





Session 2
Energy Markets
Energy Markets & Cost Control

August 4, 2008



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SPEAKER

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Overview

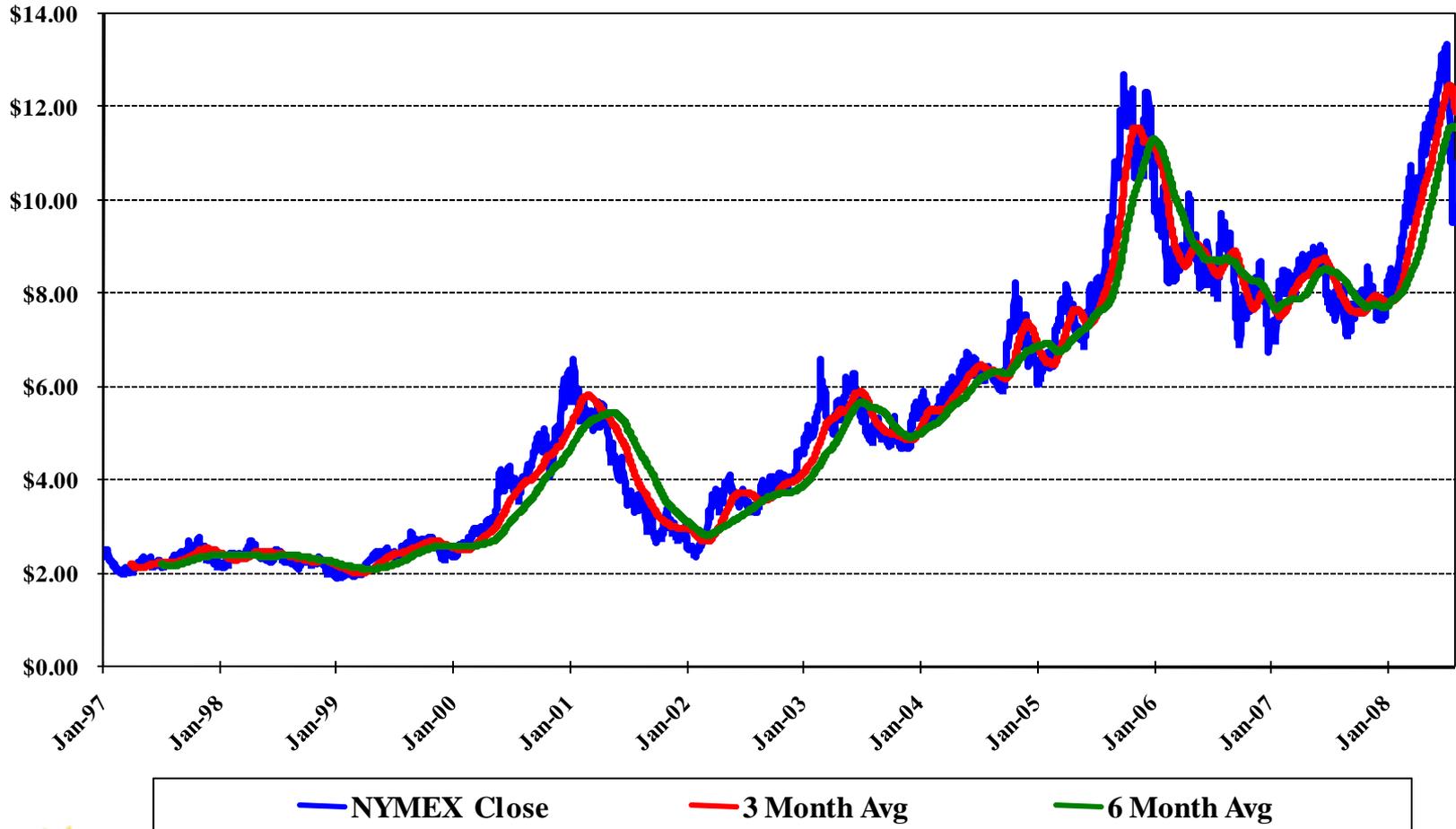
- Energy market overview
- Market relationships
- Market drivers & issues
- Cost control strategies
- Q & A

Natural Gas, Henry Hub

Forward Market (NYMEX) 12 month Strip

Report Date: 8/1/2008

\$/MMBtu



More Energy Prices

3 year change

- Coal (Appalachain): +130%, \$140/ton
- Crude (NYMEX): +105%, \$125/bbl
- #2 Oil (NYMEX): +105%, \$3.50/gal
- Nat Gas (NYMEX): +20%, \$9.50/MMBtu
- Electric (PJM Peak): +32%, \$91/MWh



