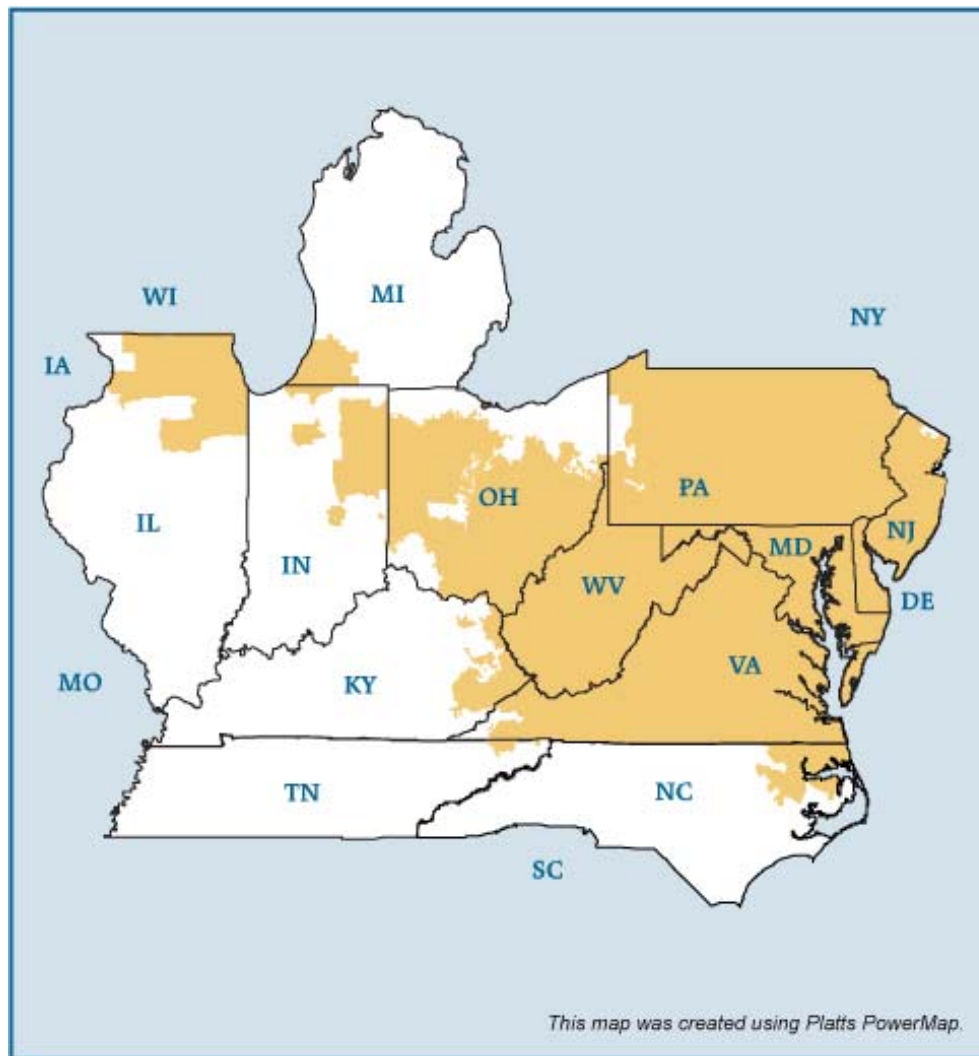


# PJM Electric Market



## Overview

**Market Description:** PJM Interconnection (PJM)

### Geography

States covered: All or most of Pennsylvania, New Jersey, Maryland, Delaware, District of Columbia, Virginia, West Virginia and Ohio. Parts of Illinois, Michigan, Indiana, Kentucky, North Carolina and Tennessee.

Reliability region: Reliability *First* Corporation (RFC) and SERC Reliability Corporation (SERC)

Balancing authority: PJM

Load zones: Allegheny Power Systems (APS), American Electric Power (AEP), Atlantic Electric Power Company, Inc. (AECO), Baltimore Gas and Electric Company (BGE), ComEd, Dayton Power and Light Company (DAY), Delmarva Power and Light Company (DPL), Dominion (DOM), Duquesne Light (DUQ), Jersey Central Power and Light Company (JCPL), Metropolitan Edison Company (METED), PPL Electric Utilities (PPL), PECO Energy (PECO), Pennsylvania Electric Company (PENELEC), Potomac Electric Power Company (PEPCO), Public Service Electric and Gas Company (PSEG), and Rockland Electric Company (RECO).

Hubs: AEP GEN, AEP-Dayton, Chicago GEN, Chicago, Dominion, Eastern, N. Illinois, New Jersey, Ohio, West INT, Western.

**Federal Energy Regulatory Commission • Market Oversight @ FERC.gov****RTO/ISO**

PJM Interconnection (PJM) operates the region's power grid and wholesale electric markets:

- Energy market: two-settlement (day ahead and real-time) spot market with locational marginal pricing (prices are calculated at each bus every five minutes),
- Capacity market,
- Ancillary services markets, and
- Financial transmission rights (FTR) market.

Energy and capacity in the region are also traded bilaterally through brokers and the Intercontinental Exchange (ICE).

[PJM 2006 State of the Markets Report](#)

Market Monitor: Joseph E. Bowring – Internal Market Monitor

**Generation/Supply**

Marginal fuel type: Coal and natural gas

Generating capacity (summer 2006): 164,634 MW

Capacity reserve (summer 2006): 19,990 MW

Reserve margin (summer 2006): 14%

**Demand**

All time peak demand: 144,644 MW (set August 2, 2006)

In summer of 2006, demand reached record levels on several occasions due to extremely hot weather.

Peak demand growth: 8.1 % (2005-2006)

Summer Peak Demand (MW) 133,762 (2005) 144,644 (2006) (Source: PJM)

Updated August 3, 2007

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## Prices

### Annual Average Day-Ahead Price

#### **PJM Western Hub (a basket of 109 buses stretching from Erie PA to Washington DC)**

**2004:** \$41.73/MWh

**2005:** \$60.89/MWh

**2006:** \$50.07/MWh

Prices increased in 2005 as a result of disturbances to the natural gas market. Prices declined in 2006 as natural gas storage levels remained above historical ranges throughout the injection season (April through October).

The PJM Western Hub pricing point is one of the most liquid energy pricing points in the world and is used for transactions on the PJM spot markets and in bilateral transactions.

**Interconnections/Seams** -- Coming soon

## Focal Point

**New Capacity Market Initiated:** Effective June 1, PJM replaced its former capacity market with the Reliability Pricing Model (RPM). RPM uses a sloped demand curve and locational prices, which are intended to better promote resource availability at times and locations when and where needed. The first RPM auction was held in April with results applying for the year beginning June 1, 2007 through May 31, 2008 (see [PJM Auction Report](#) for further detail). The second RPM Auction was held in July, with results applying to 2008-2009. A notable feature of the second auction was the larger role played by demand response (see [PJM Press Release](#) for further detail). A third auction that will apply to 2009-2010 is scheduled for October. When the new construct is in full implementation, the base auction will be for capacity three years out. Capacity offered into the market can include new or existing generation, transmission enhancements and demand-side resources.

## Supply and Demand Statistics for PJM

<b>Supply Demand Statistics</b>			
	2004	2005	2006
Summer Generating Capacity MW	106,250	166,950	164,634
Summer Peak Demand MW	77,887	133,762	144,644
Summer Reserves MW	28,363	33,188	19,990
Summer Reserve Margin:	36%	25%	14%
Annual Load (GWh):	438,874	684,592	696,165
Annual Net Generation GWh	441,778	701,443	714,091

Source: Derived from PJM data.

Updated May 16, 2007

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## Annual Average Bilateral Prices

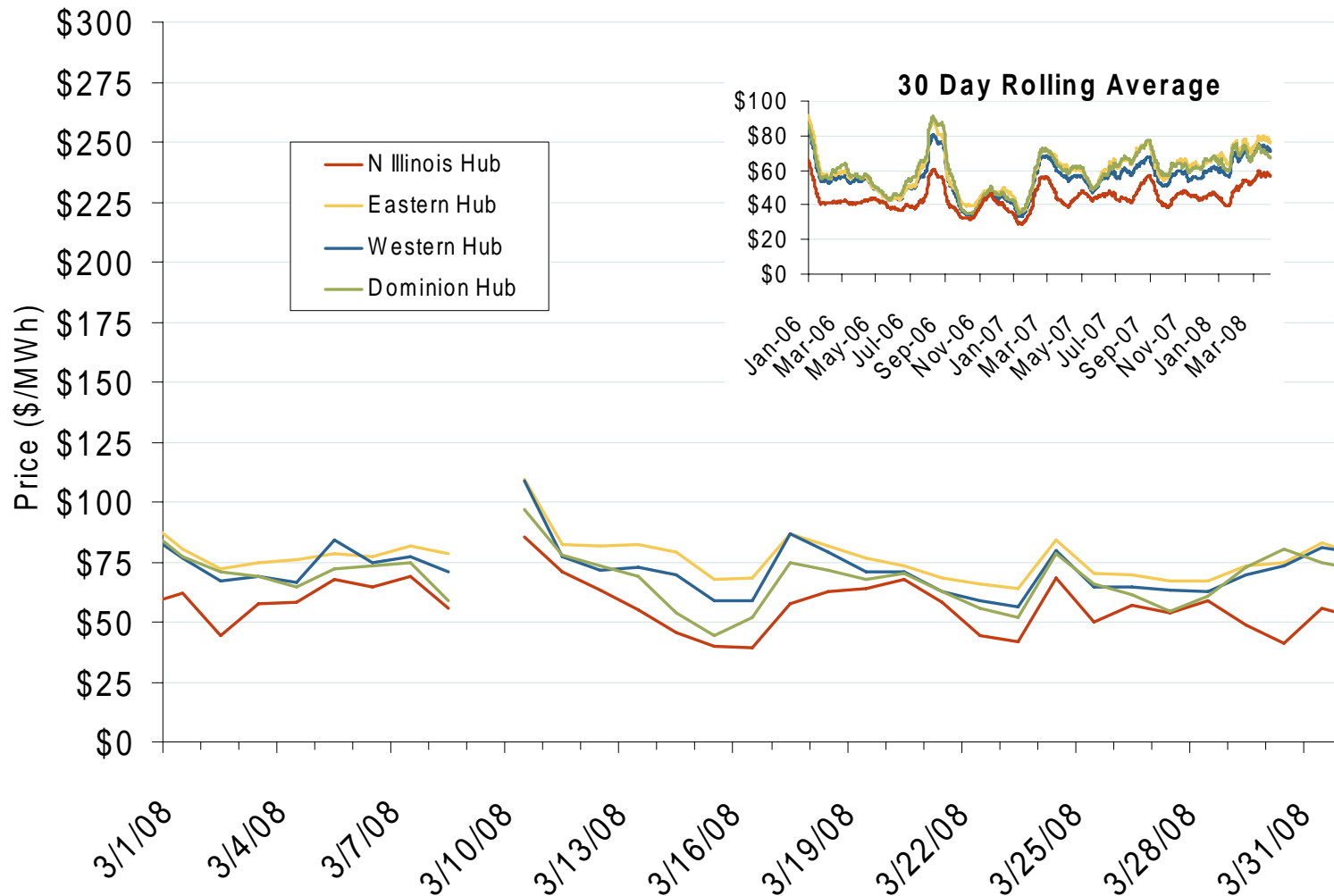
<b>Annual Average Day Ahead On Peak Prices (\$/MWh)</b>				
	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>5 Years</b>
Mass Hub	\$89.87	\$69.85	\$77.39	\$71.39
Ny Zone G	\$92.46	\$75.95	\$83.51	\$75.05
NY Zone J	\$110.03	\$85.96	\$94.15	\$88.91
NY Zone A	\$76.04	\$58.70	\$64.02	\$60.50
PJM West	\$76.64	\$61.90	\$71.15	\$61.83

Source: Derived from *Platts* data.

