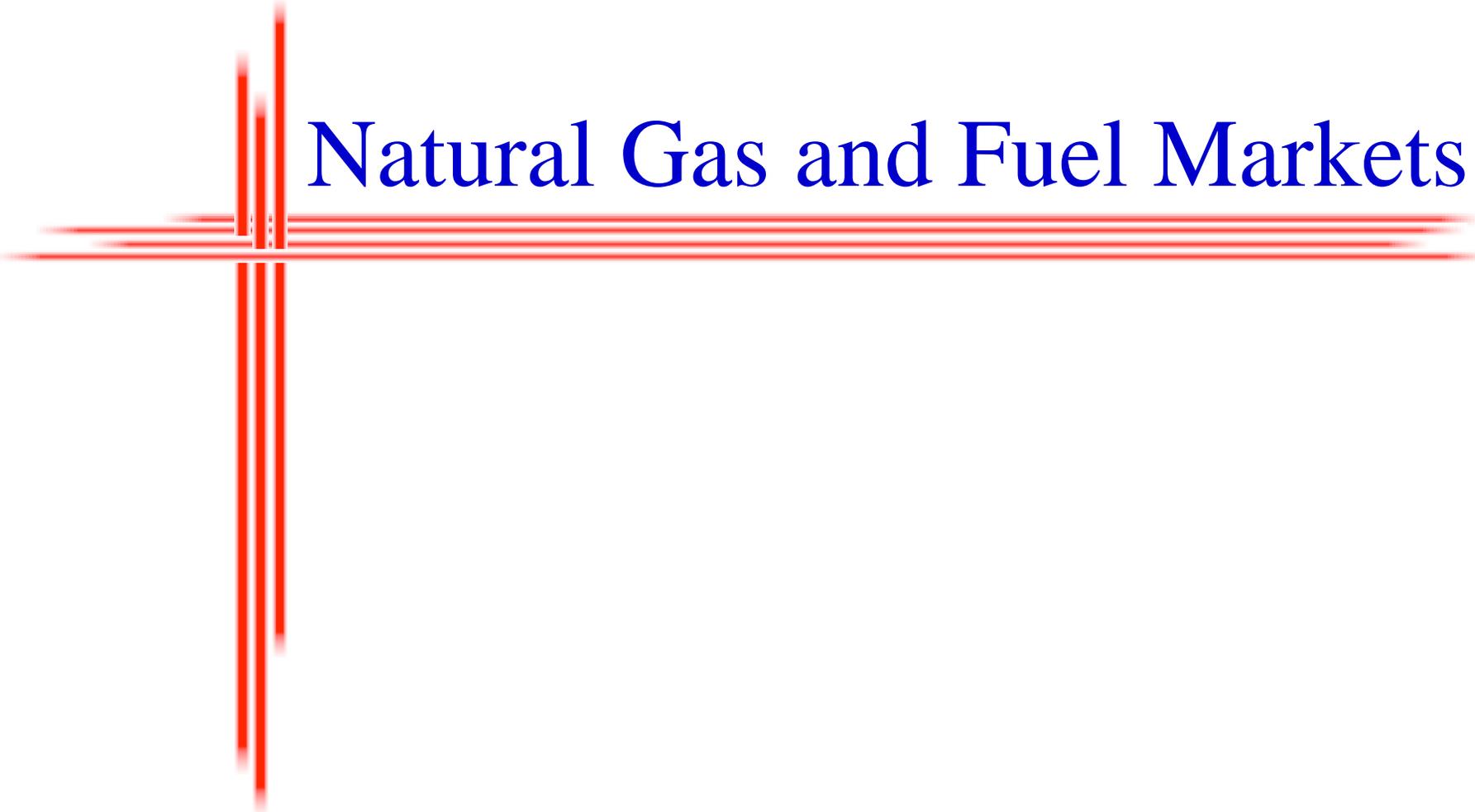


OE ENERGY MARKET SNAPSHOT

Midwest States Version – September 2009 Data

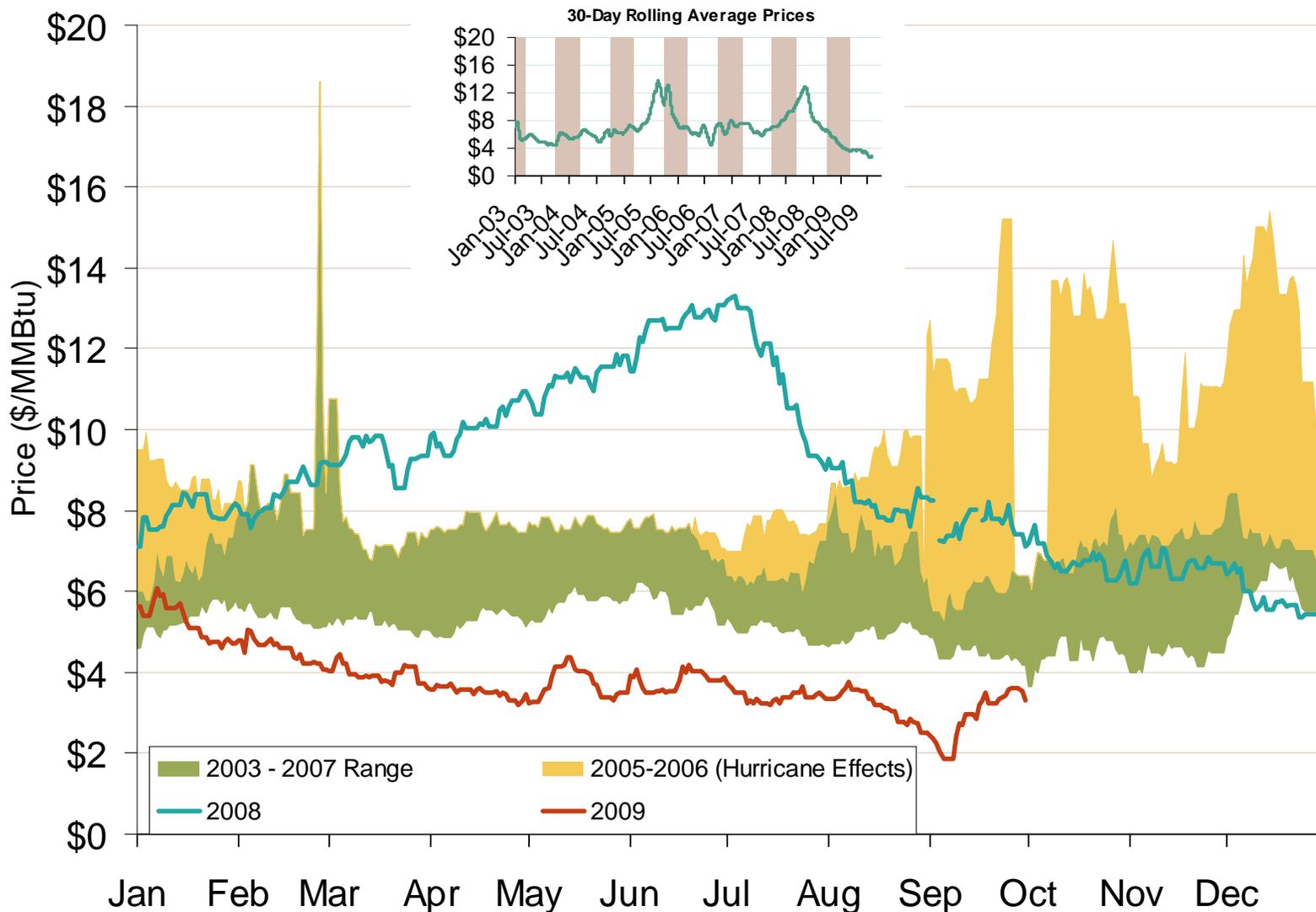
- **Natural Gas and Fuel Markets**
- **Electricity Markets**

Office of Enforcement
Federal Energy Regulatory Commission
October 2009



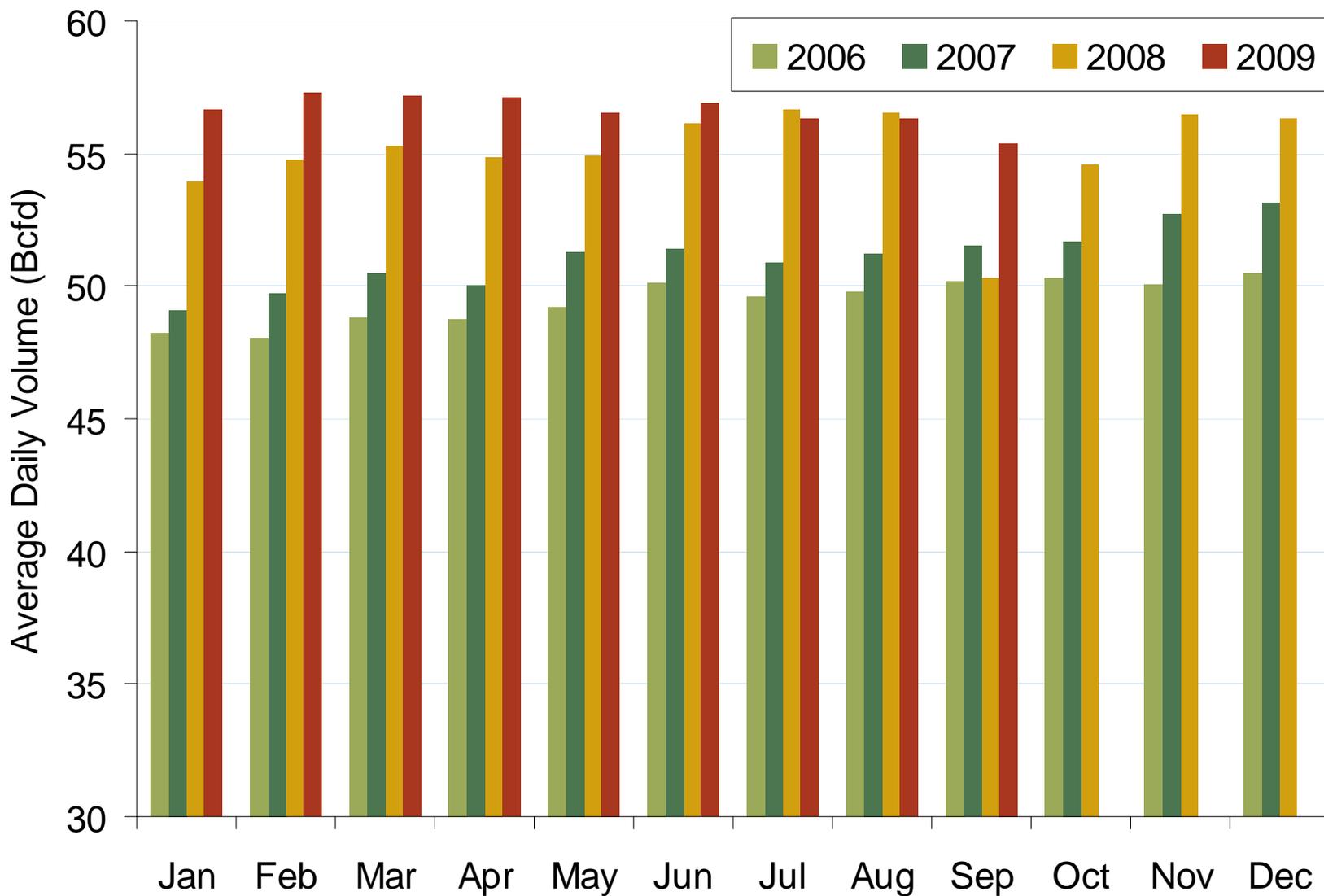
Natural Gas and Fuel Markets

Henry Hub Natural Gas Daily Spot Prices 2008, 2009 and 2003-2007 Year Range



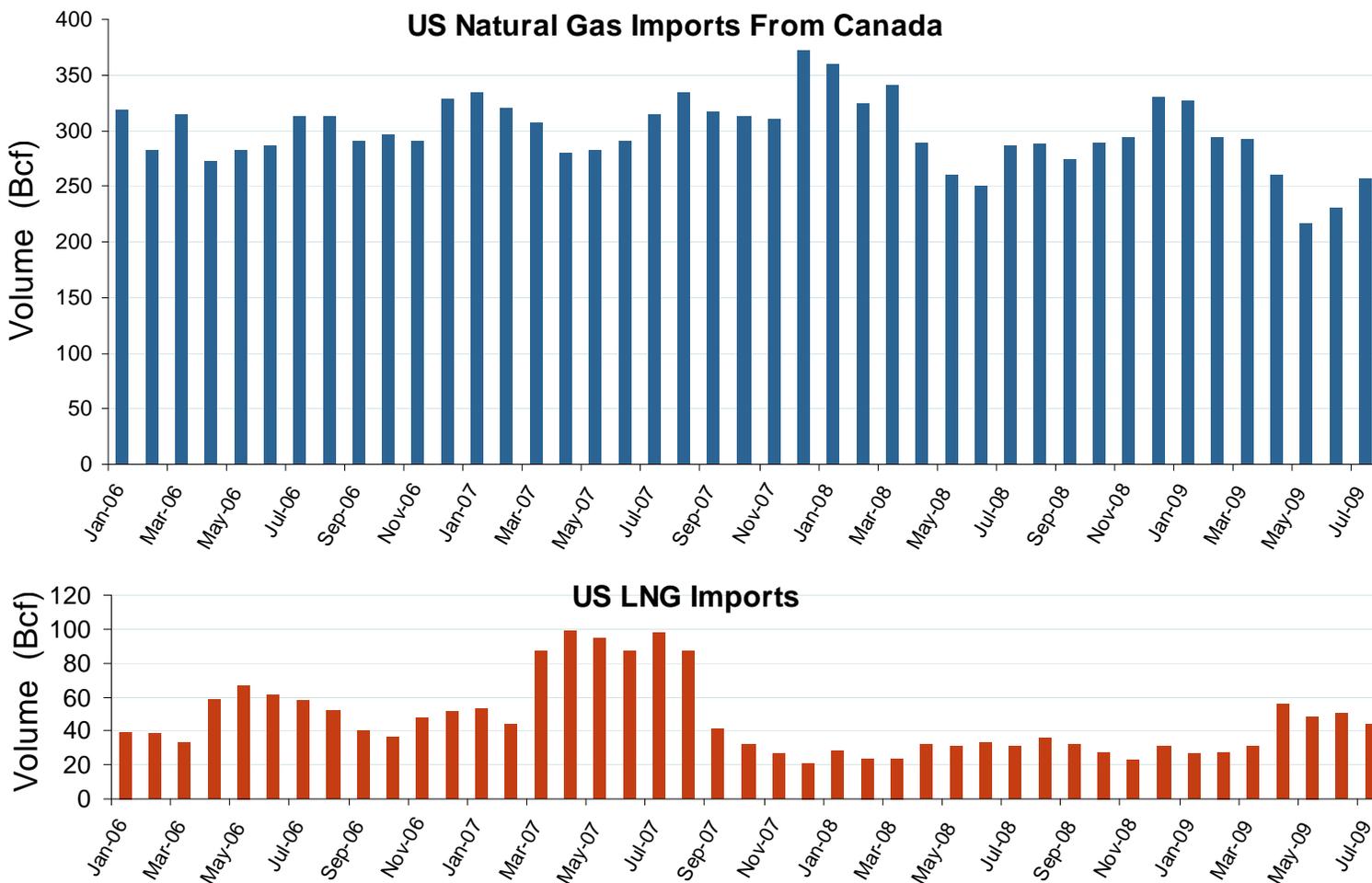
Source: Derived from *Platts* data.
October 2009 Midwest Snapshot Report

Robust Production

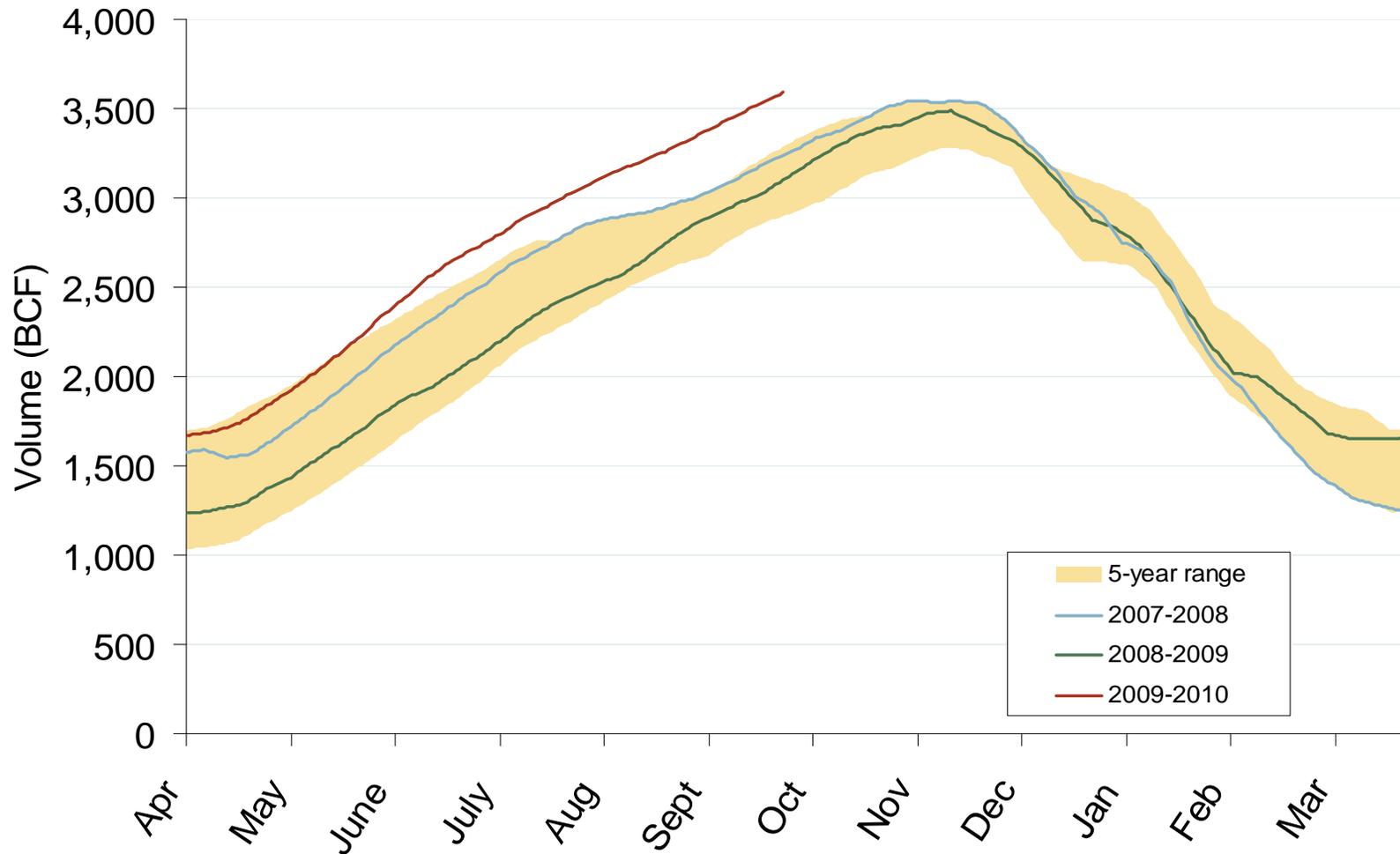


Source: Derived from *EIA and Bentek data*.