Electric Forward Market Report

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

Report Date: 8/1/08

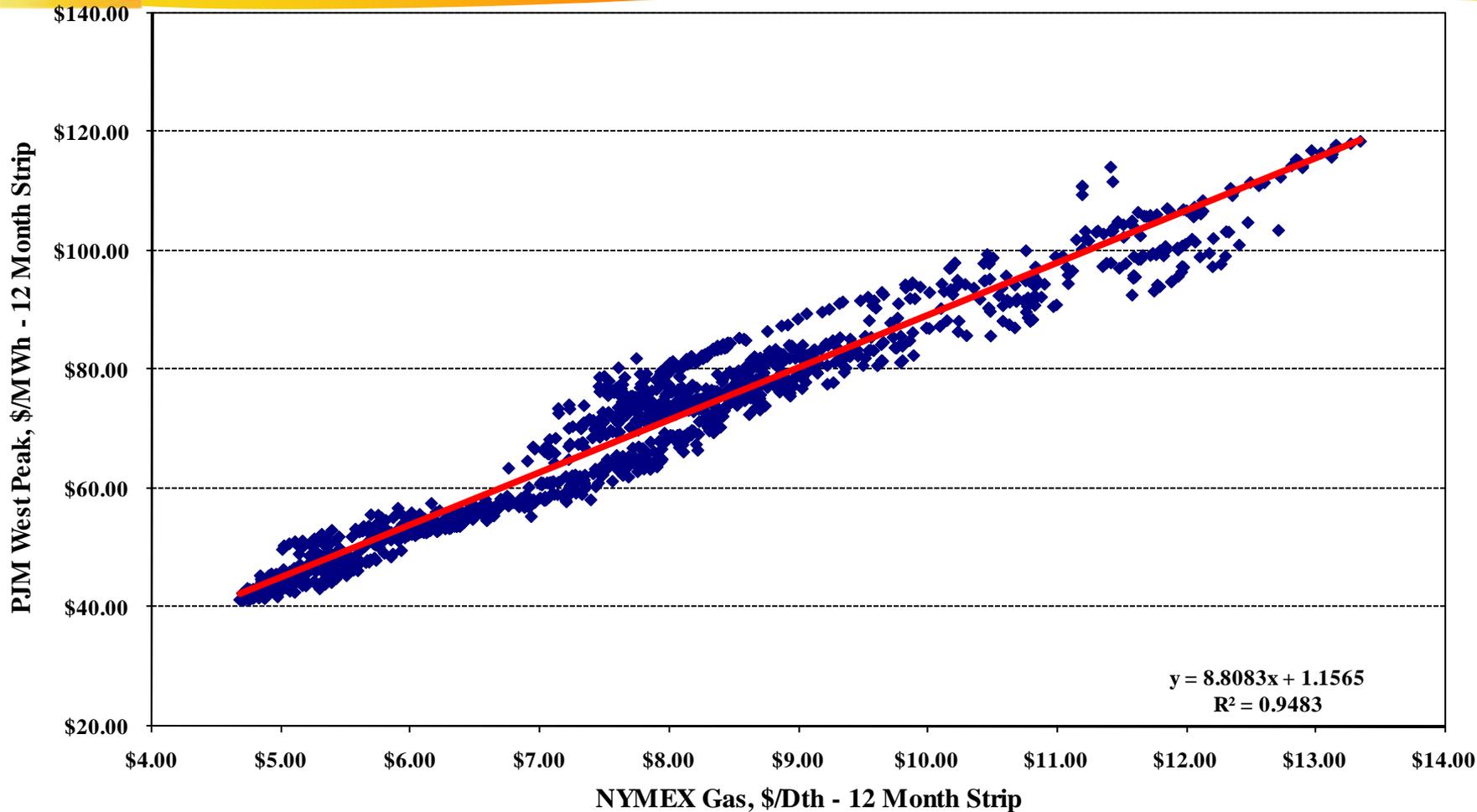
\$/MWh



5 Year Regression Analysis - Forward Gas vs Electric

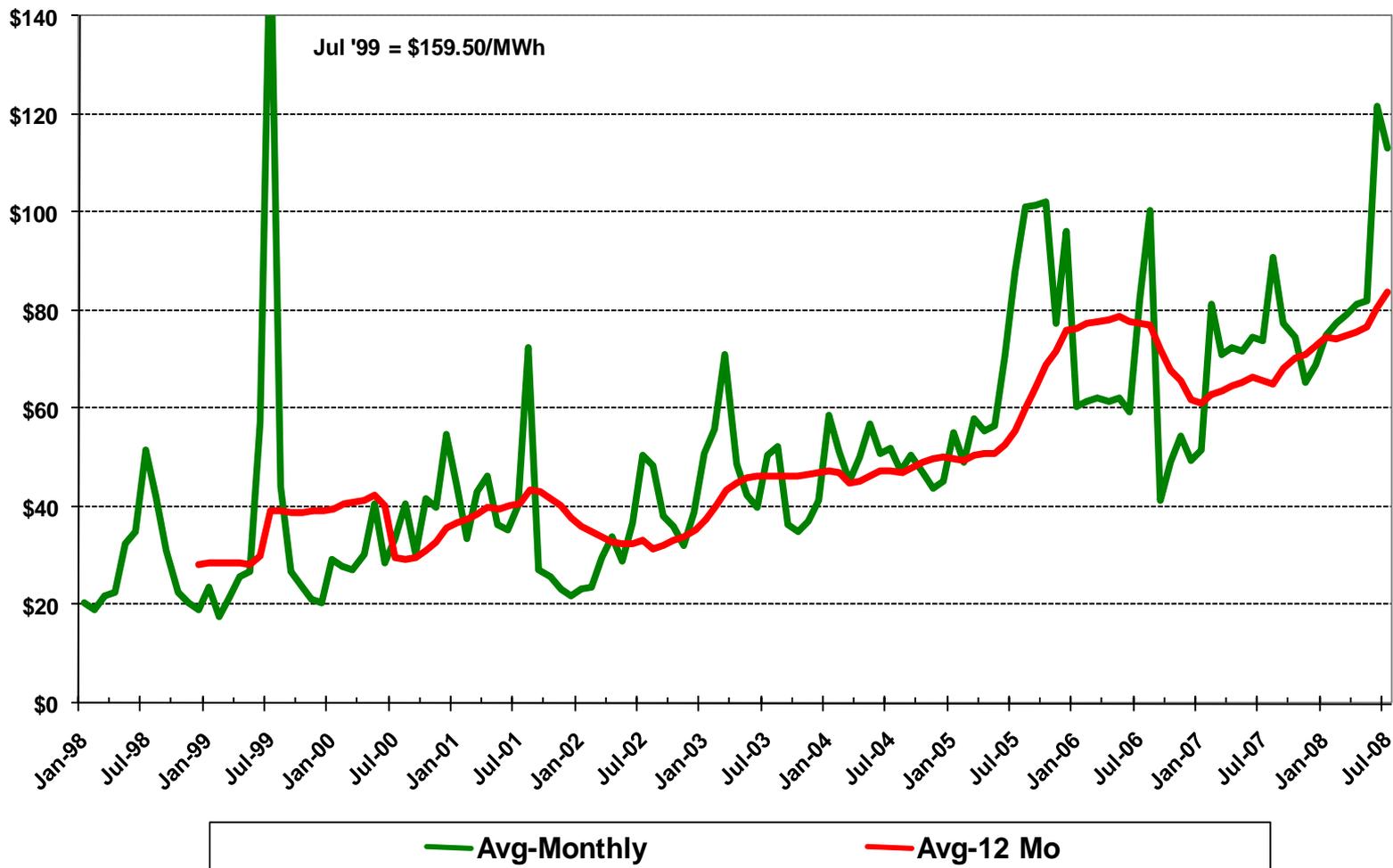
PJM-West / NYMEX 12 Month Strip

Report Date: 8/1/2008



