



• August 15-18, 2010 • Dallas, Texas •
• Dallas Convention Center •



Energy Markets and Contracting



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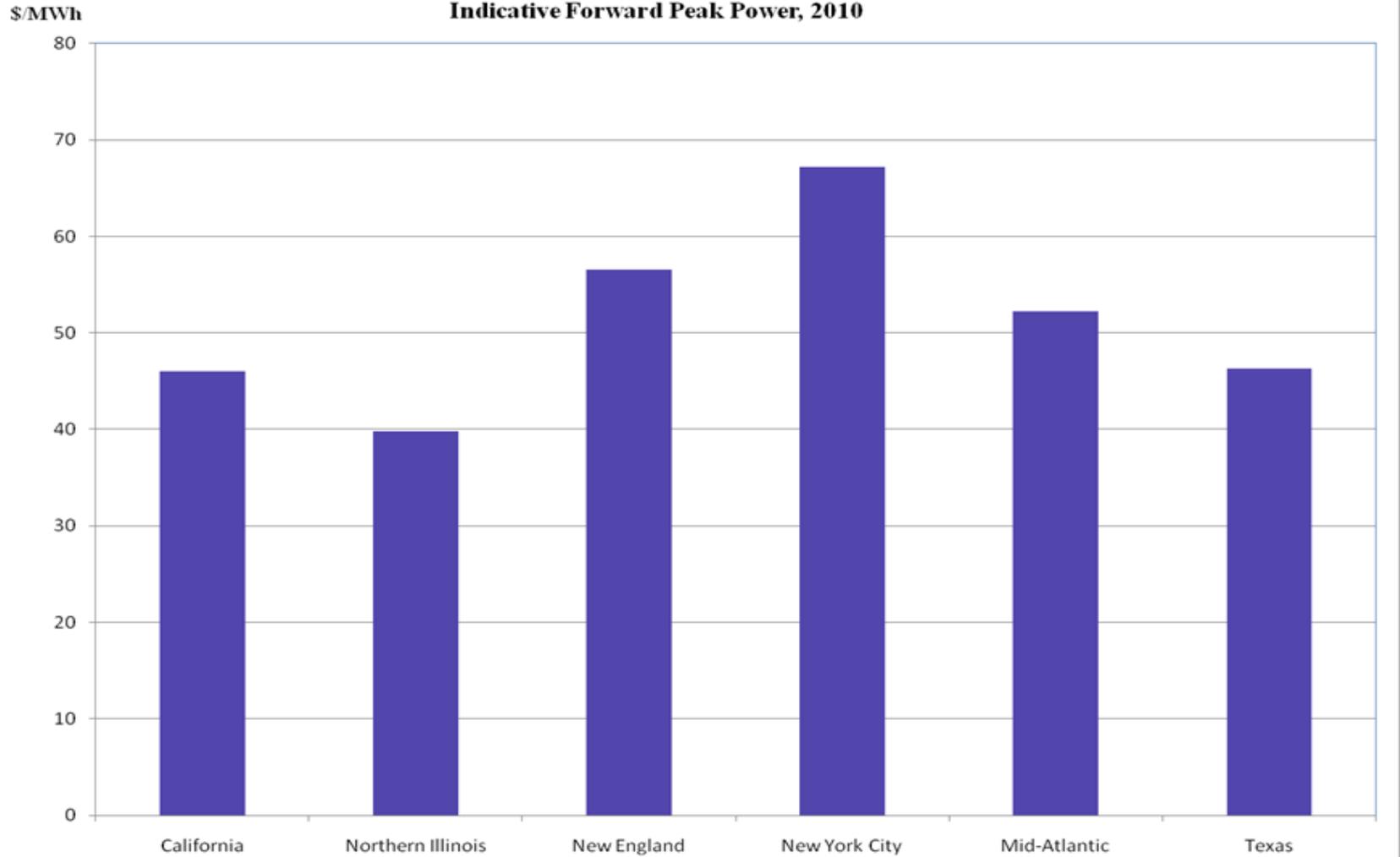
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Overview

- Energy purchased
- Electric market structures
(regulated vs. deregulated)
- Electric cost composition & drivers
- Alternative deregulated contract structures
- Know your goals

Market Electric Cost Comparison Indicative Forward Peak Power, 2010



Basic Electric Market Structures

- Regulated
 - No alternate supply option
 - Bundled prices include delivery and supply
 - Based on average prices, little term or structure alternatives
 - Dampens price volatility – deferred fuel costs
- Deregulated
 - Market based supply alternatives (utility may provide supply offer – SOS rates)
 - Unbundled prices , utility provides delivery
 - Based on marginal prices, many term alternatives
 - High price volatility, but many alternatives to control

