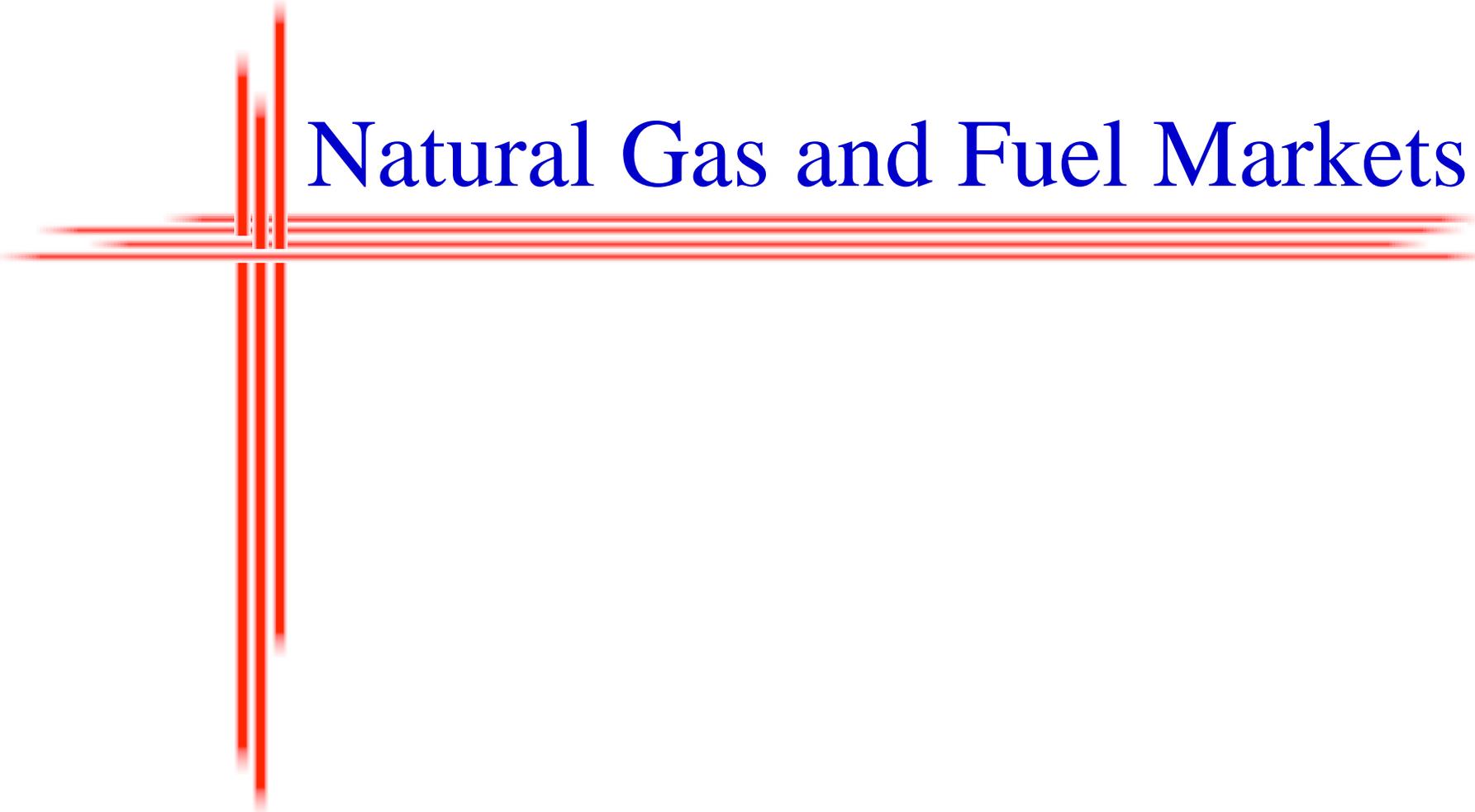


OE ENERGY MARKET SNAPSHOT

Western States Version – September 2009 Data