Canadian and LNG Natural Gas Imports

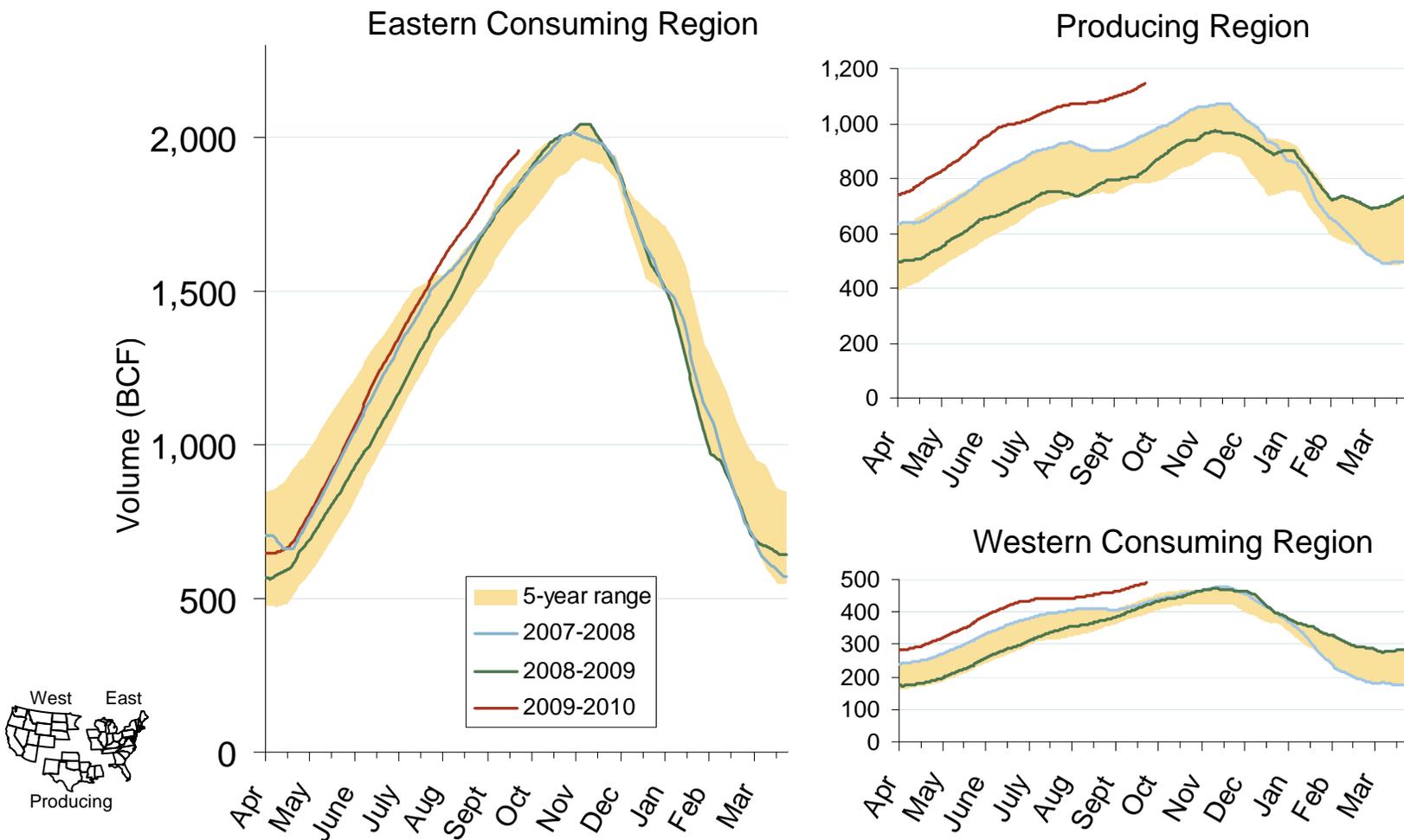


Total U.S. Working Gas in Storage



Source: Derived from EIA data.
October 2009 Midwest Snapshot Report

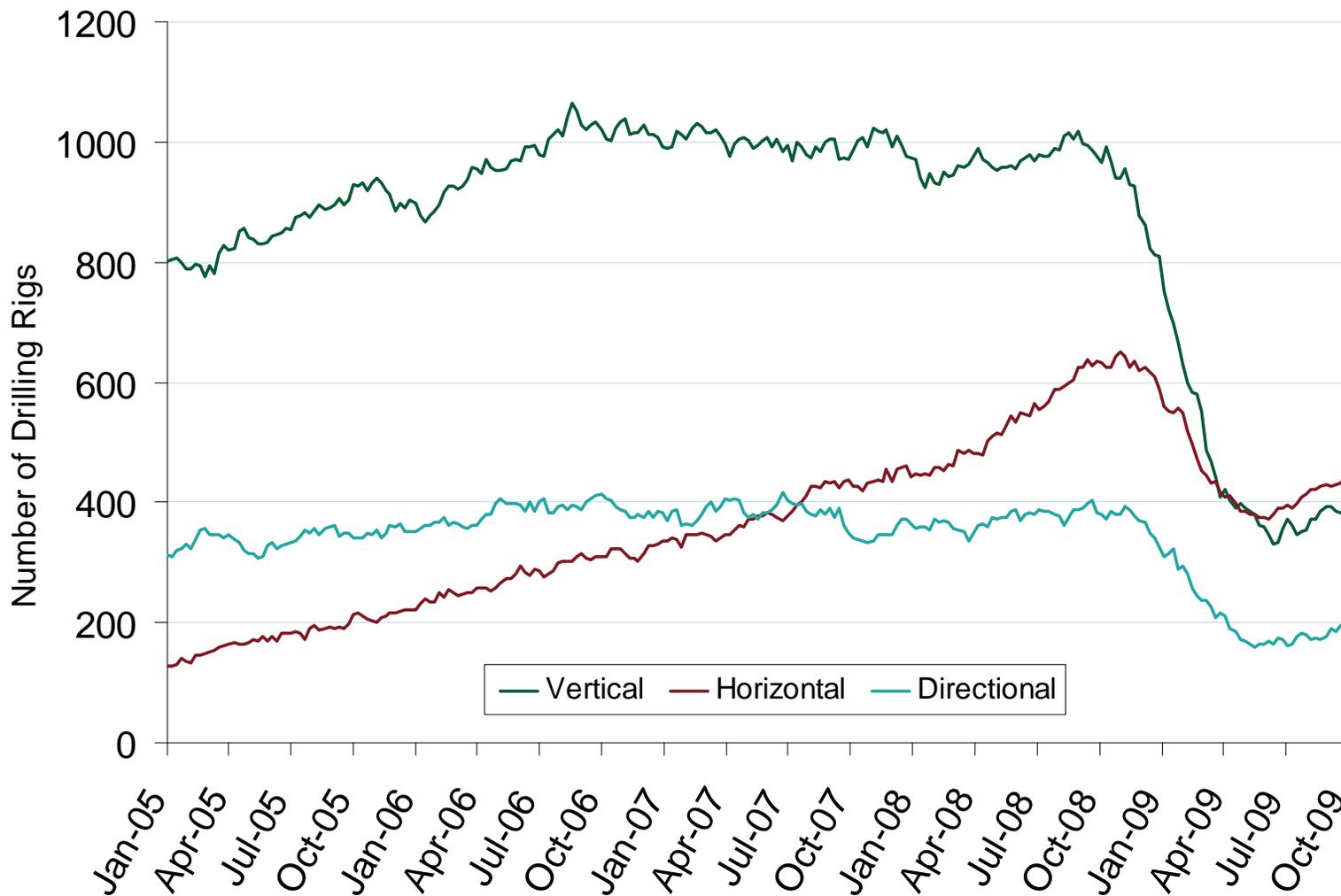
Regional Totals of Working Gas in Storage



Source: Derived from EIA data.
October 2009 Midwest Snapshot Report

Updated October 7, 2009

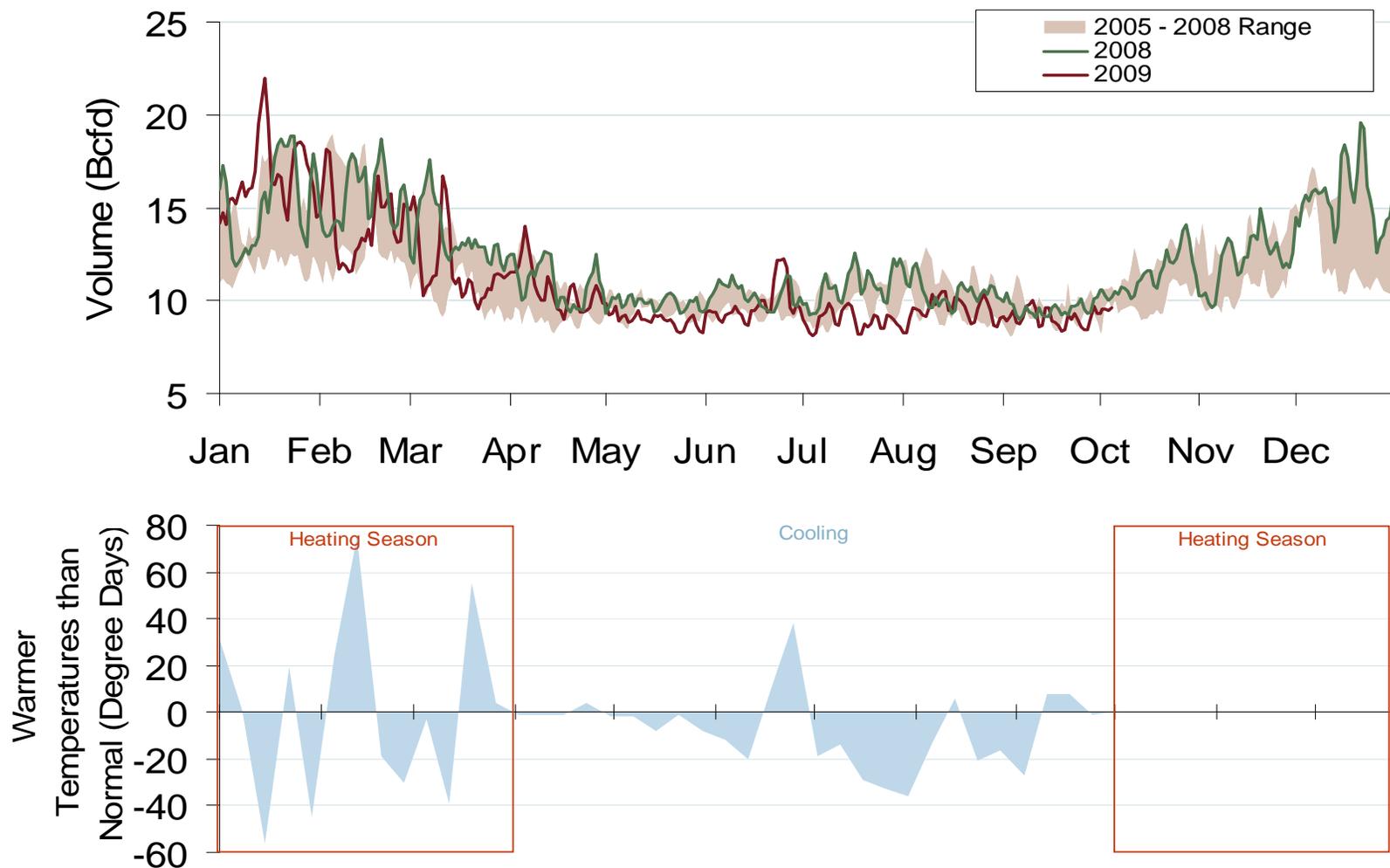
U.S. Oil and Natural Gas Drilling Rig Count by Type



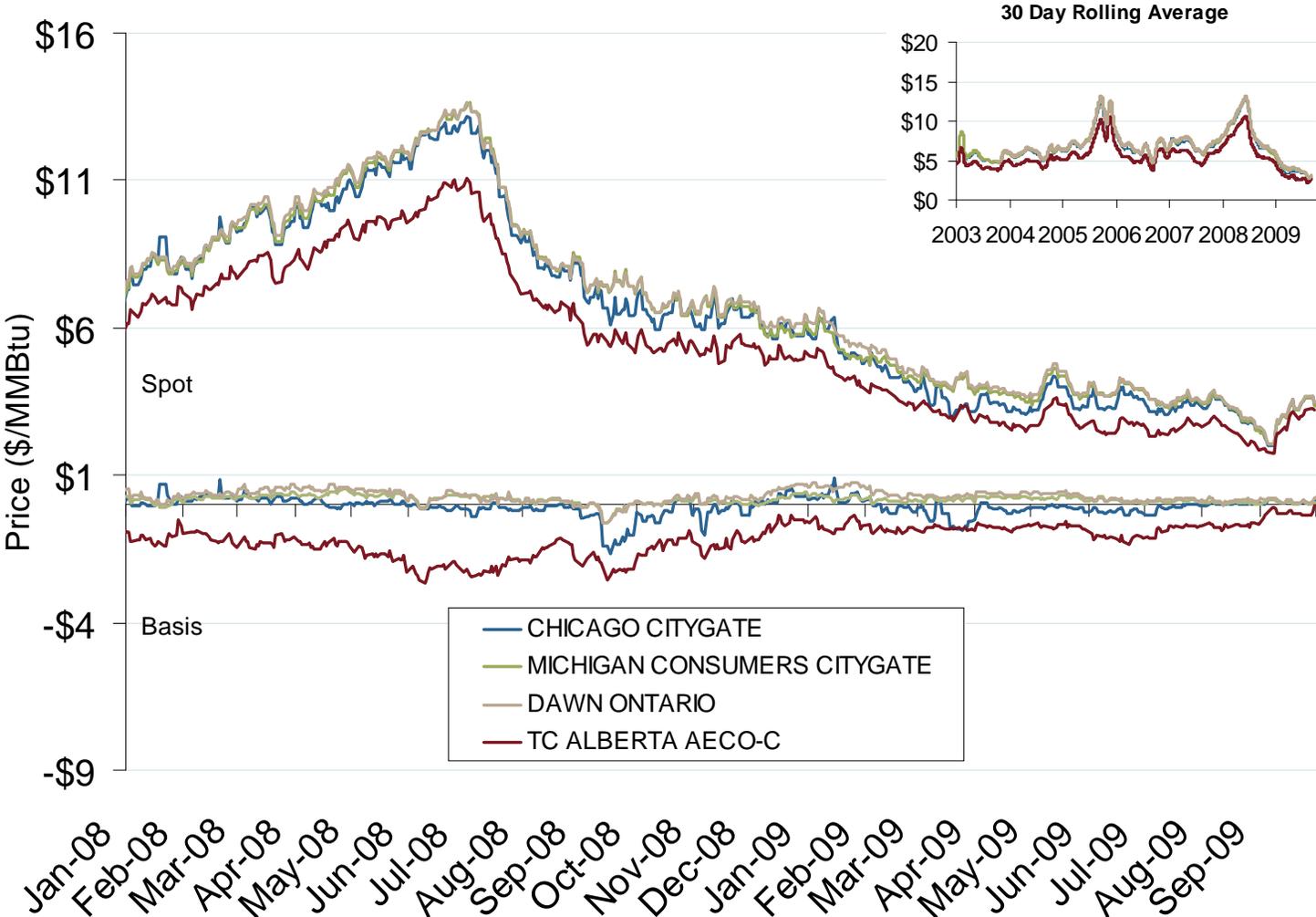
Source: Derived from *Platts* and *Baker Hughes* data.
 October 2009 Midwest Snapshot Report

Updated October 7, 2009

Daily Midwest Natural Gas Demand All Sectors

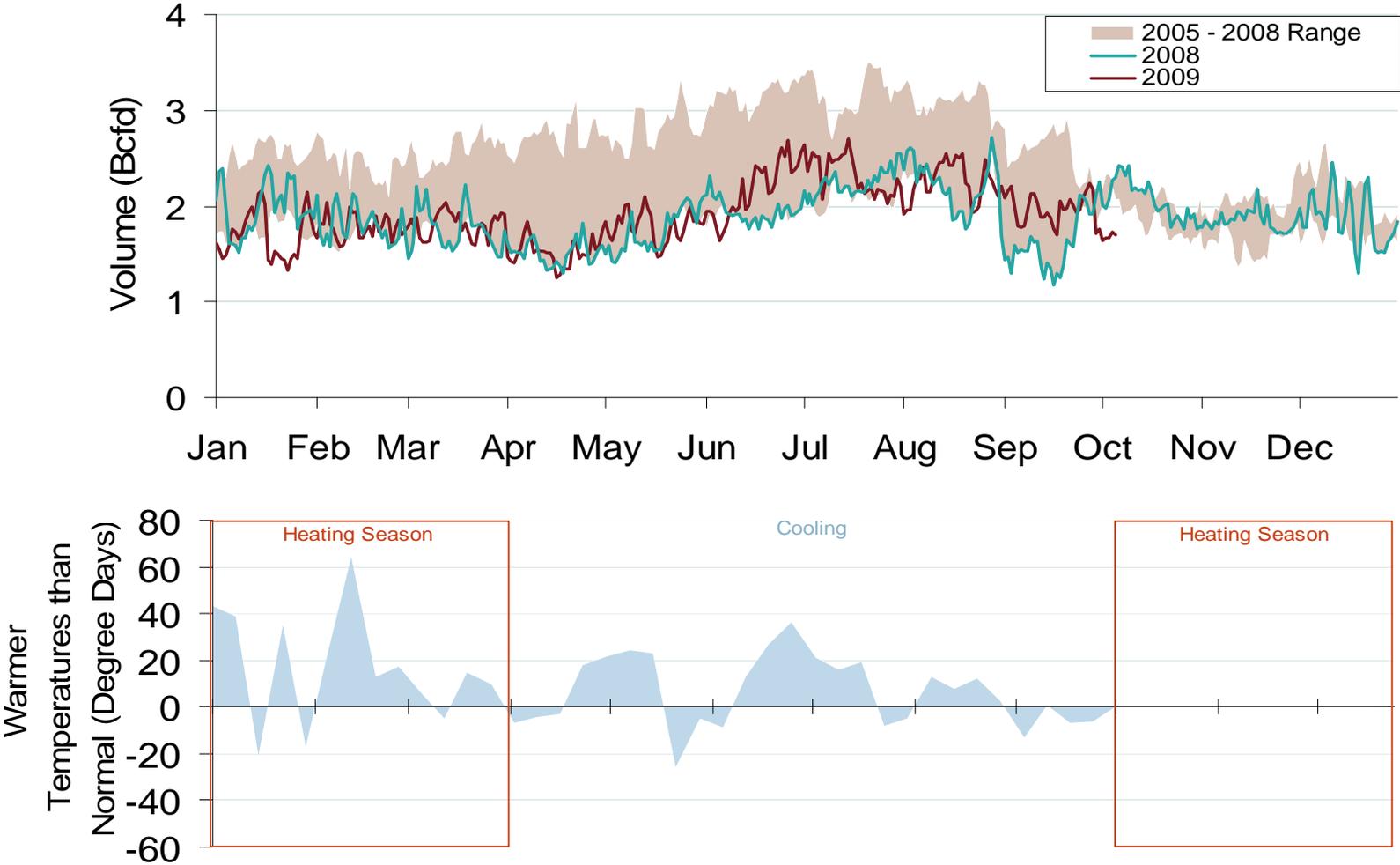


Midwestern Day-Ahead Hub Spot Prices and Basis



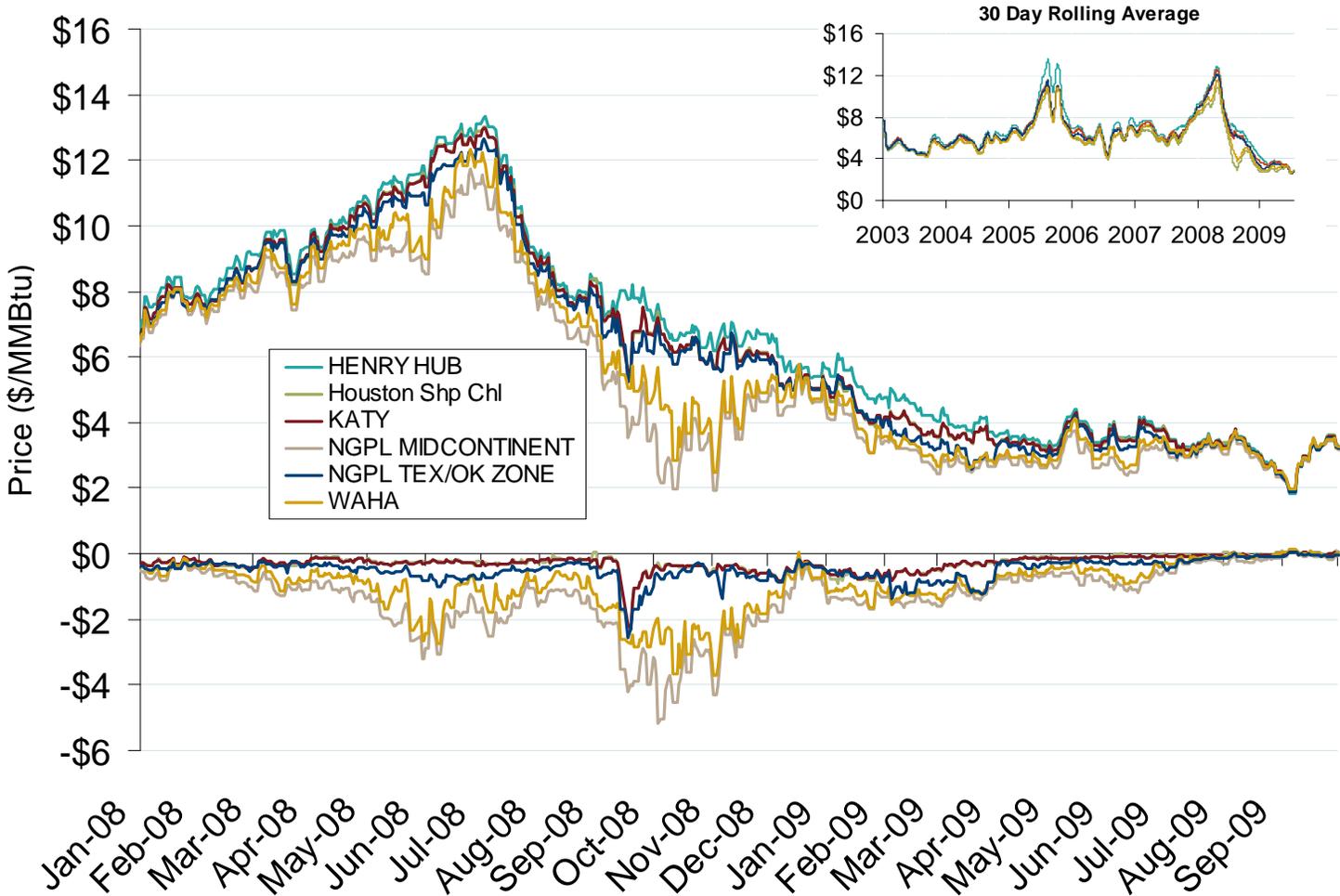
Source: Derived from Platts data.
October 2009 Midwest Snapshot Report

