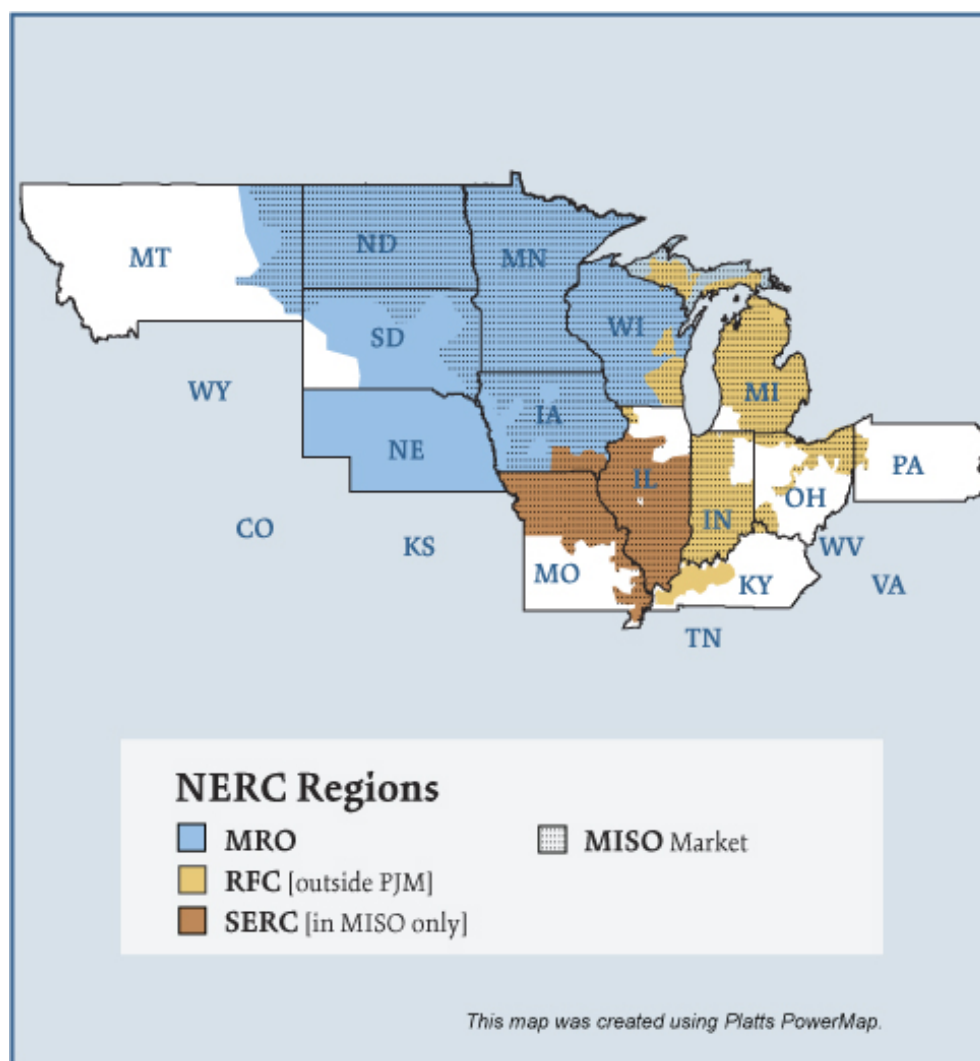


## Midwest Electric Regions



## Midwest Electric Market: Overview and Focal Points

Federal Energy Regulatory Commission • Market Oversight @ FERC.gov

### Overview

#### Market Description

Midwest Reliability Organization (MRO) reliability region and the portion of the SERC reliability region in MISO and the ReliabilityFirst Corporation (RFC) reliability region not in PJM.

#### Geography

States covered: All or most of North Dakota, South Dakota, Nebraska, Minnesota, Iowa, Wisconsin, Illinois, Indiana, Michigan and parts of Montana, Missouri, Kentucky, and Ohio.

Reliability regions: Midwest Reliability Organization (MRO), Southeastern Electric Reliability Council (SERC) and ReliabilityFirst Corporation (RFC)

(These regions were formerly: East Central Area Reliability Coordination Agreement (ECAR), Mid-America Interconnected Network (MAIN), and Midcontinent Area Power Pool (MAPP) regions.)

Balancing authorities: See list on page 6.

Hubs: Cinergy, First Energy, Illinois, Michigan, Minnesota

#### RTO/ISO

Midwest ISO (MISO) (established 2002) administers a two-settlement (day ahead and real-time) energy market known as the Day-2 market. It produces hourly locational marginal prices that are rolled up into 5 regional hub prices. MISO also administers a monthly financial transmission rights (FTR) allocation and auction.

Midwest bilateral trading is active on the IntercontinentalExchange (ICE) at the Cinergy Hub and Northern Illinois Hub.

#### [Midwest ISO 2006 State of the Markets Report](#)

Market Monitor: Dr. David Patton – Independent Market Monitor

Updated August 3, 2007

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## Midwest Electric Market: Overview and Focal Points

### Federal Energy Regulatory Commission • Market Oversight @ FERC.gov

#### **Generation/Supply (MISO only)**

Marginal fuel type: Coal

Generating capacity (summer 2006): 137,232 MW

Capacity reserve (summer 2006): 21,025 MW

Reserve margin (summer 2006): 18%

#### **Demand (MISO only)**

All time peak demand: 116 GW (set July 31, 2006)

All time peak demand for MISO market footprint excluding LG&E: 110.5 GW (set July 31, 2006)

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

Peak demand growth: 3.4% (2005-2006)

Summer Peak Demand (GW): 112.2 (2005) 116 (2006) 110.5 (2006 MISO market footprint excluding LG&E)

*Source: Derived from MISO Data*

#### **Prices (MISO only)**

Annual Average Day-Ahead Price at Cinergy Hub: \$50.54/MWh (2005) \$40.44/MWh (2006)

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).

**Interconnections/Seams**

Since the start of the Day-2 market on April 1, 2005, persistent transmission constraints in the Wisconsin and the Upper Peninsula of Michigan (WUMS) and Minnesota areas have caused their prices to diverge from other areas of MISO, usually at times of high loads or decreased generation supply.

## Supply and Demand Statistics for MISO

<b>Supply Demand Statistics</b>			
	2004 (2)	2005	2006 (1)
Summer Generating Capacity MW	NA	136,402	137,232
Summer Peak Demand MW	101,538	112,197	116,207
Summer Reserves MW	NA	24,205	21,025
Summer Reserve Margin:	NA	22%	18%
Annual Load (GWh):	569,475	607,474	NA
Annual Net Generation GWh	NA	NA	NA

Footnote (2)/ The MISO Day-2 market did not exist in the summer of 2004

Footnote (1)/ This includes LG&E and KU. LG&E and KU left the MISO market on 9/1/2006

Source: Derived from *MISO* data and FERC staff discussions with MISO.