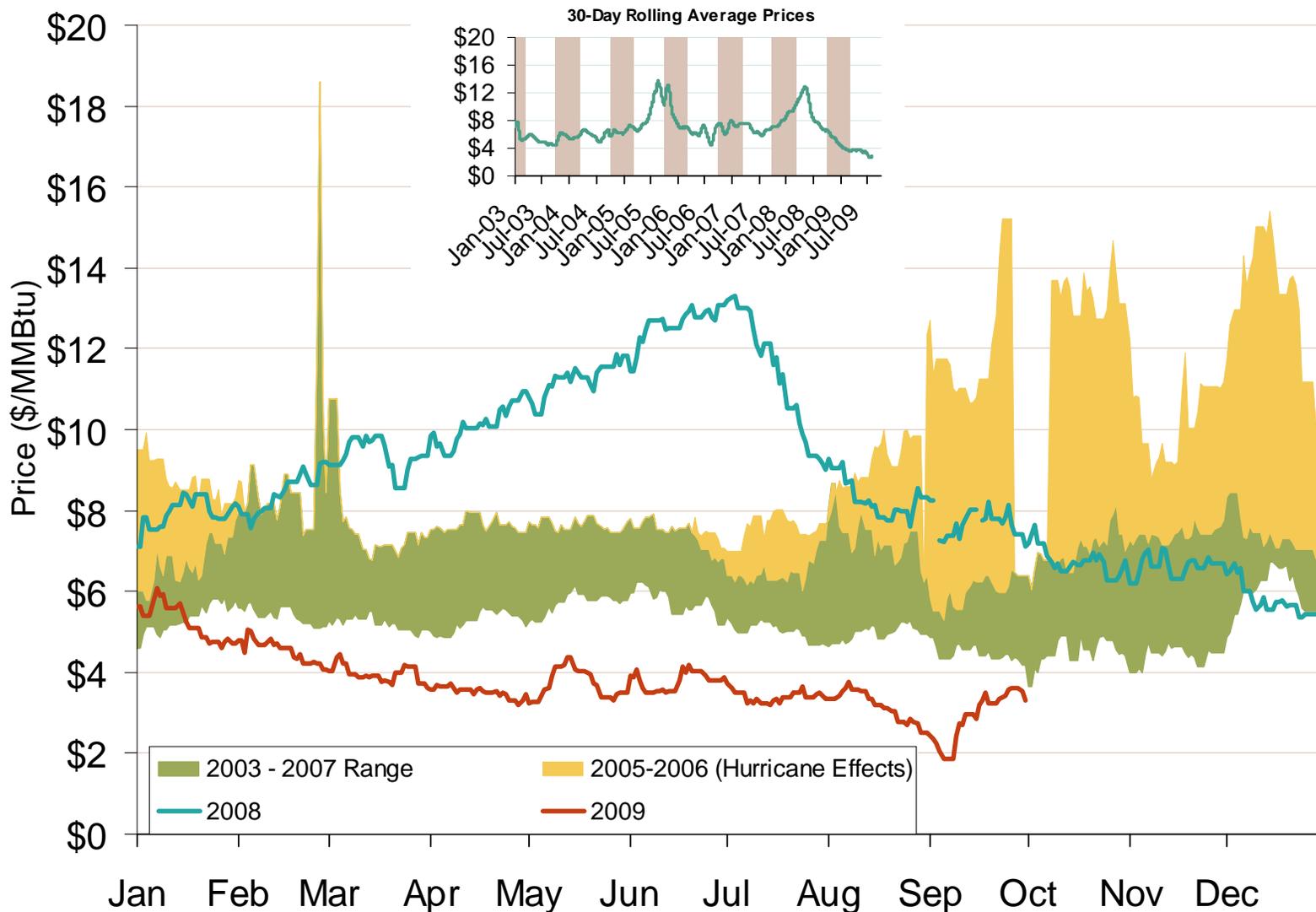
- **Natural Gas and Fuel Markets**
- **Electricity Markets**