Updated March 7, 2008

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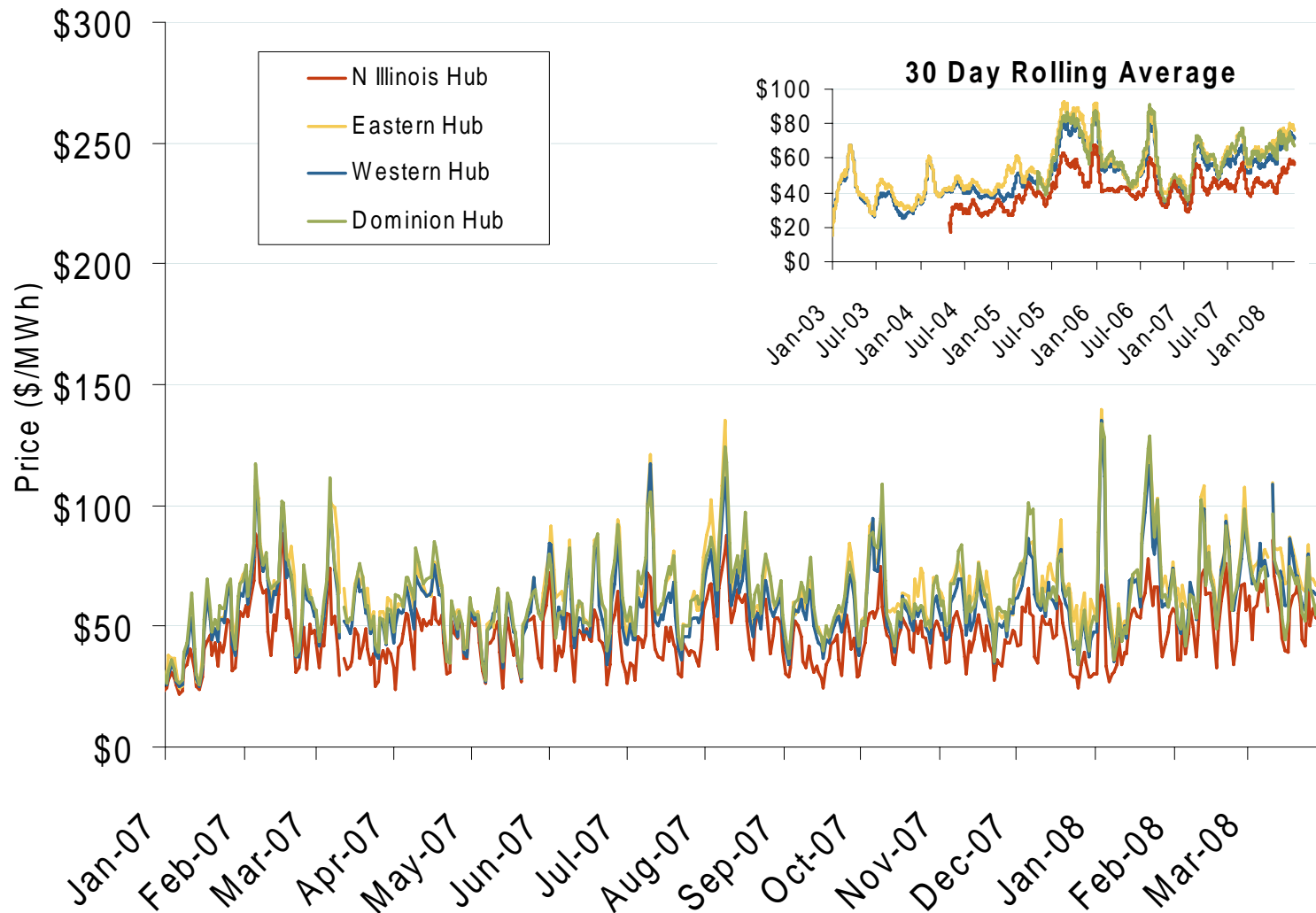
## Daily Average of PJM Day-Ahead Prices - All Hours



Source: Derived from PJM data.

Updated April 4, 2008 1131

## Daily Average of PJM Day-Ahead Prices - All Hours

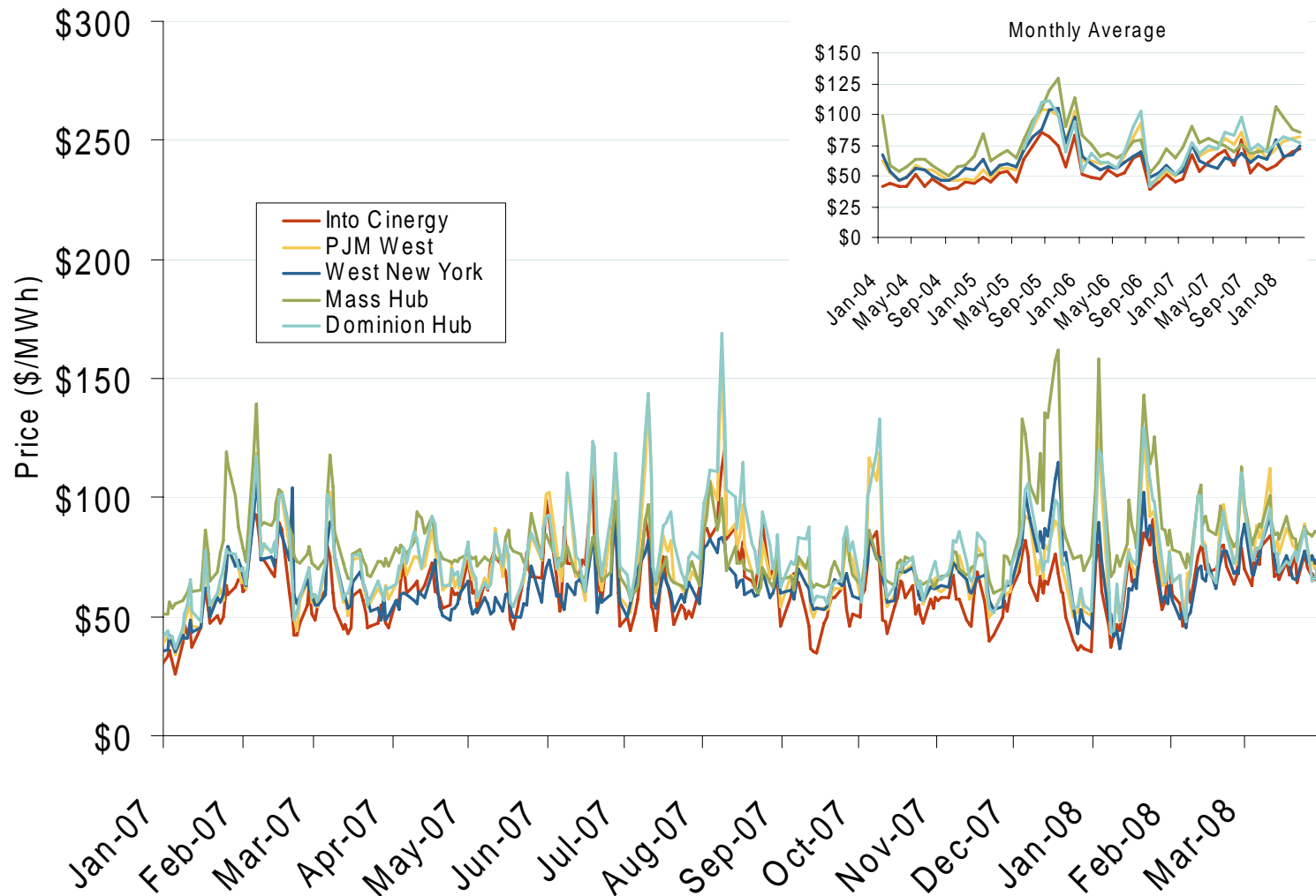


Source: Derived from PJM data.

Updated April 4, 2008



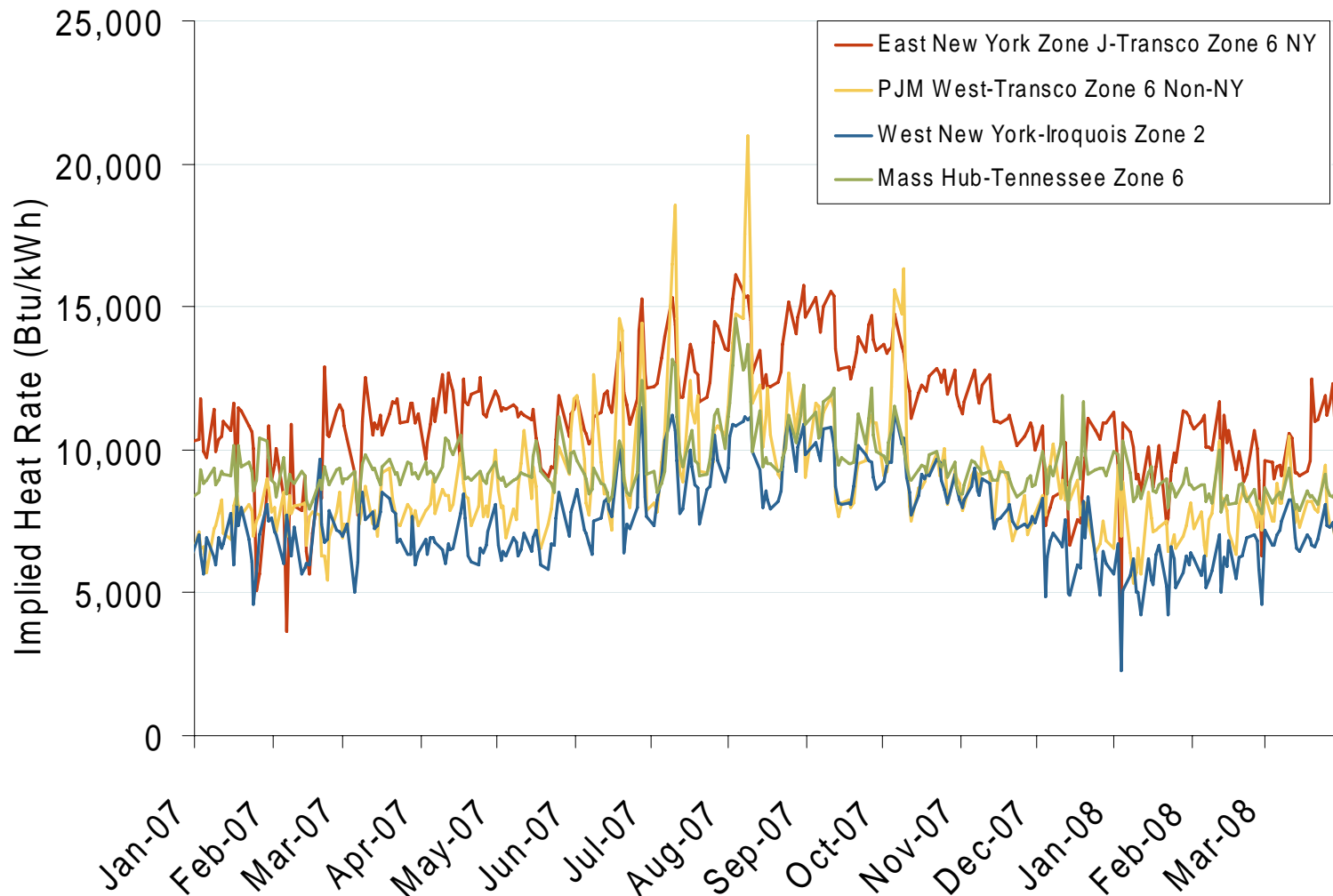
# Eastern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.