Peak Average LMP-RT PJM Western Hub, 1998 - 7/2008

\$/MWh



PJM Western Hub Forward Electric Market Prices

On-Peak Annual Summary, \$/MWh

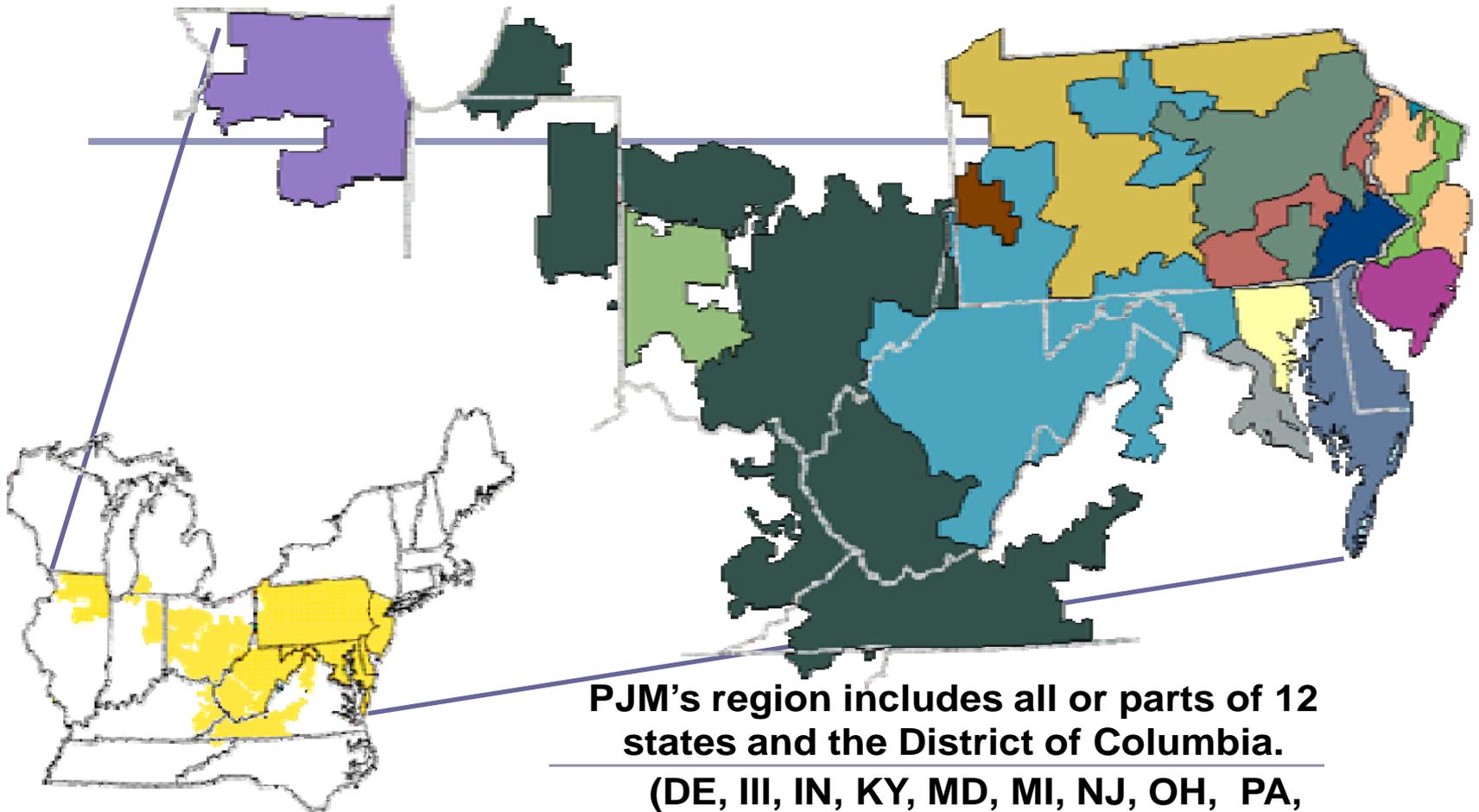
	<u>Range</u>	<u>Average</u>
Spot – Past year (12 mos. Ending)	\$65 - \$83	\$74
Spot – 4 years (12 mos. Ending)	\$47 - \$83	\$66
Front Yr-4 yr Avg (Next 12 Months) As of 8/1/08	\$52 - \$119	\$77 Current: \$91

Electric Generation Fuel Sources USA



Coal	49%
Nuclear	20%
Gas	20%
Hydro	7%
Oil	2%
All Other	2%

PJM Control Area



PJM's region includes all or parts of 12 states and the District of Columbia.

(DE, Ill, IN, KY, MD, MI, NJ, OH, PA, TN, VA, WVA and DC)