Office of Enforcement
Federal Energy Regulatory Commission
October 2009



Natural Gas and Fuel Markets

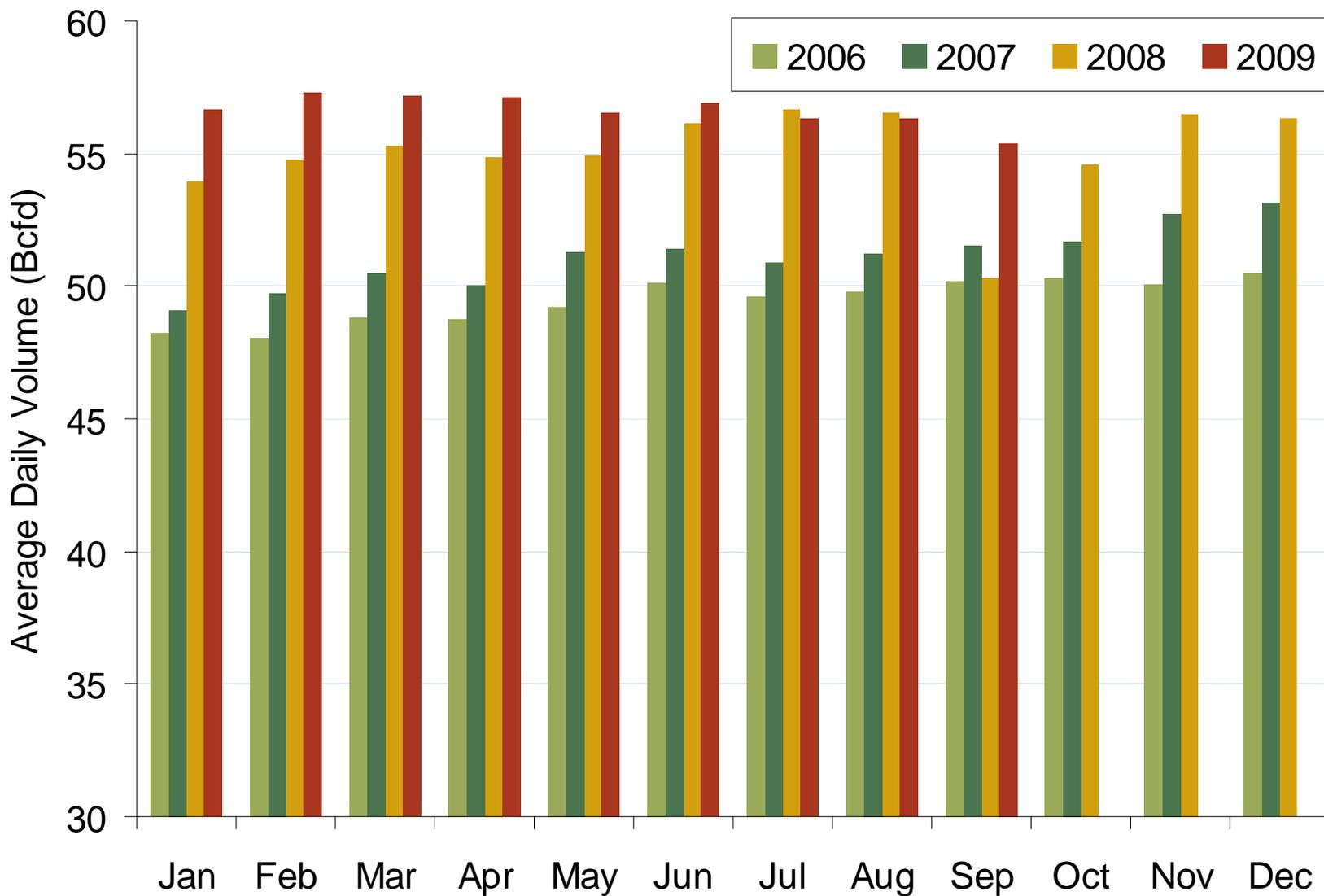
Henry Hub Natural Gas Daily Spot Prices 2008, 2009 and 2003-2007 Year Range