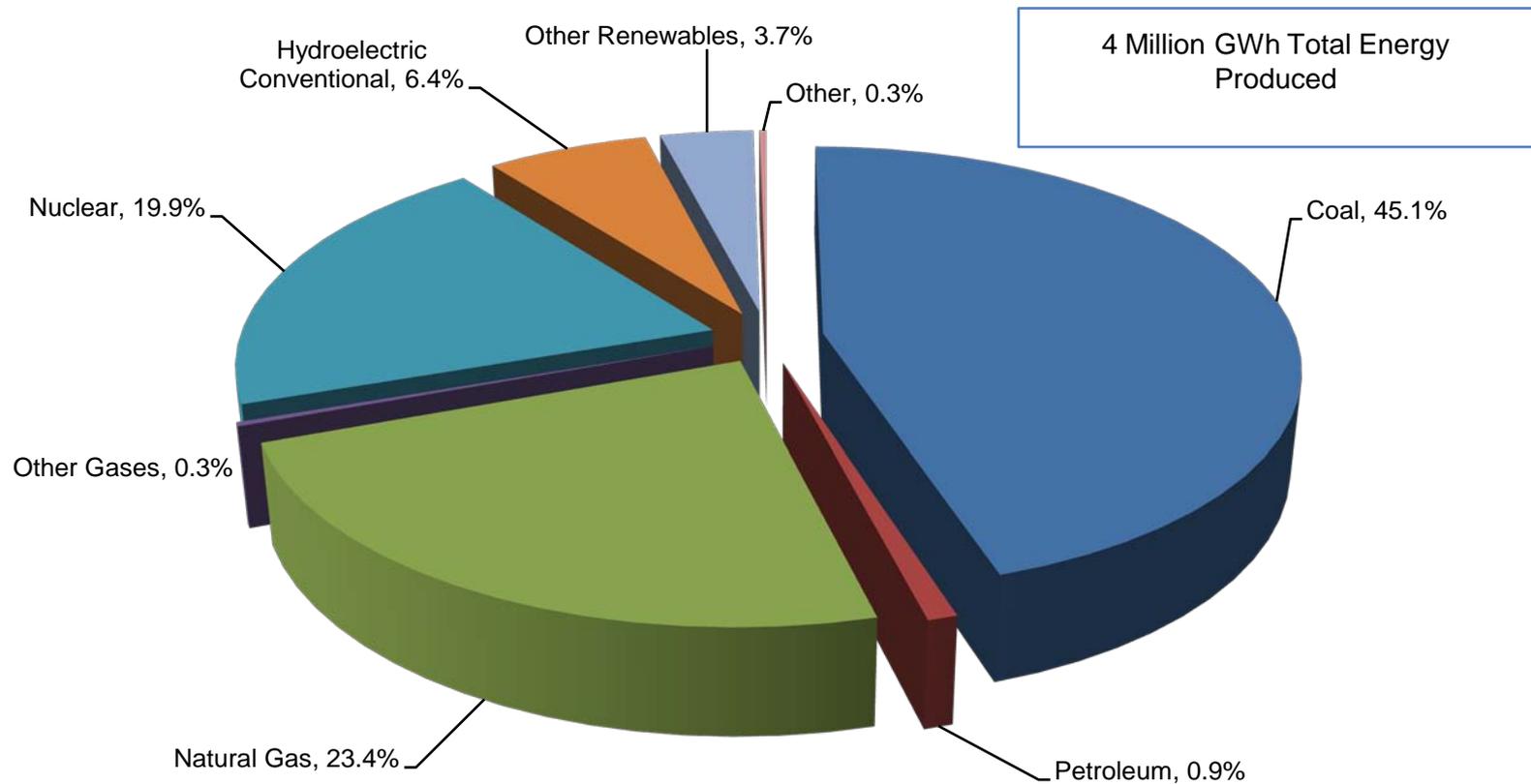
Electric Market Pricing Issues

- Regulated
 - Price signals delayed - lowers prices for scarce resources in rising markets
 - Cost of service regulation may encourage overbuilding
 - Financing structure for capital assets (50/50 debt/equity)
 - Provides low income backstop embedded in rates
- Deregulated
 - High price volatility responds to current market conditions
 - Choice enables end users to manage energy price risk based on market offerings for various terms
 - Production assets concentrated in few companies
 - Encourages efficient & responsive buyers, conservation, efficient production and onsite resources

Energy Market Overview

- Prices are affected by numerous factors including international/domestic supply & demand, weather, political events, policy, U.S. dollar and speculators/hedge funds
- Oil is a transportation fuel in the U.S.
- Natural gas is both a heating fuel and a significant generation fuel
- Coal is primarily a generation fuel in U.S.
- Natural gas & daytime electric prices are highly correlated