Daily Gulf Natural Gas Demand All Sectors



Source: Derived from *Bentek* data.
October 2009 Midwest Snapshot Report

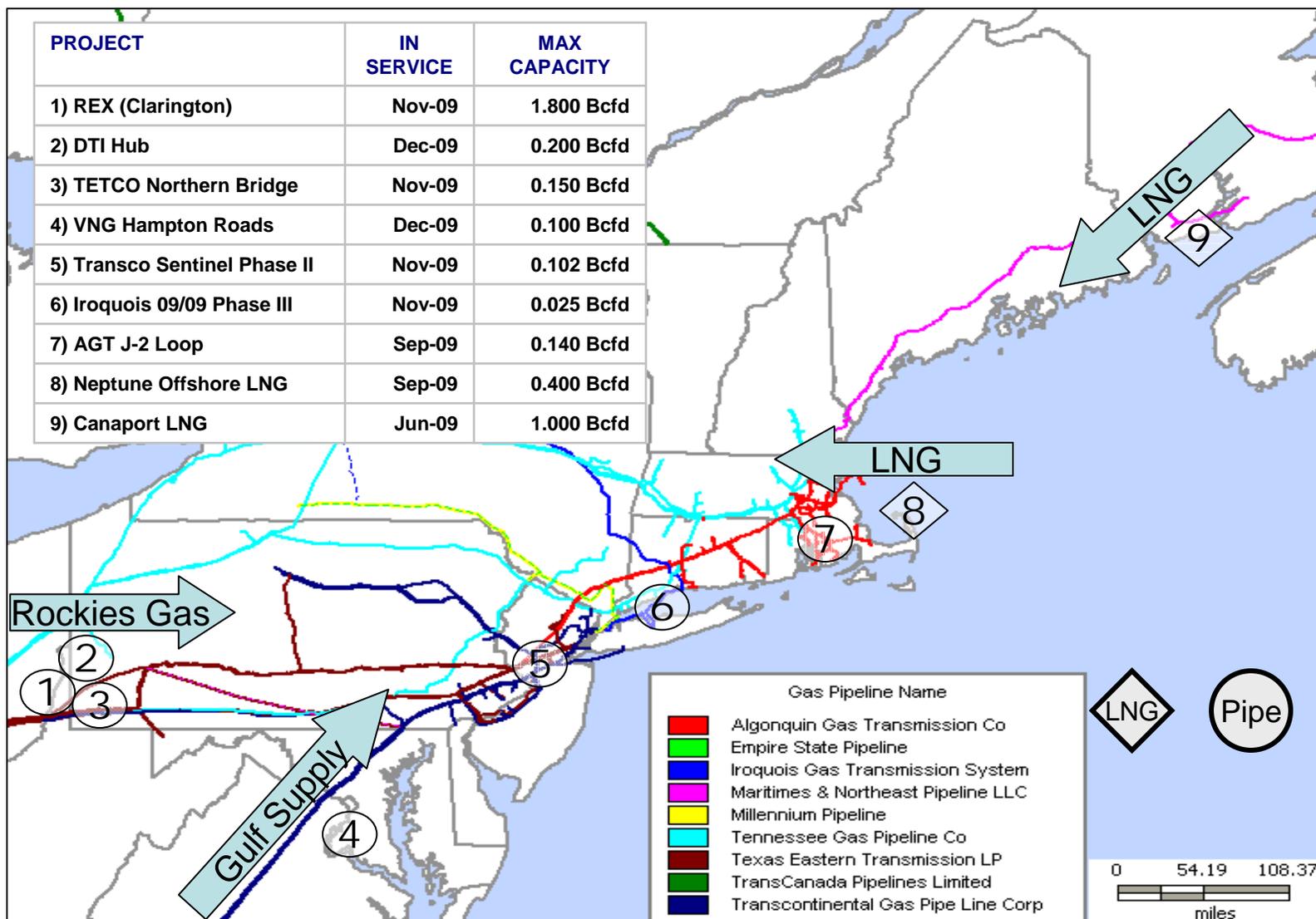
Gulf Day-Ahead Hub Spot Prices and Basis



Source: Derived from *Platts* data.
October 2009 Midwest Snapshot Report

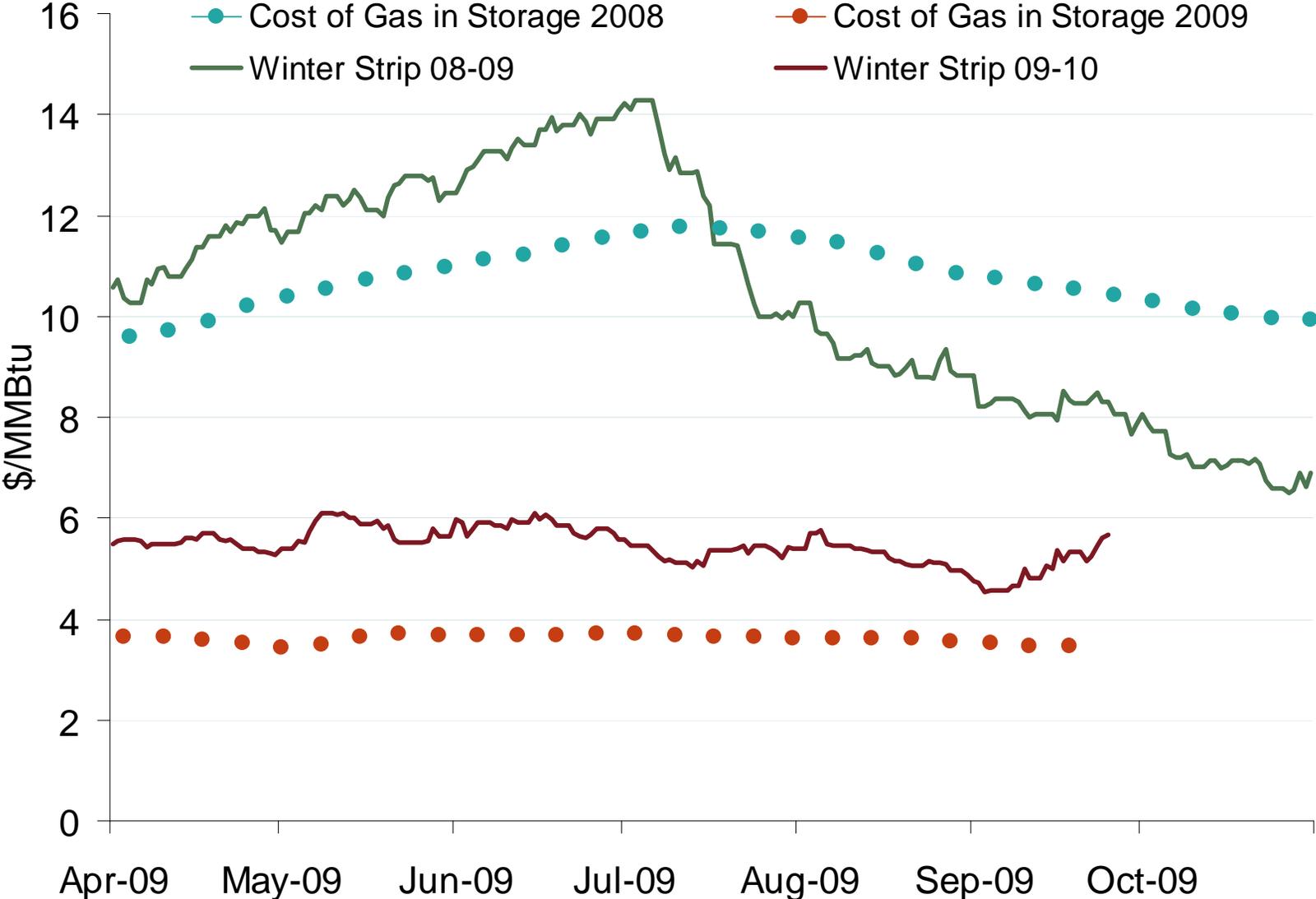
Updated October 7, 2009

Natural Gas Infrastructure Additions



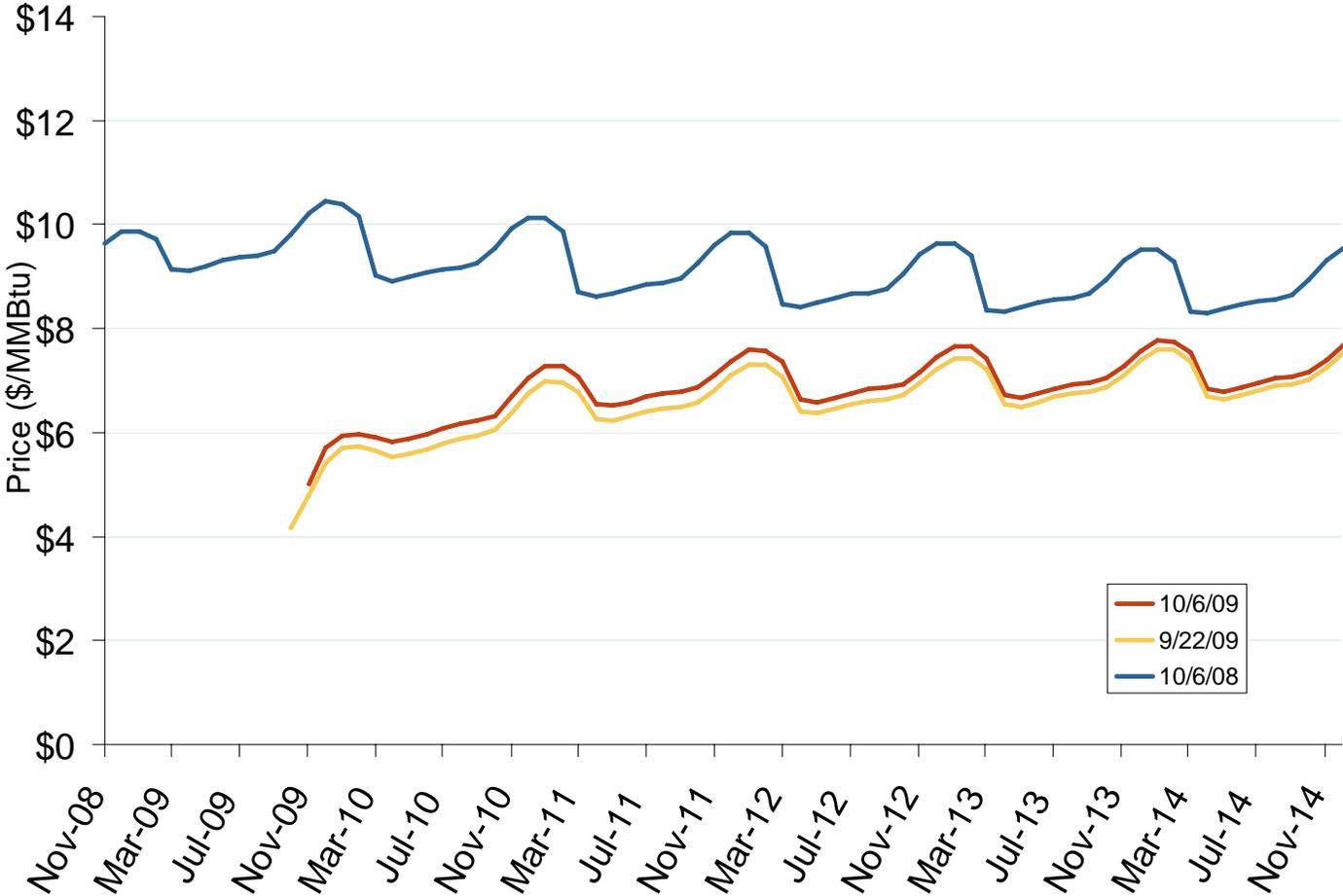
Source: Derived from Bentek data.
October 2009 Midwest Snapshot Report

Winter Forwards Lower Than Last Year



Source: Derived from NYMEX Clearport
October 2009 Midwest Snapshot Report

NYMEX Natural Gas Forward Price Curve



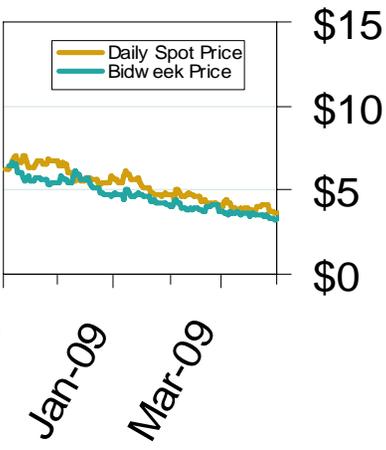
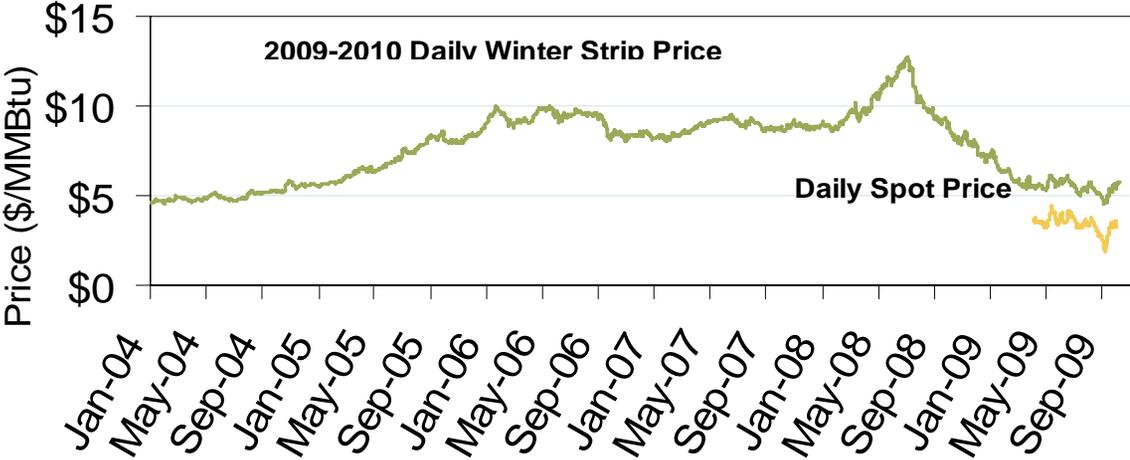
The NYMEX futures contract trades in 10,000 million Btu units. The blue series shows the forward price curve for these contracts 1-year ago. The red and yellow curves show prices for contracts traded on the current and previous months.

Henry Hub and AECO Prompt-Month Futures Prices



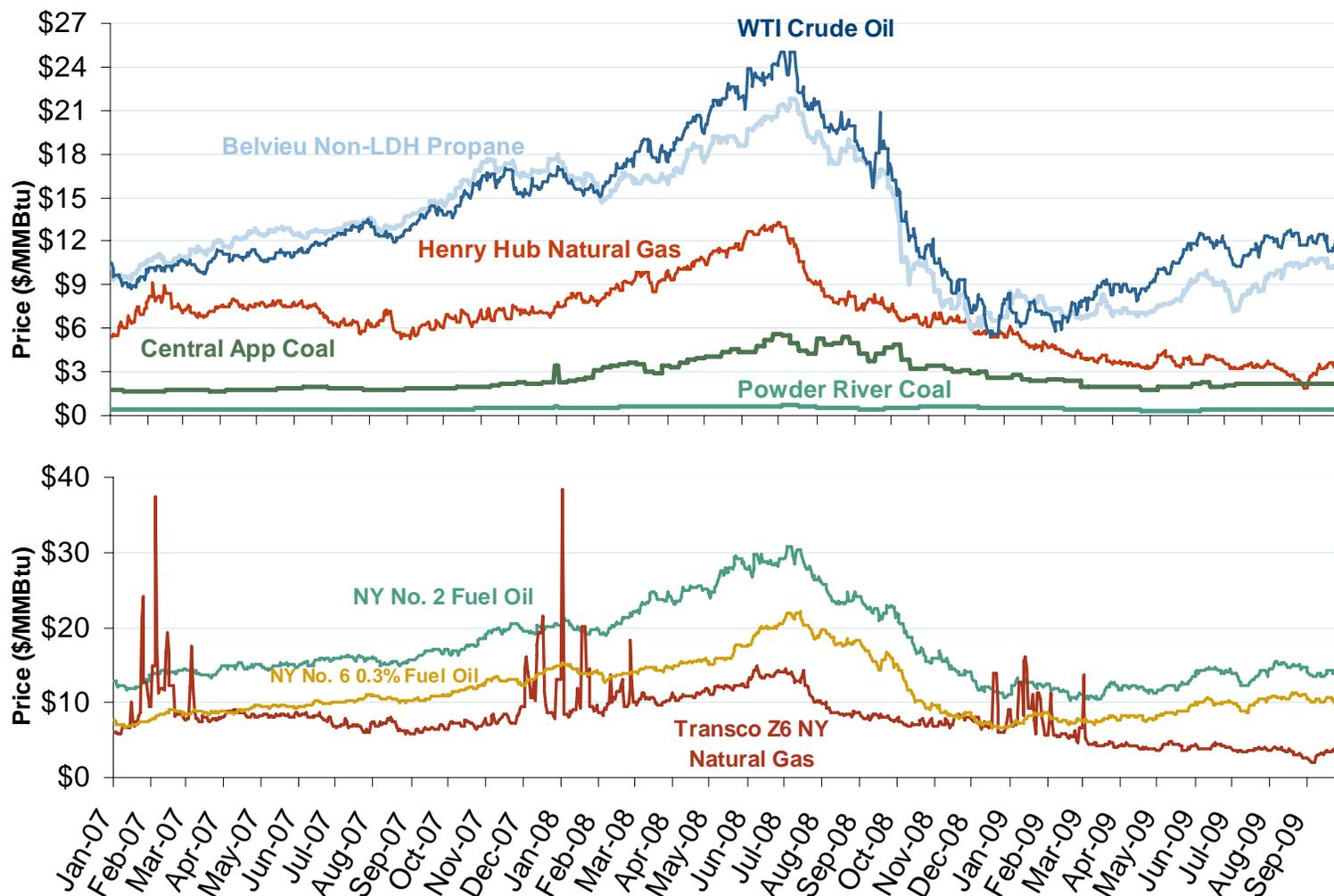
Source: Derived from ICE data.
October 2009 Midwest Snapshot Report

Natural Gas Winter Futures Strip and Daily Henry Hub Spot and Bidweek Prices



Source: Derived from Platts and Nymex data.