Updated January 8, 2007

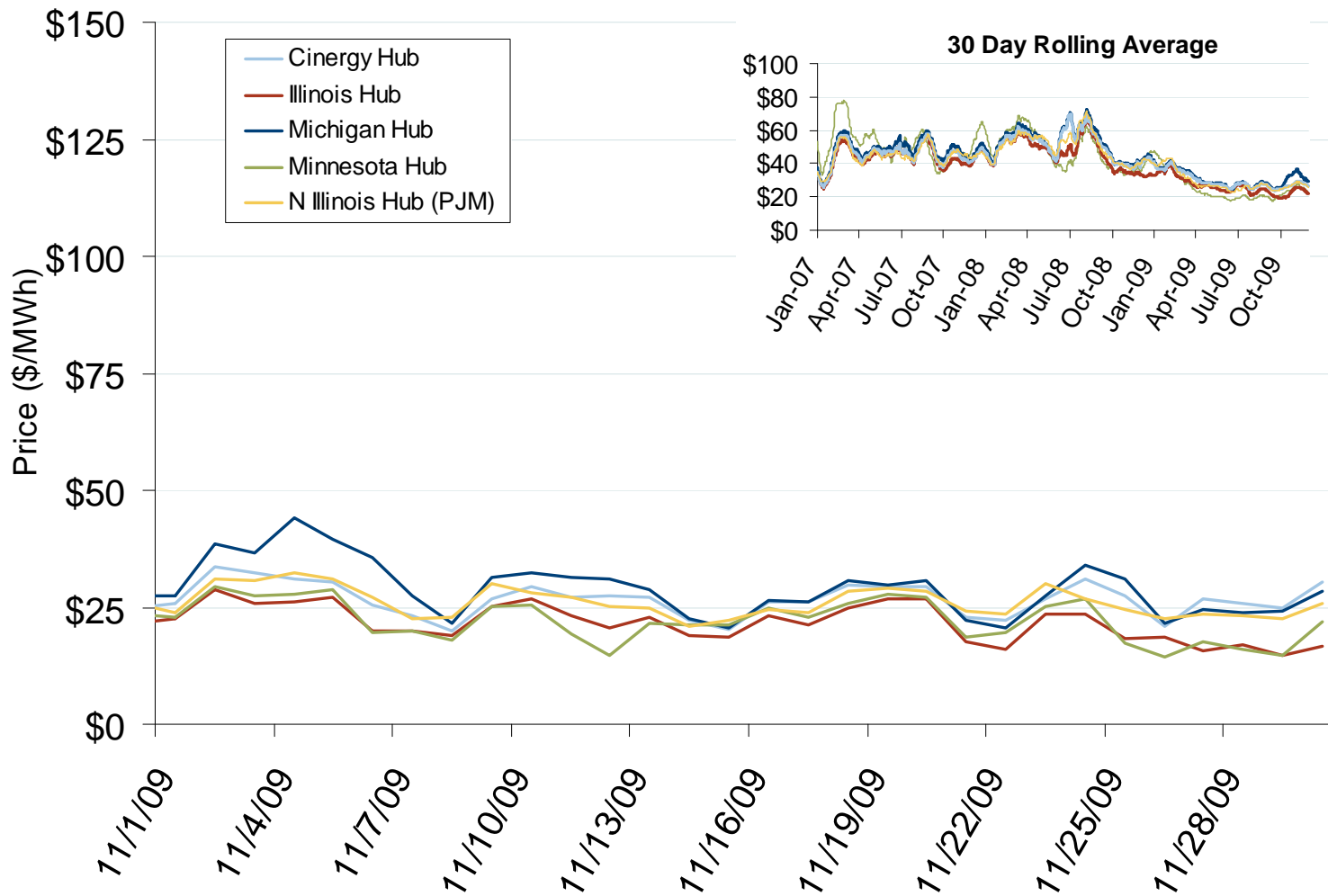
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## Annual Average Bilateral Prices

Annual Average Day Ahead On Peak Prices (\$/MWh)						
	2004	2005	2006	2007	2008	5-Year Avg
Cinergy	\$43.31	\$63.76	\$51.81	\$61.20	\$66.88	\$57.38
Michigan Hub*	N/A	\$72.79	\$55.29	\$64.43	\$69.15	\$64.93
Minnesota Hub*	N/A	\$69.25	\$59.47	\$72.32	\$67.46	\$66.98
NI Hub	\$42.03	\$61.76	\$52.52	\$58.93	\$66.13	\$56.26
Illinois Hub*	N/A	\$67.92	\$51.32	\$59.88	\$62.52	\$59.91
MAPP South	\$45.90	\$65.48	\$55.11	\$61.18	\$69.18	\$59.36

\* As of April 1, 2005.

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

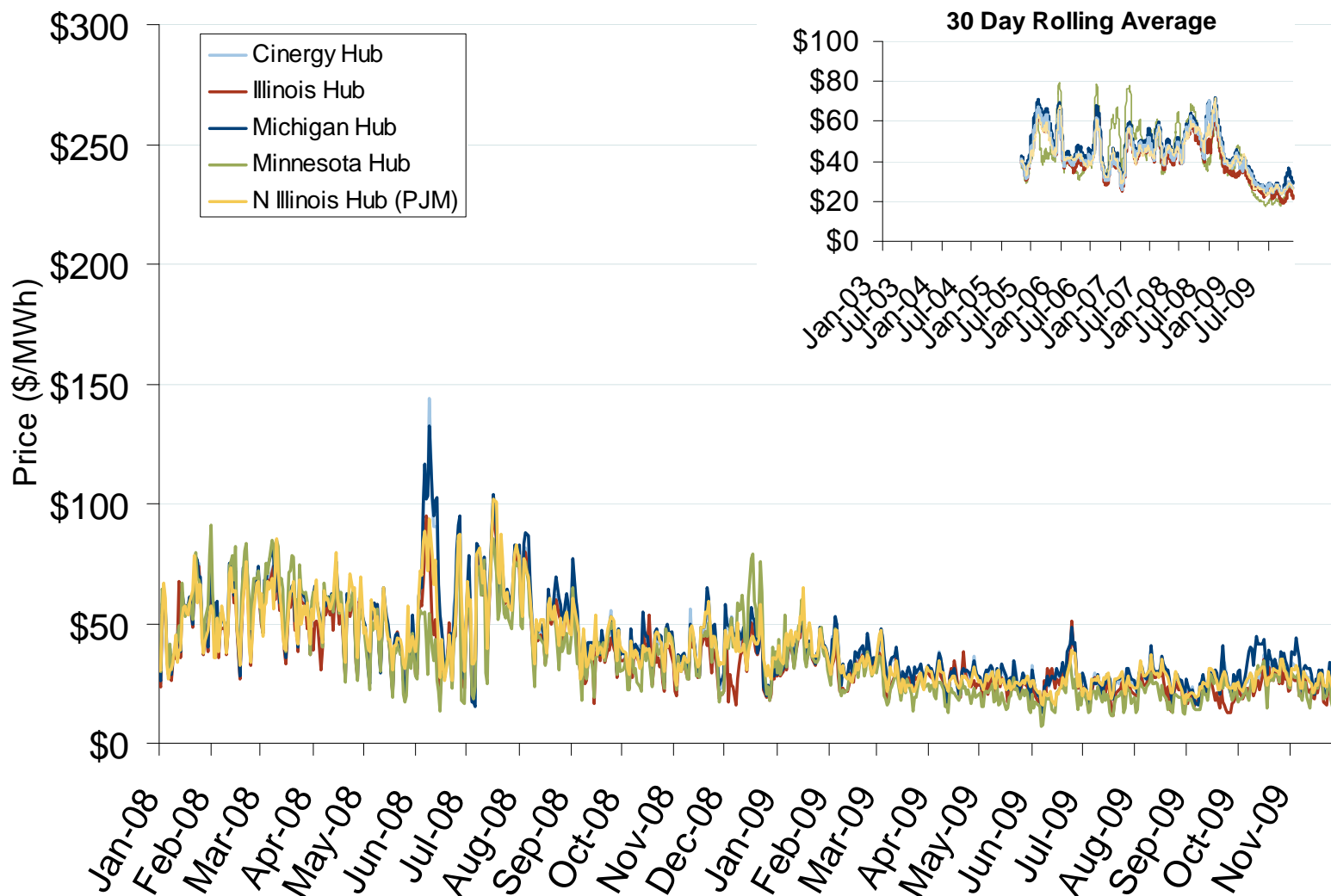


Source: Derived by Bloomberg from MISO and PJM data as reported by Bloomberg.