Electric Generation Fuel Sources

PJM – Regions change exposure

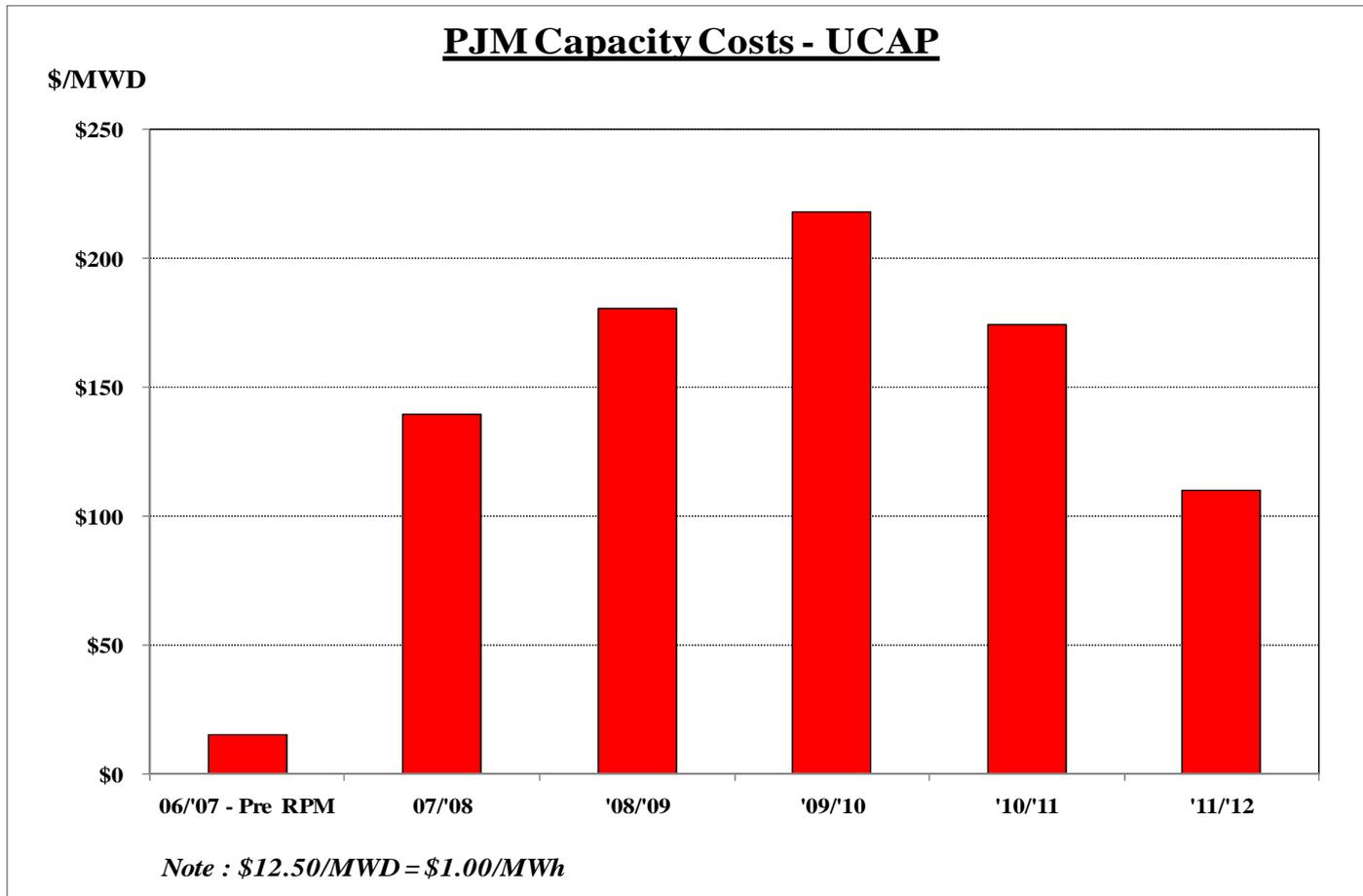
Coal	55%
Nuclear	34%
Gas	8%
Hydro	2%
Oil	-%
All Other	1%



Other Energy Related Markets

- Capacity markets – various types
- Ancillary electric markets – transmission
 - Substantial escalation in past 3 years
- Renewables markets
 - Fractured markets / no standards / illiquid
- Basis markets – both electric and gas
 - Degraded transparency and liquidity

Capacity Costs in various markets





It's Not Just Energy...

(Past 3 years)