Updated April 4, 2008

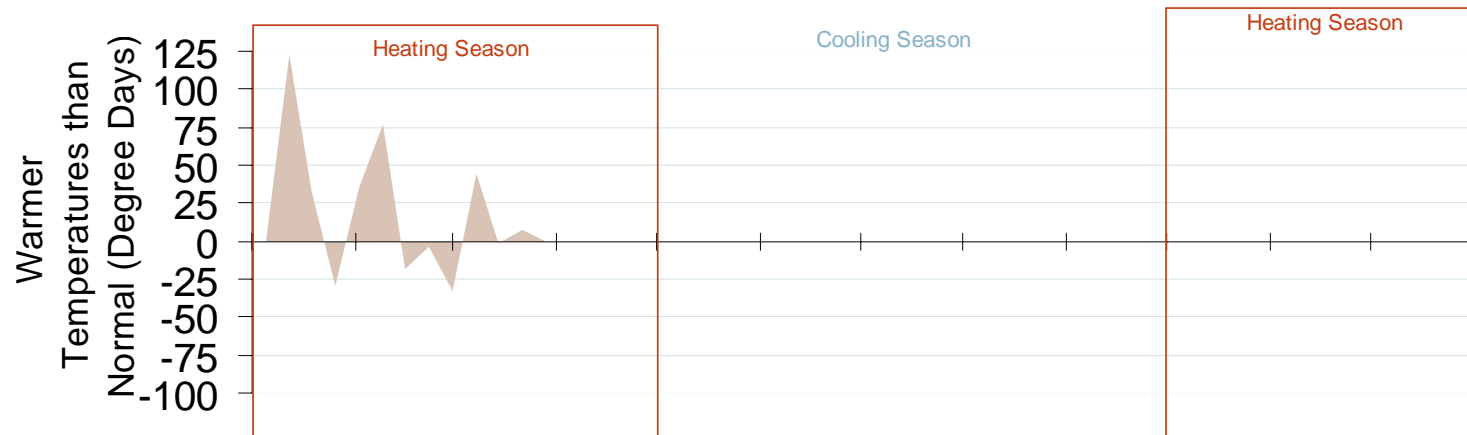
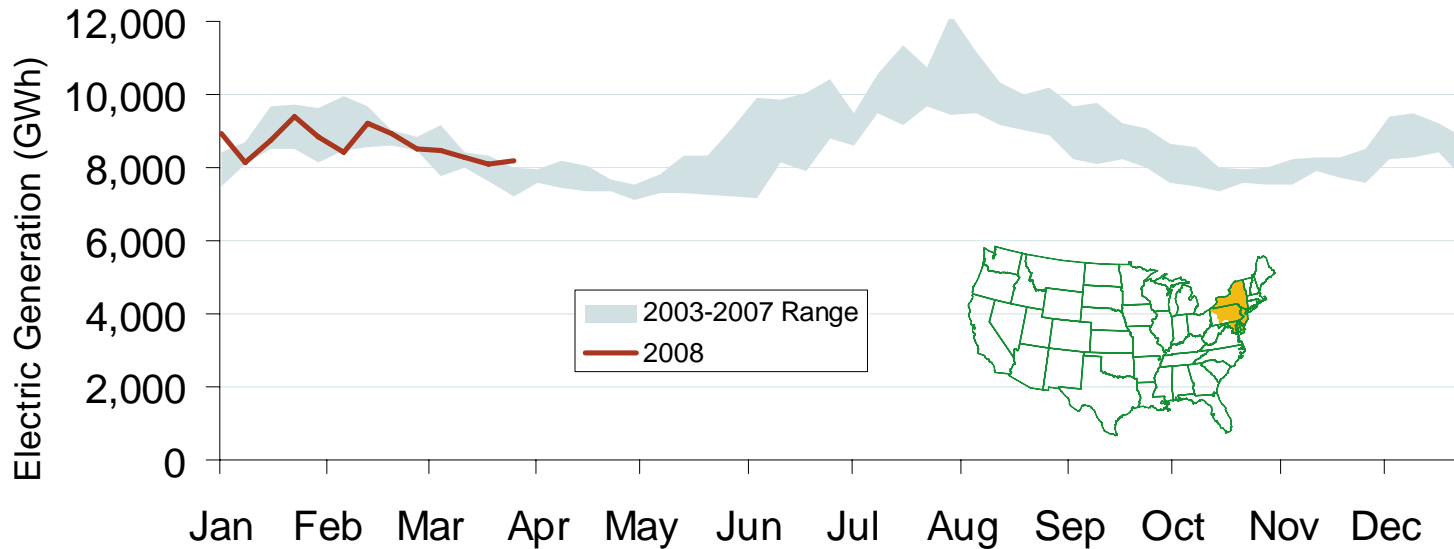
## Implied Heat Rates at Eastern Trading Points



Source: Derived from *Platts* data

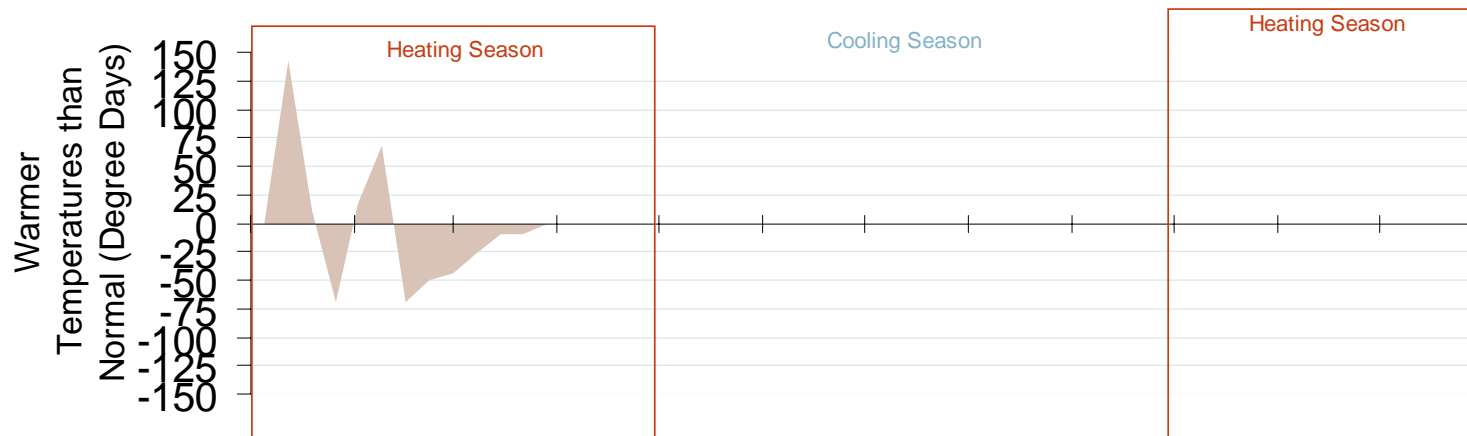
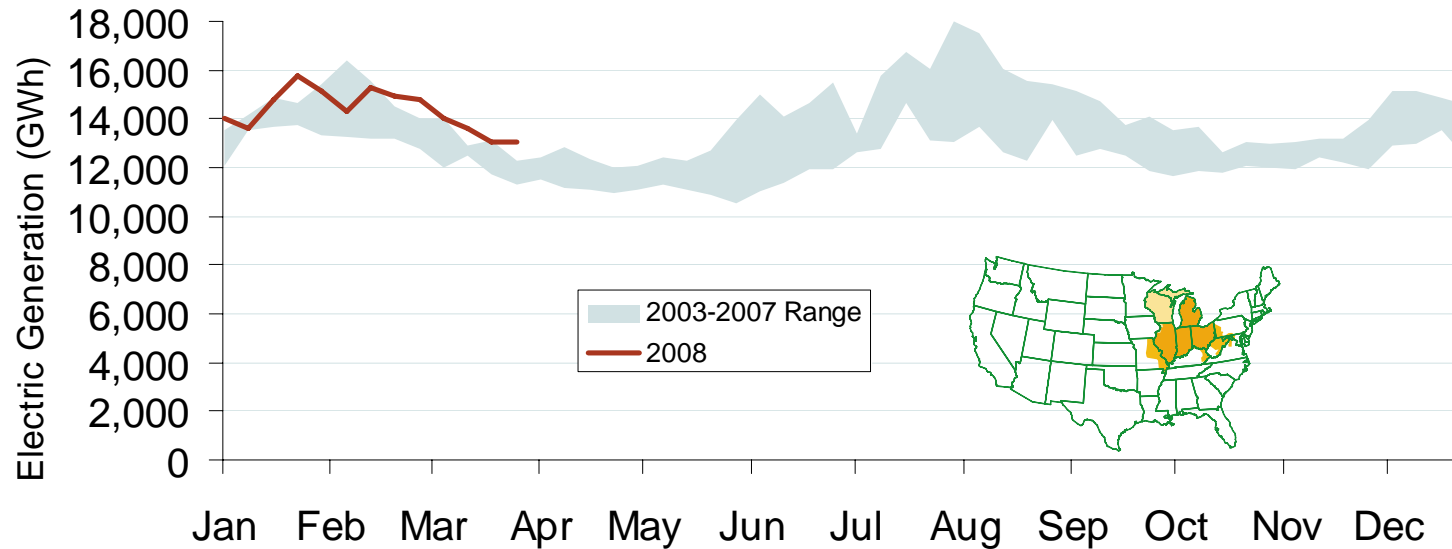
Updated April 4, 2008

# Weekly Electric Generation Output and Temperatures Mid Atlantic Region



Source: Derived from EEI and NOAA data.