Oil, Coal, Natural Gas and Propane Daily Spot Prices

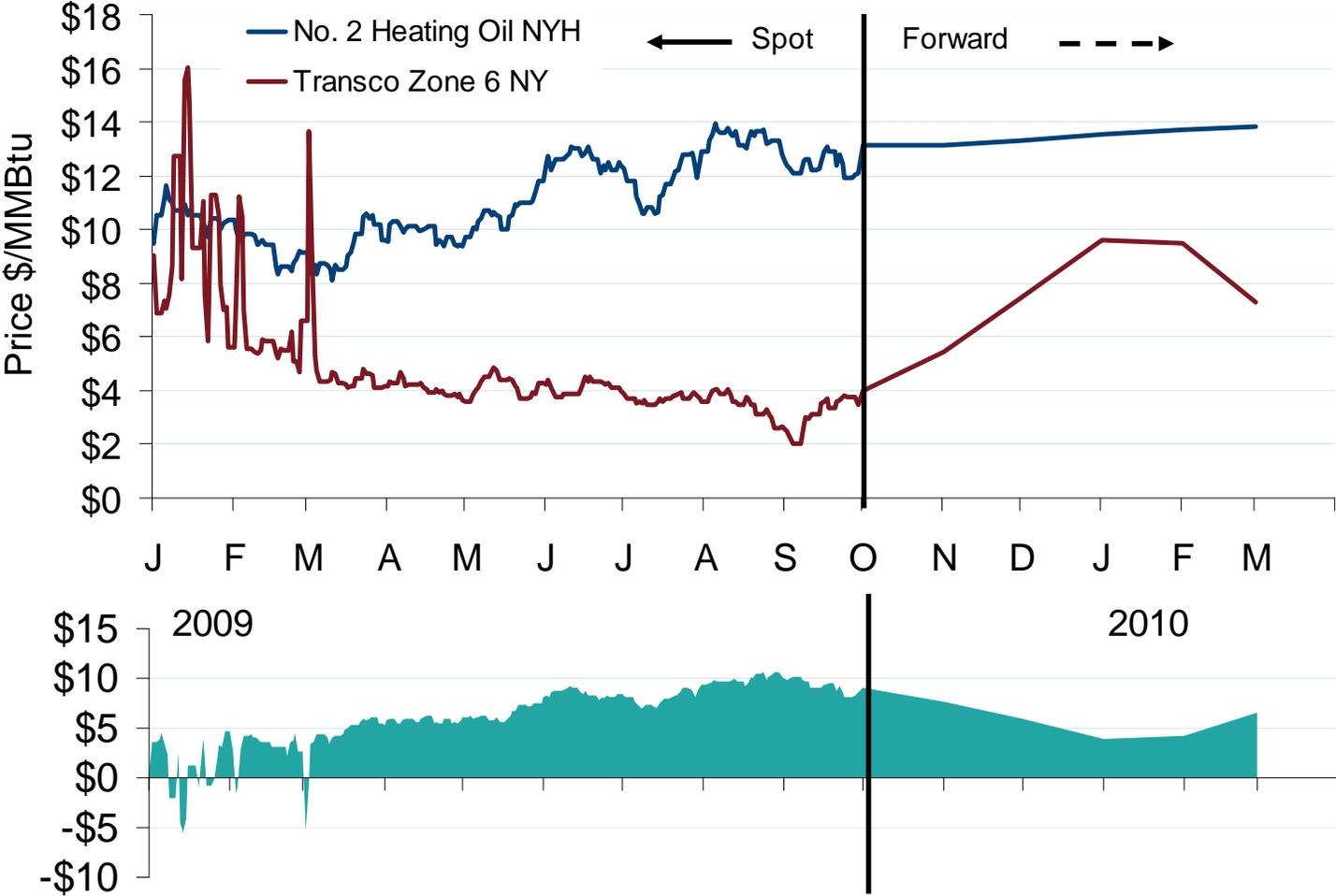


Source: Derived from *ICE* and *Bloomberg* data.

Note: Coal prices are quoted in \$/ton. Conversion factors to \$/MMBtu are based on contract specifications of 12,000 btus/pound for Central Appalachian coal and 8800 btus/pound for Powder River Basin coal.

Updated October 7, 2009

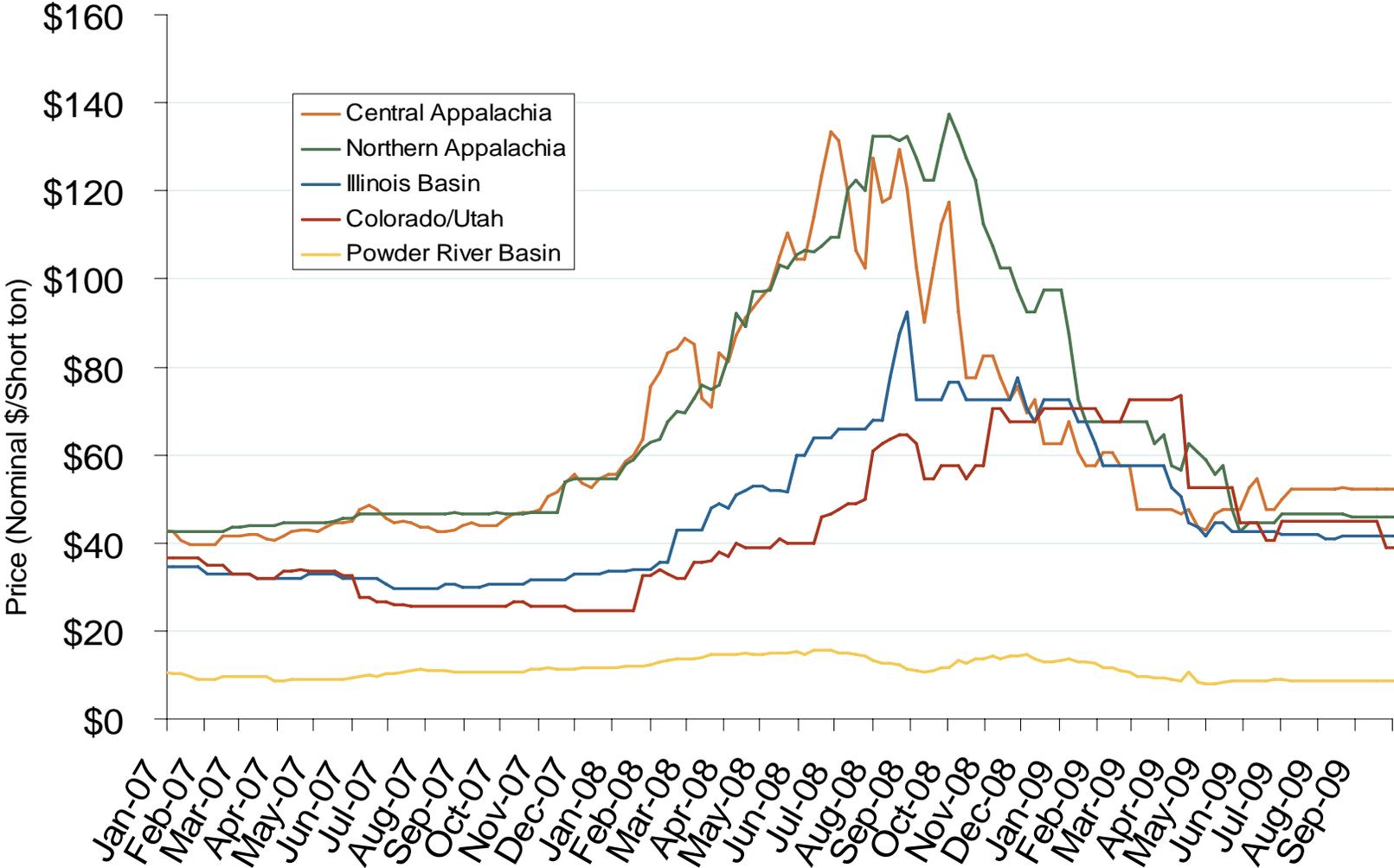
Northeast Heating Oil vs. Natural Gas Spread



Source: Derived from ICE & NYMEX Clearport

Updated October 5, 2009

Regional Coal Spot Prices

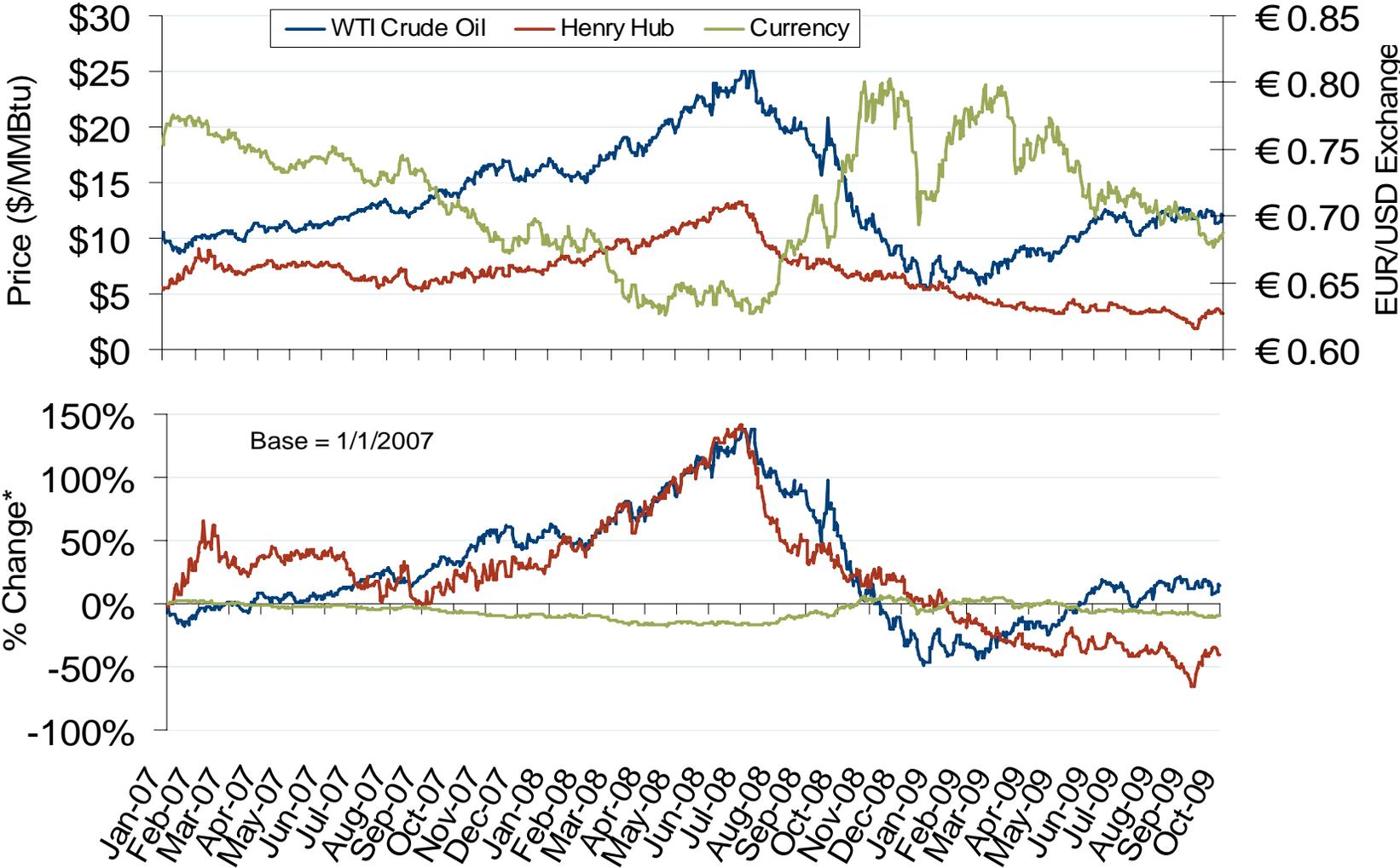


Note: Does not reflect the delivered price of coal; excludes incremental cost of emissions allowances.

Source: Derived from *Bloomberg* data.
October 2009 Midwest Snapshot Report

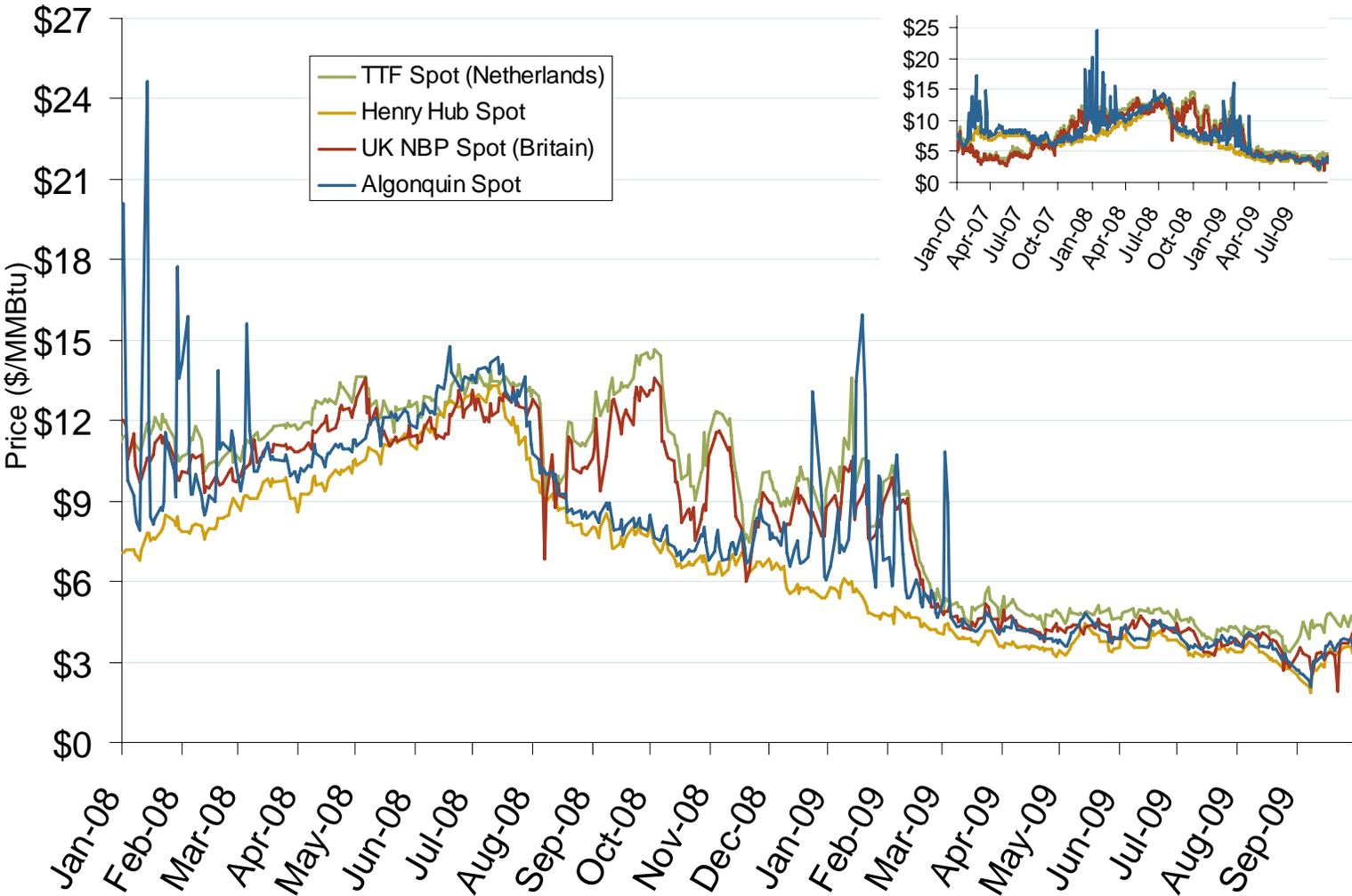
Updated October 7, 2009

Oil, Natural Gas and Currency Spot Prices



Source: Derived from *Bloomberg* data.

Atlantic Basin European and US Spot Natural Gas Prices



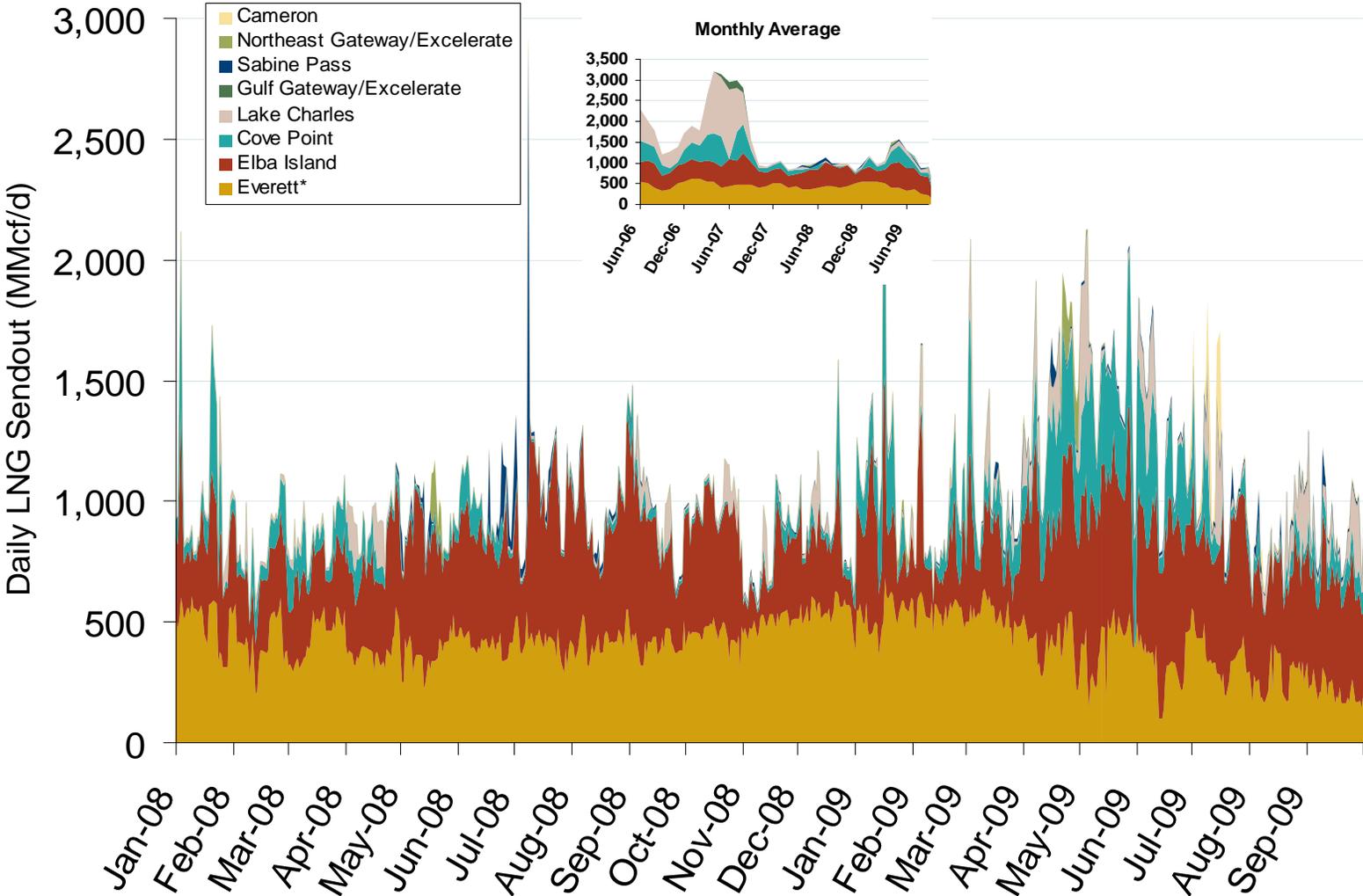
Source: Derived from *Bloomberg* and *ICE* data.
October 2009 Midwest Snapshot Report