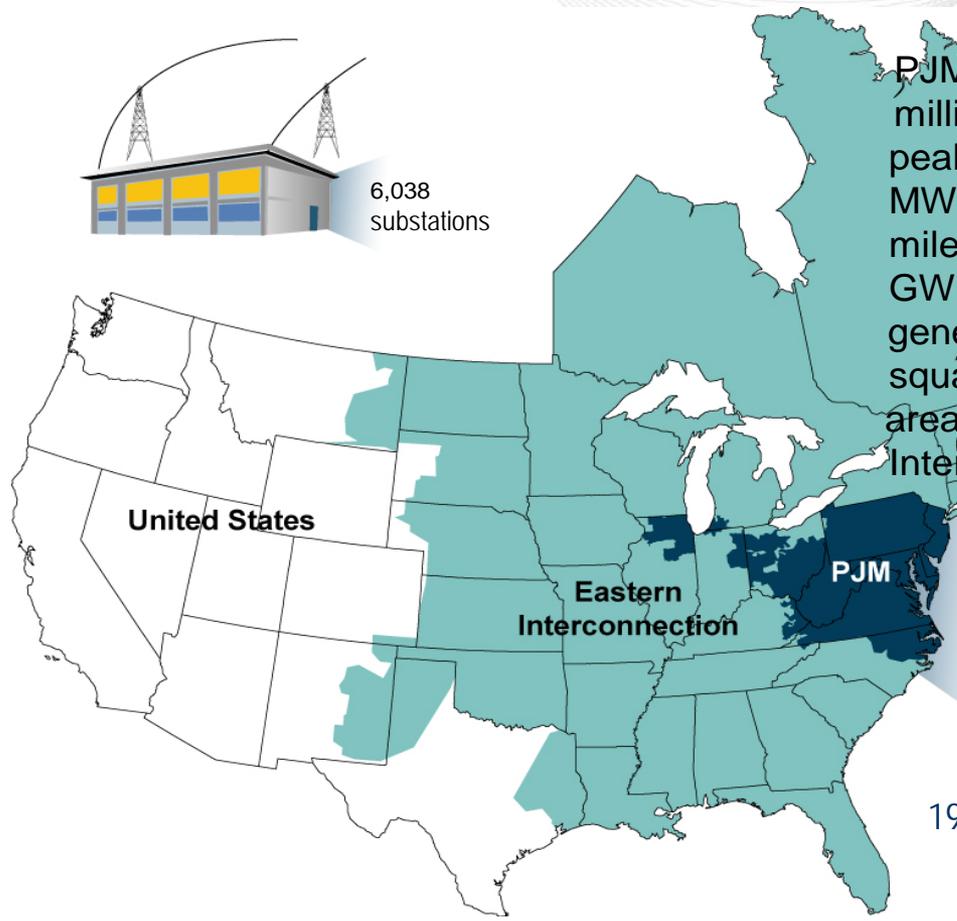
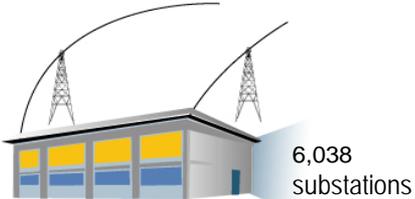
Electric Generation Fuel Sources



Electric Generation Fuel Sources (DOE-EIA – 2010)



PJM as Part of the Eastern Interconnection



KEY STATISTICS

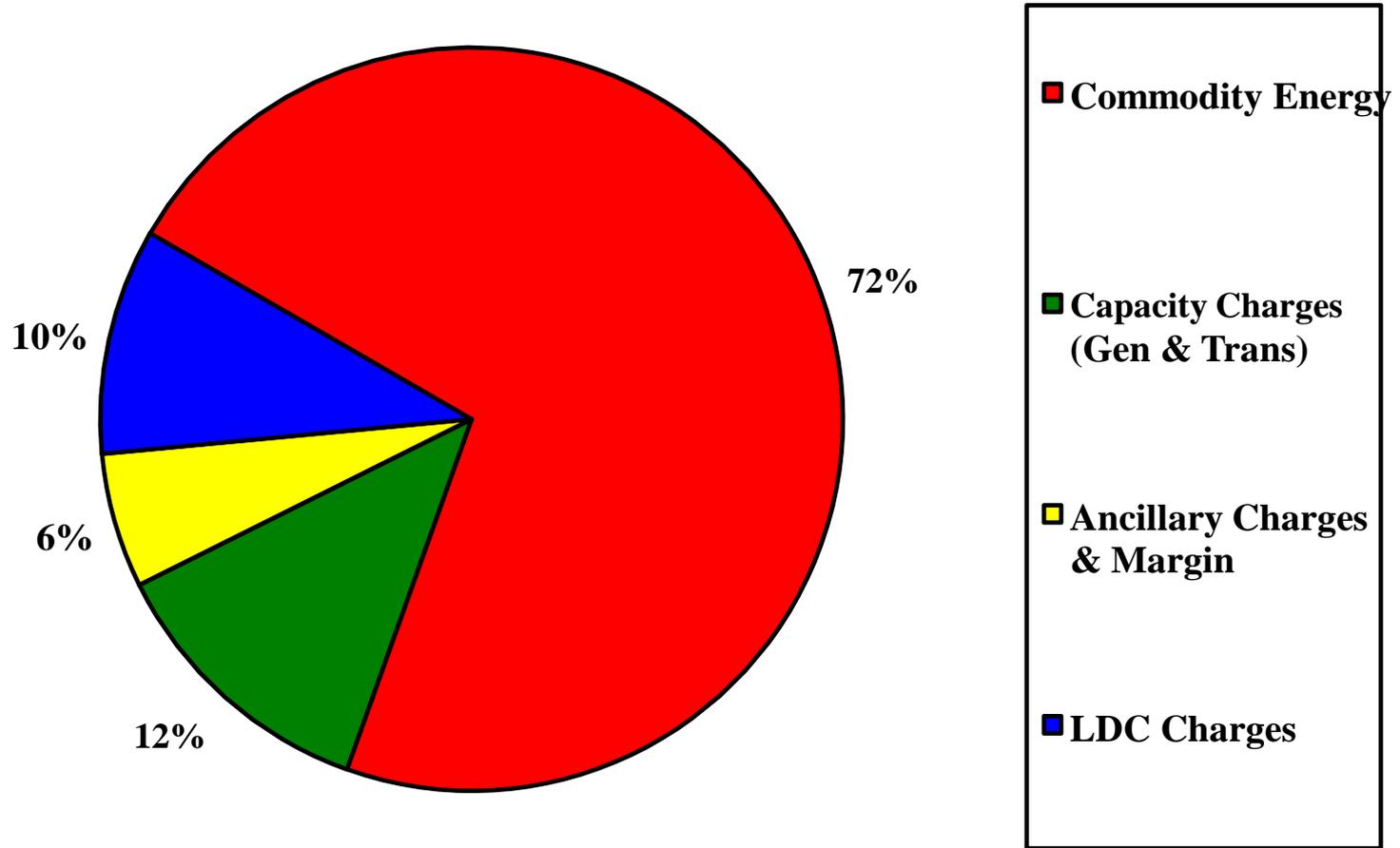
PJM member companies	538
millions of people served	51
peak load in megawatts	144,644
MW of generating capacity	164,905
miles of transmission lines	56,250
GWh of annual energy generation sources	729,000
square miles of territory area served	164,260
Internal/external tie lines	13 states + DC 247