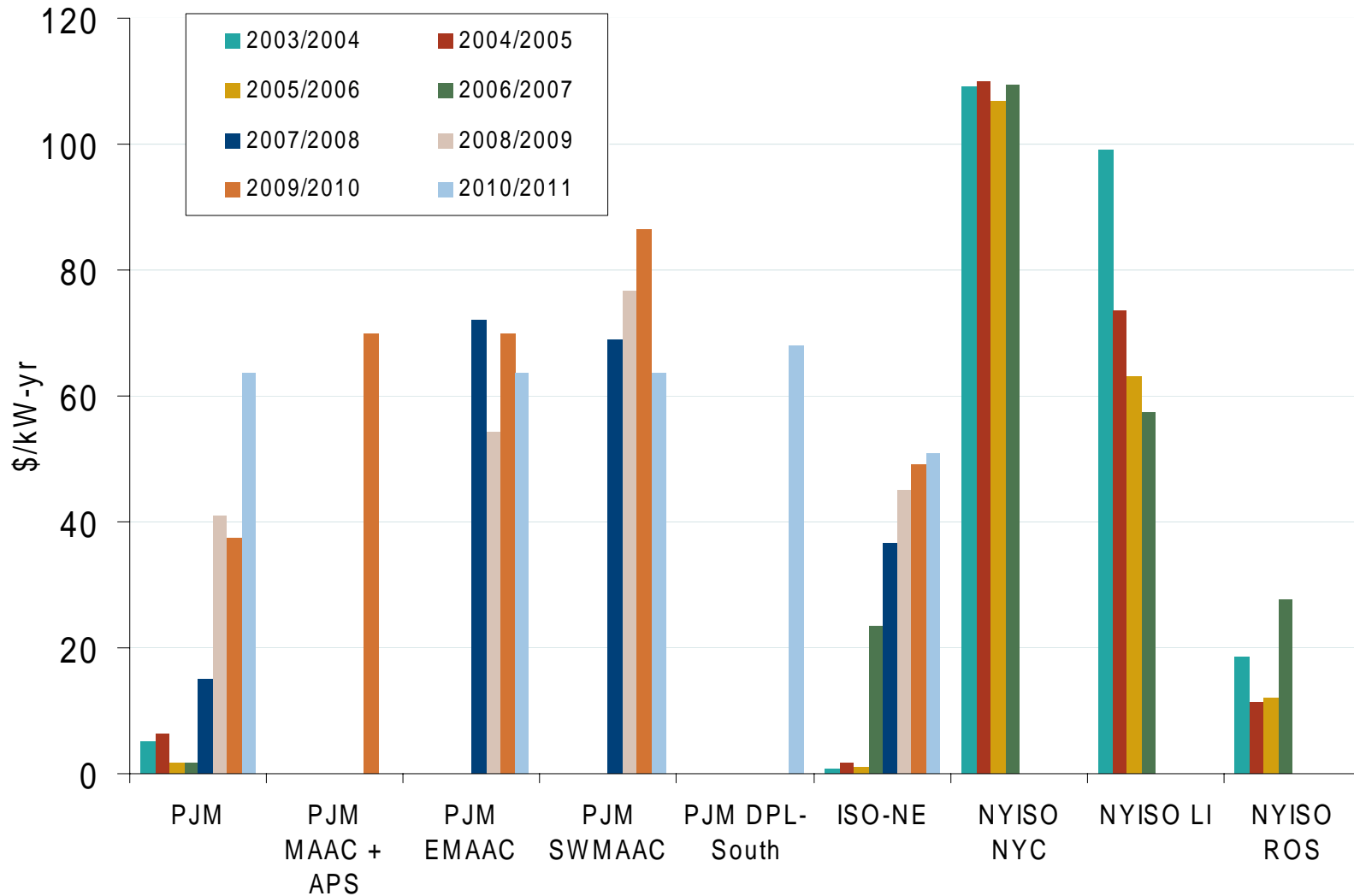
# Weekly Electric Generation Output and Temperatures Central Industrial Region



Source: Derived from EEI and NOAA data.

Updated April 4, 2008

## PJM, NYISO and ISO-NE Capacity Prices

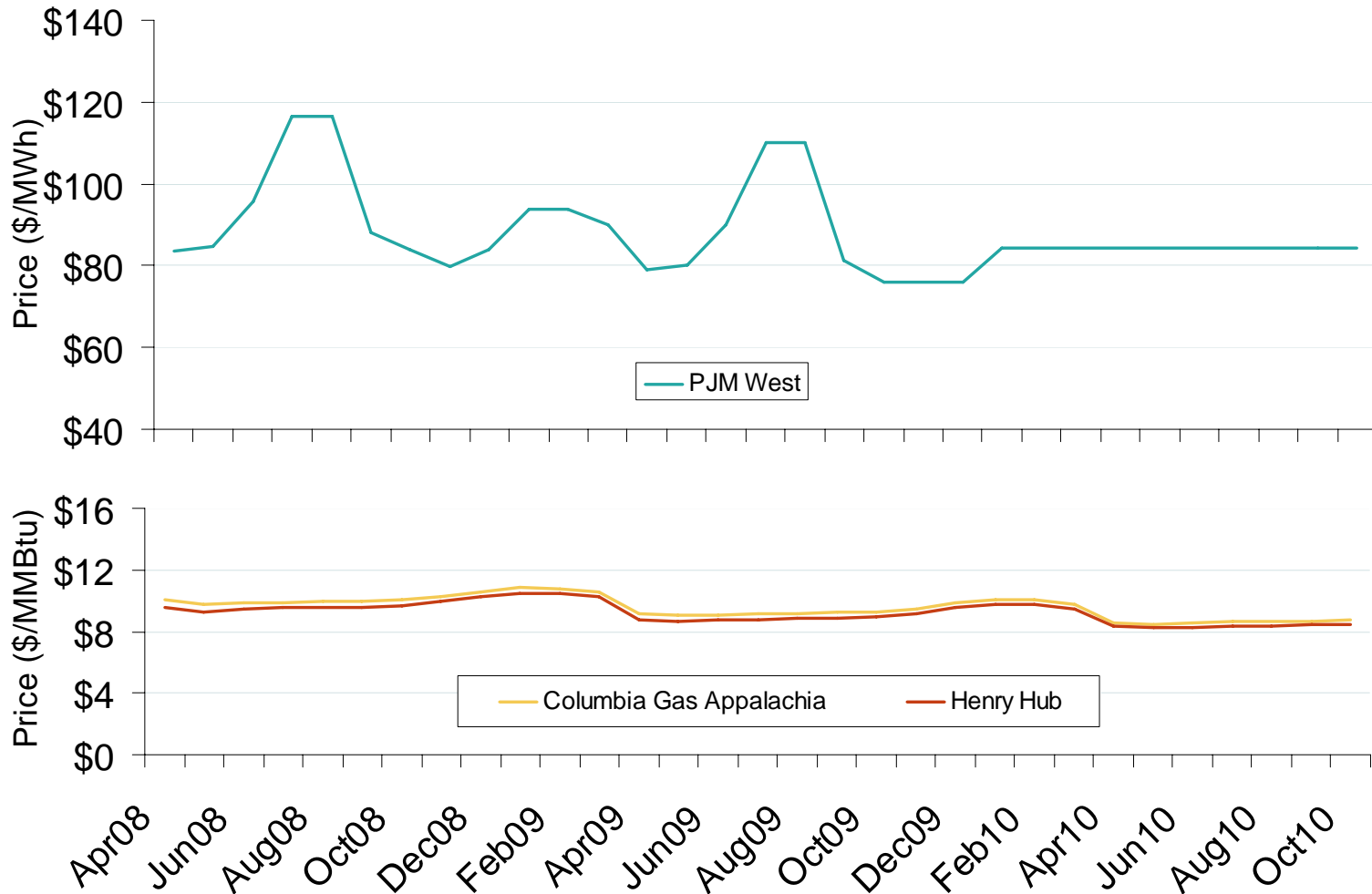


Note: ISO-NE results for 2010/2011 are preliminary based on FCM auction results before pro-rationing.

Source: Derived from PJM, NYISO and ISO-NE data

Updated March 7, 2008

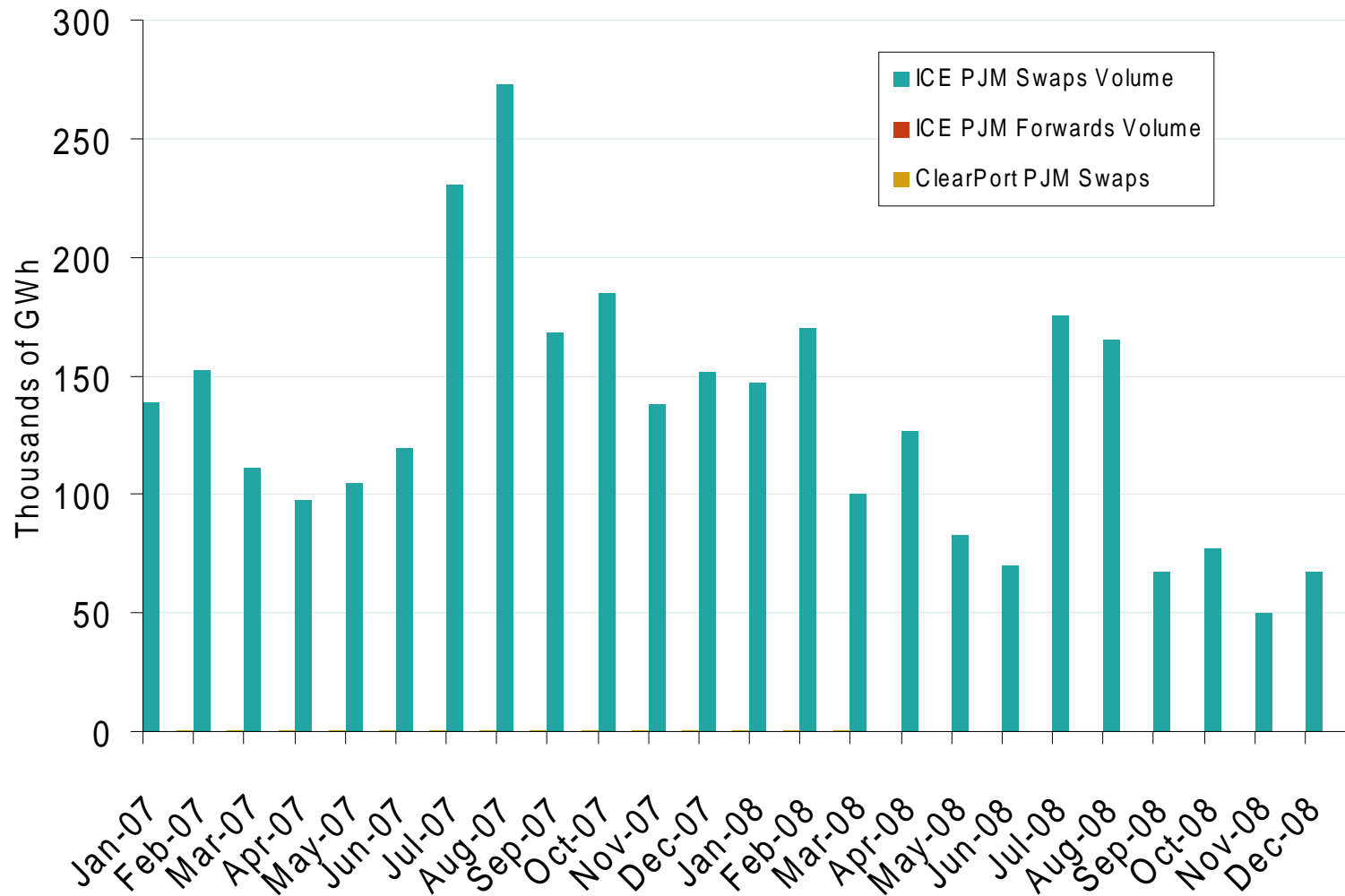
## PJM West Electric Forward Price Curve and Selected Natural Gas Forward Curves



Source: Derived from Nymex data.