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

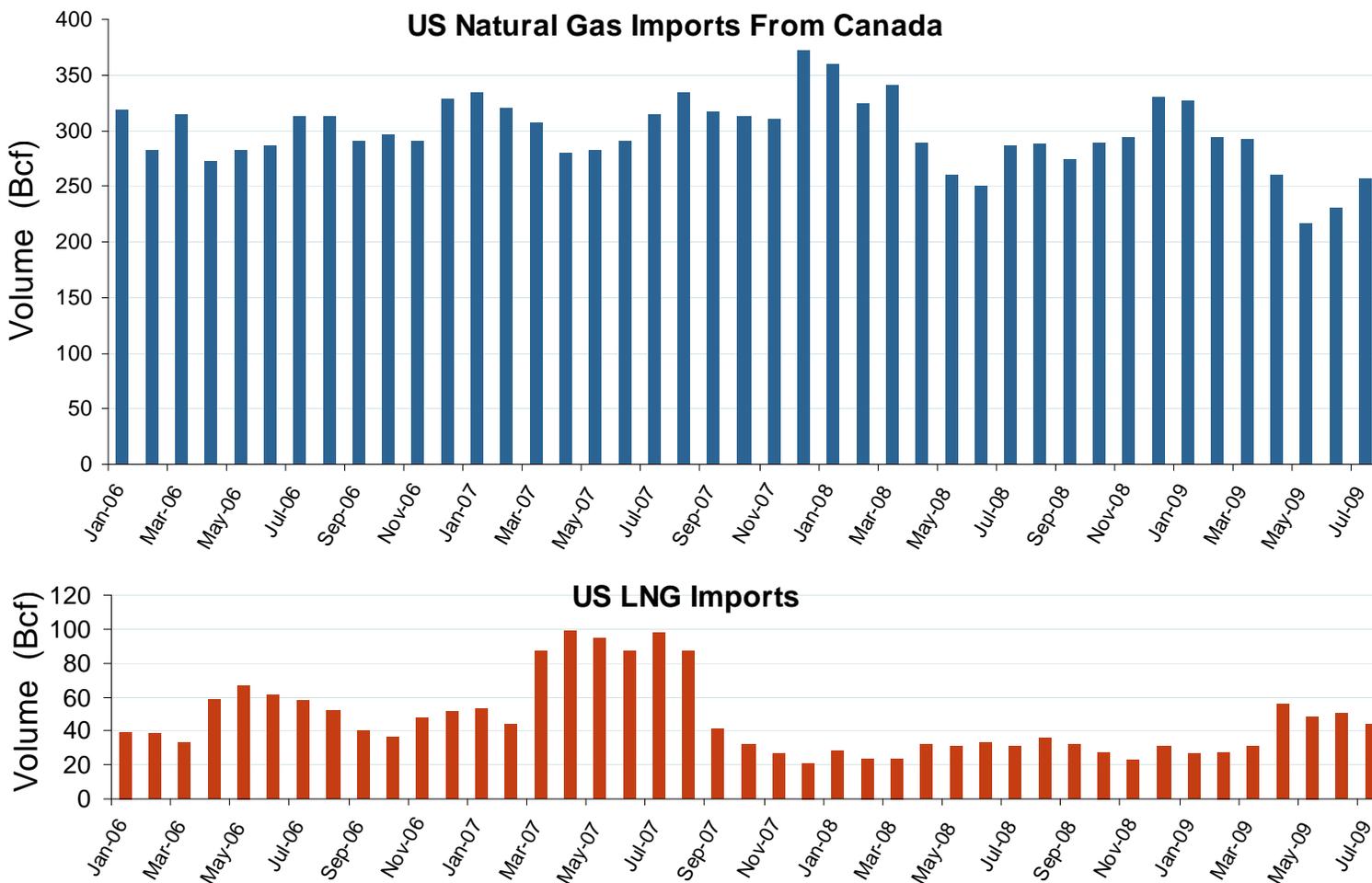
Updated October 7, 2009