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

Electric Cost Components - Typical Eastern PJM C&I Customer

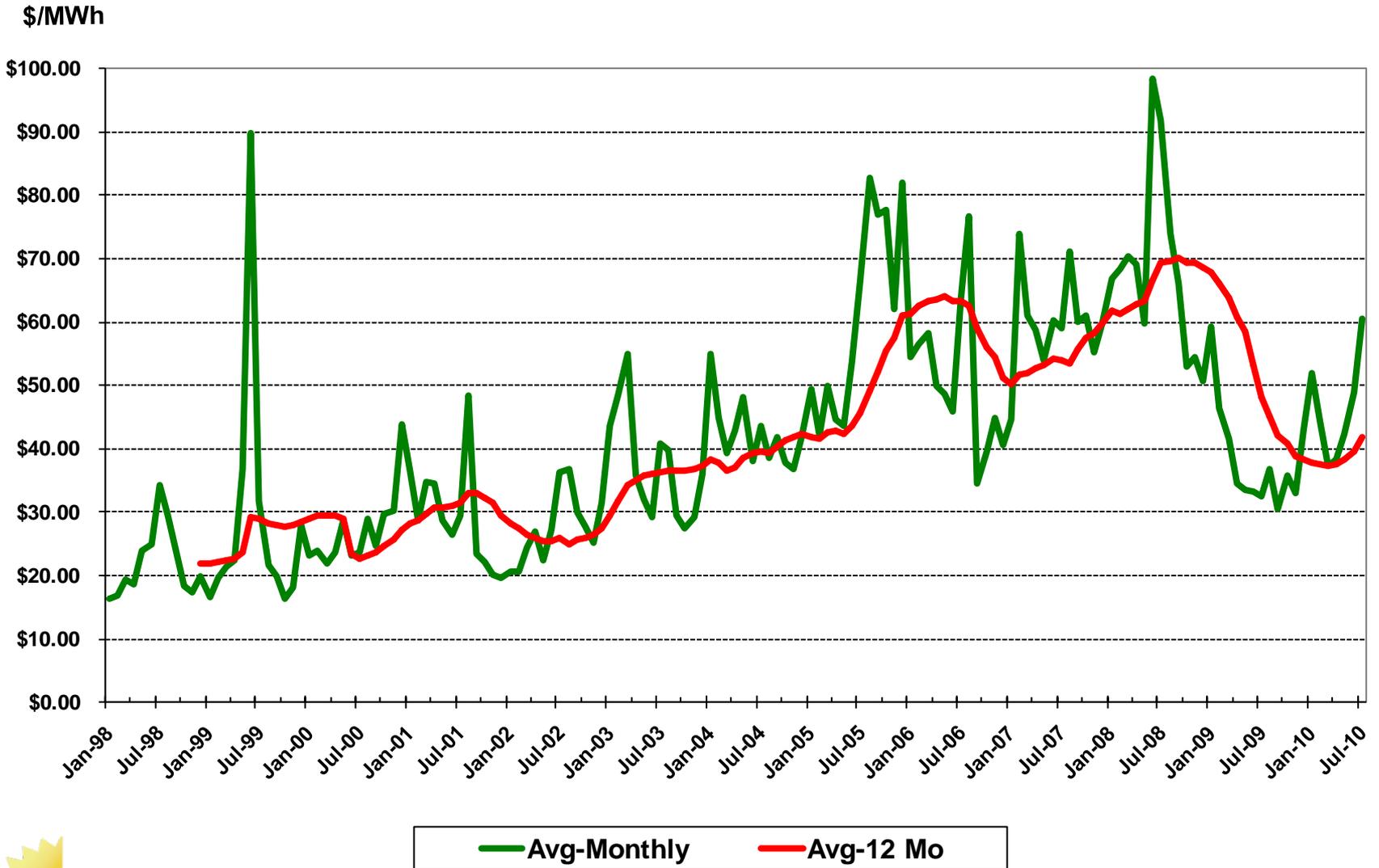
Market Illustration Proforma 2009/2010



Electric Cost Composition

- Energy – dominant cost (70% +/-)
 - Based on spot or forward energy prices (Deregulated) or generation fuel costs (Regulated)
 - Charges based on volume and usage profiles
- Capacity – secondary cost (10 – 12%)