Updated April 4, 2008

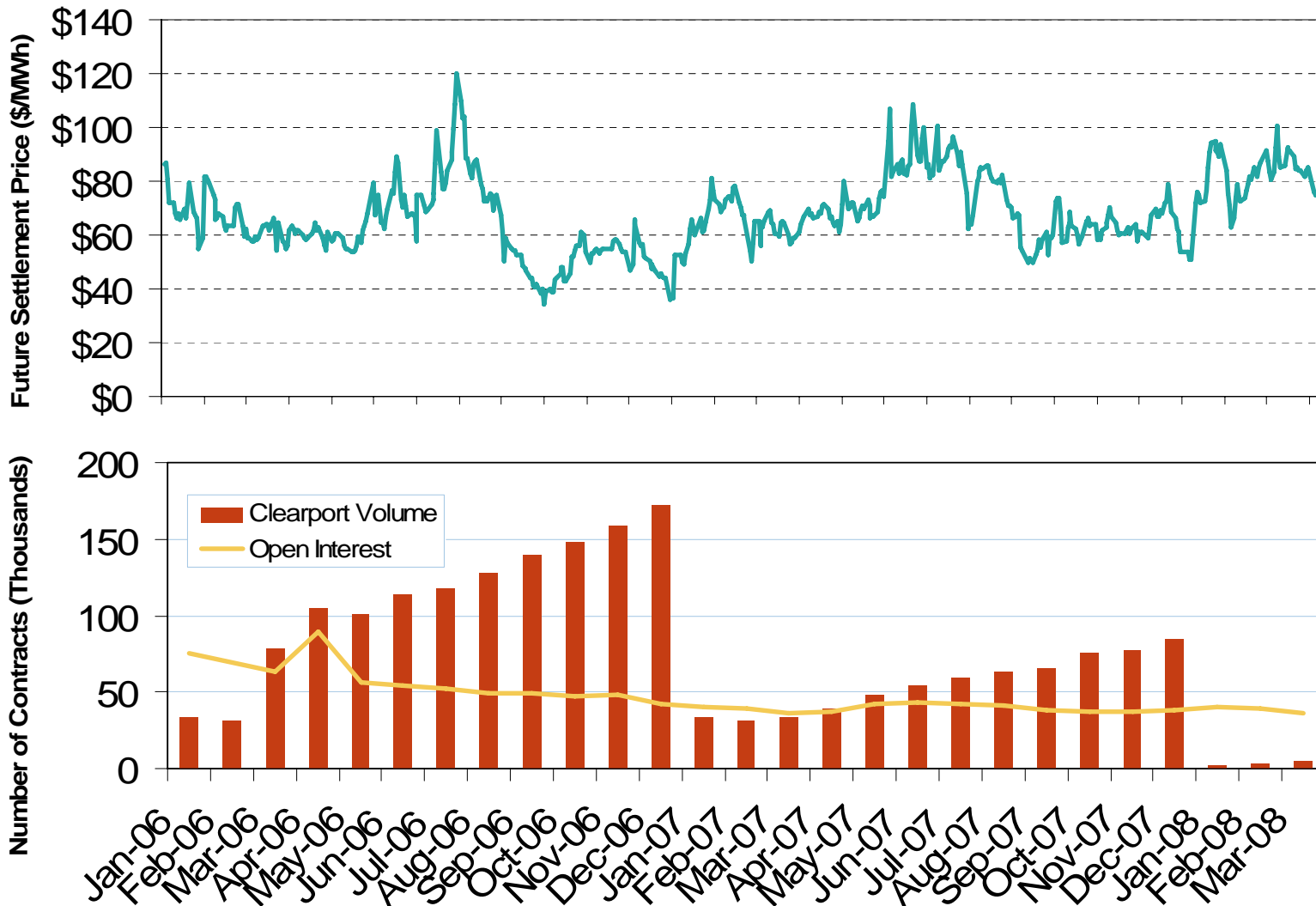
## PJM Western Hub Forward and Swap Volumes



Source: Derived from ICE and Nymex ClearPort data. ICE on-peak forward (physical) and swap (financial) volumes are for PJM's Western Hub and include monthly, dual monthly, quarterly, and calendar year contracts traded for each month. Nymex ClearPort on-peak swap (financial) volumes are for PJM's Western Hub traded by month.

Updated April 4, 2008

## Daily Settlement Price, Monthly Volume and Open Interest



Source: Derived from Nymex data.

Updated April 4, 2008

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## Hourly Day-Ahead Prices at AEP (PJM) and ComEd (PJM) June 1-August 31, 2007



Source: Derived from PJM data.

Created December 7, 2007

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# Hourly Day-Ahead Prices at First Energy Hub (MISO) and AEP (PJM) June 1-August 31, 2007

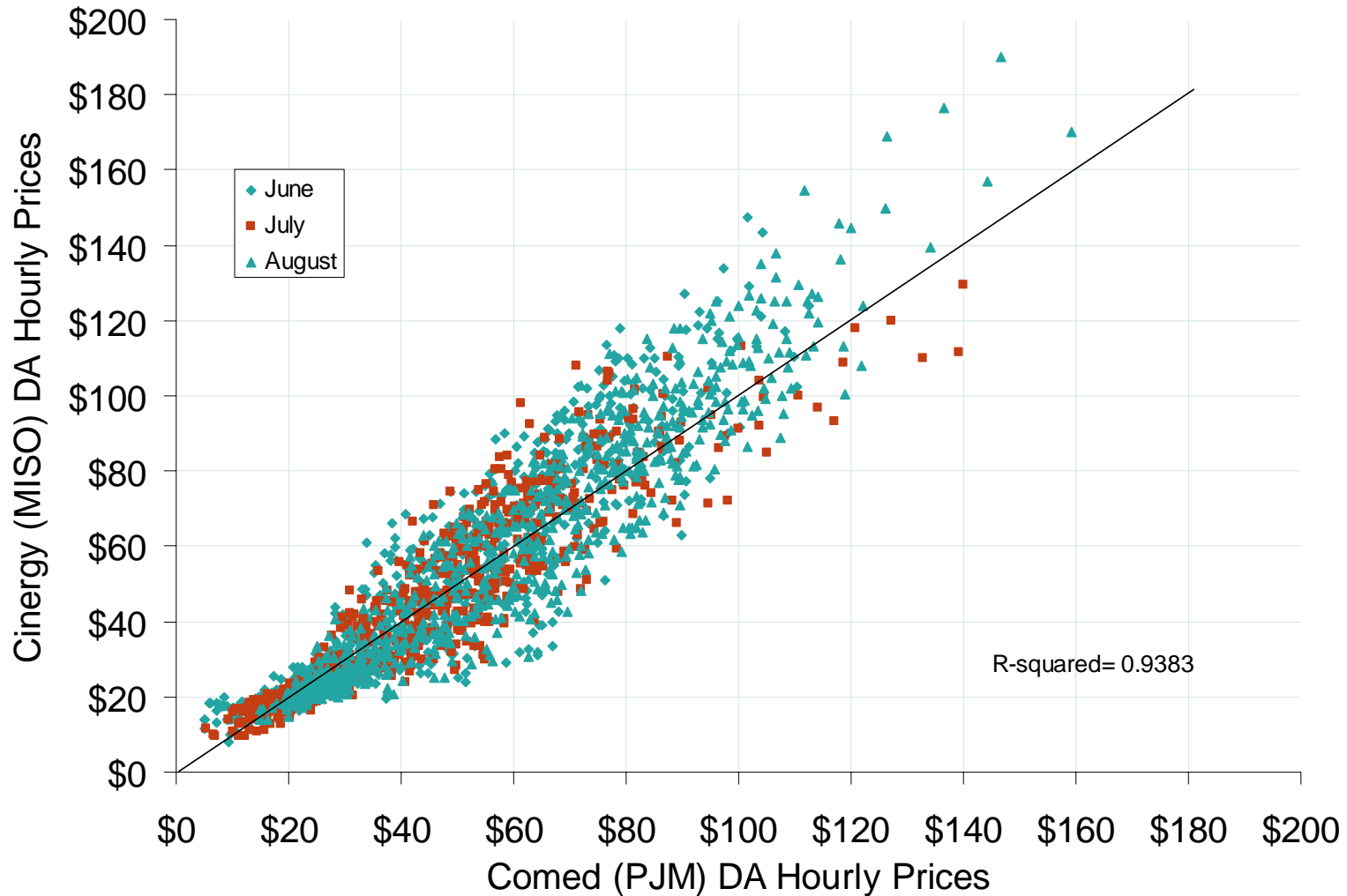


Source: Derived from MISO and PJM data.

Created December 7, 2007

1053

## Hourly Day-Ahead Prices at Cinergy (MISO) and ComEd (PJM) June 1-August 31, 2007



Source: Derived from MISO and PJM data.

Created December 7, 2007

1053

## Hourly Day-Ahead Prices at Cinergy (MISO) and AEP (PJM) June 1-August 31, 2007

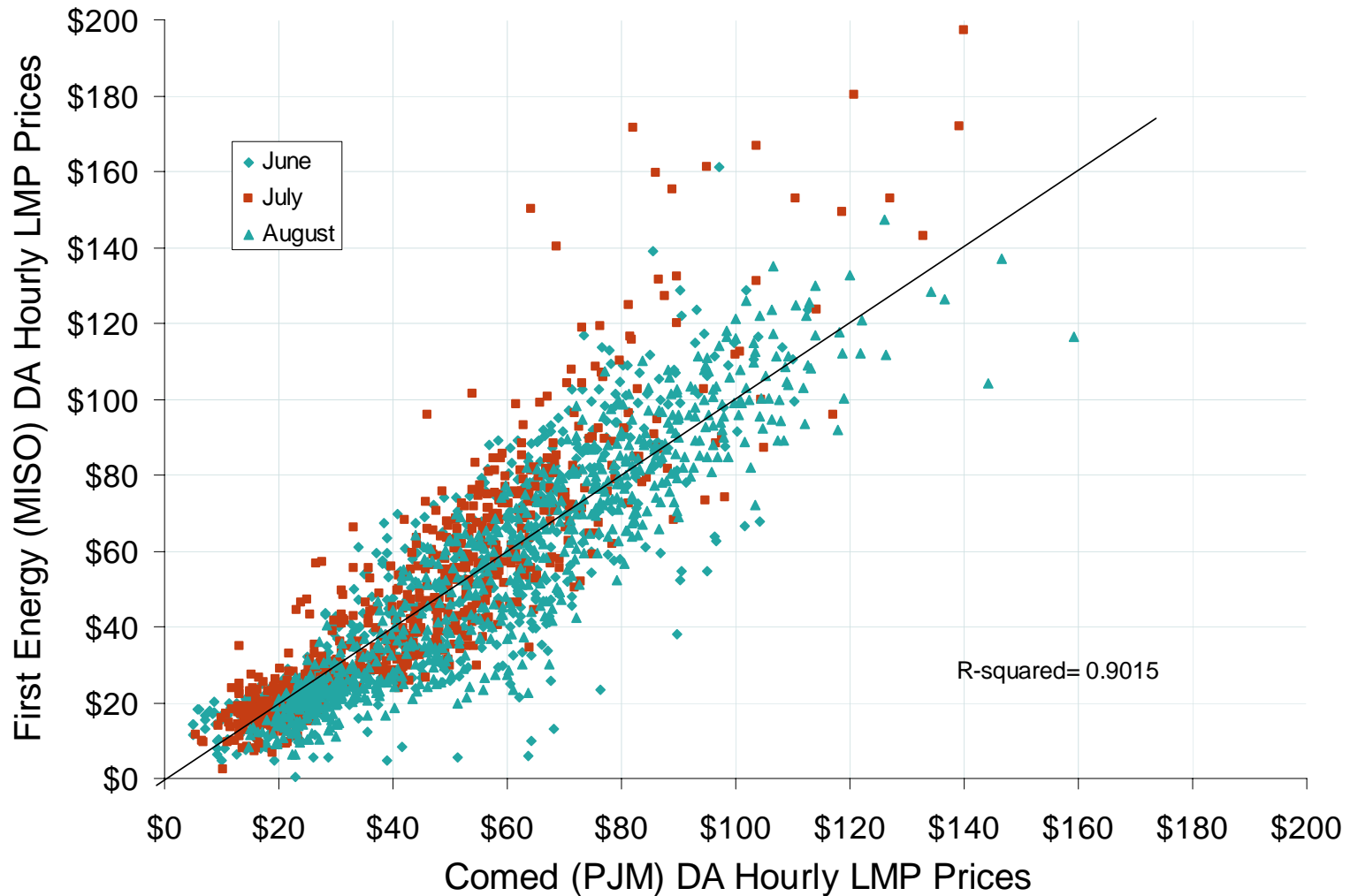


Source: Derived from MISO and PJM data.

