


- Recent Activity
  - PJM Board has approved five new backbone transmission lines
- Future Impacts
  - Annual congestion costs reduced \$1.7 billion
  - Annual capacity costs reduced \$3.0 billion



# Reliability – Generation Interconnection

**PJM Average Time to Complete Studies**  
*(calendar days)*



## ■ Recent Trend

- 1,100 study requests from 2005 through 2009
- More than 50% reduction in average time to complete studies while number of study requests tripled

## ■ Future Enhancements

- Backlog reduction
- Reduce average aging of incomplete studies





# Reliability & Markets – Demand Response

**Demand Response Participation  
as % of PJM Markets**



## ■ Recent Trend

- 5,682 MW increase in demand resources from 2008 to 2009
- Demand side responders earned over \$300 million

## ■ Future Enhancements

- Shortage Pricing
- Price Responsive Demand



# Markets – Energy Market Prices



## ■ Recent Trends

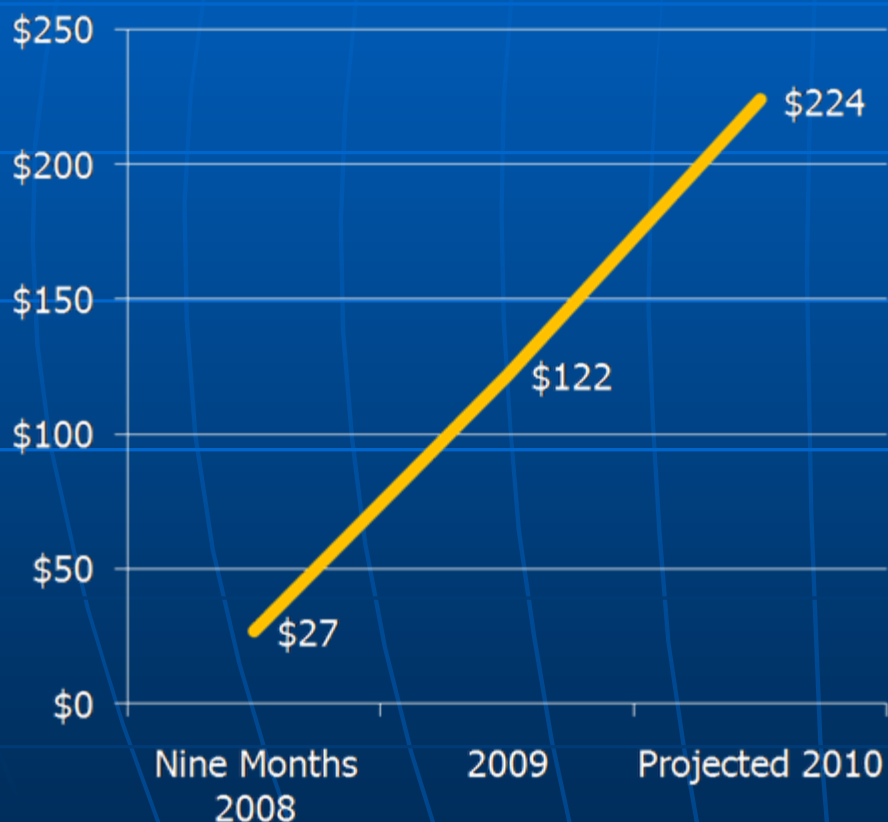
- 70% of changes in load-weighted energy prices are driven by changes in fuel costs
- In the past five years, load-weighted fuel-adjusted wholesale spot energy prices in the PJM region have decreased 30% from \$30.45 to \$21.46



# PJM Innovations

## Perfect Dispatch

Cumulative Generation Production  
Cost Savings  
(dollars in millions)



## ■ Future Enhancements

- **Perfect Dispatch** – Expand initiative to optimize steam generating unit commitment actions
- **Advanced Control Center** – Duplicate operations and markets control and data centers utilizing shared architecture
- **Storage and Frequency Regulation** – Develop and implement “pay-for-performance” pricing structure to stimulate participation of advanced technologies
- **Credit Risk Management** – Title clarification through PJM Settlement as counterparty to pool transactions