 - Based on generation capacity markets (Deregulated) or generation capital and O&M costs (Regulated)
 - Charges based on coincident peak usage with system or site peak usage
- Ancillary & supply margin (6% +/-)
 - Various costs to operate interstate transmission grid and supplier margins
- LDC - local utility distribution (10% +/-)
 - Delivery charges (should be the same for both market types)

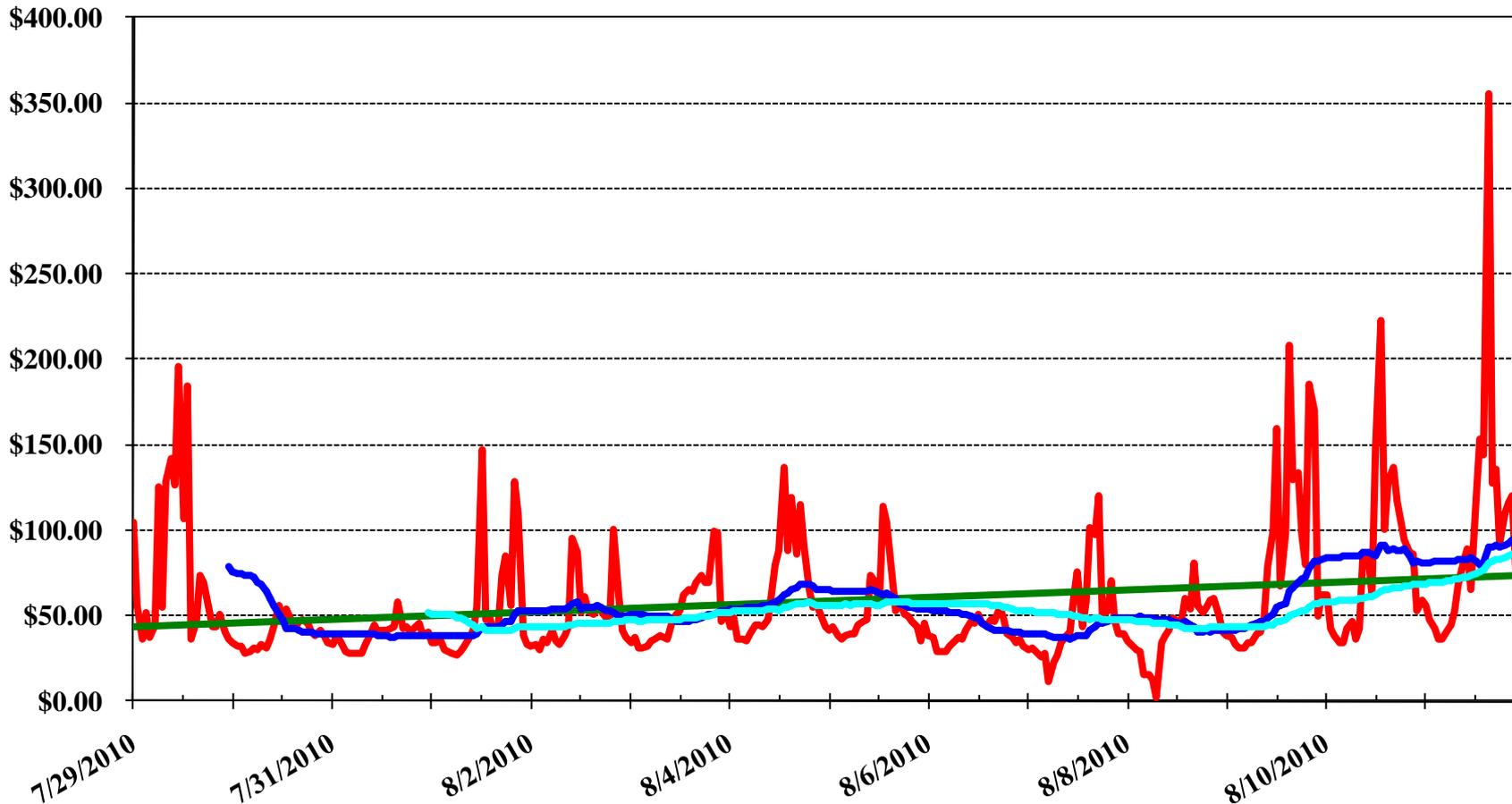
ATC Average LMP-RT PJM Western Hub, 1998 - 7/2010