Created December 7, 2007

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## Hourly Day-Ahead Prices at First Energy Hub (MISO) and ComEd (PJM) June 1-August 31, 2007

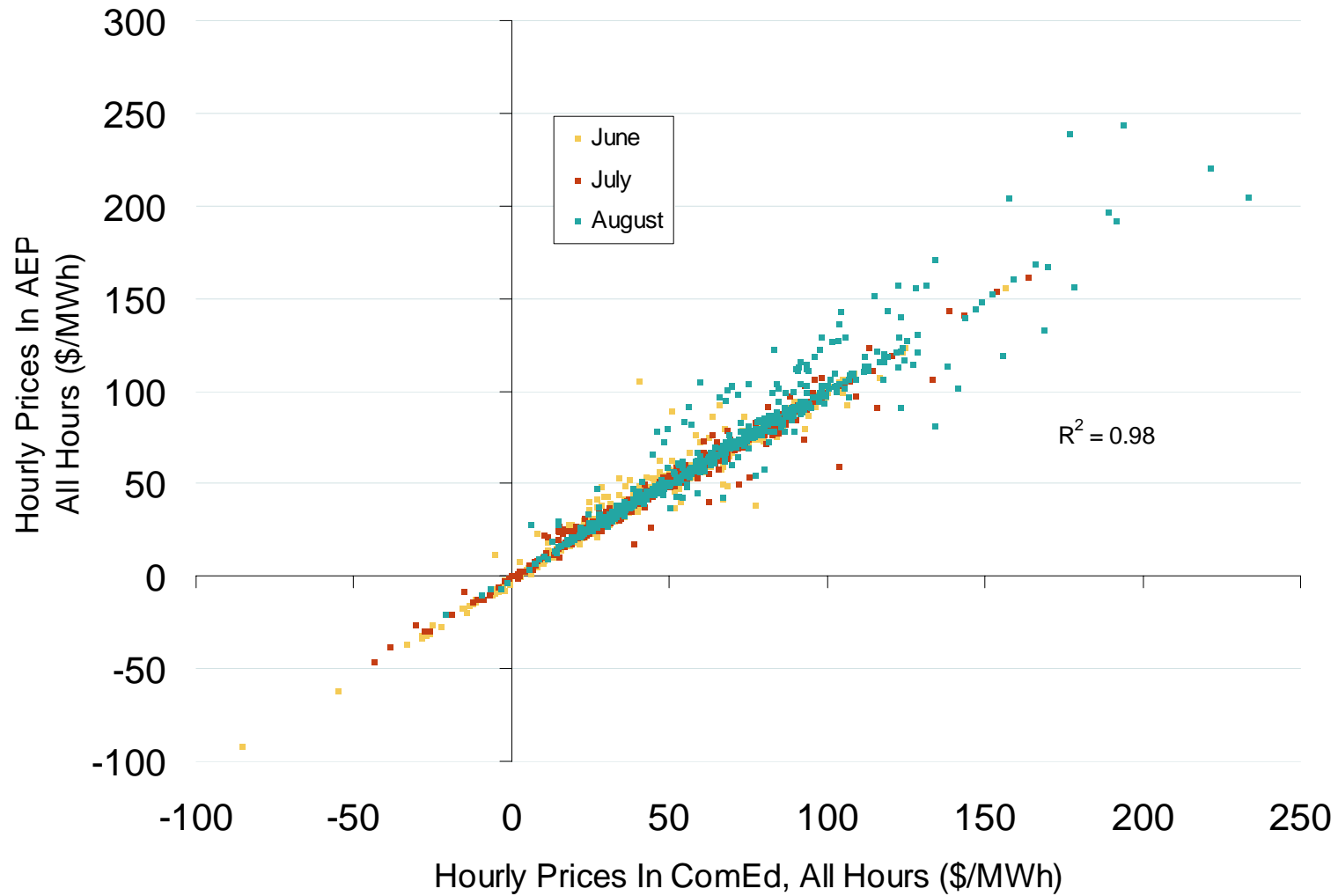


Source: Derived from MISO and PJM data.

Created December 7, 2007

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## Hourly Real-Time Prices at AEP (PJM) and ComEd (PJM) June 1-August 31, 2007

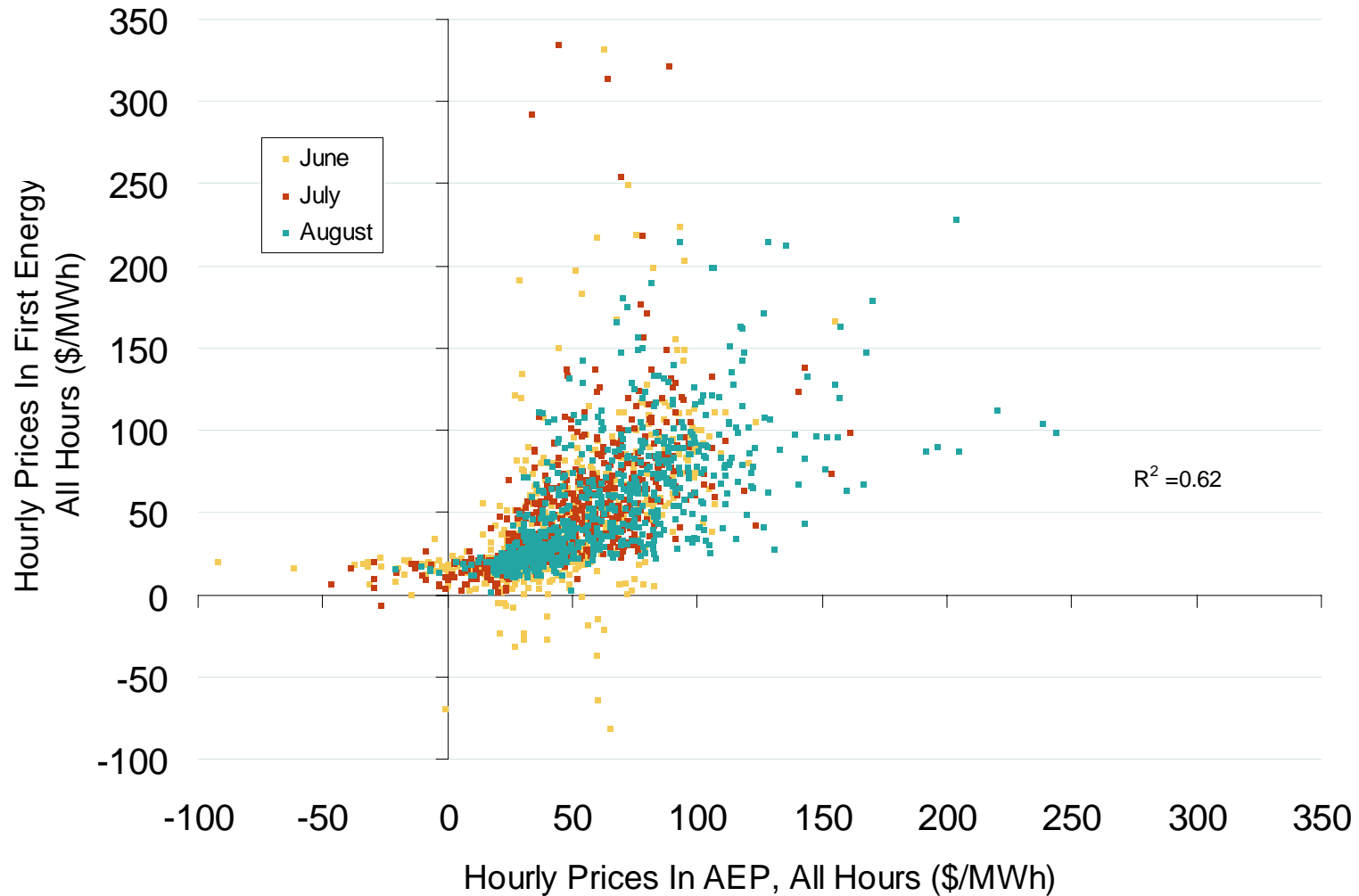


Source: Derived from PJM data.