Updated October 7, 2009

World LNG Estimated October 2009 Landed Prices



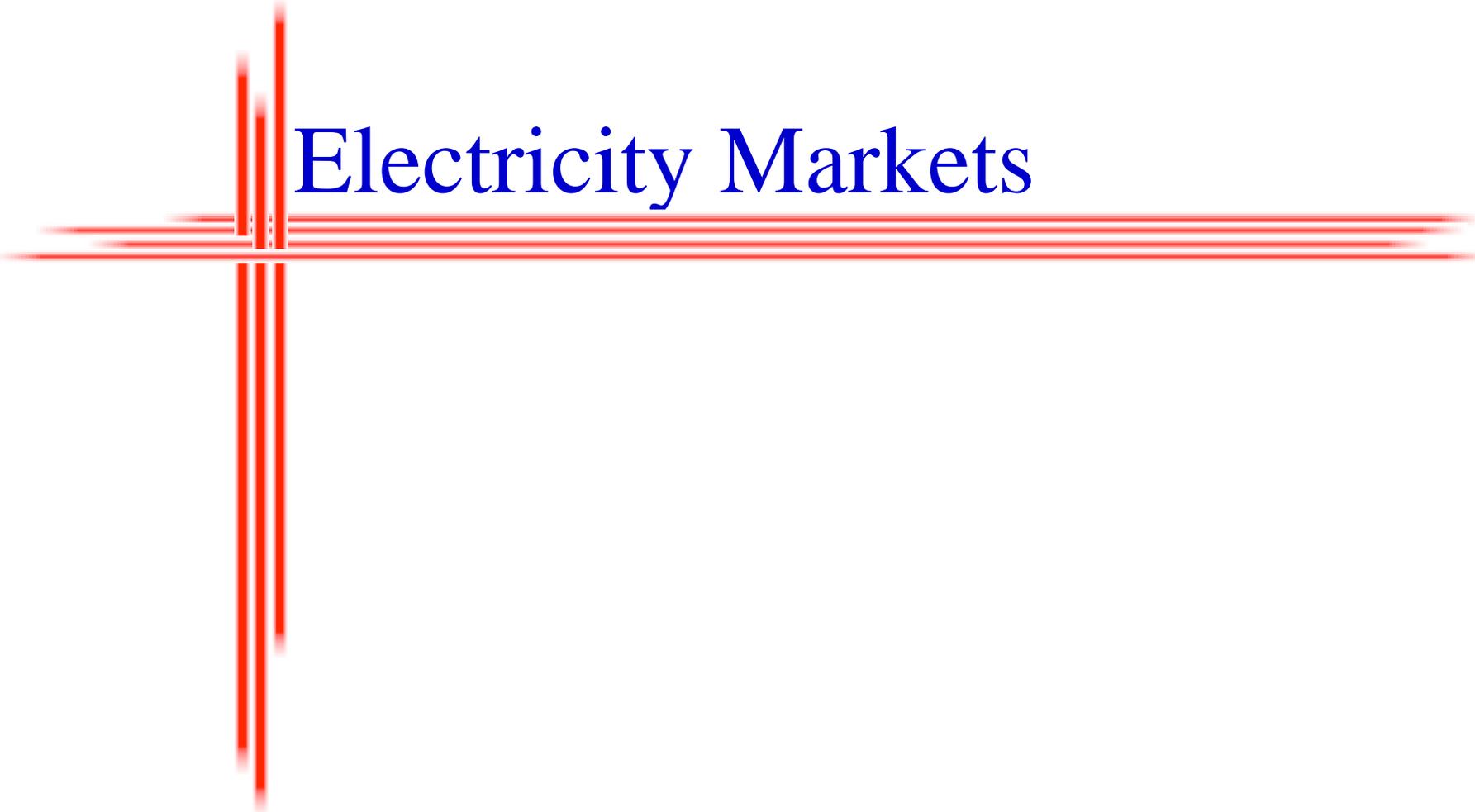
Daily Gas Sendout from Existing U.S. LNG Facilities



Source: Derived from Bentek data.

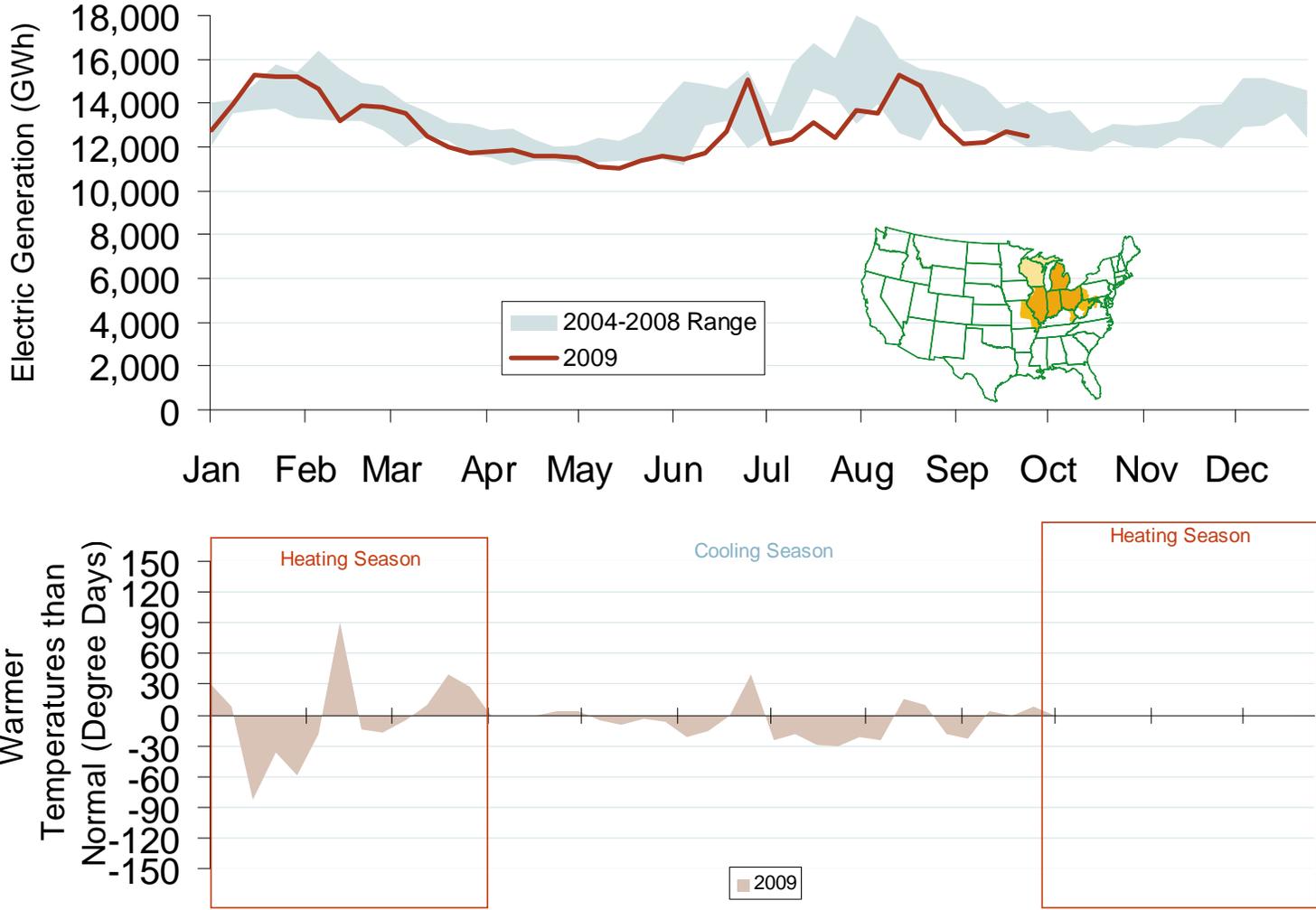
* Everett data includes flows onto the AGT and TGP interstate lines, plus estimates of flows to the Mystic 7 power plant, Keyspan Boston Gas, and LNG trucked out of the terminal. Excludes Freeport LNG which flows via intrastate pipelines.

Updated October 7, 2009



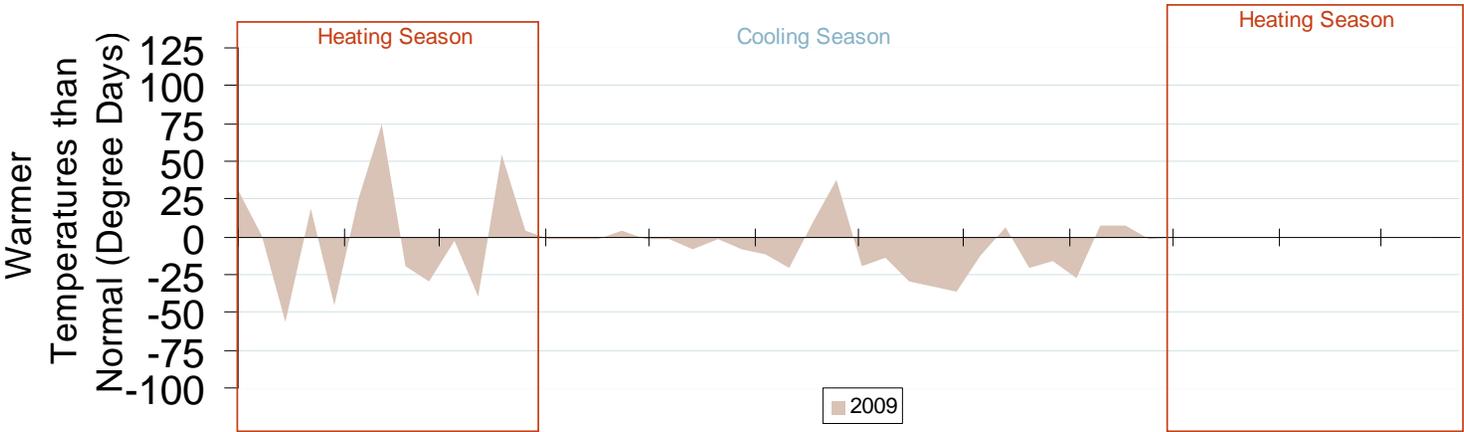
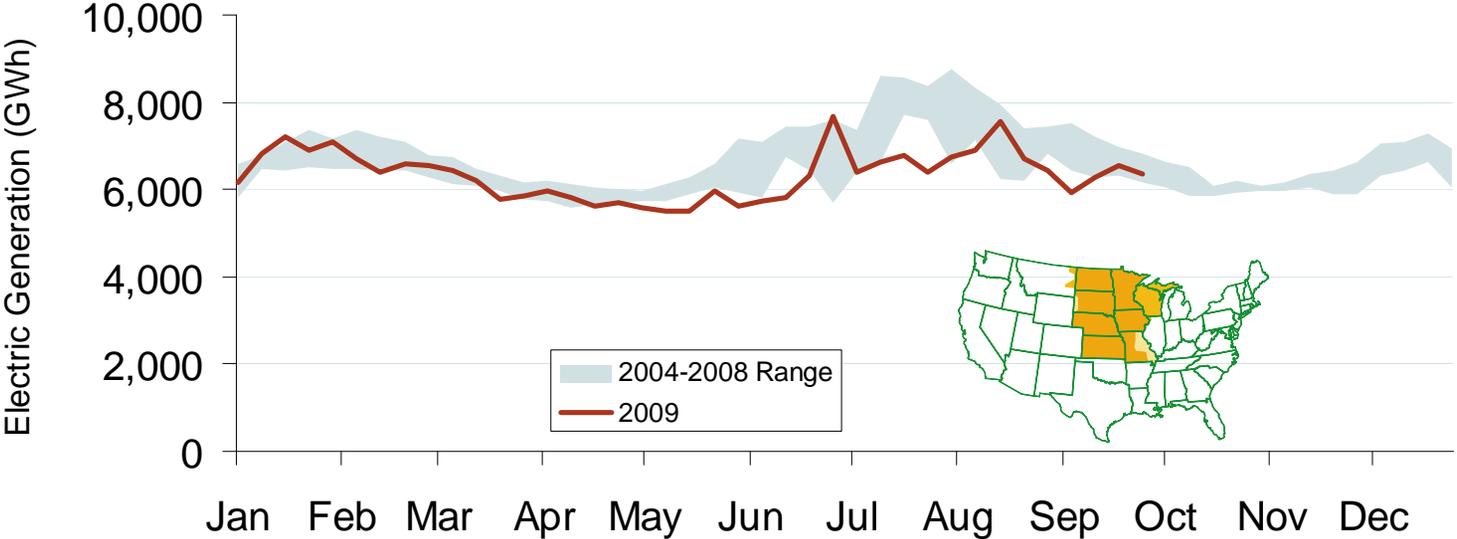
Electricity Markets

Weekly Electric Generation Output and Temperatures Central Industrial Region



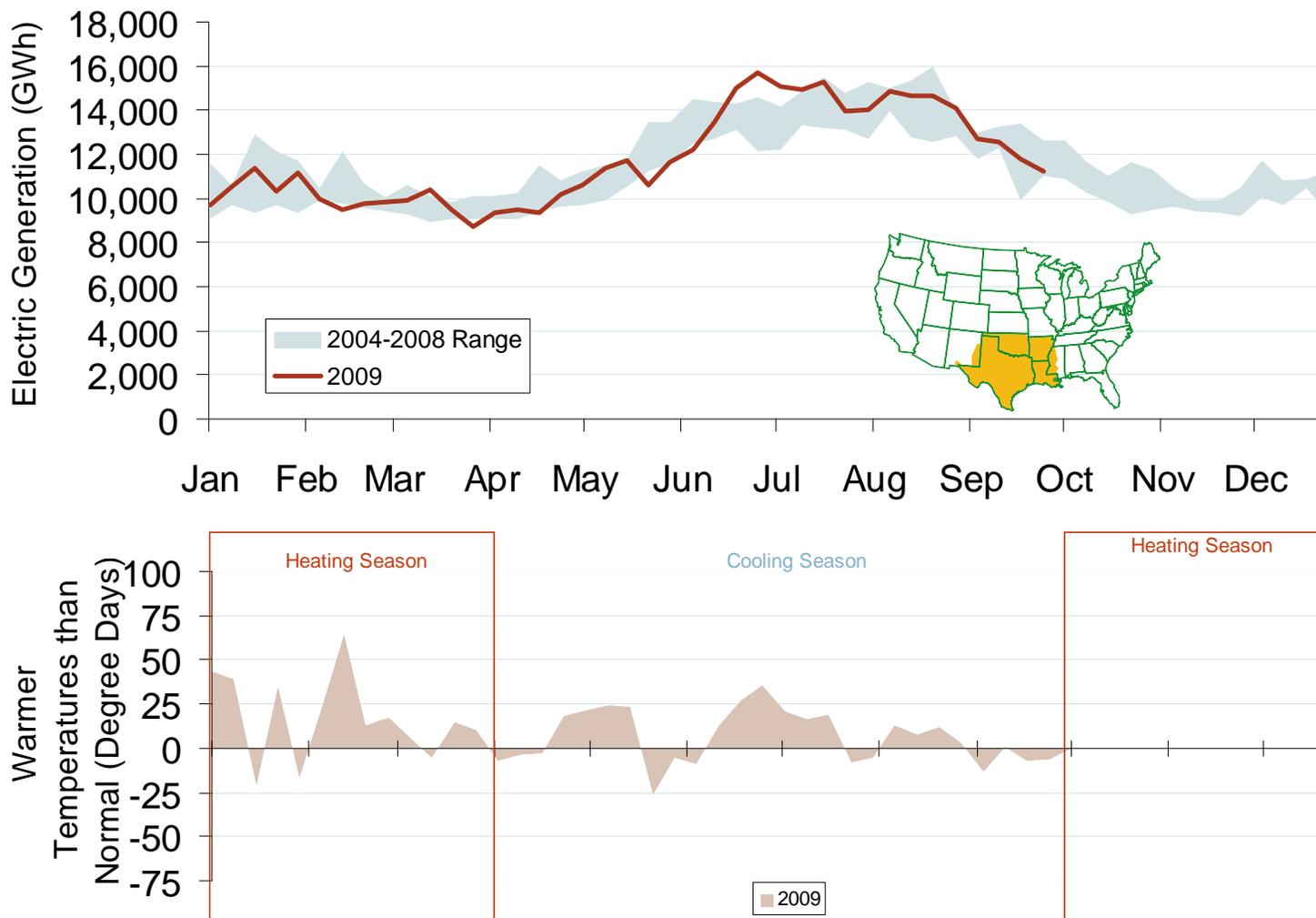
Source: Derived from *EI* and *NOAA* data.
October 2009 Midwest Snapshot Report