PJM WESTERN HUB-RT, 8/11/10

14 Day Hourly Trend

\$/MWh



GovEnergy 2010

Electric Forward Market Report

Front Year On-Peak (5x16) - PJM Western Hub

Report Date: 8/6/10

\$/MWh



PJM Western Hub Forward Electric Market Prices

On-Peak Annual Summary, \$/MWh

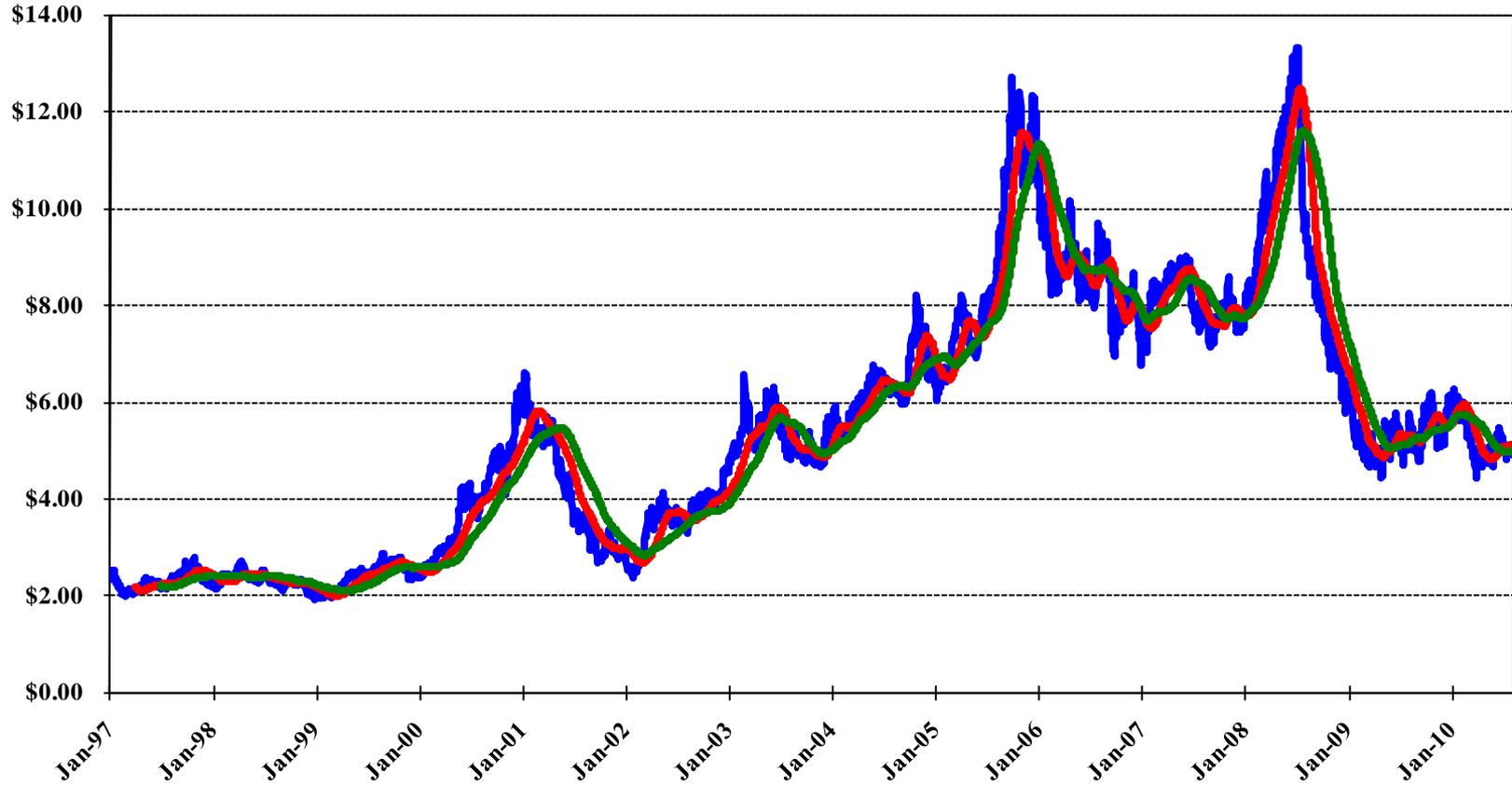
	<u>Range</u>	<u>Average</u>
Spot - Past year (12 mos. Ending)	\$43 - \$52	\$45
Spot - 7 years (12 mos. Ending)	\$37 - \$84	\$60
Front Yr-7 yr Avg. (Next 12 Months) As of 8/10/10	\$41 - \$119	\$66 Current: \$51