Created October 5, 2007

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## Hourly Real-Time Prices at First Energy Hub (MISO) and AEP (PJM) June 1-August 31, 2007

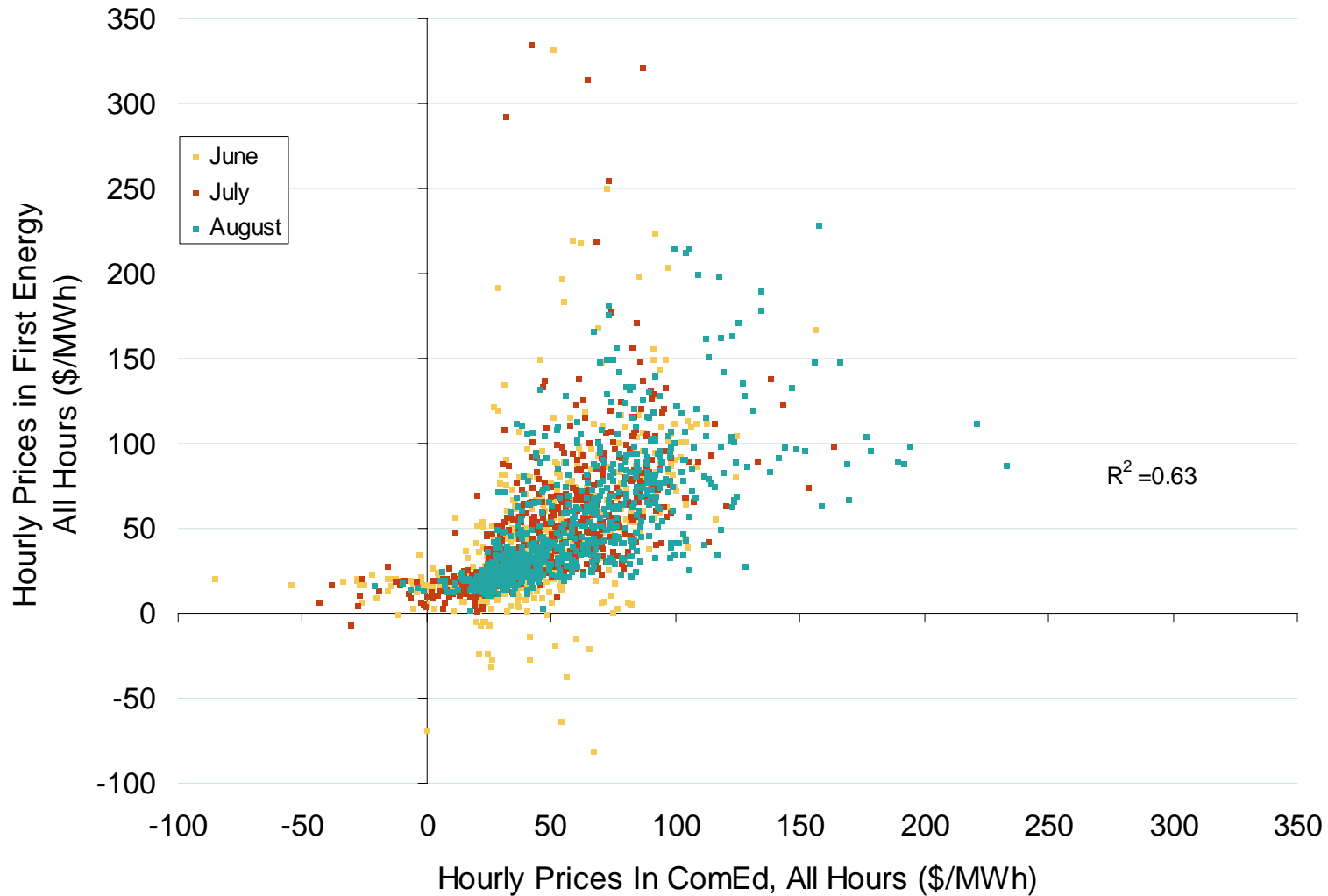


Source: Derived from MISO and PJM data.

Created October 5, 2007

1053

## Hourly Real-Time Prices at First Energy Hub (MISO) and ComEd (PJM) June 1-August 31, 2007

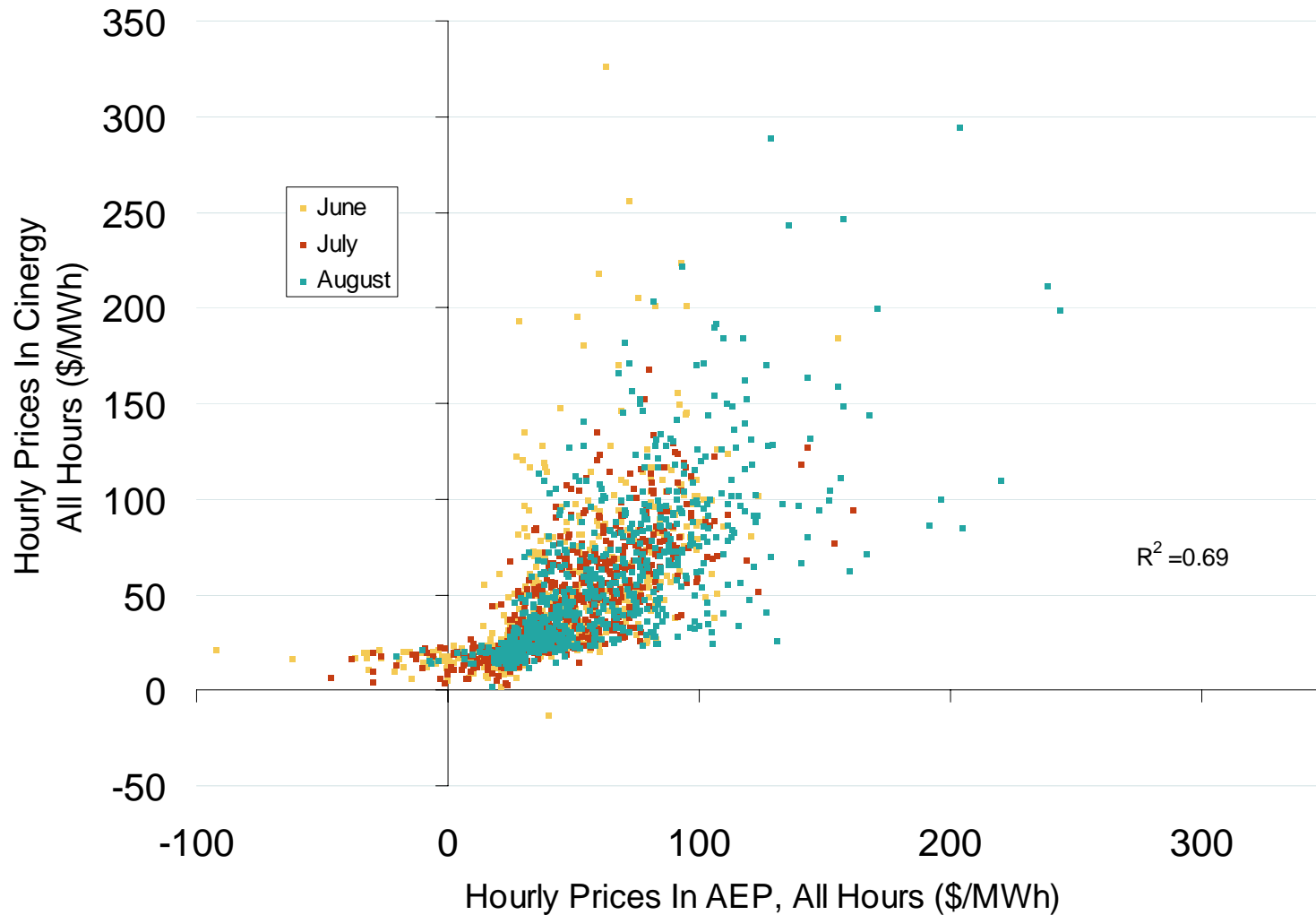


Source: Derived from MISO and PJM data.

Created October 5, 2007



## Hourly Real-Time Prices at Cinergy (MISO) and AEP (PJM) June 1-August 31, 2007

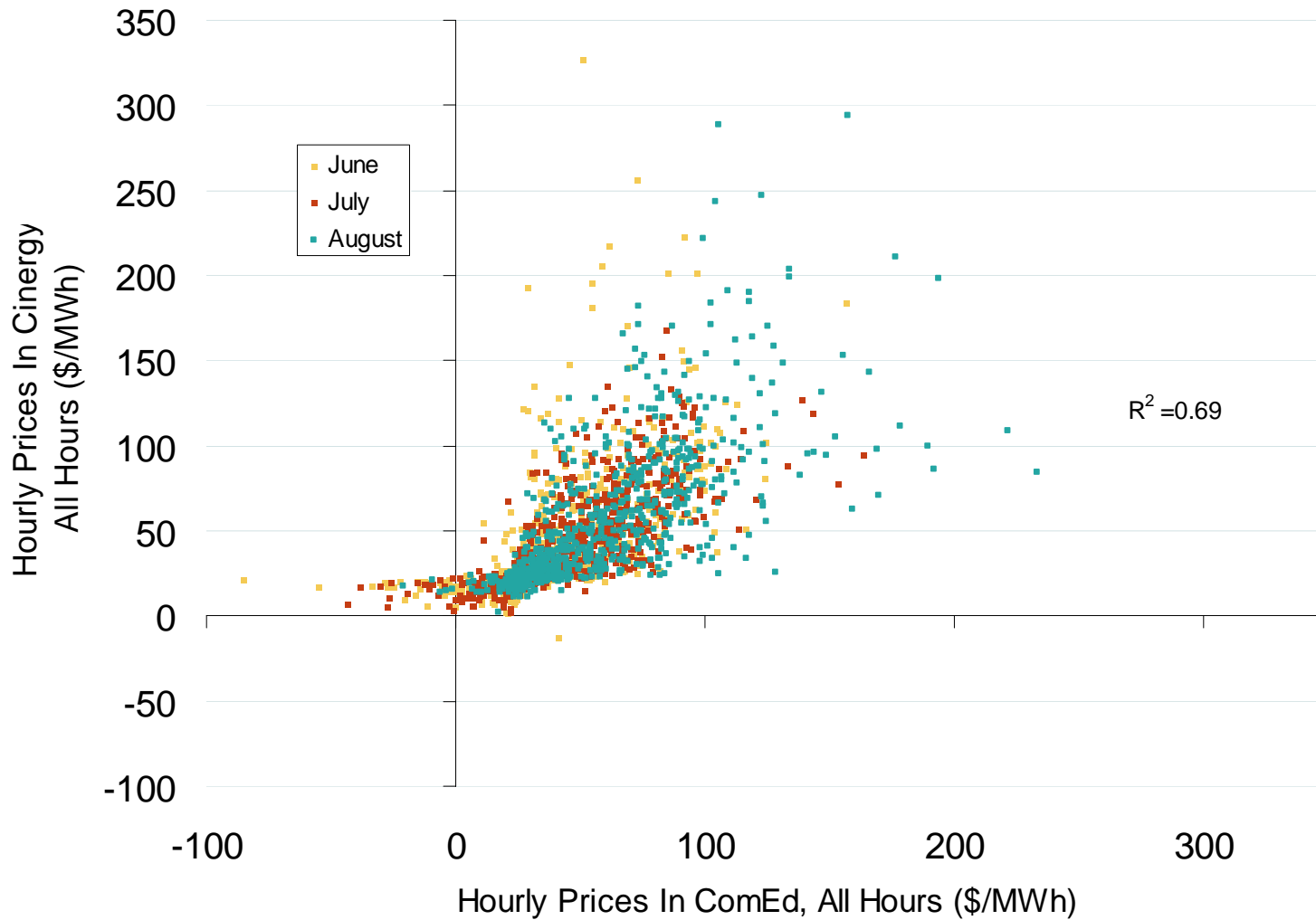


Source: Derived from MISO and PJM data.