Weekly Electric Generation Output and Temperatures West Central Region

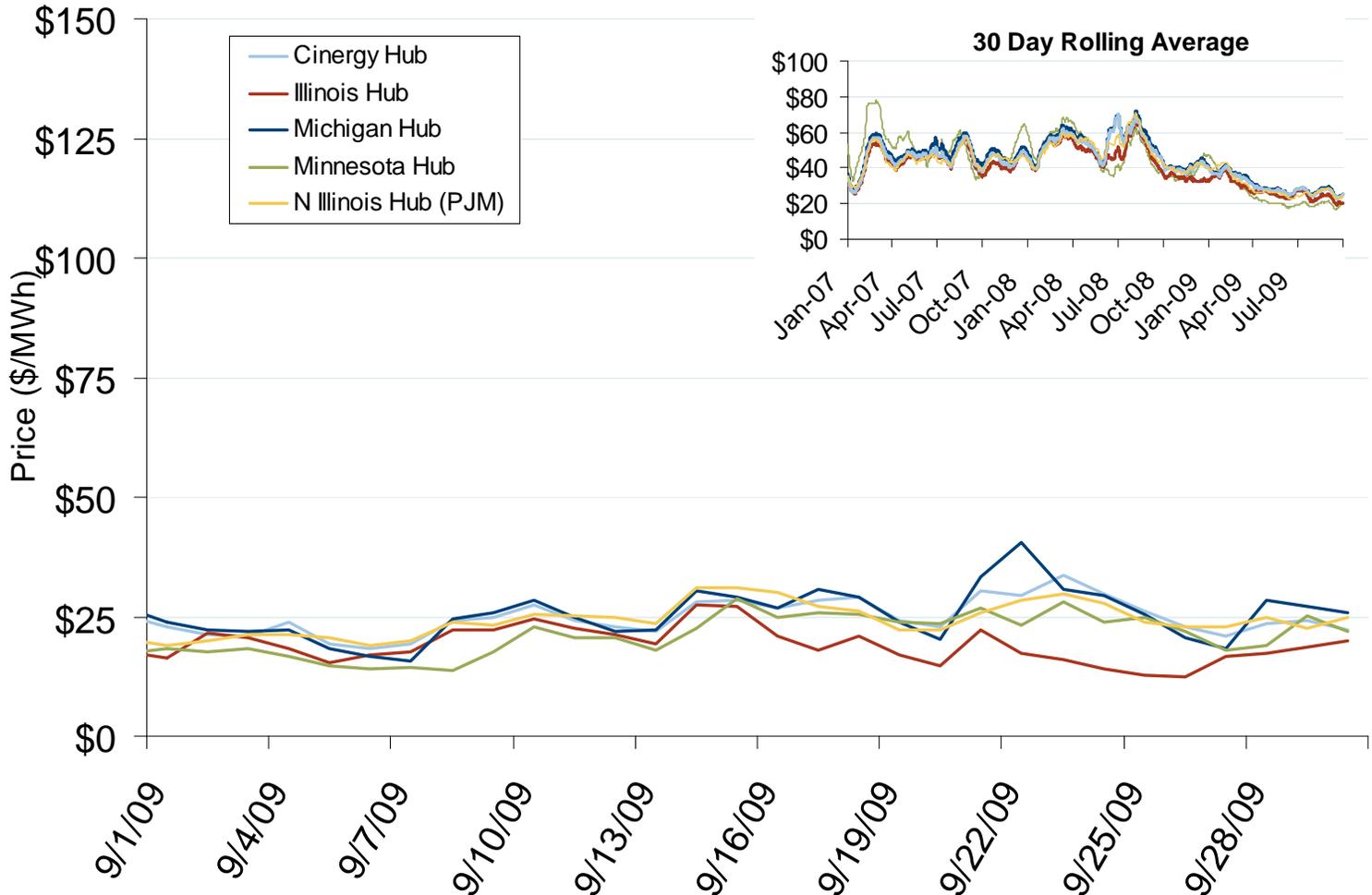


Source: Derived from EEI and NOAA data.
October 2009 Midwest Snapshot Report

Weekly Electric Generation Output and Temperatures South Central Region



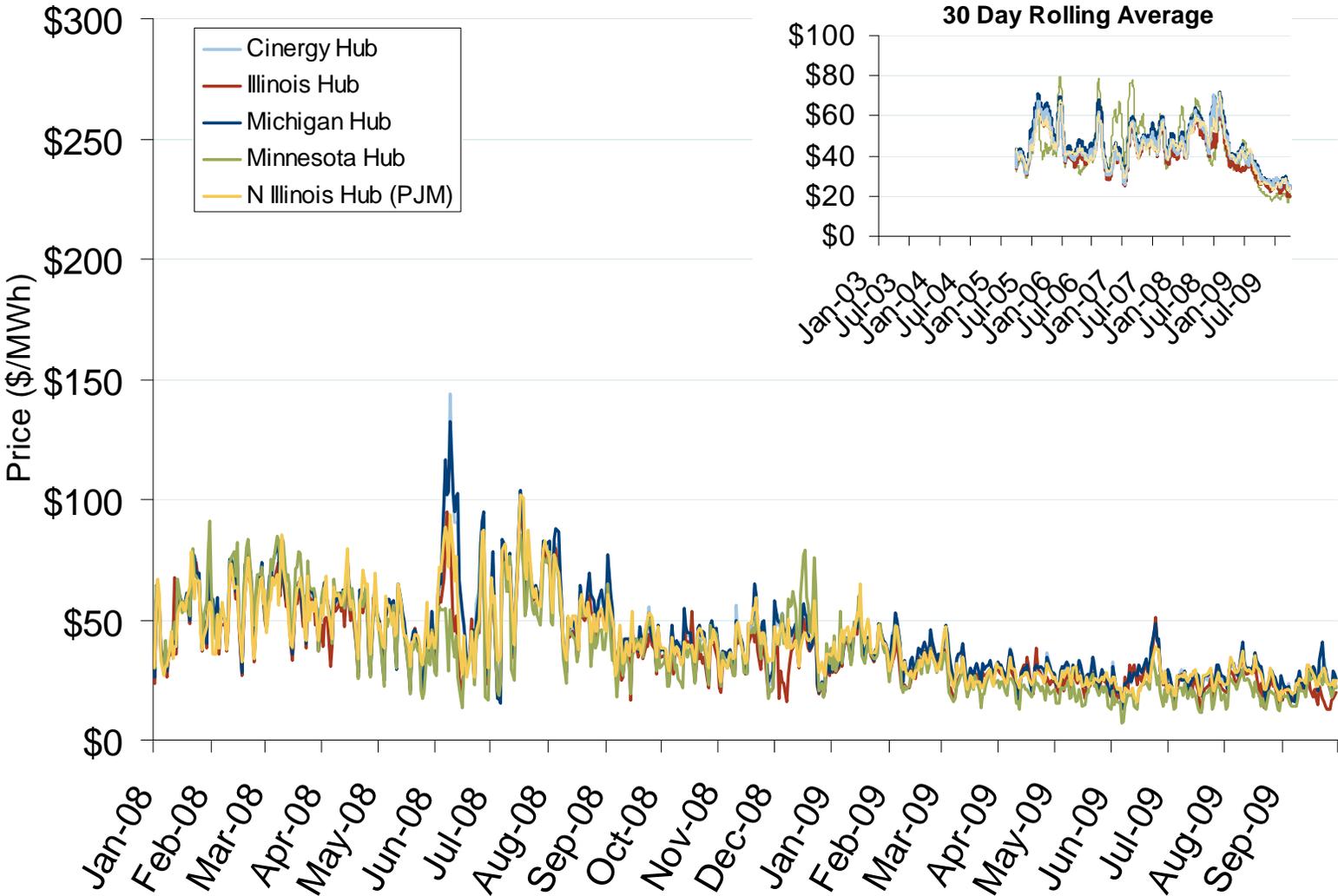
Daily Average of MISO Day-Ahead Prices - All Hours



Source: Derived by Bloomberg from MISO and PJM data as reported by Bloomberg.
October 2009 Midwest Snapshot Report

Updated October 7, 2009

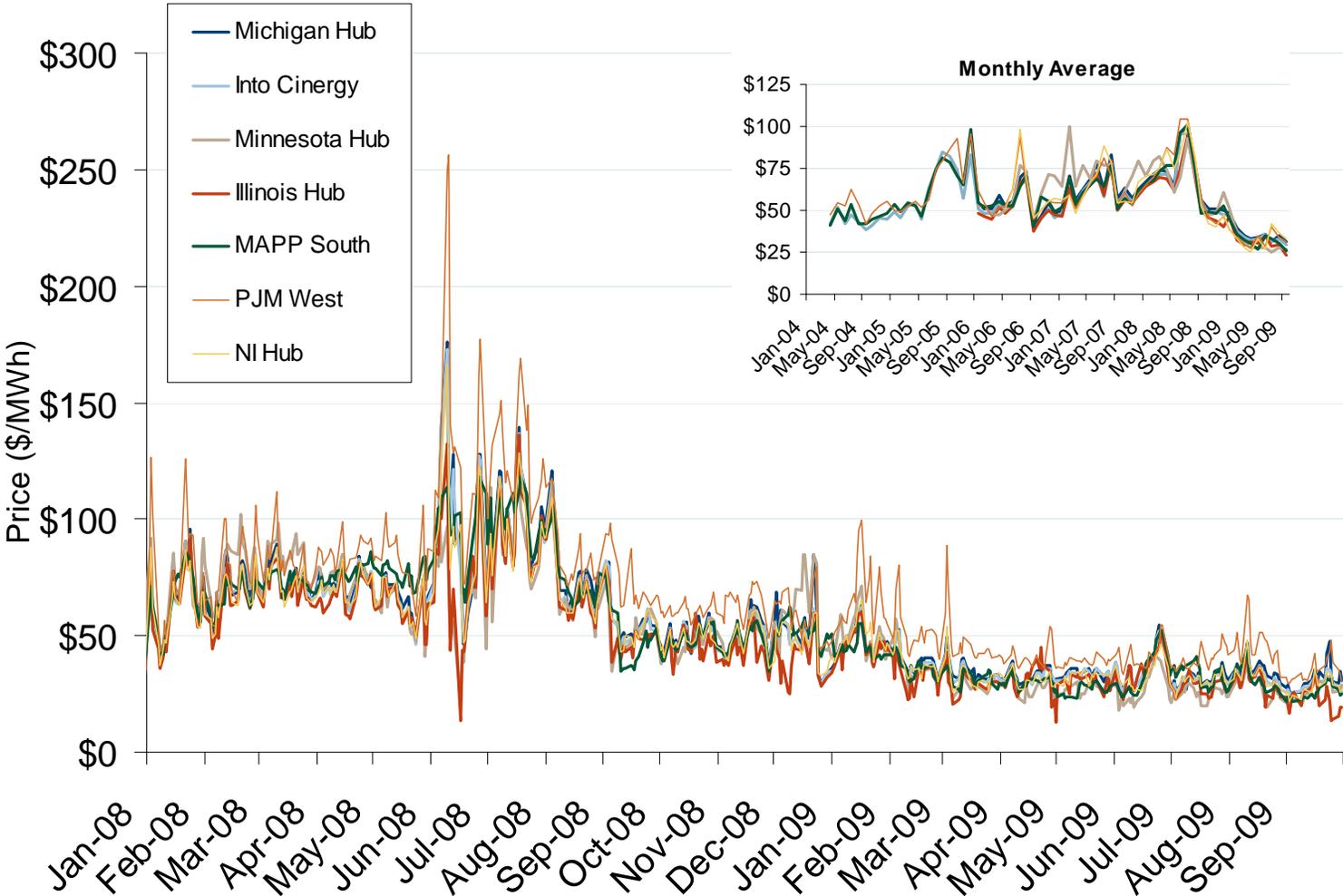
Daily Average of MISO Day-Ahead Prices - All Hours



Source: Derived by Bloomberg from MISO and PJM data as reported by Bloomberg.
October 2009 Midwest Snapshot Report

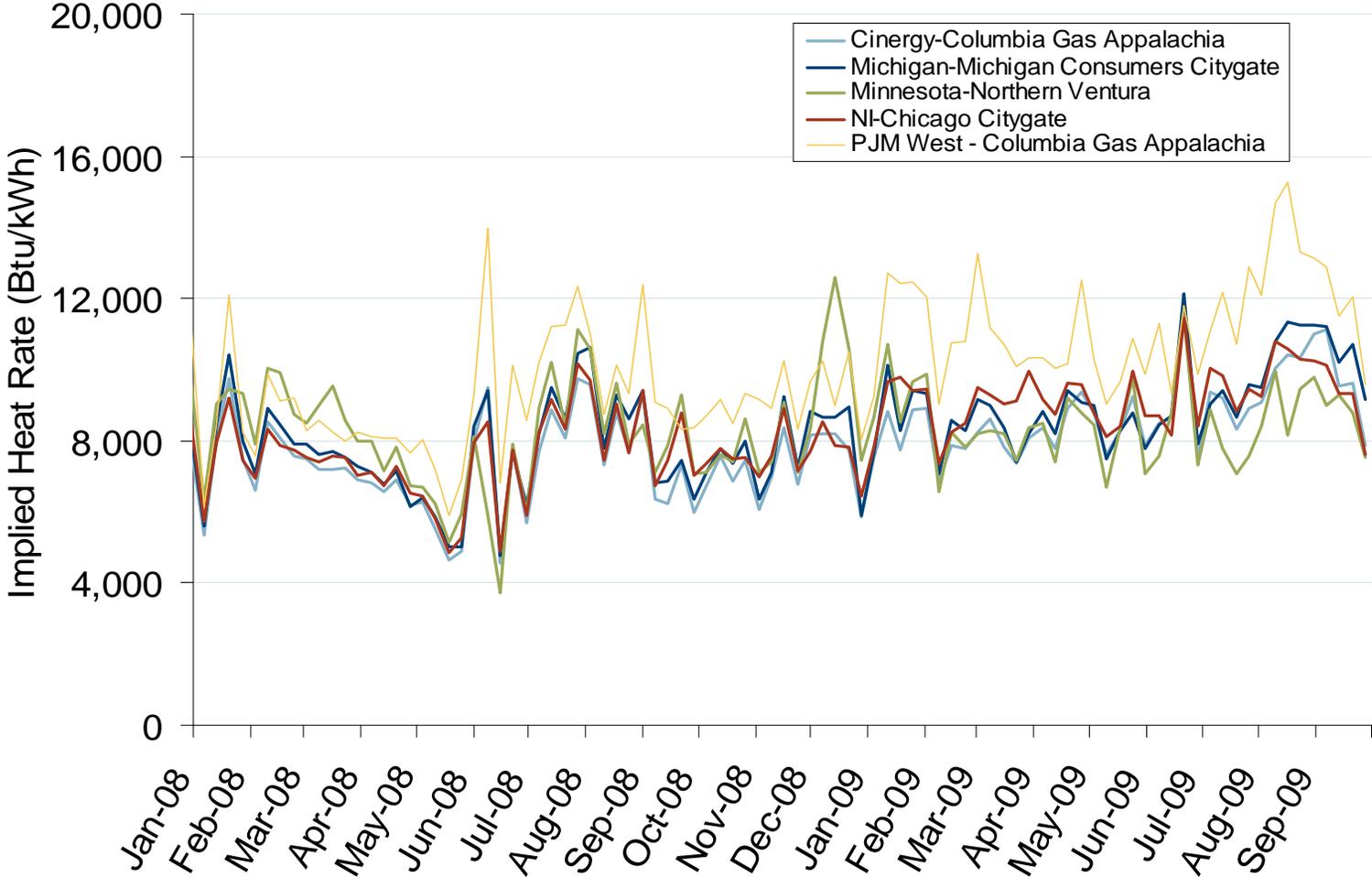
Updated October 7, 2009

MISO/PJM Bilateral Day-Ahead On-Peak Prices



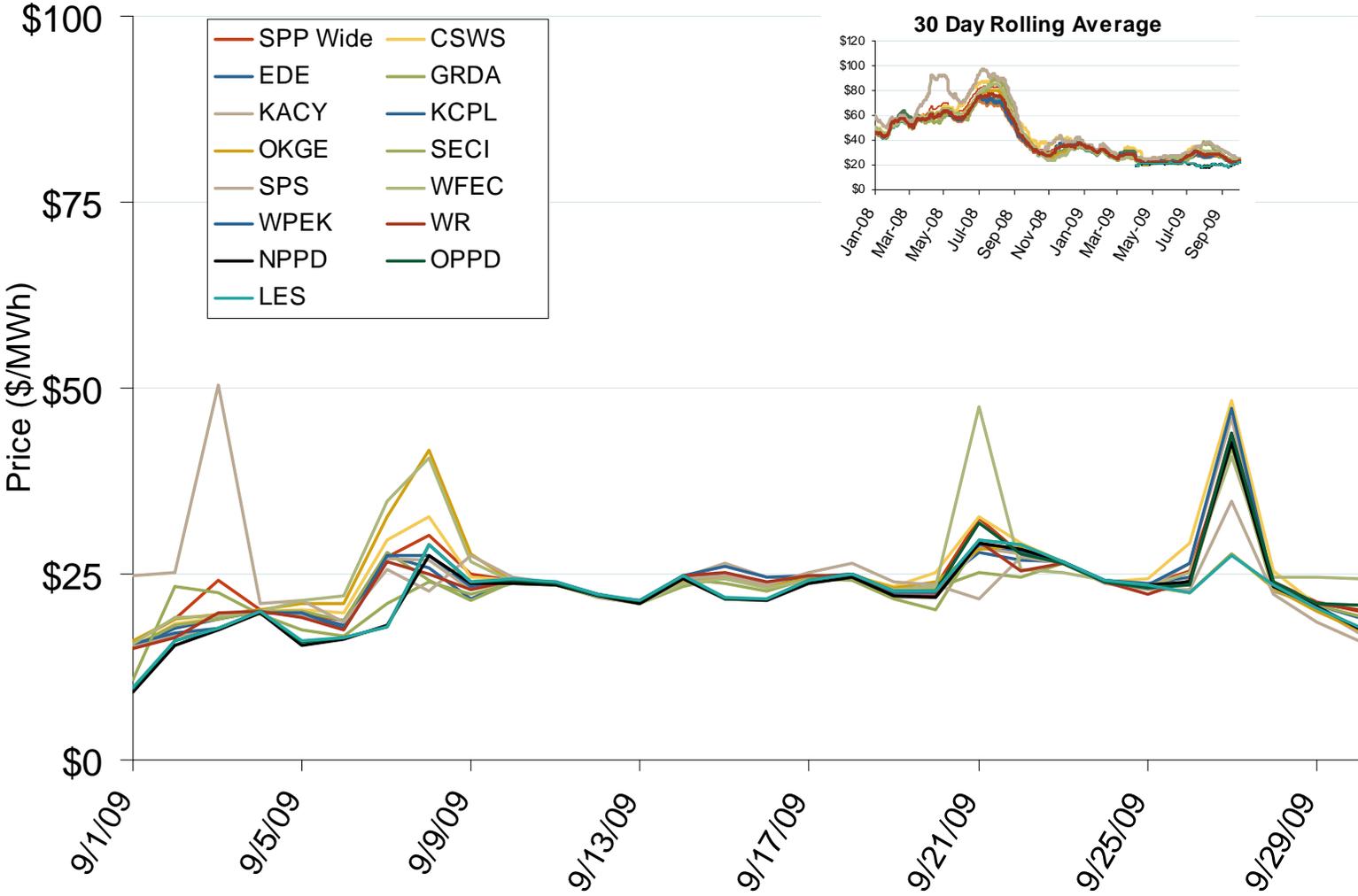
Source: Derived from *Platts* data.
October 2009 Midwest Snapshot Report

Implied Heat Rates at MISO and PJM Hubs Weekly Averages



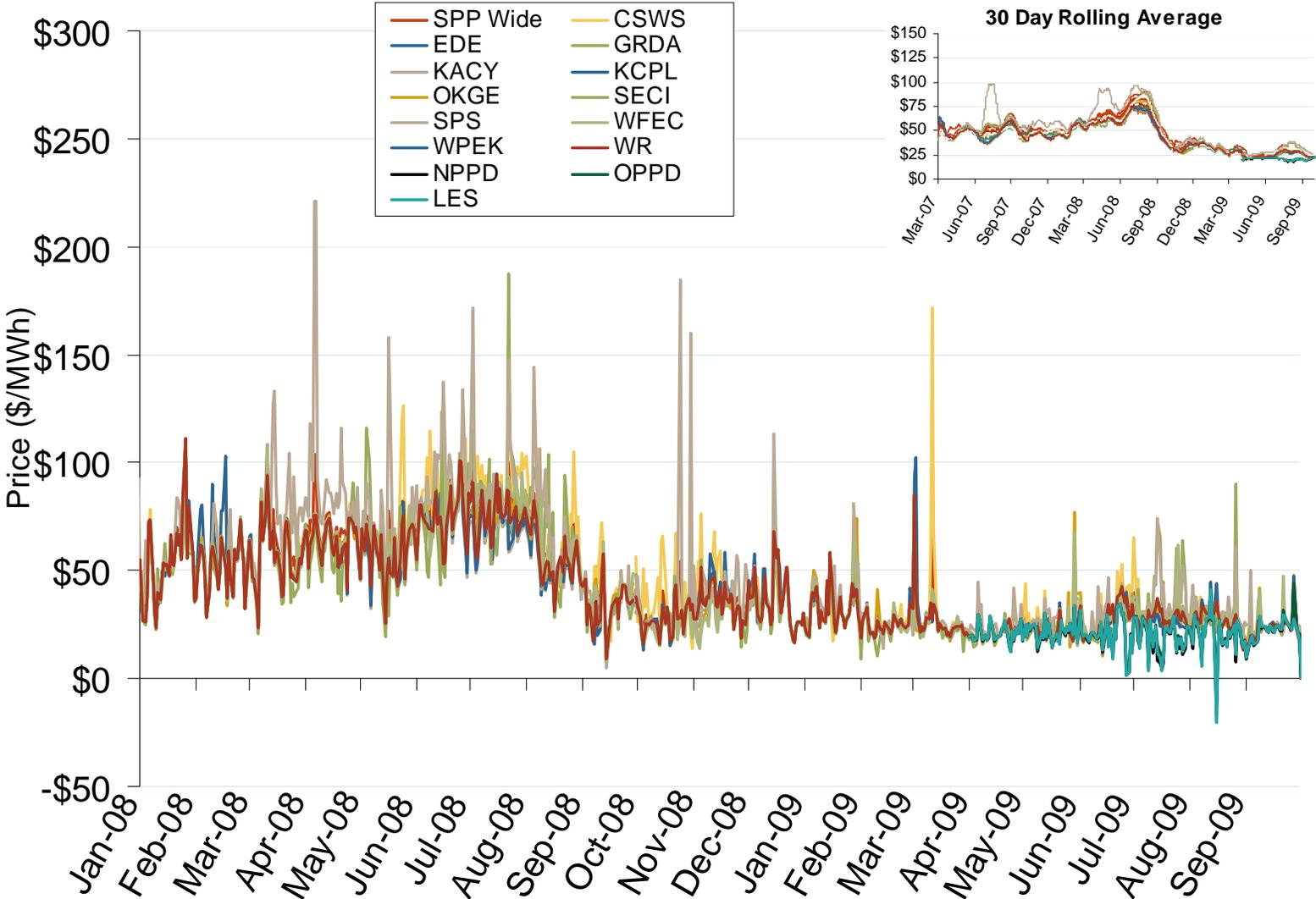
Source: Derived from *Platts* on-peak electric and natural gas price data.
October 2009 Midwest Snapshot Report