Robust Production

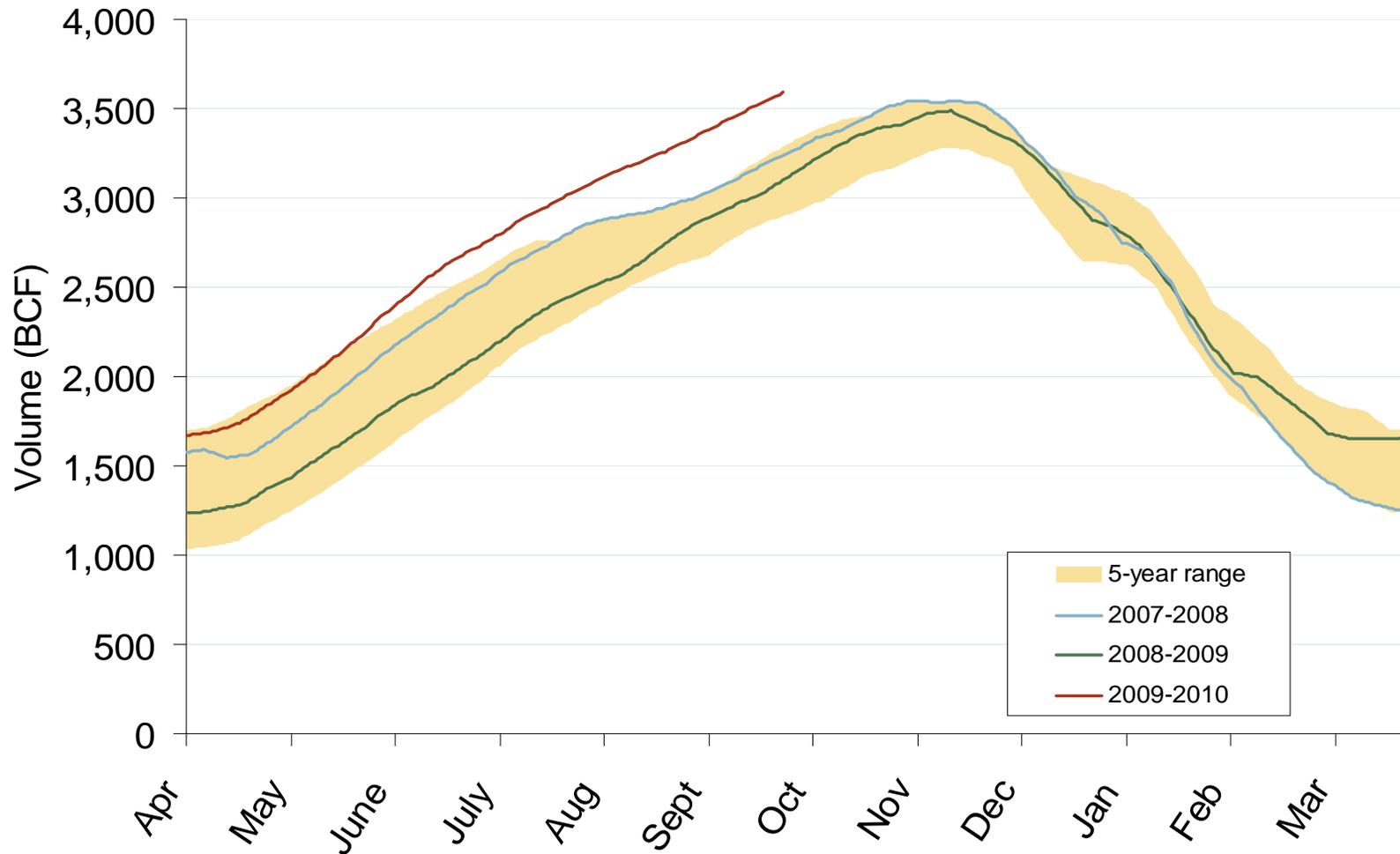


Source: Derived from *EIA and Bentek data*.