Created October 5, 2007

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## Hourly Real-Time Prices at Cinergy (MISO) and ComEd (PJM) June 1-August 31, 2007

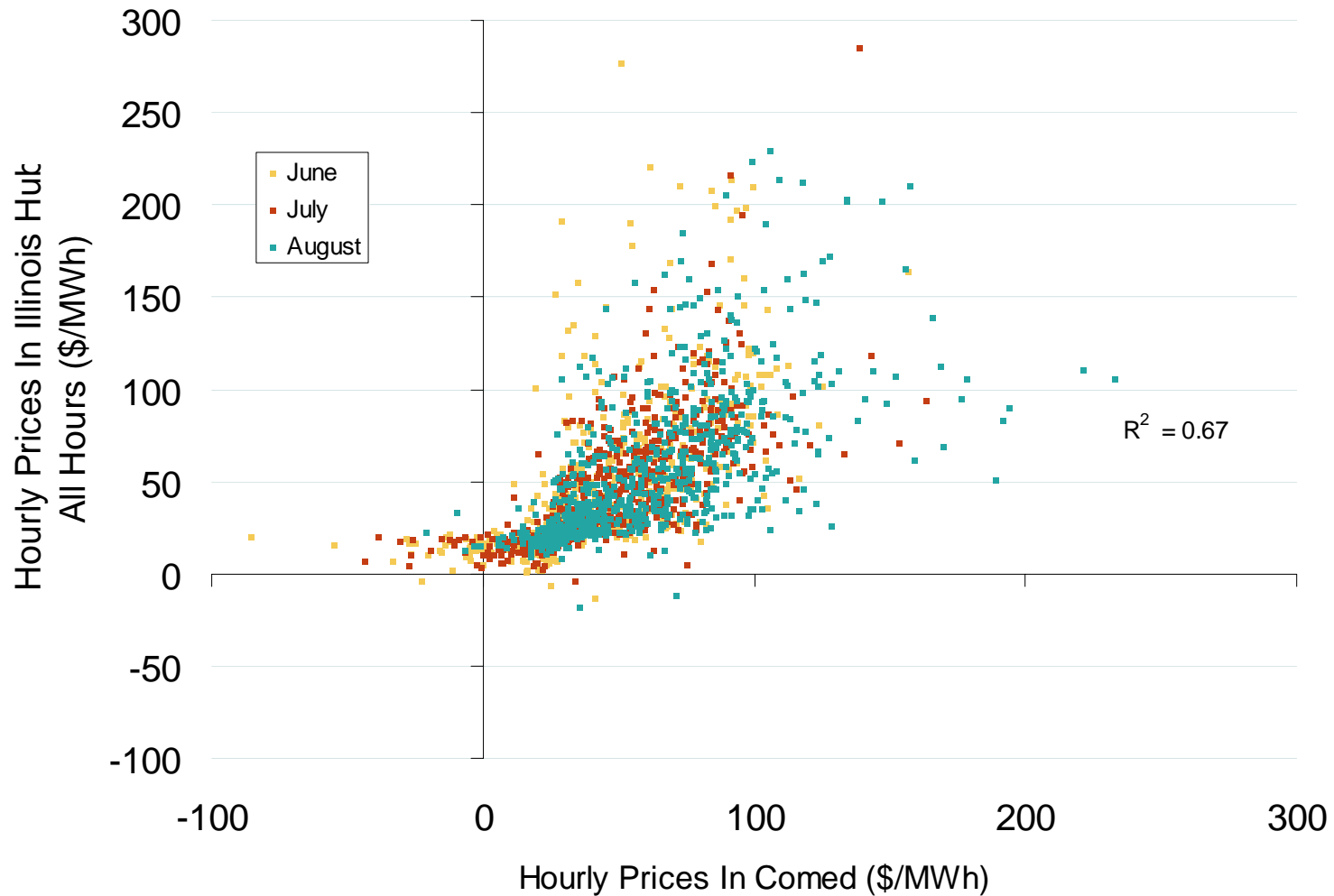


Source: Derived from MISO and PJM data.

Created October 5, 2007

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## Hourly Real-Time Prices at Illinois Hub (MISO) and ComEd (PJM) June 1-August 31, 2007

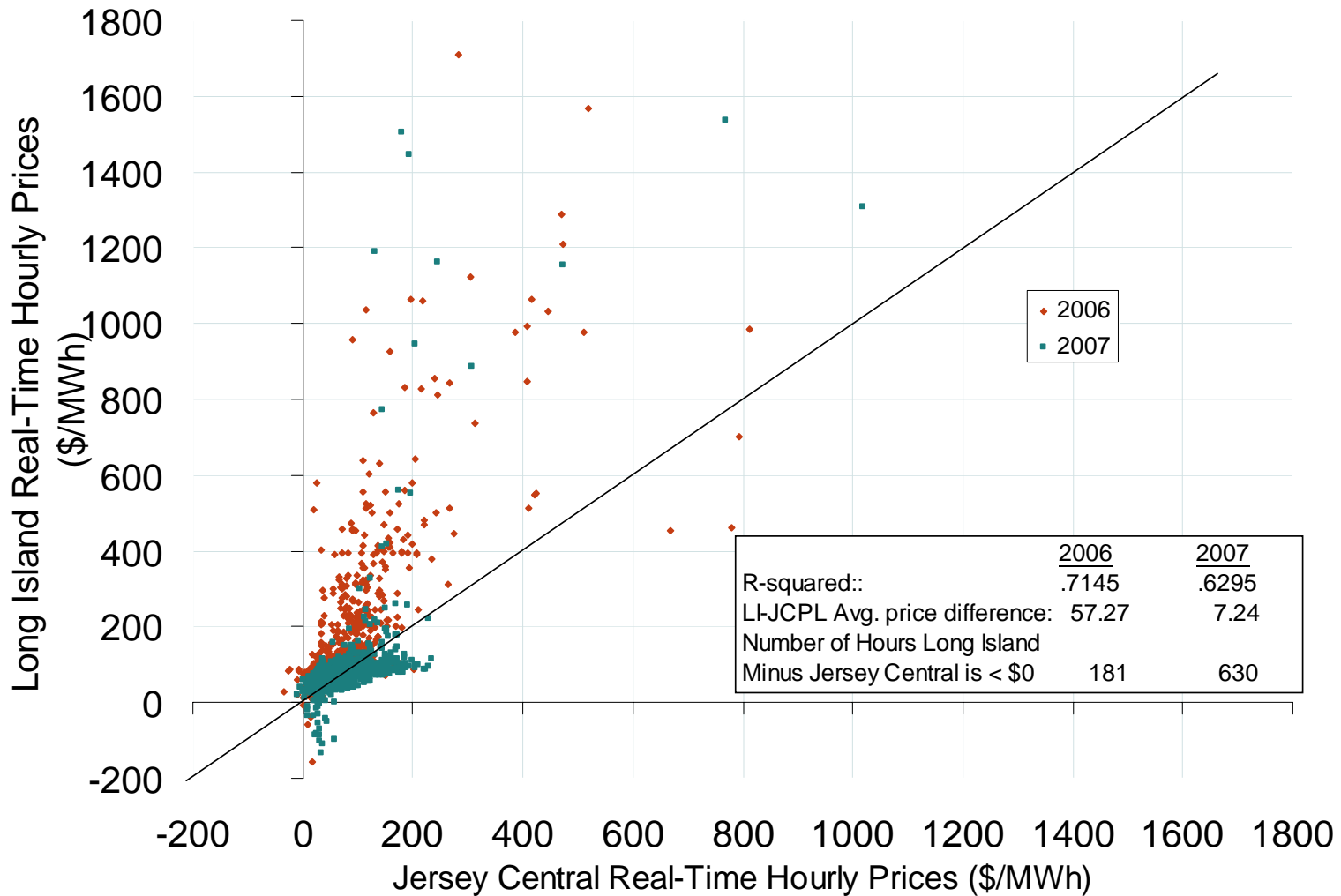


Source: Derived from MISO and PJM data.

Created October 5, 2007

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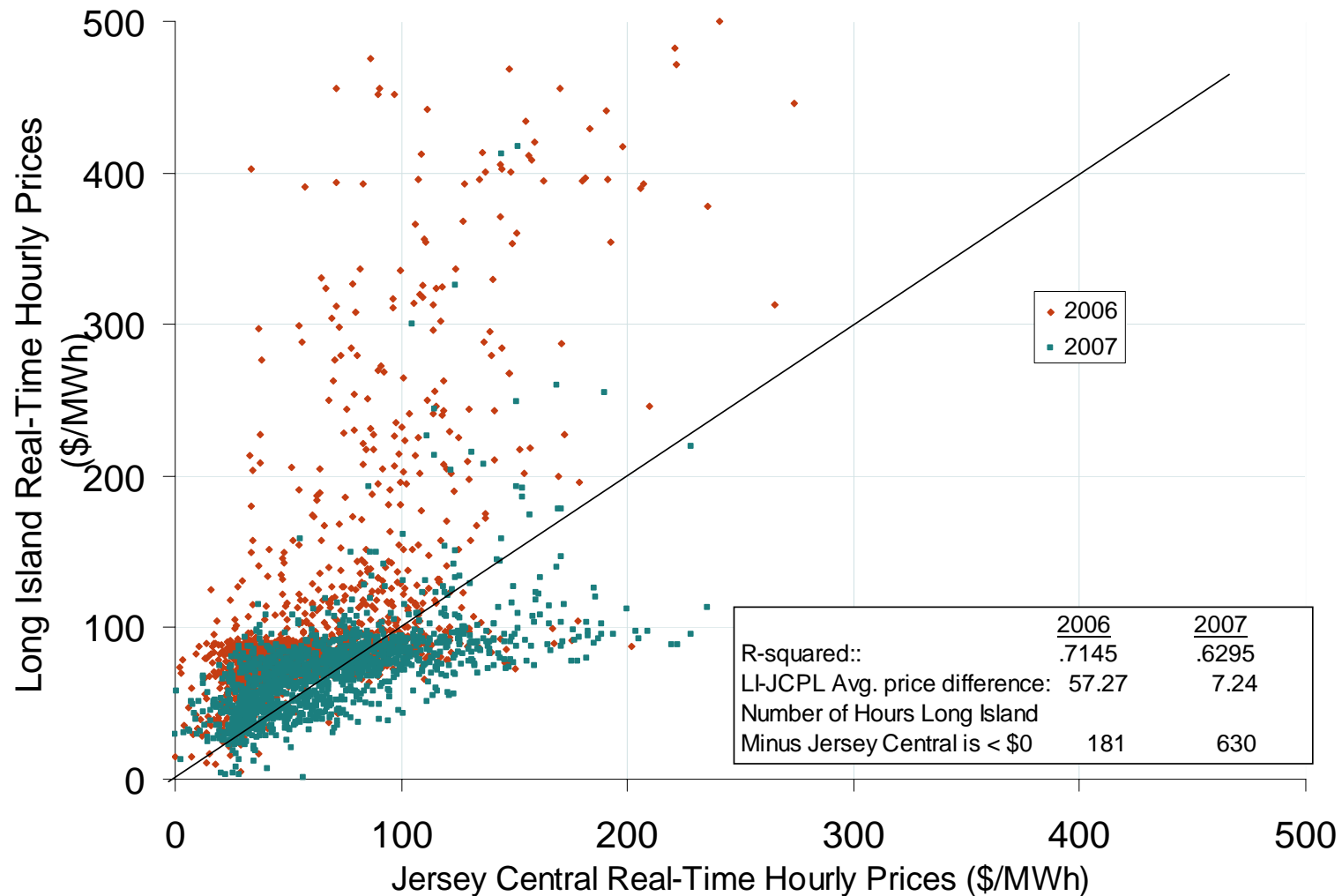
## Hourly Real-Time Prices at Long Island (NYISO) and Jersey Central (PJM) Summer 2006 and 2007 (July and August)



Source: Derived from NYISO and PJM data.

Created November 5, 2007

## Hourly Prices at Long Island (NYISO) and Jersey Central (PJM) Summer 2006 and 2007 (July and August)



Source: Derived from NYISO and PJM data.

Created November 5, 2007