- Soybeans: +95%
- Corn: +140%
- Wheat: +100%
- Gold: +110%
- Steel: +75%



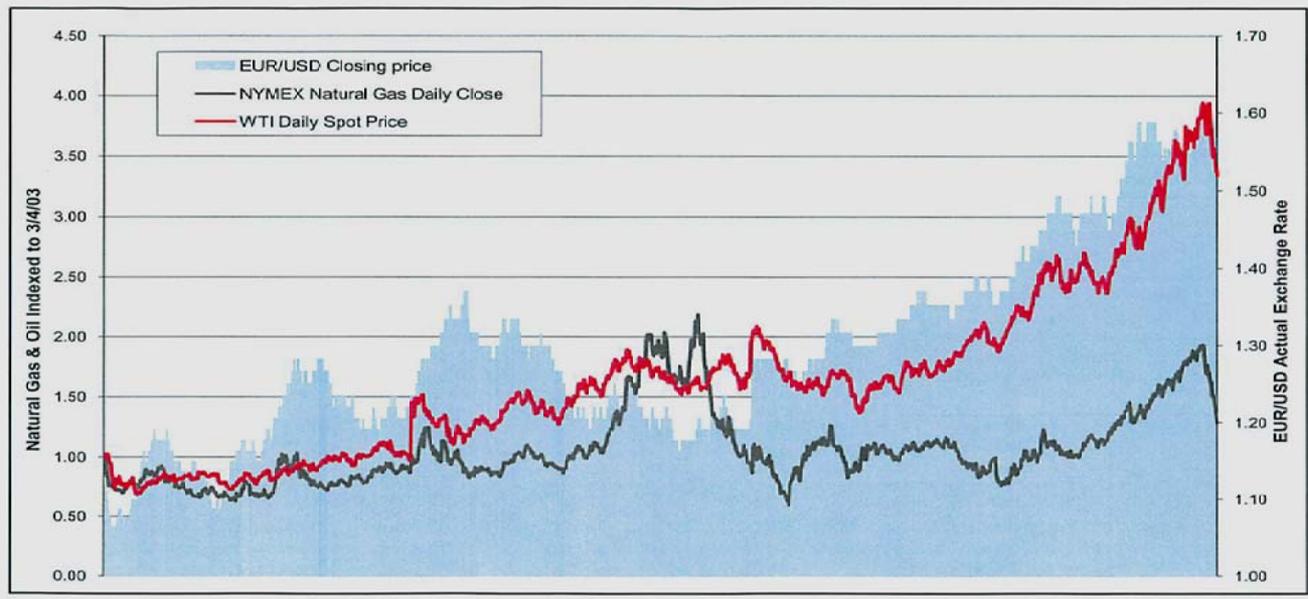
Major Market Drivers

- Degradation of US dollar
- Investment flows into commodities
- World-wide demand (China / India)
- Natural & man-made disasters (fear)
- Alternative fuel production / renewable requirements
- Insufficient delivery infrastructure