Updated December 8, 2009

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

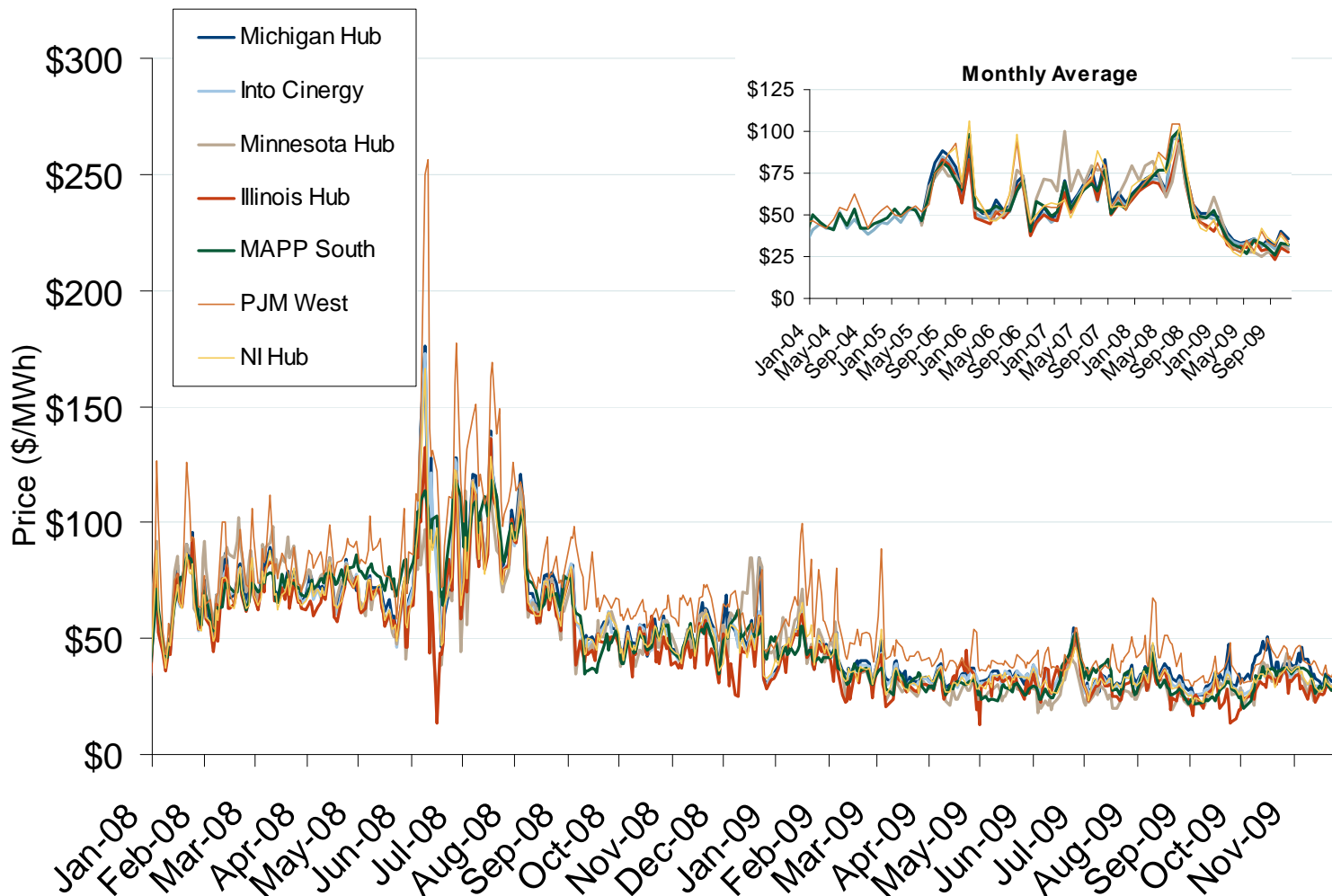


Source: Derived by Bloomberg from MISO and PJM data as reported by Bloomberg.

Updated December 8, 2009



# MISO/PJM Bilateral Day-Ahead On-Peak Prices

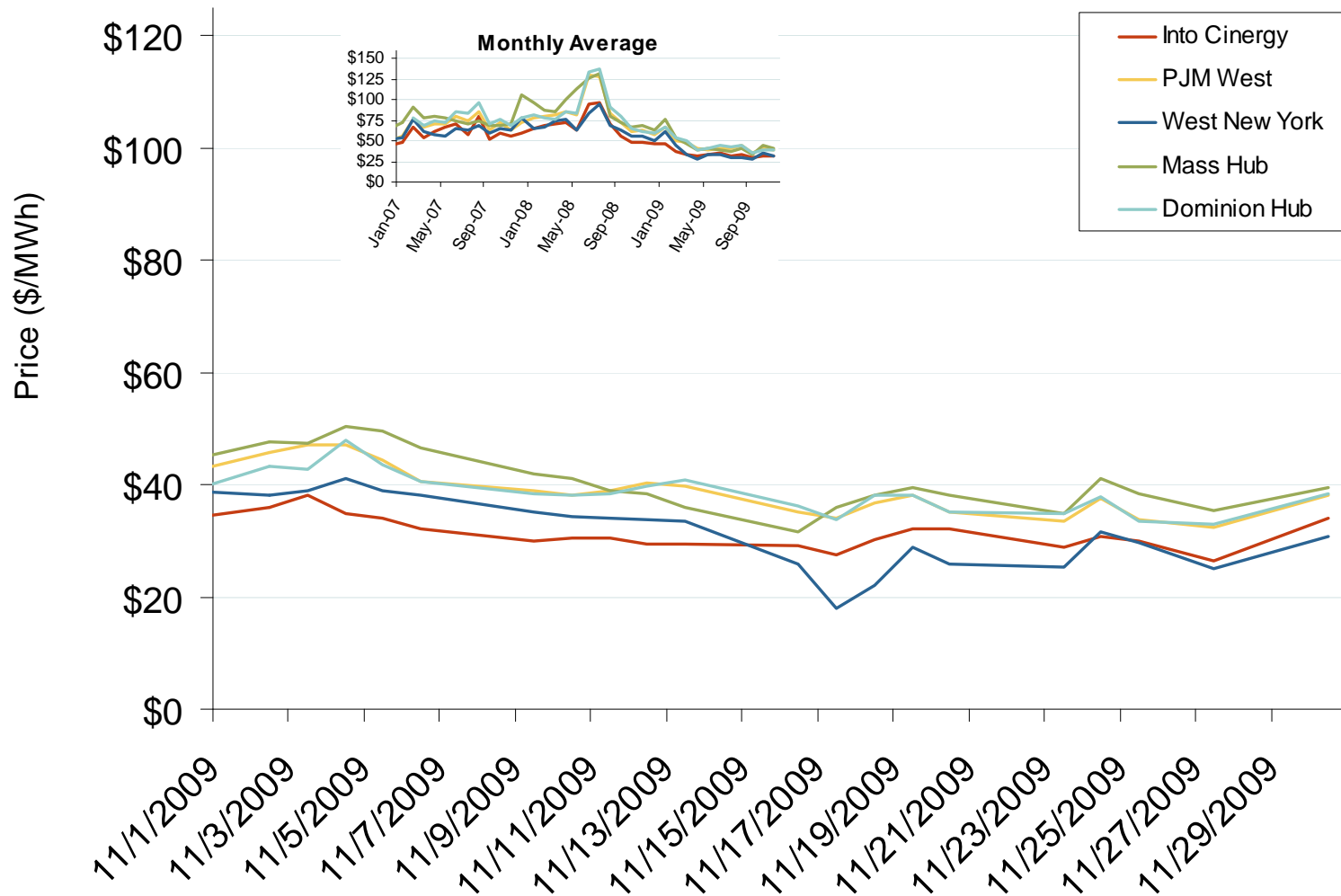


Source: Derived from *Platts* data.