Daily Average of SPP Real Time Prices - All Hours



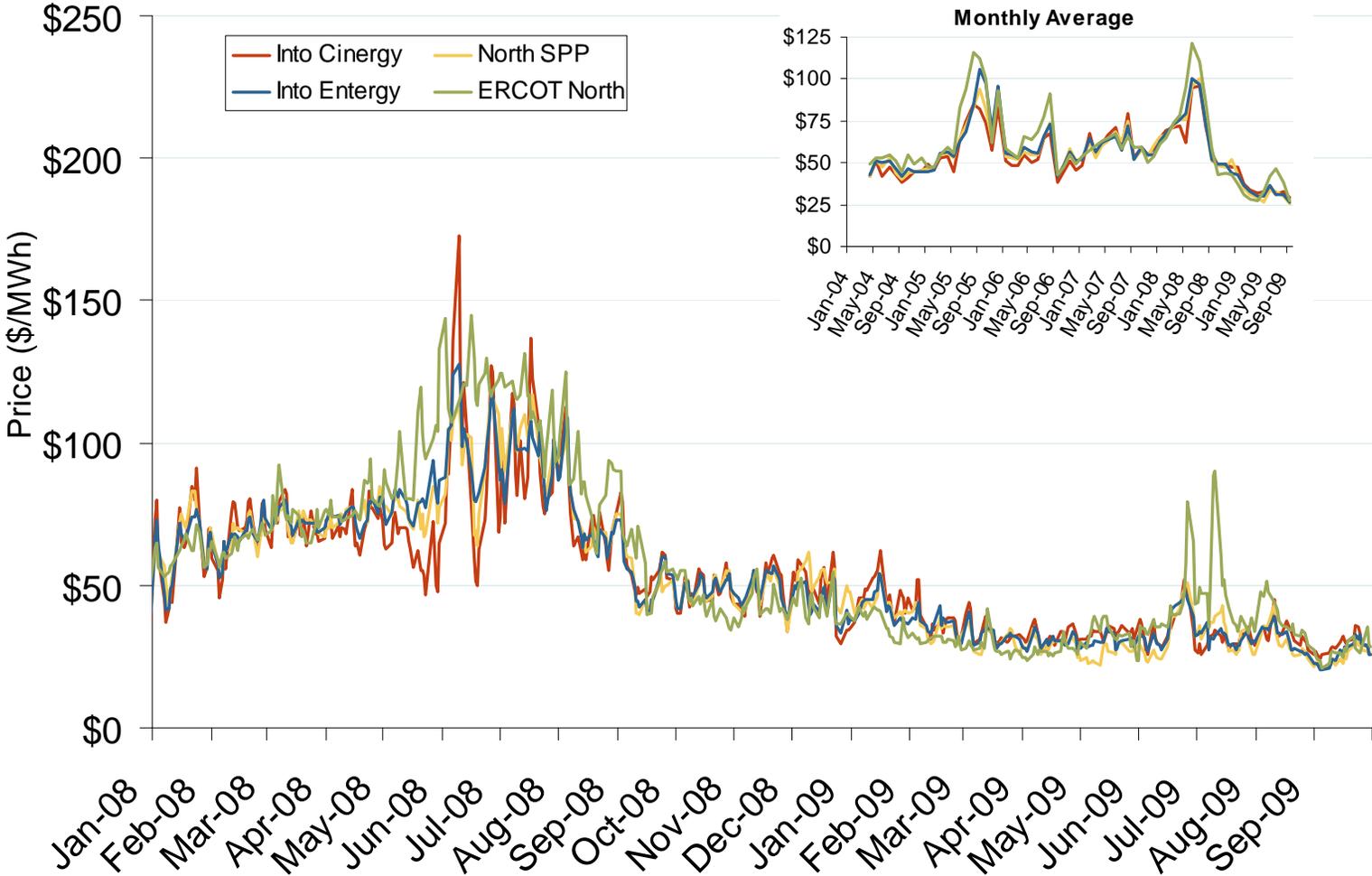
Source: Derived from SPP data.
October 2009 Midwest Snapshot Report

Daily Average of SPP Real Time Prices - All Hours



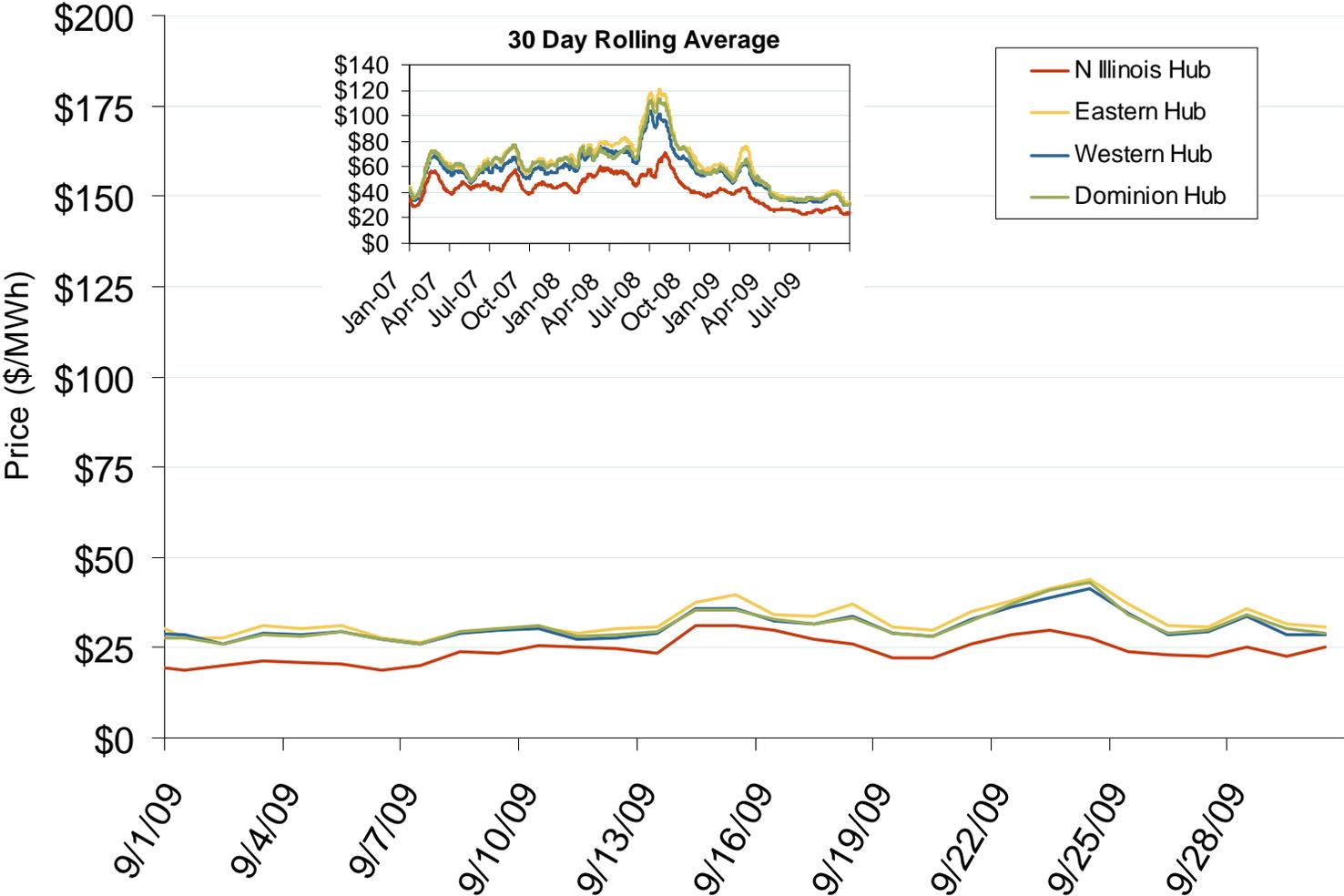
Source: Derived from SPP data.

Central Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.
October 2009 Midwest Snapshot Report

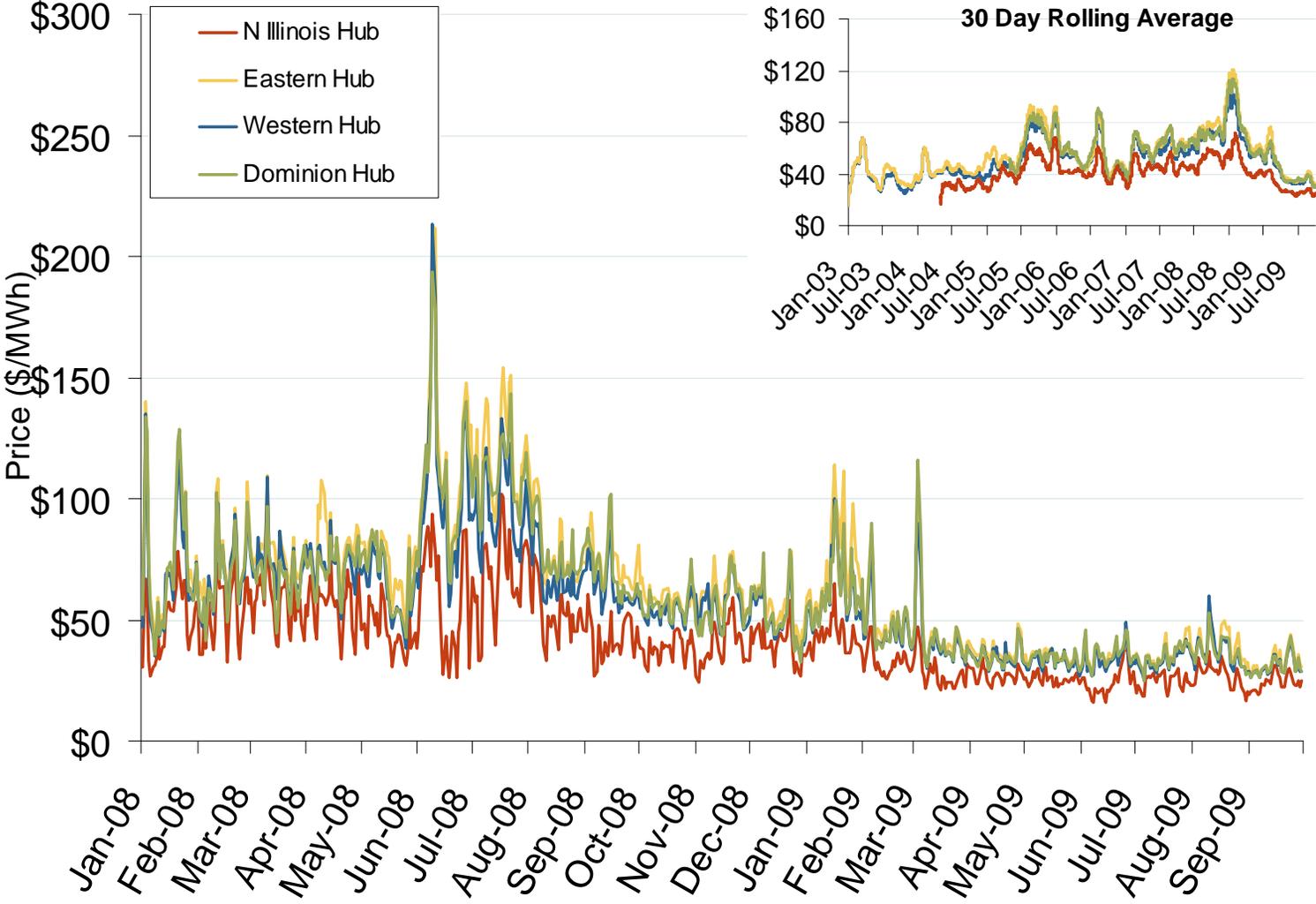
Daily Average of PJM Day-Ahead Prices - All Hours



Source: Derived by Bloomberg from PJM data as reported by Bloomberg.
October 2009 Midwest Snapshot Report

Updated October 7, 2009

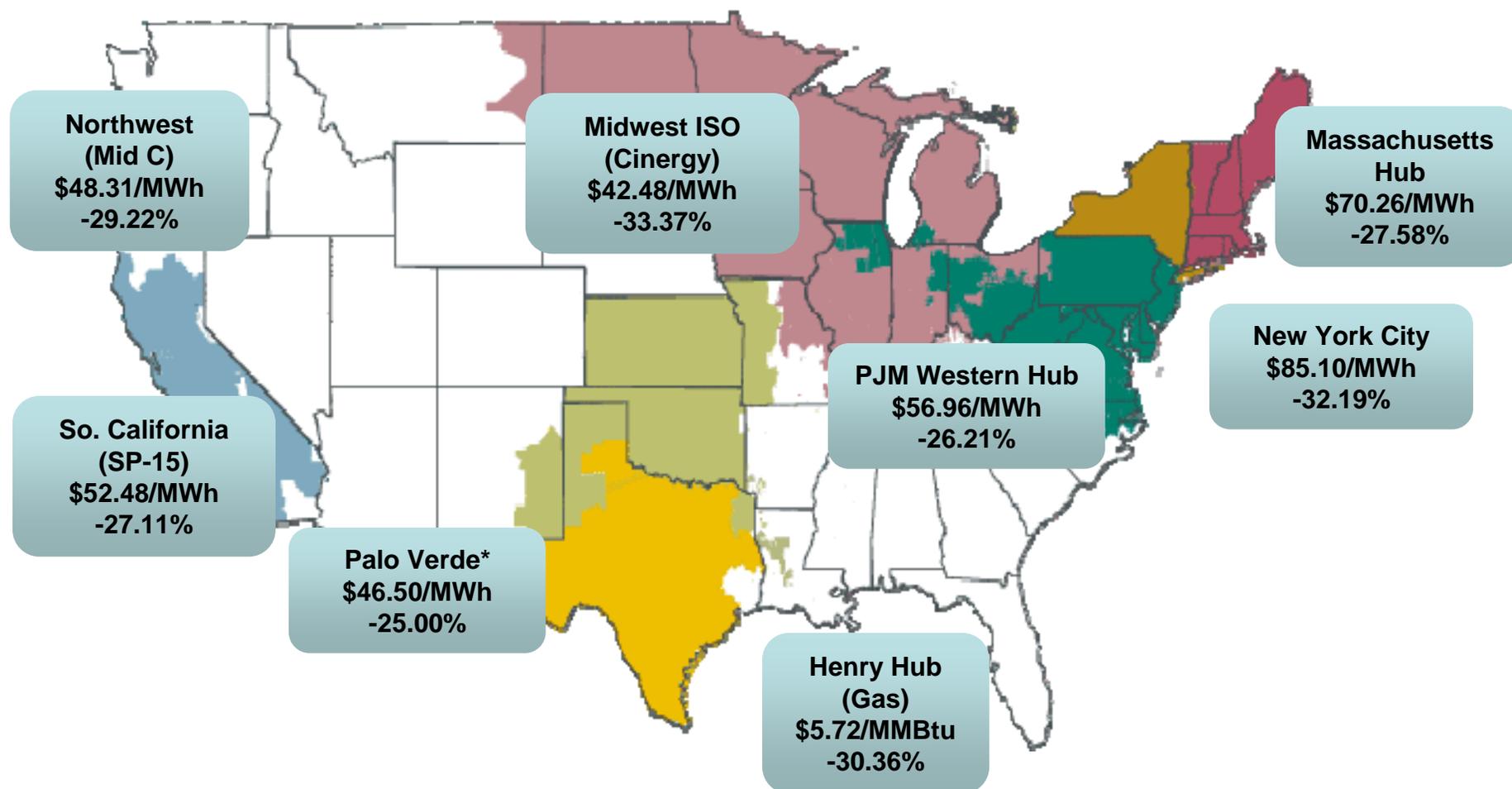
Daily Average of PJM Day-Ahead Prices - All Hours



Source: Derived by Bloomberg from PJM data as reported by Bloomberg.
October 2009 Midwest Snapshot Report

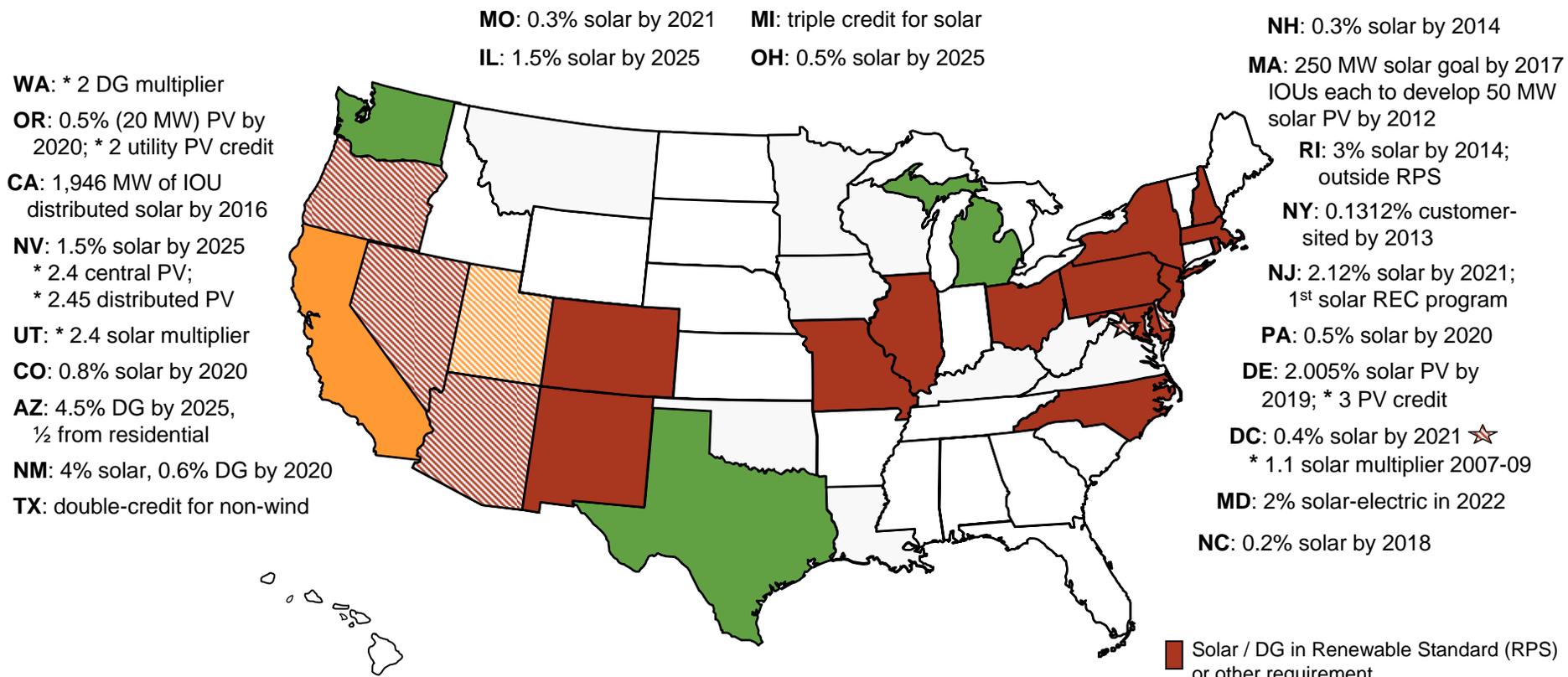
Updated October 7, 2009

Winter (Jan-Feb) On-Peak Forward Prices 2009 vs. 2010



Source: Winter is defined here as January and February. Palo Verde price and change is for the first quarter instead of Jan-Feb. Forward on-peak electric and natural gas data is from ICE as of 10/1/09 and is compared to the same forward packages from last Jan-Feb as of 10/1/08.

16 States and D.C. have Solar or Distributed Generation RPS Provisions



Updates at: <http://www.ferc.gov/market-oversight/othr-mkts/renew.asp>

Notes: An RPS requires a percent of an electric provider's energy sales (MWh) or installed capacity (MW) to come from renewable resources. (*) Multipliers receive extra credit towards RPS compliance.