Euro vs. Dollar



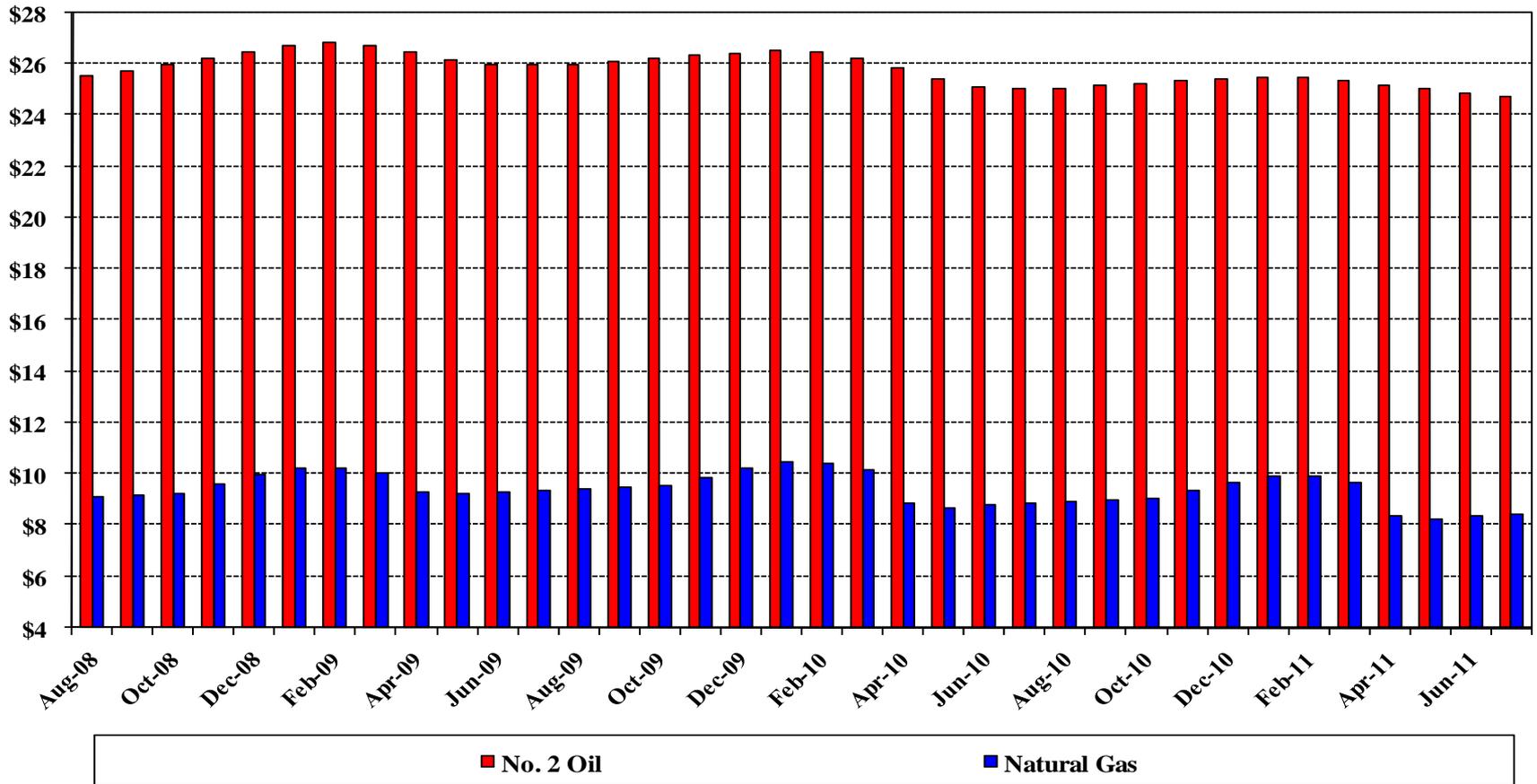


Forward Market - No. 2 Oil / Henry Hub Gas Parity

Term Structure, NYMEX Contracts

Report Date: 7/25/08

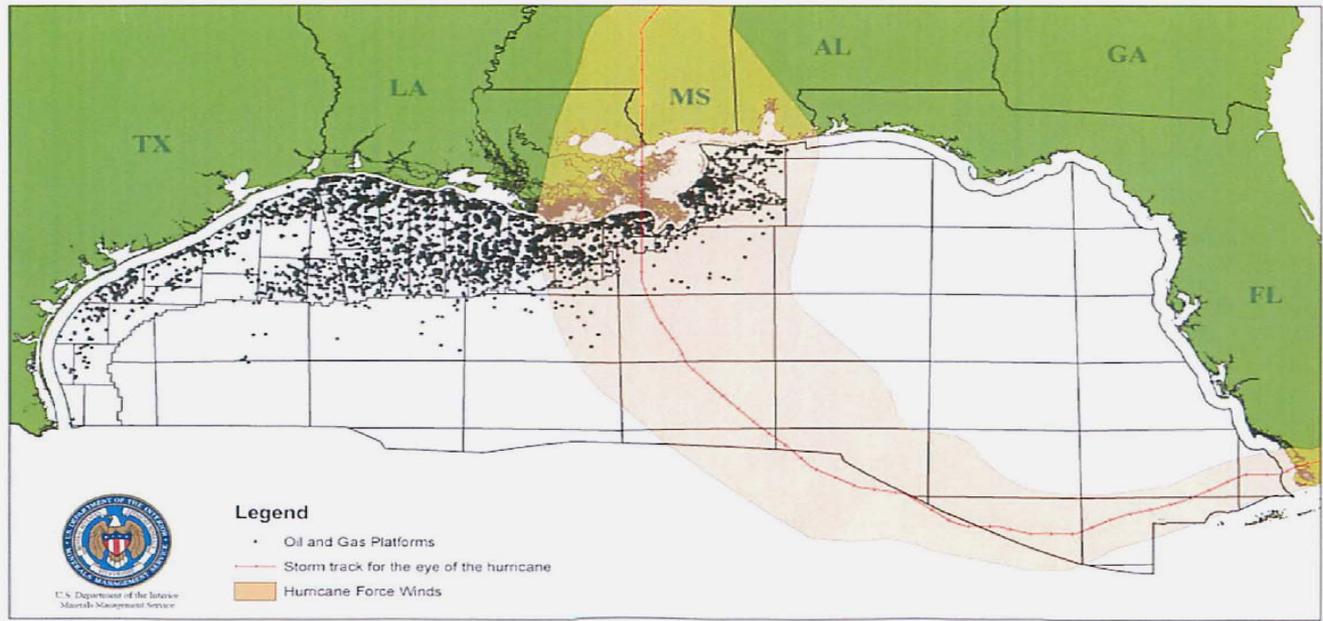
\$/MMBtu





Hurricanes

Hurricane Katrina, August 2005



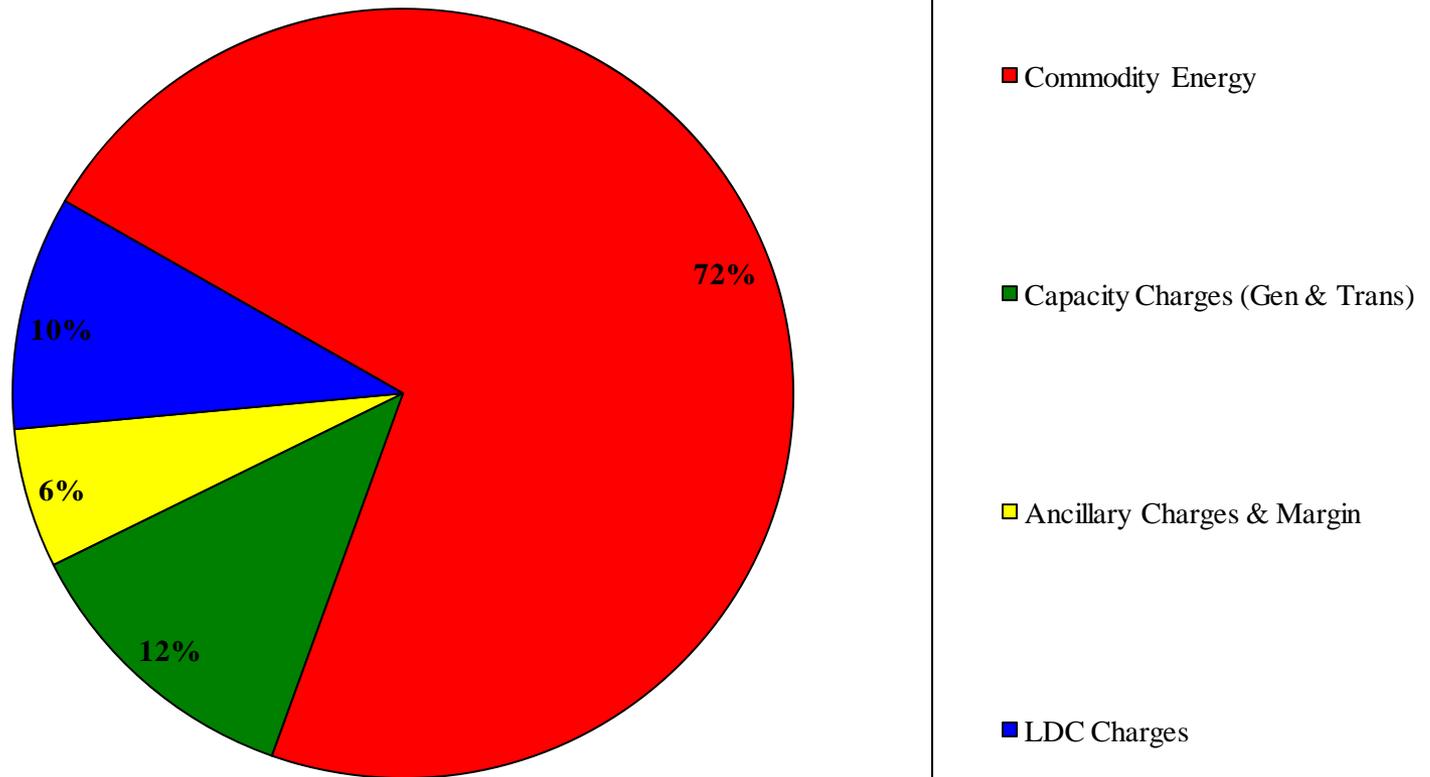


Strategy must go beyond purchasing

- Procurement / contracting
 - Contract designed to support market response
 - Apply portfolio management techniques
- Short-term market response - Demand response
 - Develop responsiveness to short-term market conditions
 - Capacity programs & energy programs
 - Generally modest cost, if any, to execute
- Long-term market response - Conservation
 - Requires capital

Electric Cost Components - Typical Eastern PJM C&I Customer

Market Illustration - Proforma 2008/2009





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



Key Electric Procurement Issues

- Understand what you purchase
 - Commodity - you get what you ask for
- Understand your risk
 - Risk changes as time extends
 - Volatility can be an opportunity for a lower price
- Unbundled pricing
 - Facilitates disciplined commodity management
 - Allows \$ cost averaging and response when market dips
- Procurement is a continuous process



Alternative Contract Structures

- Fixed price, full requirements (popular structure)
 - All or none / non-standard transactions
 - Capacity pass through
 - Time & seasonal pricing may be utilized
 - Limited swing provisions / most risk passed to supplier
- Block & Index, cost + fee (More market oriented approach)
 - Process / spreads price risk over time / unbundled pricing
 - Fixed price standard electric blocks limit price risk
 - DA scheduling can control ancillary costs
 - Access wholesale market for transparent / better pricing
 - Maintain competition among more participants
 - Provides 100% of benefit for any load response
 - Experience and analysis suggests \$5 – 8/MWh advantage over fixed price, full requirements structure



Conclusions

- More than simply purchasing is required to be effective - responsiveness is necessary
- Conserve - 1st rule in commodity management: Don't buy it
- Employing commodity purchasing practices in a disciplined approach can help control energy costs
- Unbundled type approach provides more flexibility in managing energy commodity price risk
- Potential to access to 100% of market benefits for load response and conservation under unbundled type approach
- Unbundled approach also enables onsite generation and direct access to physical supply, including renewables