Updated December 8, 2009

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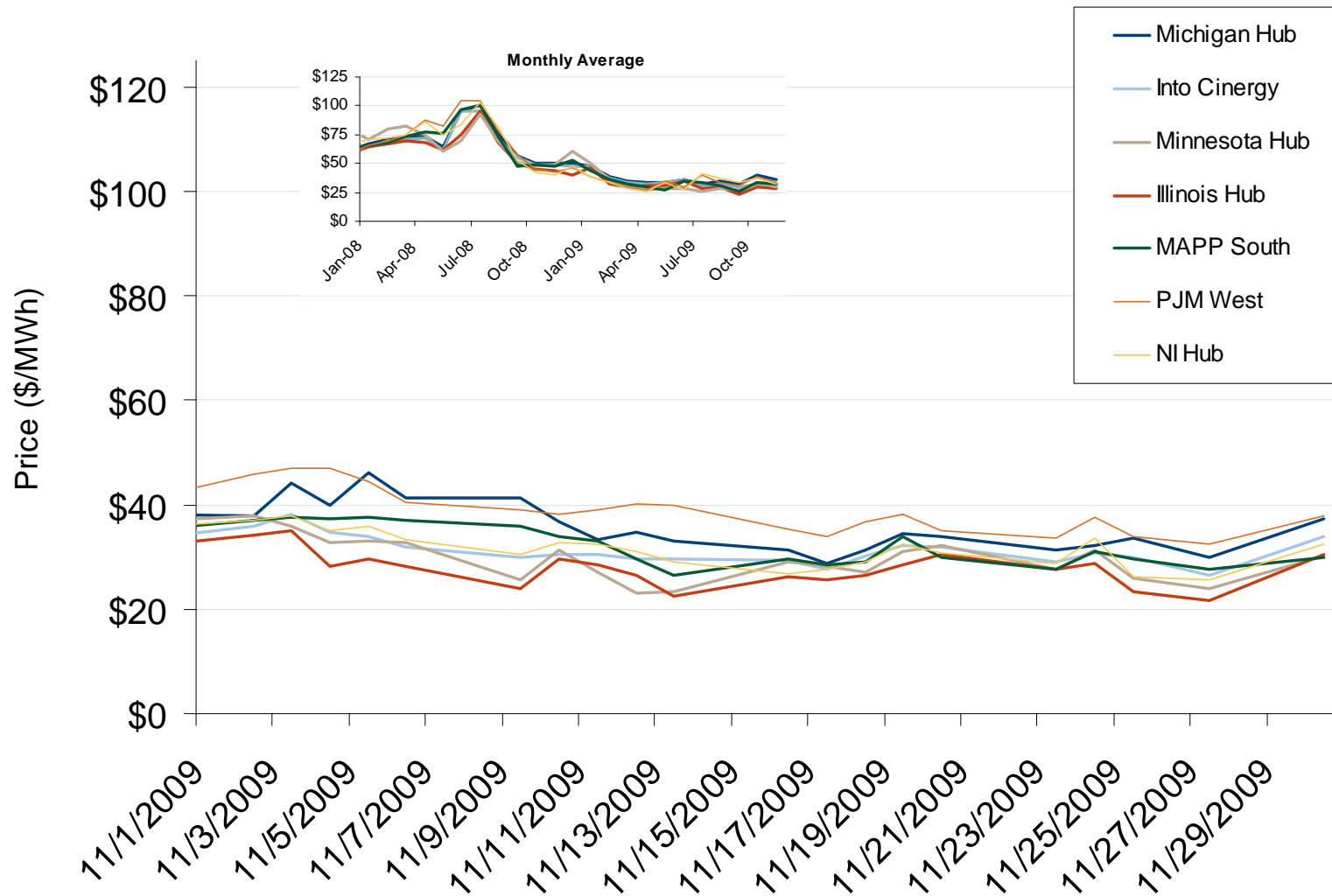
# Eastern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from Platts data.

Updated December 8, 2009

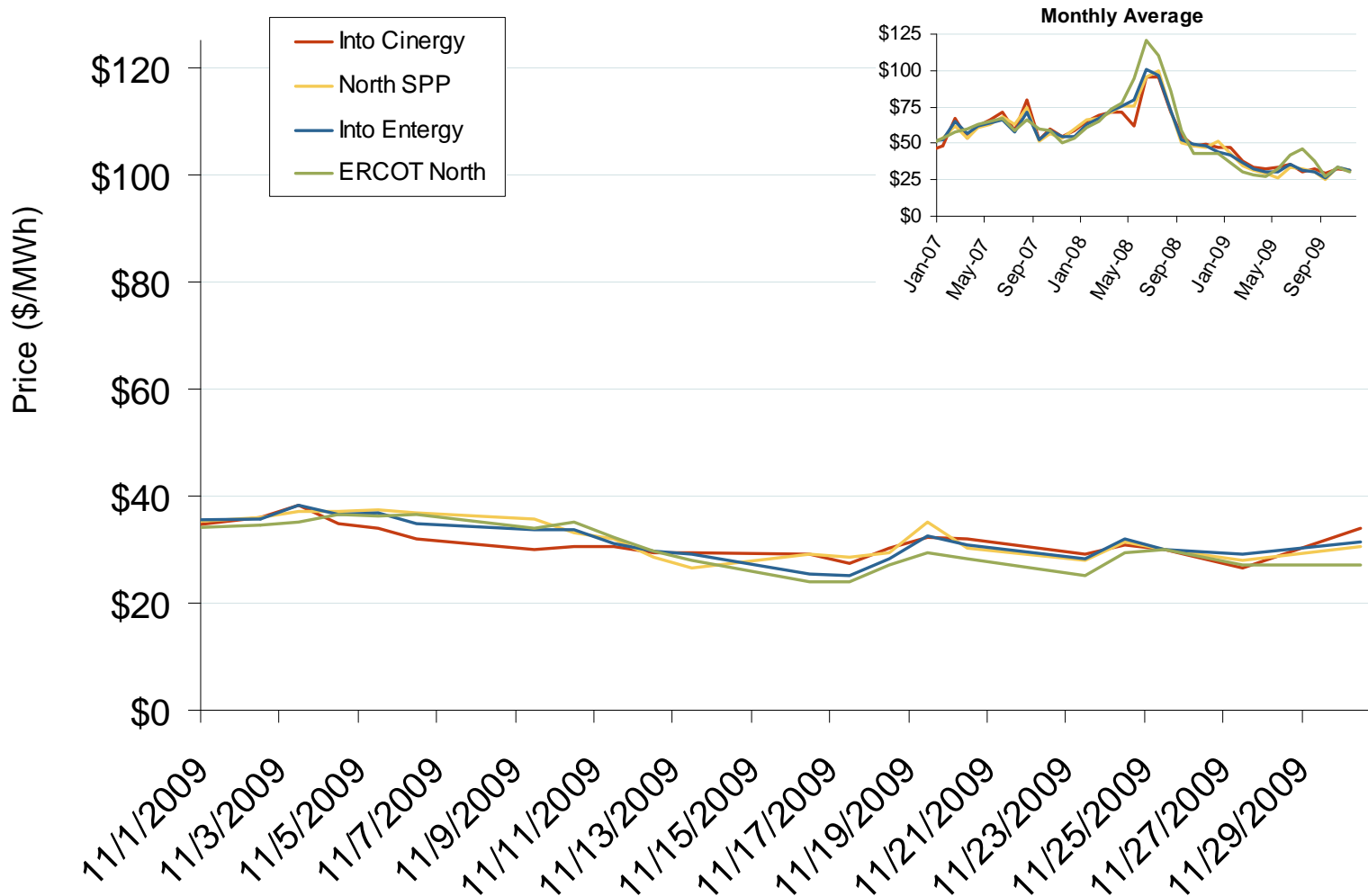
# MISO/PJM Bilateral Day-Ahead On-Peak Prices