Natural Gas, Henry Hub

Forward Market (NYMEX) 12 month Strip

Report Date: 8/6/2010

\$/MMBtu



— NYMEX Close

— 3 Month Avg

— 6 Month Avg

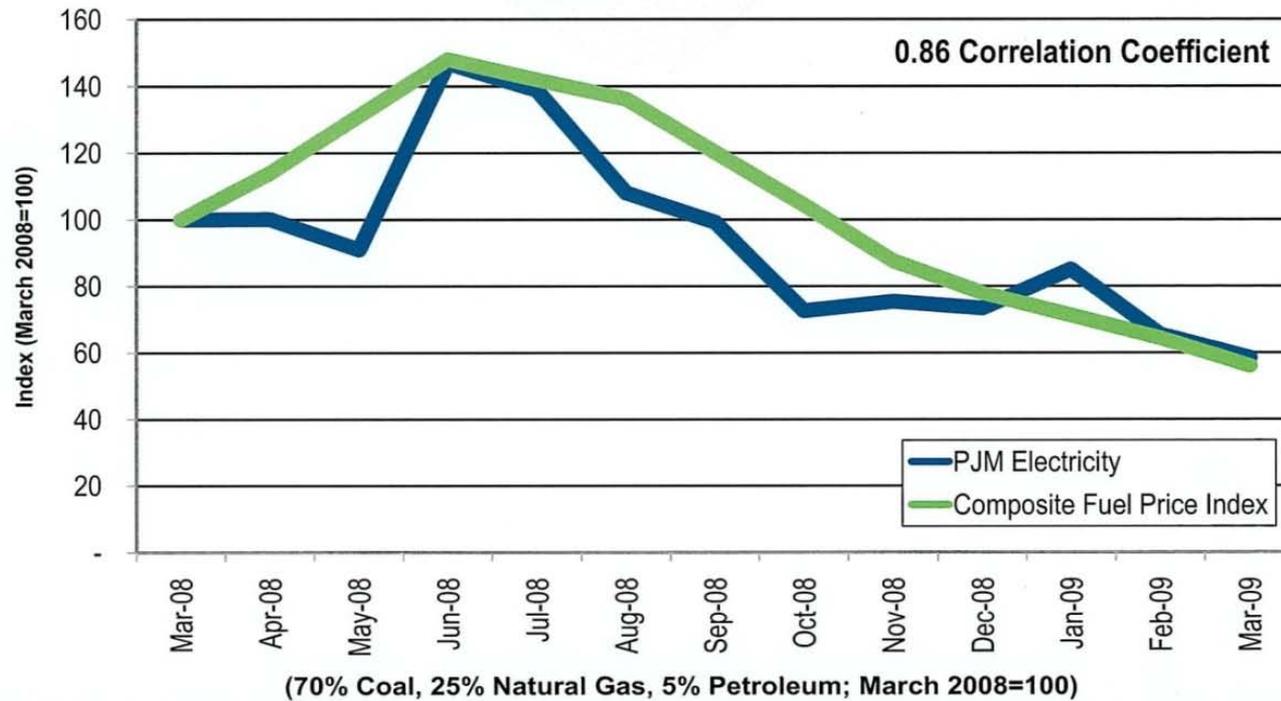
APPALACHIAN COAL FUTURES 10 YEARS (Aug 16, 2000 - Aug 15, 2010)



InfoMine.com



PJM LMP vs. Composite Fuel Price Index



PJM Confidential
DOCs #538612

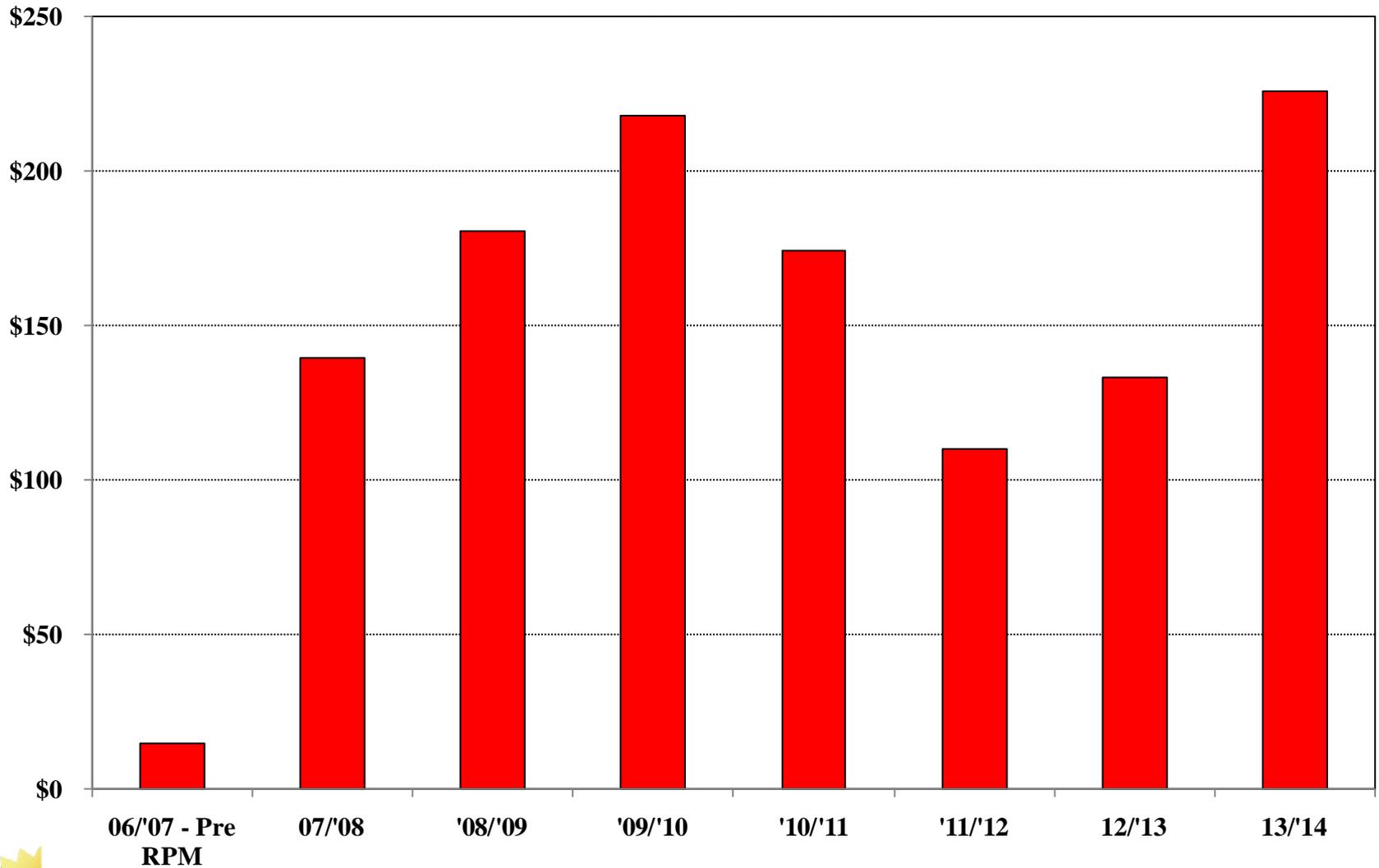
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PJM©2009