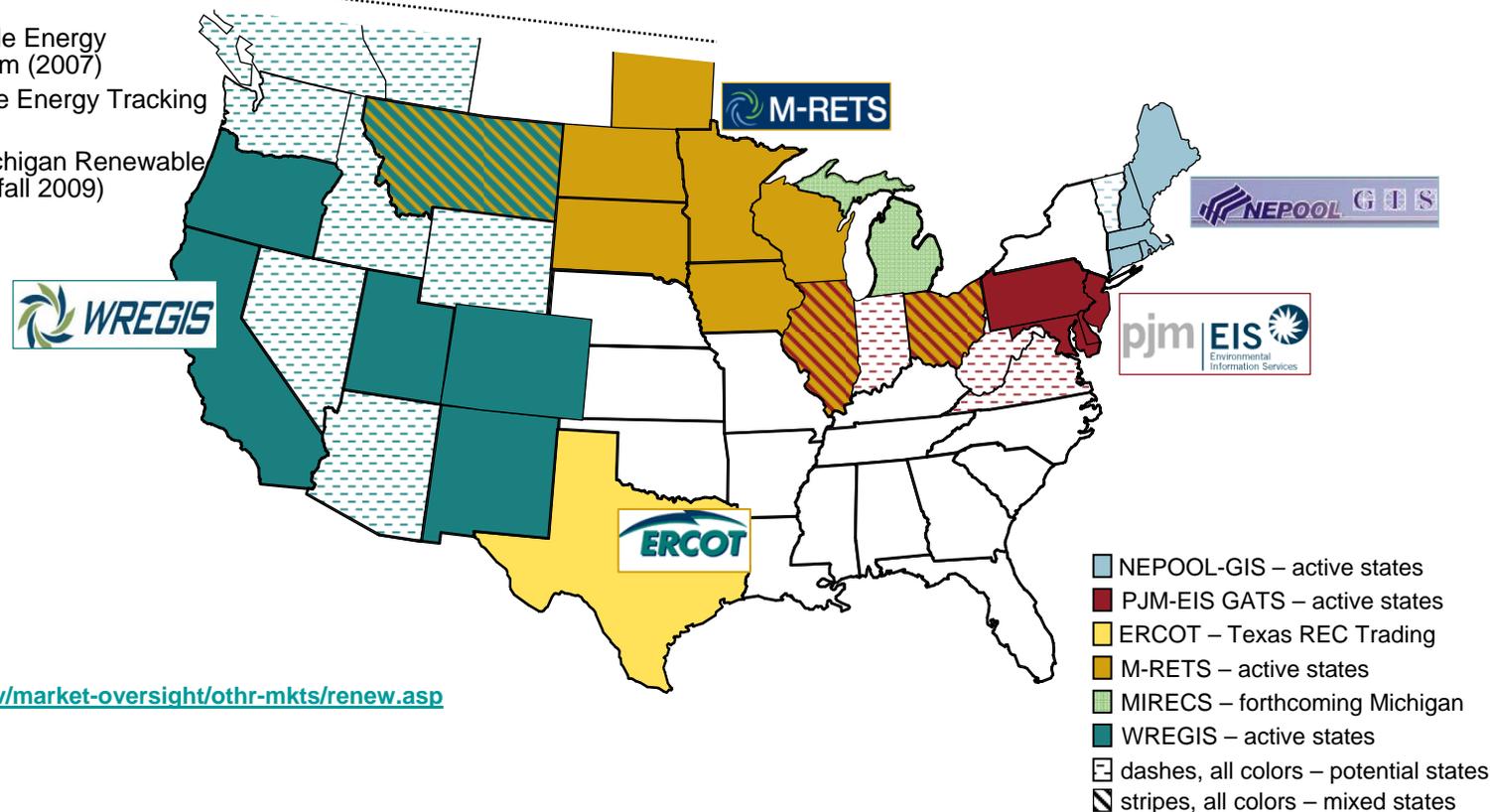
Abbreviations: DG – Distributed Generation; PV – solar photo-voltaic; RPS – Renewable Portfolio Standard

Sources: Derived from data in: LBNL, *RPS in the U.S. through 2007 (4/08)*, PUCs, and the Database of State Incentives for Renewables and Energy Efficiency: <http://www.dsireusa.org>

Five Renewable Certificate Tracking Systems Operate in North America

Tracking Systems: (year operational)

- **ERCOT:** Texas REC Trading System (2001)
- **NEPOOL – GIS:** New England Pool - Generation Information System (2002)
- **PJM – GATS:** PJM-Generator Attribute Tracking System (2005)
- **WREGIS:** Western Renewable Energy Generation Information System (2007)
- **M-RETS:** Midwest Renewable Energy Tracking System (2007)
- **MIRECS:** *in-development* Michigan Renewable Energy Certification System (fall 2009)



Updates at: <http://www.ferc.gov/market-oversight/othr-mkts/renew.asp>

Note: neither Alaska nor Hawaii have renewable tracking systems

Abbreviations: REC - Renewable Energy Certificate; also a renewable energy credit;

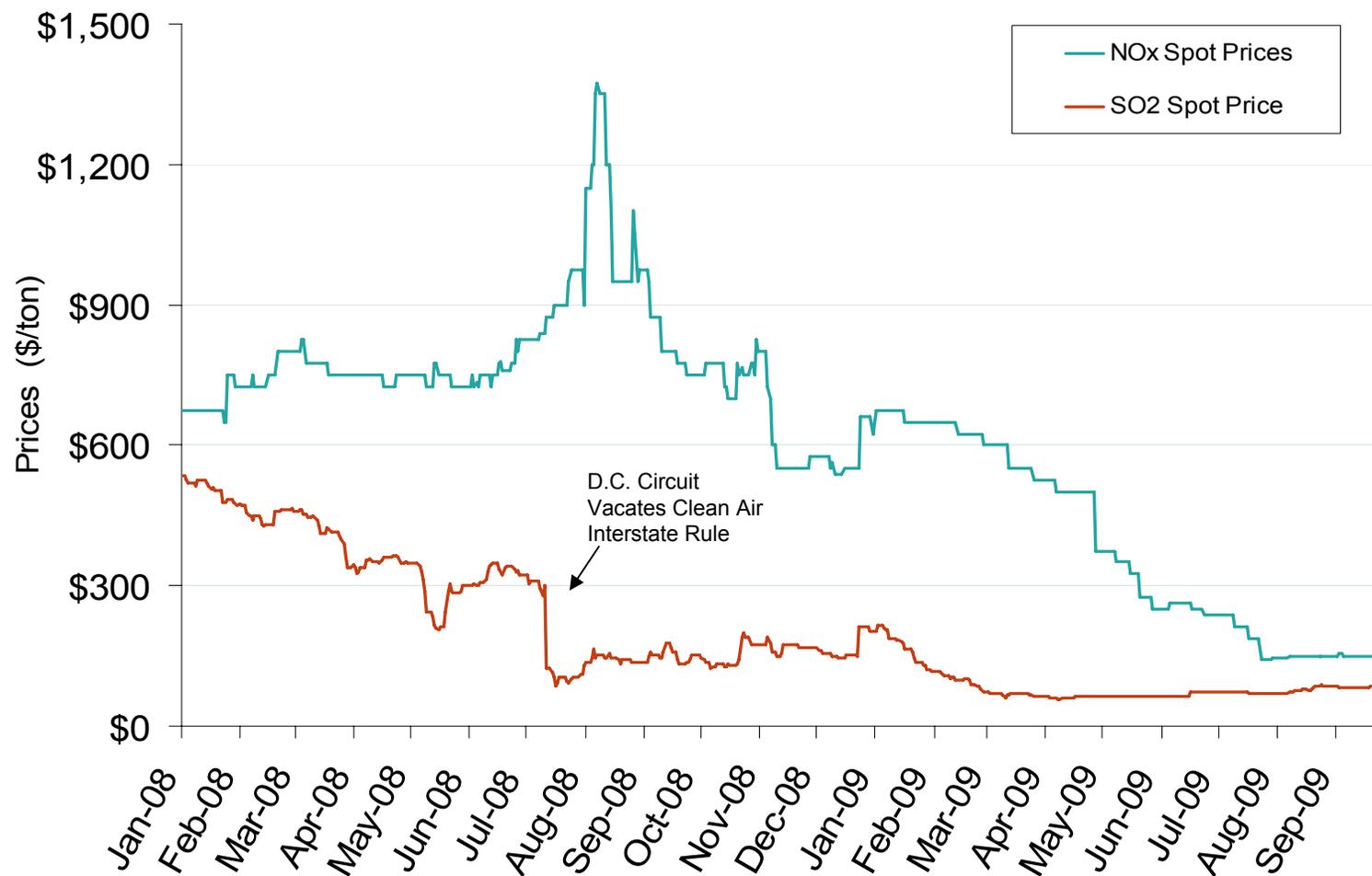
RPS – Renewable Portfolio Standard (also known as RES, Renewable Electricity Standard); SREC – Solar REC

Sources: Environmental Tracking Network of North America: www.etnna.org; Individual tracking systems:

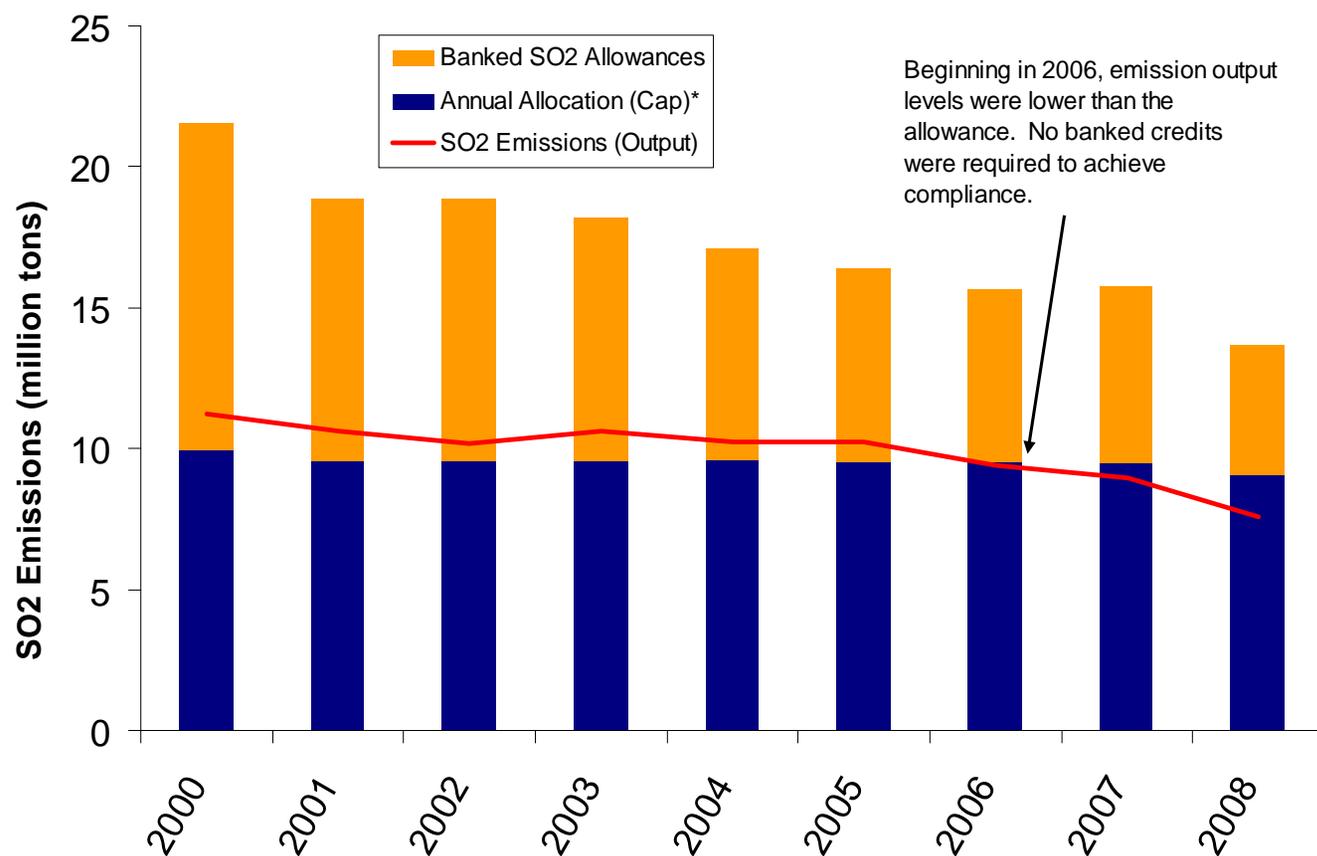
www.nepoolgis.com, www.texasrenewables.com, www.pjm-eis.com/gats/about-gats.html, www.wregis.org,

www.mrets.org; infrastructure provider: www.apx.com

SO₂ Allowance Spot Prices and NOx Seasonal Allowance Spot Prices



SO₂ Allowances Available for Compliance and SO₂ Emission Output under Cap-and-Trade

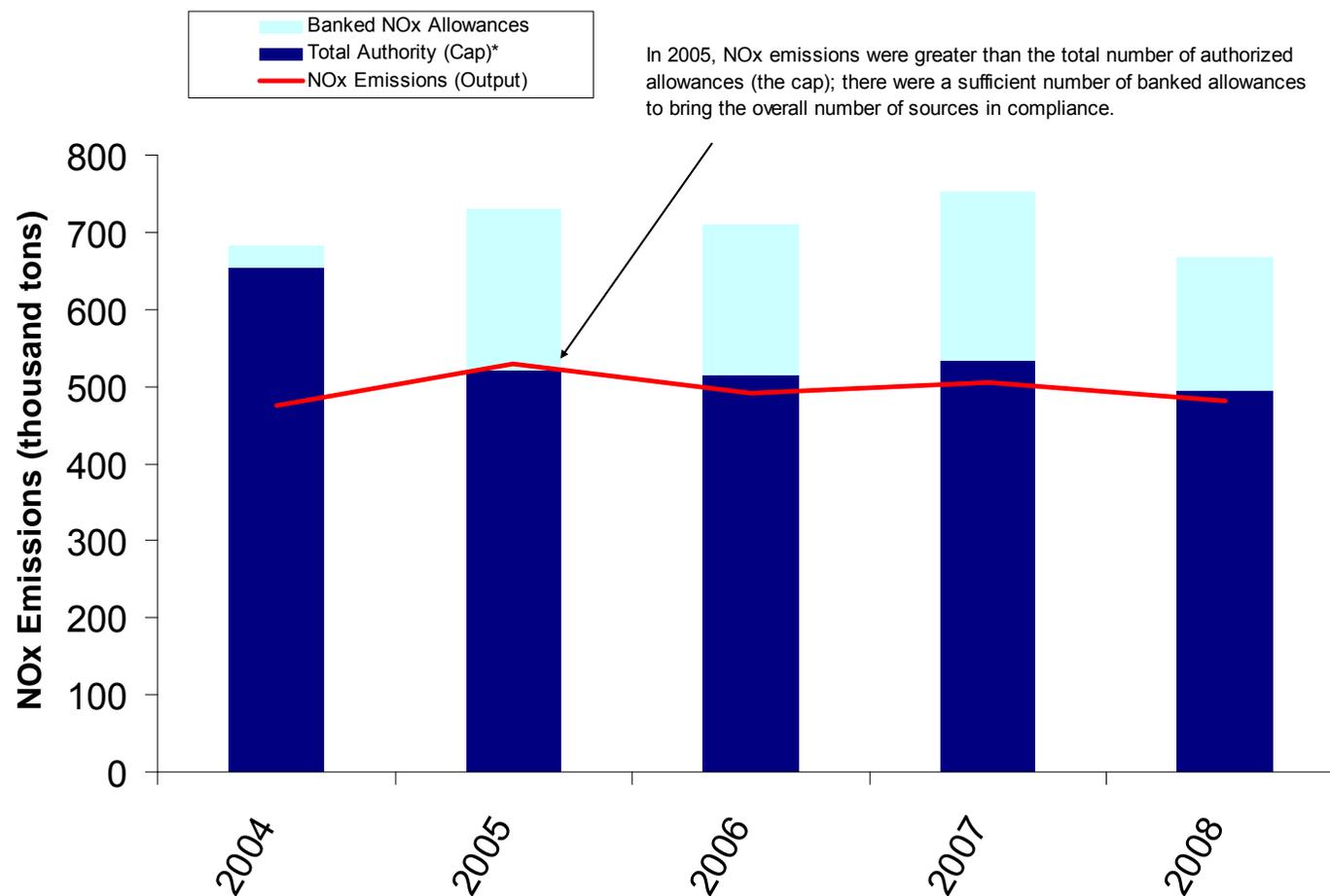


Source: EPA

* See overview on following slide.
October 2009 Midwest Snapshot Report

Updated August 20, 2009

NOx Allowances Available for Compliance and NOx Emission Output under Cap-and-Trade



Source: EPA

* See notes on following slide.
October 2009 Midwest Snapshot Report

Updated August 20, 2009

Collaborative Greenhouse Gas (GHG) Programs

Collaborative Regional GHG Programs:

- Three North American groups with goals to lower regional GHG emissions were initiated by state Governors.
- 32 U.S. states, D.C., eight Canadian provinces, and six Mexican states are Participants or Observers.
- Observer jurisdictions do not commit to group GHG reduction goals, but participate in proceedings should they opt to join later. RGGI Observers are not on its Board.

Western Climate Initiative (WCI):

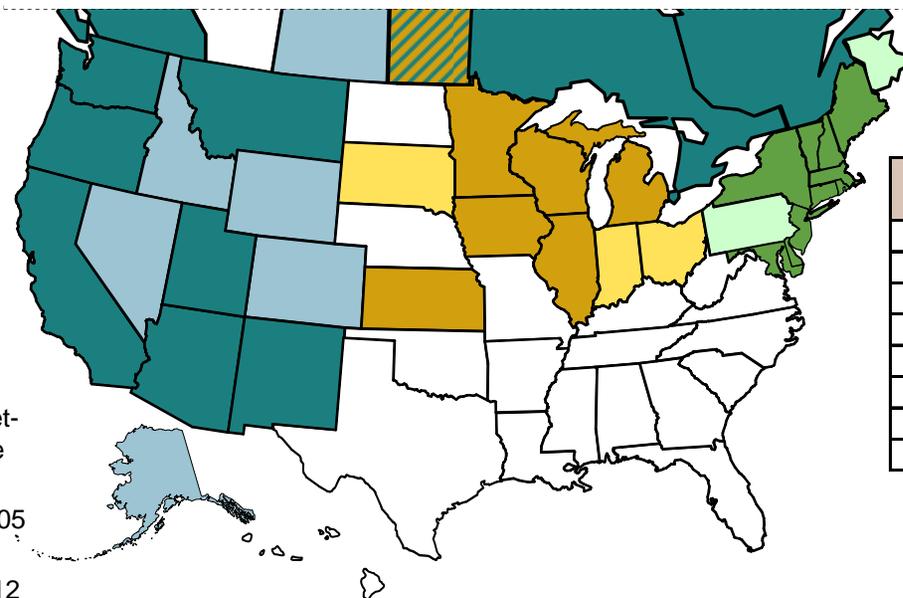
- Created February 2007
- Partners: 7 states, 4 provinces; Observers: 5 states, 1 province
- Announced its design for a market-based, *multi-sector* cap-and-trade program, Sept 2008:
 - 15% CO₂ reduction below 2005 levels by 2020
 - Phase I to take effect Jan 2012

Midwest Greenhouse Gas Reduction Accord:

- Established November 2007
- Participants: 6 states, 1 province; Observers: 3 states, 1 province
- Preliminary design recommendations issued Dec 2008: 15 - 25% reductions by 2020, 60 - 80% by 2050

Regional Greenhouse Gas Initiative (RGGI):

- Compliance period began Jan 1, 2009
- Participants: 10 states; Observers: 1 state, D.C., 3 provinces
- Market-based cap-and-trade effort to reduce *power-sector* CO₂ emissions.
- 10% CO₂ reduction by 2018 covers over 200 plants
- One allowance is the right to emit 1 ton of CO₂
- Annual RGGI cap is 188 million tons



RGGI Auction Data

| Auction Date | Allocation Year | Allowances Sold (000s) | Clearing Price |
|--------------|-----------------|------------------------|----------------|
| 9/25/08 | 2009 | 12,565 | \$3.07 |
| 12/17/08 | 2009 | 31,506 | \$3.38 |
| 3/18/09 | 2009 | 31,514 | \$3.51 |
| 3/18/09 | 2012 | 2,176 | \$3.05 |
| 6/17/09 | 2009 | 30,888 | \$3.23 |
| 6/17/09 | 2012 | 2,173 | \$2.06 |
| 9/9/2009 | 2009 | 28,409 | \$2.19 |
| 9/9/2009 | 2012 | 2,173 | \$1.87 |

- Participant in WCI
- Observer to WCI
- Participant in MGGRA
- Observer to MGGRA
- Participant in RGGI
- Observer to RGGI
- Participant in MGGRA & WCI

Updates at: <http://www.ferc.gov/market-oversight/otr-mkts/emiss-allow/otr-emns-ovr-ghg.pdf>

Notes: Kansas is a MGGRA participant and WCI observer. Ontario and Quebec are Partners to WCI and Observers to RGGI; Ontario is also an observer to RGGI.

Sources: regional initiatives - www.rggi.org, www.midwesternaccord.org, www.westernclimateinitiative.org, Point Carbon, analyst reports, trade press