Source: Derived from Platts data.

Updated December 8, 2009

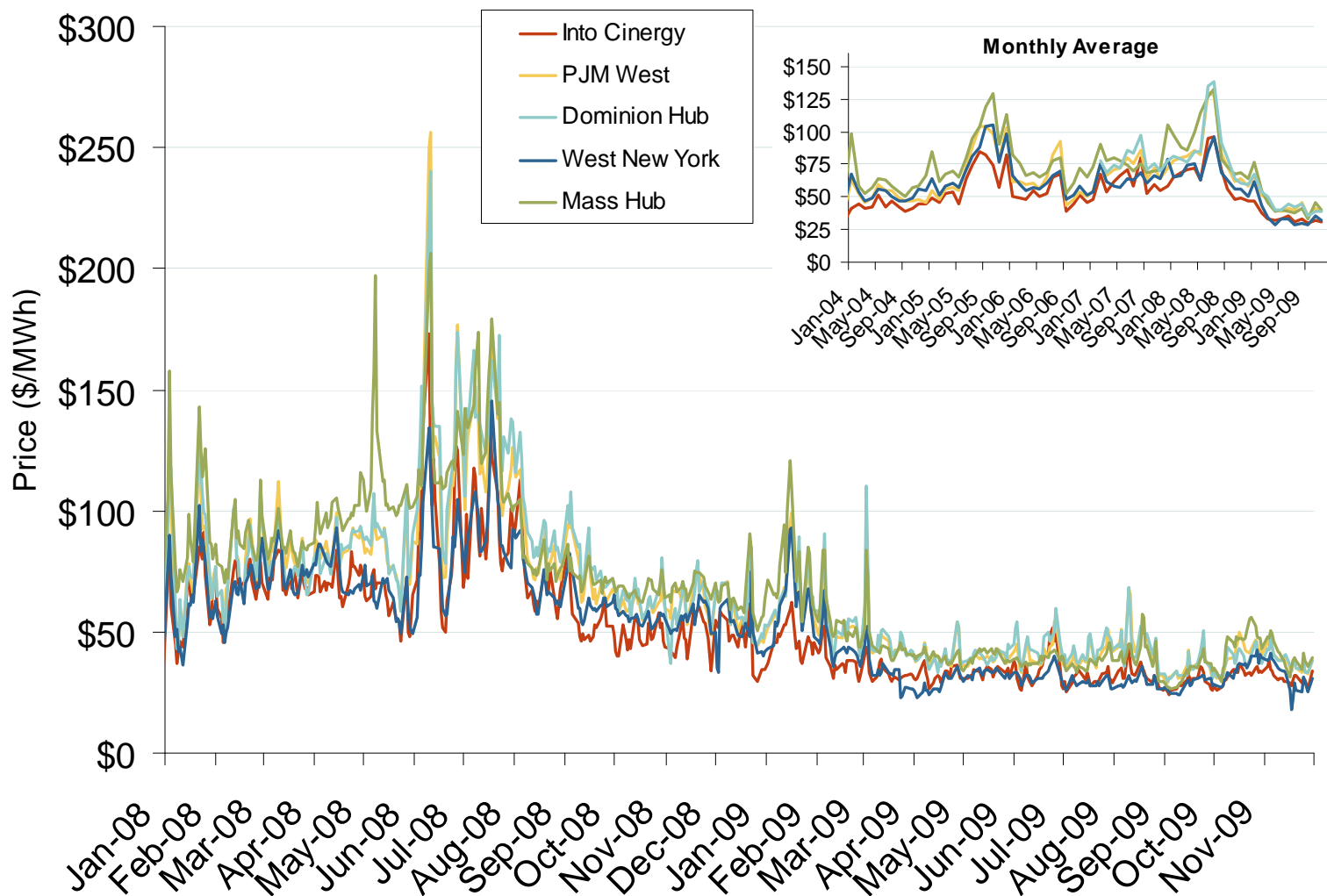
# Midwestern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data

Updated December 8, 2009

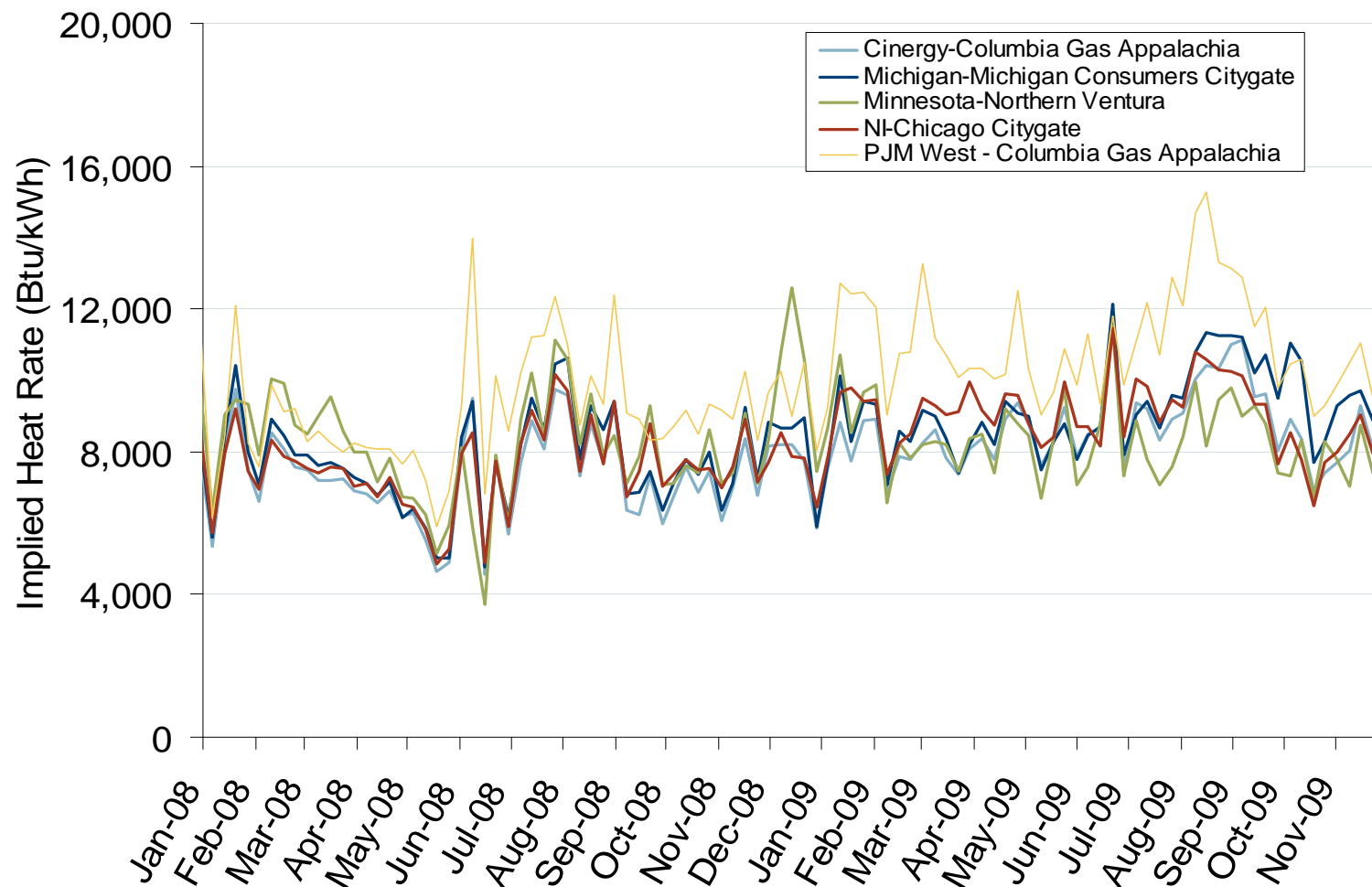
## Eastern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.