# Communication, Coordination and Collaboration



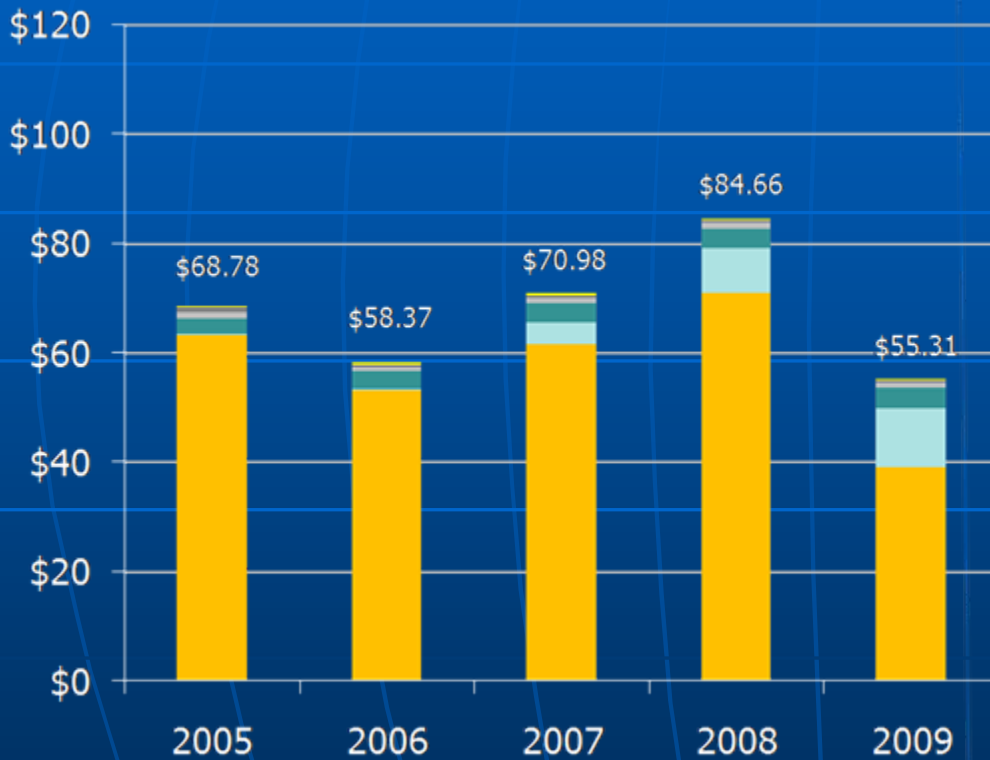


# Appendix

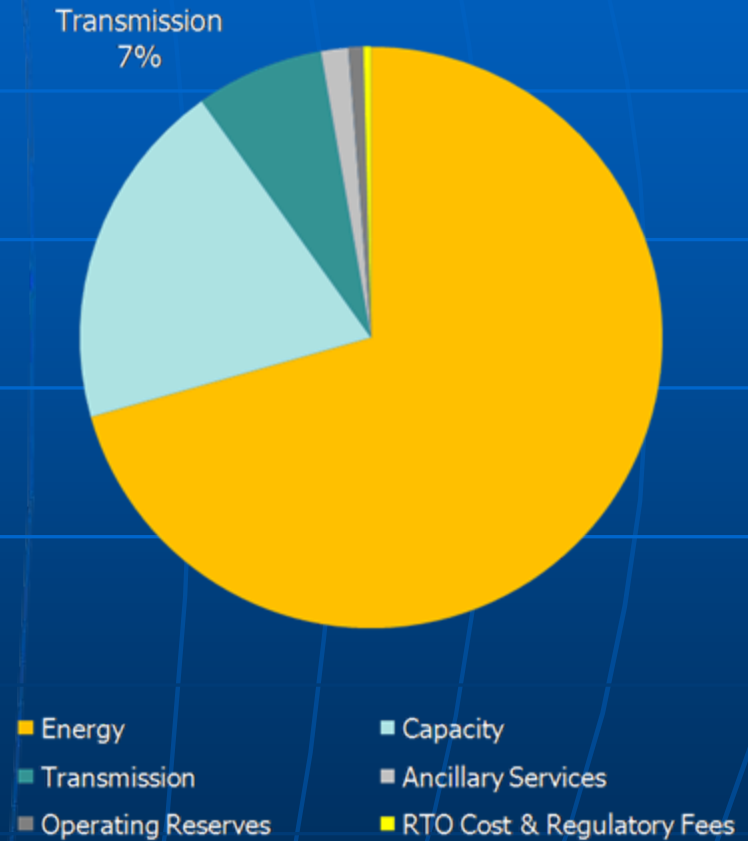


# PJM Wholesale Power Cost Breakdown

**PJM Wholesale Power Cost Breakdown**  
*(\$/megawatt hour)*



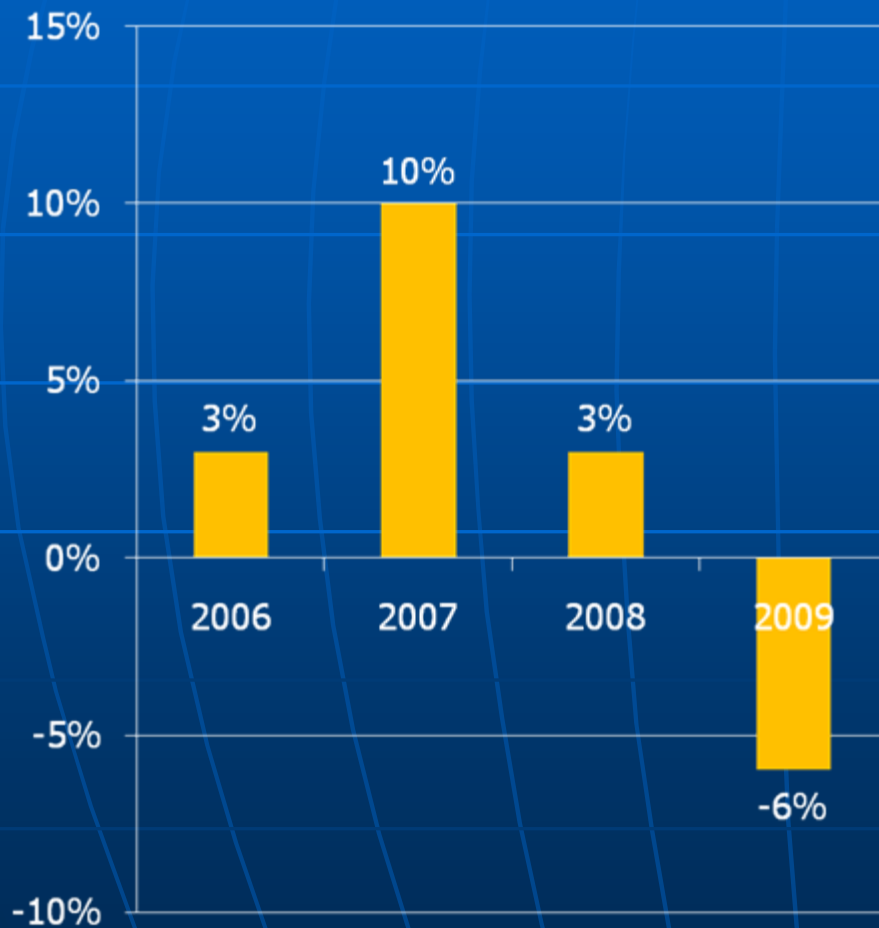
**2009 Total Cost = \$55.31**





# Markets – Market Competitiveness

**PJM Energy Market Price Cost Markup**



## ■ Recent Trend

- Prices in PJM are set, on average, by marginal units operating at or close to their marginal costs

*Note: The data on Market Competitiveness was obtained from the State of the Market Reports issued by PJM's independent market monitor.*



# Markets – Regulation and Storage

## ■ Recent Trend

- Cost efficiency savings across the RTO footprint is between \$80 million and \$105 million per year.

## ■ Future Enhancements

- Develop and implement “pay-for-performance” regulation market pricing structure to stimulate participation of advanced technologies.