Slide Courtesy of PJM

PJM- Capacity Costs (UCAP)

\$/MWD



Note : \$12.50/MWD = \$1.00/MWh



Buyer Risk Spectrum

*Lower Cost
over Time*

*Higher Cost
over Time*



Volatility

(Doesn't mean higher cost)
Short contracts in high markets to
gain long contracts in lower markets

Certainty

100% of usage under fixed
price contract prior to budget /
measurement period

Electric Risk Profile Considerations

- Time horizon
 - Electricity used perpetually but manage risk for limited time
- Budget flexibility
 - Tolerance for intra year cost variations / symmetrical?
- Multi-year escalation tolerance
 - Tolerance for multi year cost changes beyond budget period
- Operational flexibility
 - Ability to make short-term usage changes
- Capital availability
 - Funds available to invest in energy assets
- Electric cost impact on organization
- Administrative / management resources

Elements of Electric Risk

- Core commodity
 - Fixed vs. floating
 - Fixed price timing
- Basis / congestion
 - Fixed vs. floating
 - Fixed price timing
- Capacity
 - Generation
 - Transmission
- Ancillary
- Renewable requirements
- Volumetric changes

Multi-disciplinary Approach

- **PURCHASING APPROACH/STYLE**
 - Traditional fixed price, full requirements purchasing
 - Portfolio approach - block / index approach
- Demand response (short duration / relatively infrequent)
 - Behavior modification
 - Process modification
 - Onsite generation (peaking)
- Conservation (persistent purchase changes)
 - Behavior modification
 - Load shifting
 - Onsite generation / cogeneration

Purchasing Approach

- Fixed price, full requirements approach
 - All or none / non-standard transactions
 - Capacity can pass through depending on market/supplier
 - Volumetric risk passed to supplier
- Portfolio approach - block & index
 - Retail contract typical application for less than 25 – 30 MW loads
 - Create captive supplier or ISO supply account for large groups
 - Experience and analysis suggests
 - \$5 – 8/MWh advantage over fixed price, full requirements structure
 - Additional \$2 – 4/MWh potential for captive supply structure

Portfolio Approach - Wholesale

- Create captive supplier or contract for ISO supply account
- Unbundled pricing process
 - Spreads price risk over time
- Fixed price standard electric blocks limit dominant price risk
 - Core commodity & basis/congestion
- Access wholesale market for transparency and enhanced competition
- Ability to direct contract with generation (traditional or renewable)
- DA scheduling controls ancillary risk
- Manage capacity independently / 100% load response benefit
- Renewable requirements managed independently
- Adapts to volumetric changes objectively / no premiums

Sample Policy Elements

- Time horizon: 5 years
- Budget period variance: +/- 8%
- Annual Escalation Limit
 - Years 1 & 2: 10%
 - Years 3+: 15%
- Annual Price Target
 - Years 1 & 2: +5%
 - Years 3+: flat
- Operational
 - 20 – 25% spot market exposure average
 - Ancillary: DA schedule min 75%, mitigate RT price spikes
 - Capacity: 15% load response, 15 days, 4 hours
 - Conservation: TBD
- Renewable: 20% total, physical assets allowed for 80%

Goals

- Know your goals up front.
 - To beat the utility price?
 - Budget stability over time that the utility does not offer?
 - Lowest price?
 - How much price risk you are willing to assume?
 - Renewable/environmental goals?
- Express yourself clearly – you get exactly what you ask for.

Conclusions

- Every state/utility is a different market so a “one size fits all” approach is difficult
- Saving energy at all times is important but especially during summer peaks
- Accepting measured risk consistent with your organization is likely to reduce cost over time
- Understand your goals and revisit them often