Updated December 8, 2009 1014

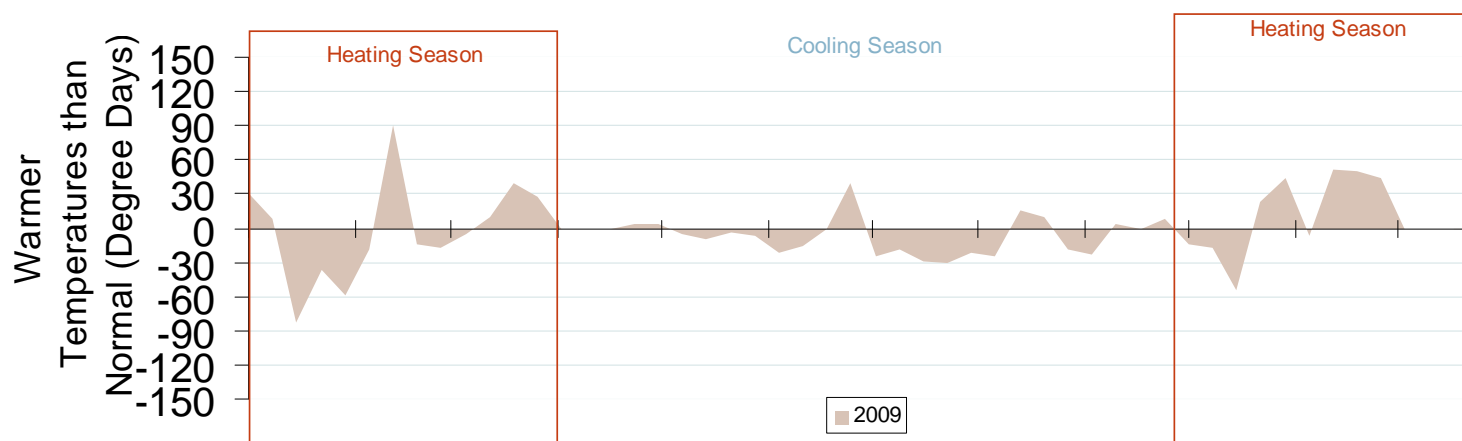
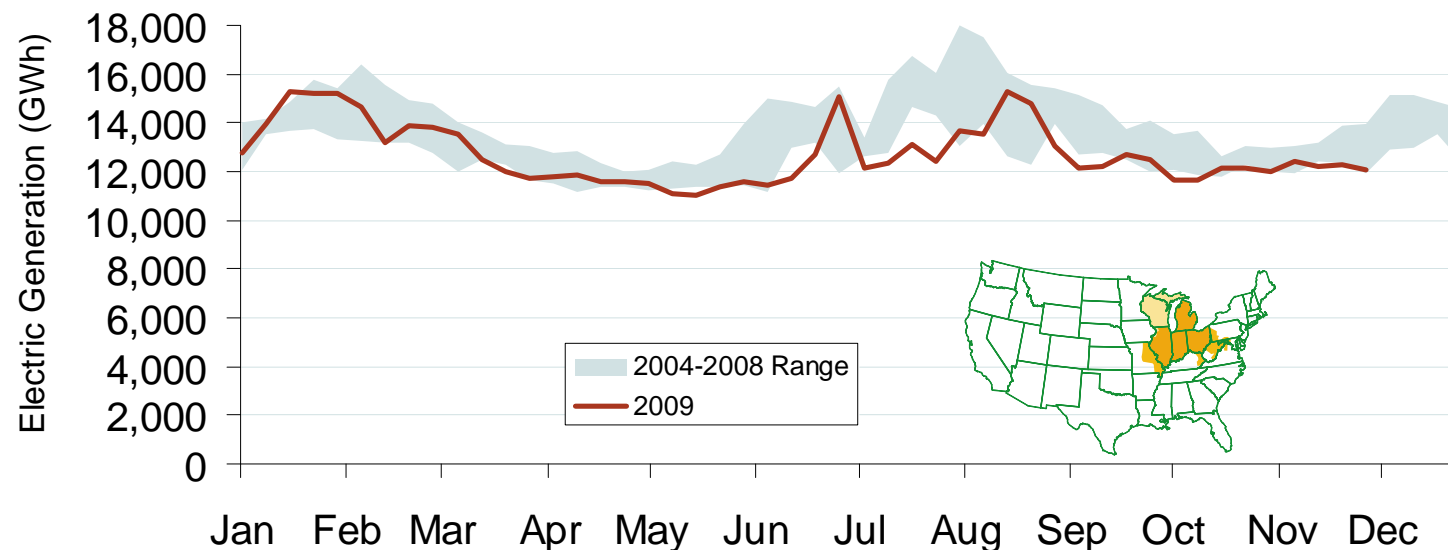
## Implied Heat Rates at MISO and PJM Hubs Weekly Averages



Source: Derived from *Platts* on-peak electric and natural gas price data.