Water Heater



Flywheels



Mobile Batteries



Stationary Battery



# Organizational Effectiveness – Administrative Costs

**PJM Annual Administrative Charges  
per Megawatt Hour of Load Served**



## ■ Recent Trend

- Economies of scale and favorable actual to budget variances in 2008 and 2009 lowered PJM's administrative rate
- Represent 0.4% of wholesale power costs
- Benchmarks best-in-class internationally

## ■ Projections

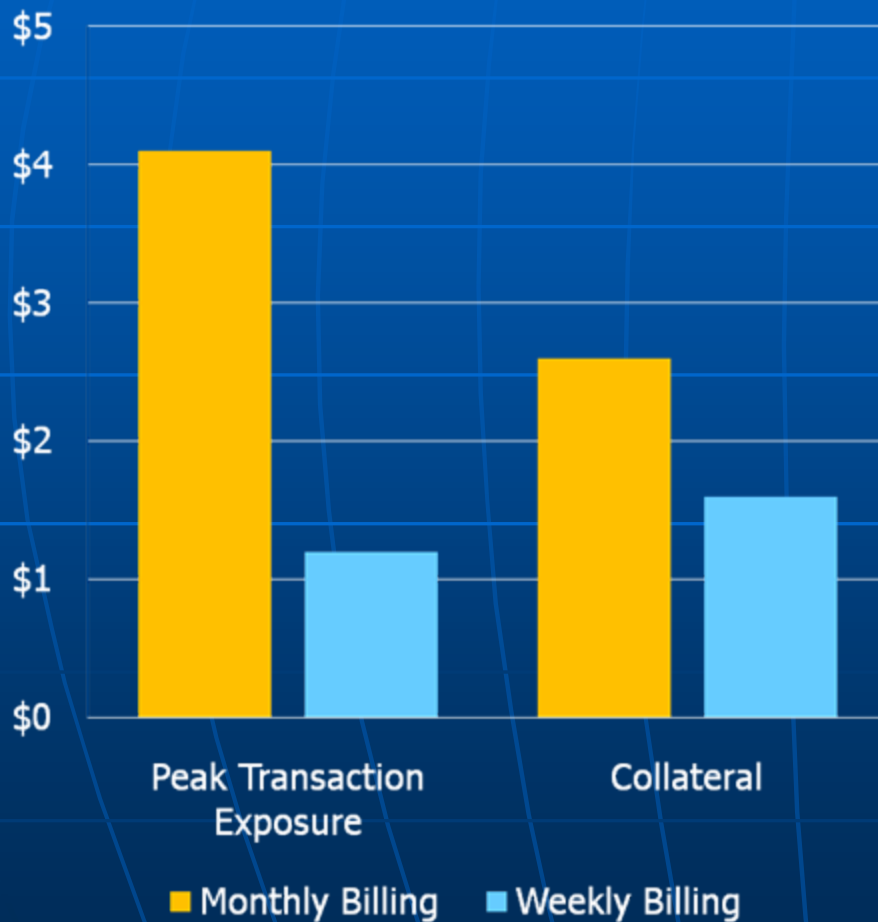
- Annual administrative rates forecasted at \$0.26 to \$0.31 per MWh of load served





# PJM Specific Initiative – Credit Risk Management

**Impacts of Accelerated Settlements**  
*(dollars in billions)*



## ■ Recent Trend

- Implemented weekly billing and settlement in summer 2009
- 70% reduction in peak transaction exposure
- \$1 billion of working capital returned to members

## ■ Future Enhancements

- Title clarification through PJM Settlement as counterparty to pool transactions



# PJM Value Proposition

## Reliability –

resolving constraints and economic efficiency

**\$470 million to \$490 million in annual savings**



## Energy production cost –

efficiency of centralized dispatch over a large region

**\$340 million to \$445 million in annual savings**



## Generation investment –

decreased need for infrastructure investment

**\$640 million to \$1.2 billion in annual savings**



## Grid services –

cost-effective procurement of synchronized reserve, regulation

**\$80 million to \$105 million in annual savings**



**\$2.2 billion in annual savings**