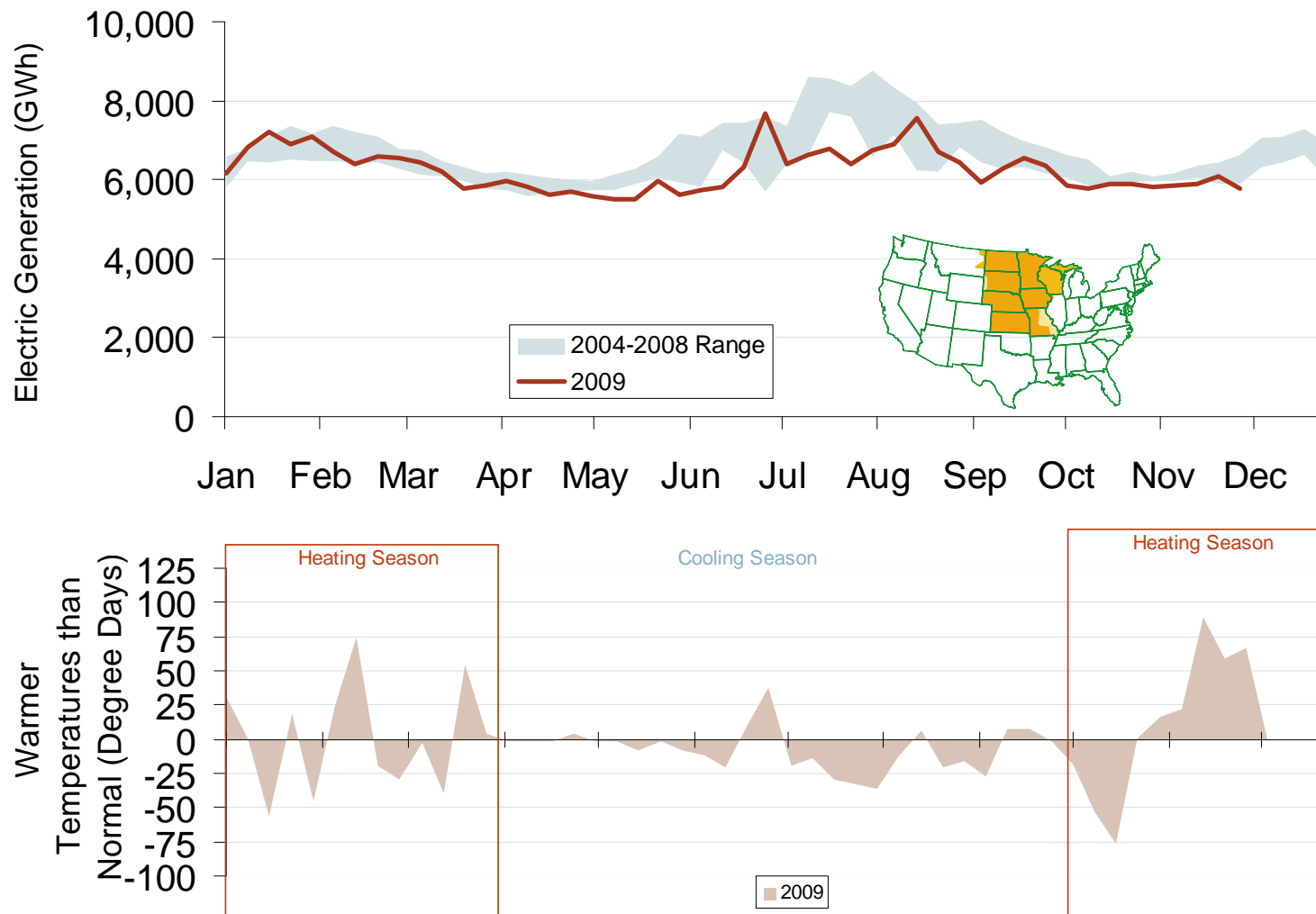
Updated December 8, 2009 1133

# Weekly Electric Generation Output and Temperatures Central Industrial Region



Source: Derived from EEI and NOAA data.

# Weekly Electric Generation Output and Temperatures West Central Region

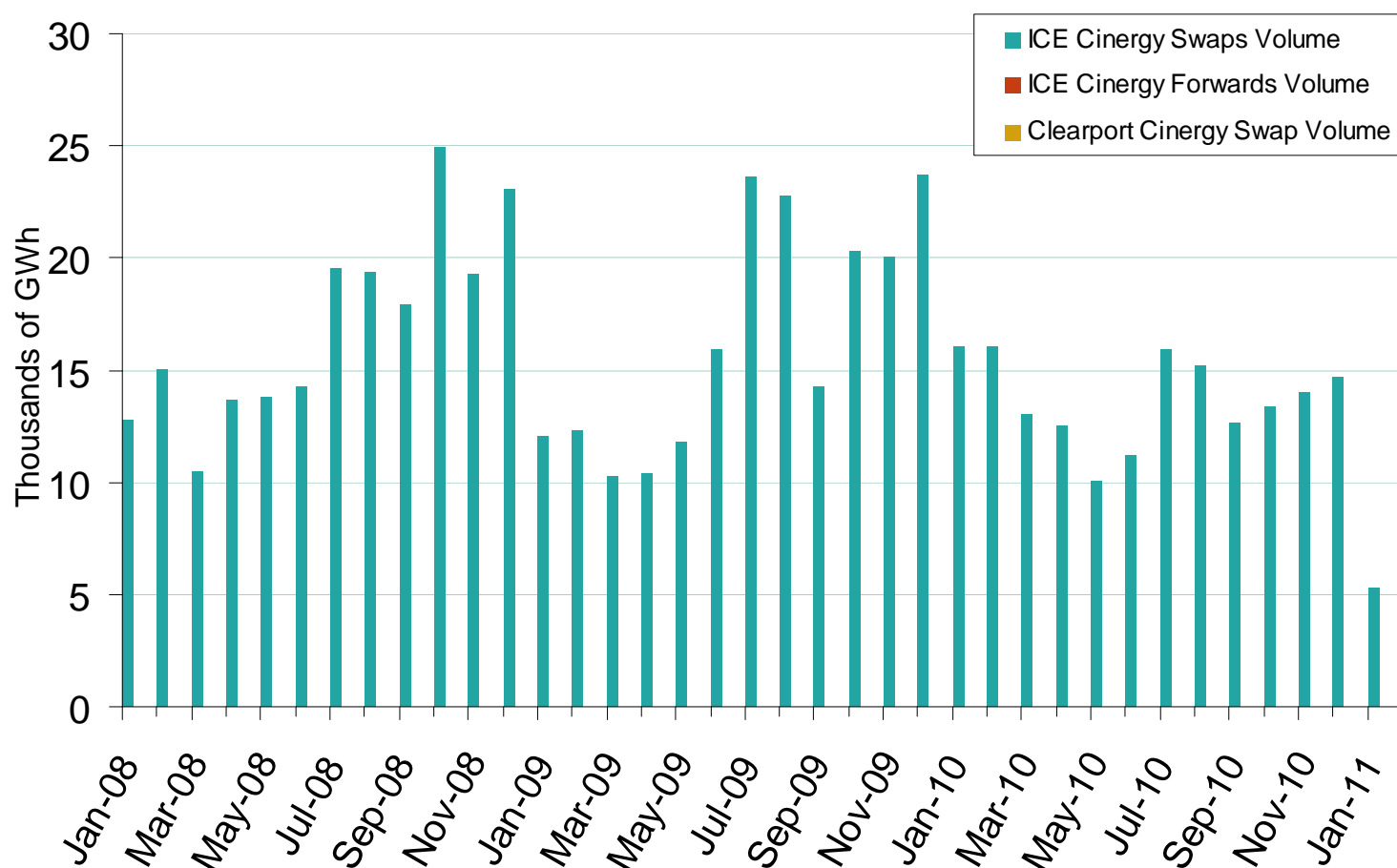


Source: Derived from EEI and NOAA data.

Updated December 8, 2009

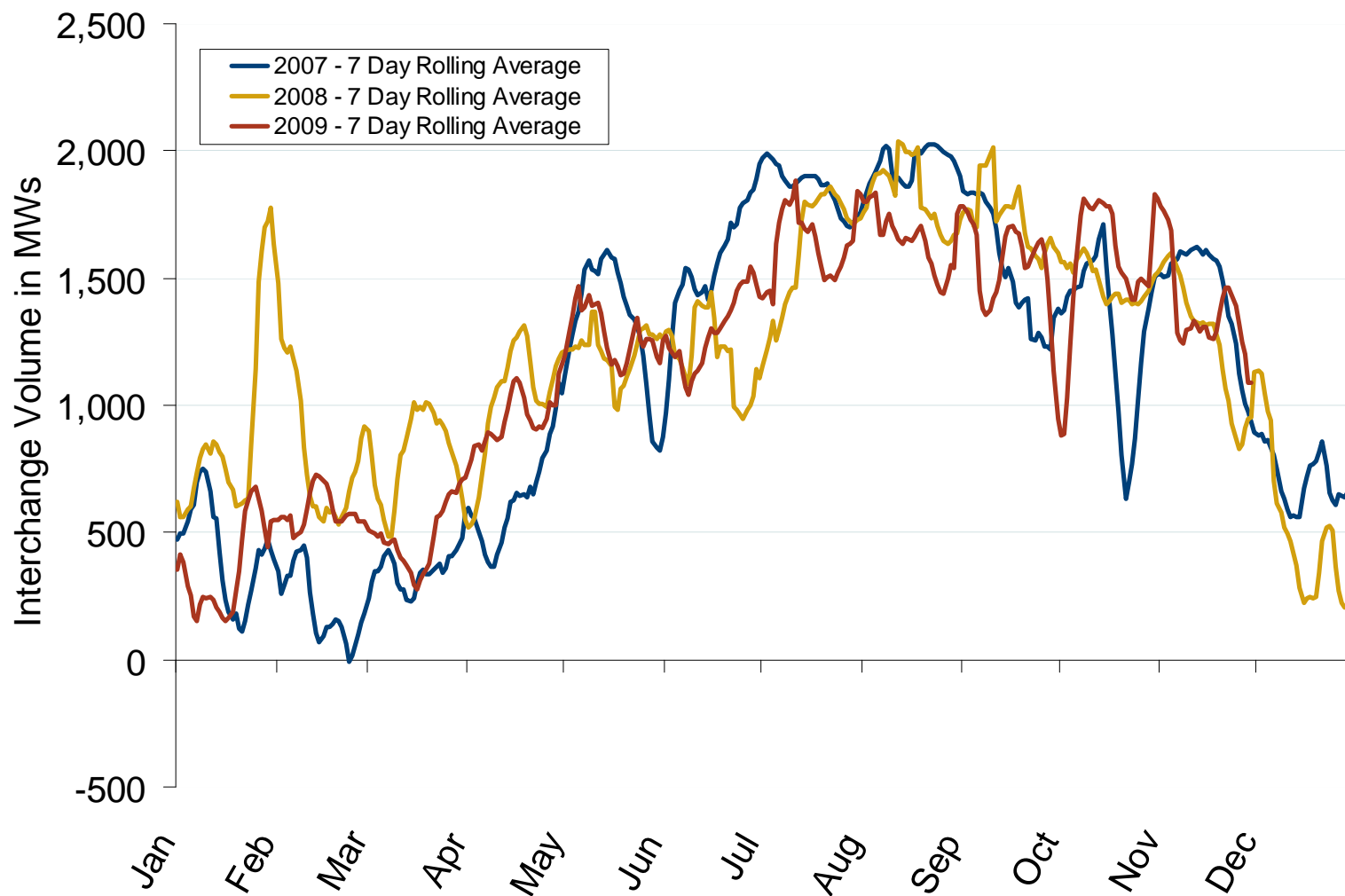


## Cinergy Forward and Swap Volumes



Source: Derived from *ICE* and *Nymex ClearPort* data. ICE on-peak forward (physical) and swap (financial) volumes are for the Cinergy Hub and include monthly, dual monthly, quarterly, and calendar year contracts traded for each month. Nymex ClearPort on-peak swaps (financial) volume are for the Cinergy Hub traded by month.

## Imports into MISO from Manitoba Hydro 2007 - 2009

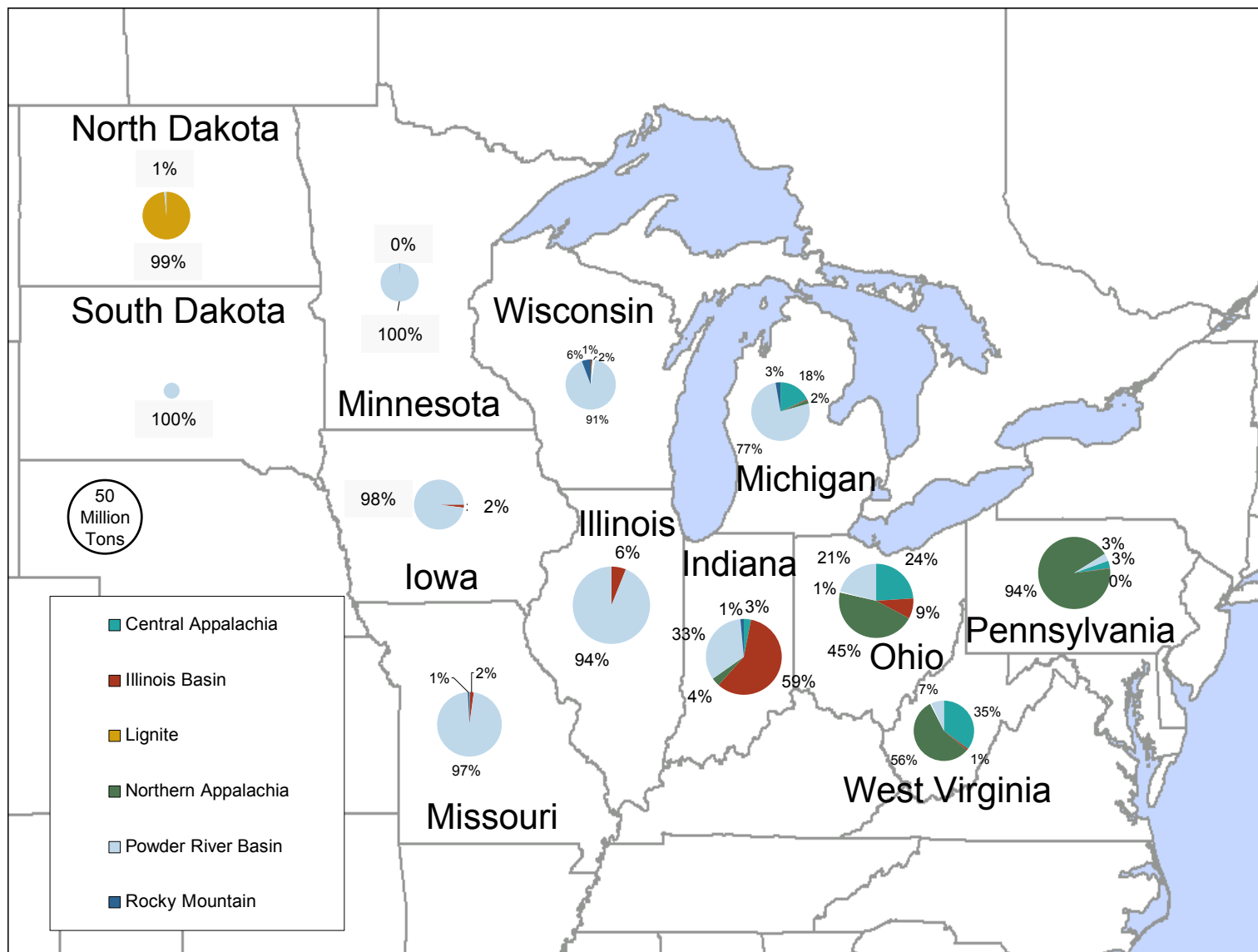


Source: Derived from MISO data.

Updated December 8, 2009

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# 2008 Coal Shipment Origins by Supply Basin



Source: Derived from FERC and EIA data.

Updated March 23, 2009

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