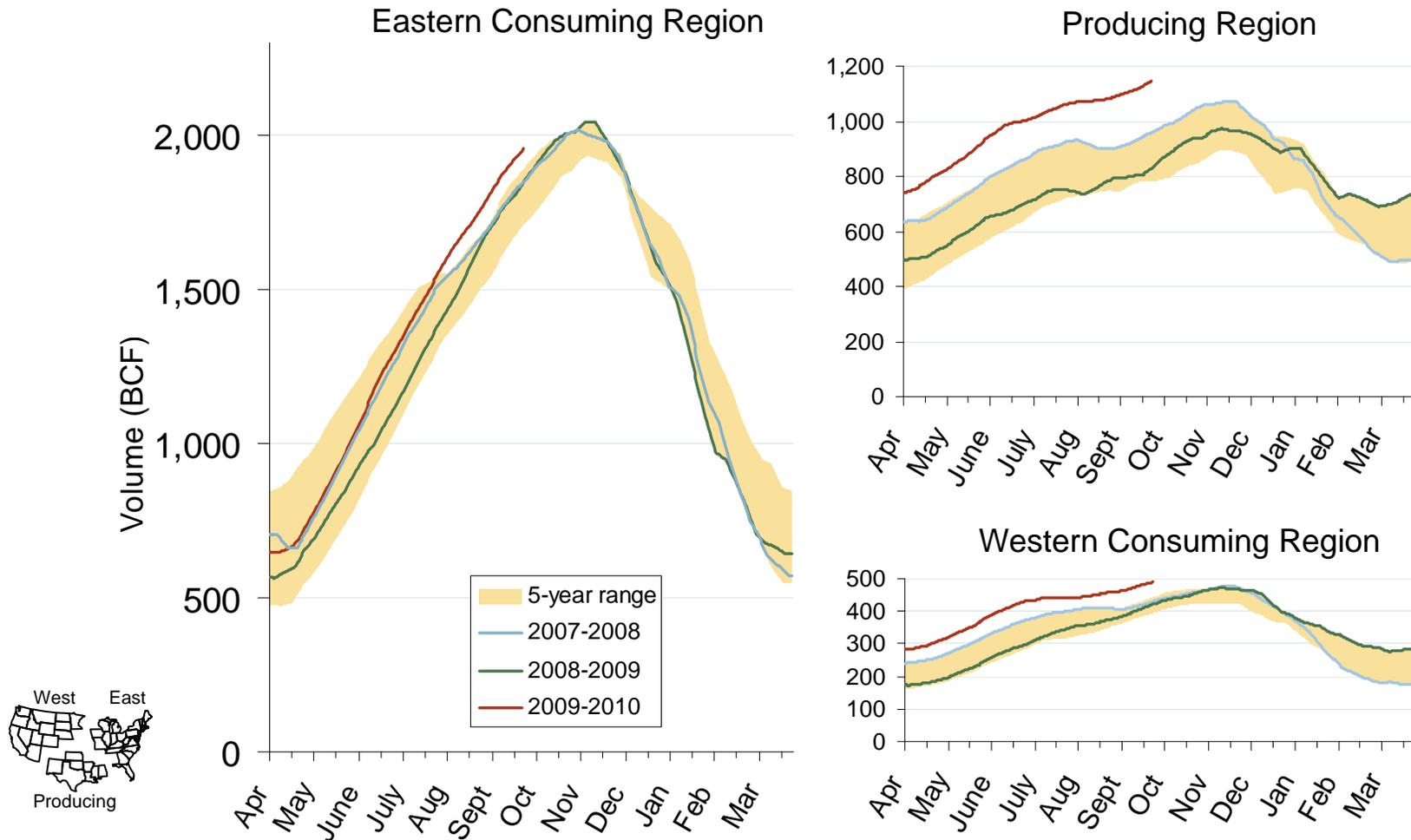
Canadian and LNG Natural Gas Imports



Total U.S. Working Gas in Storage



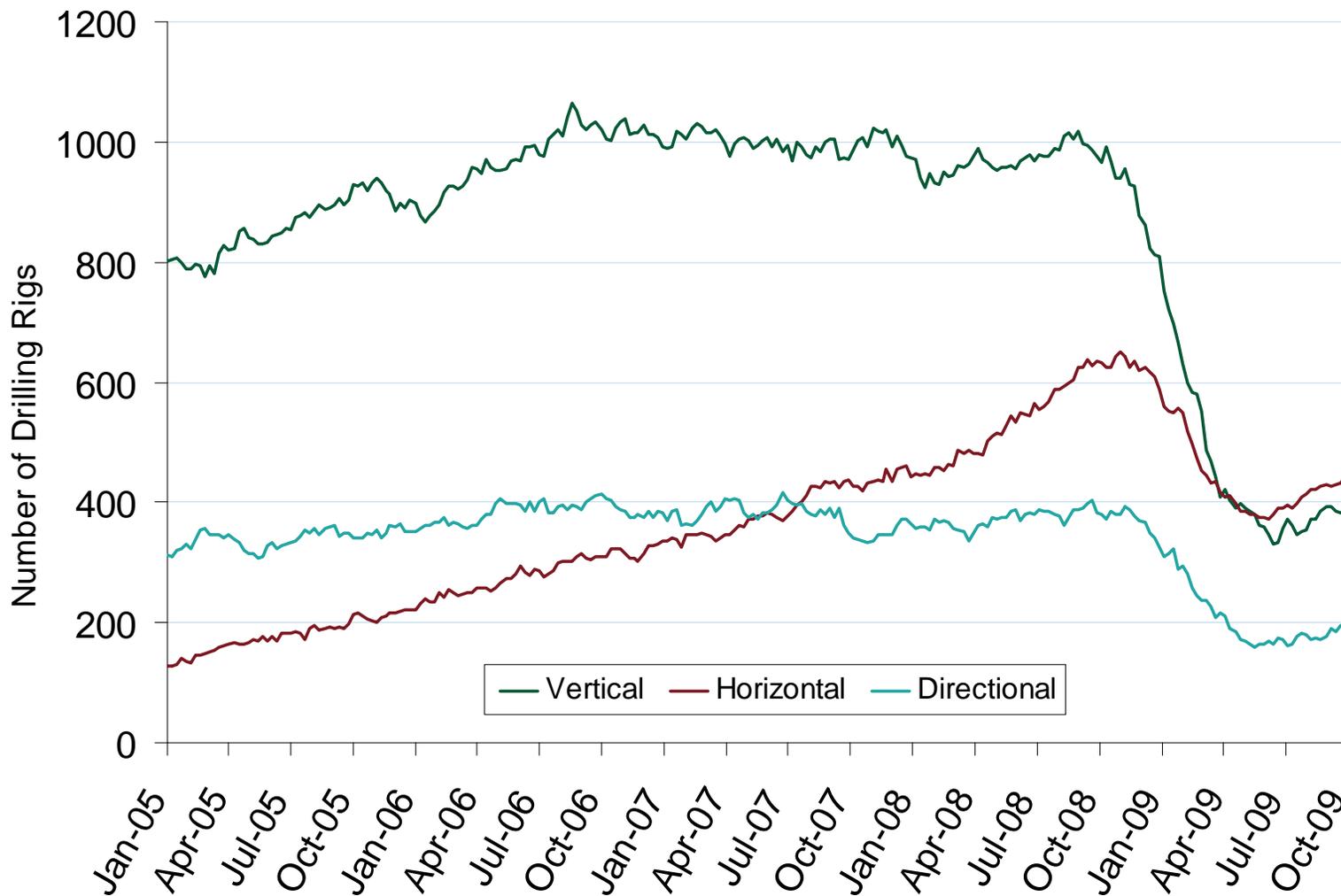
Regional Totals of Working Gas in Storage



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

Updated October 7, 2009

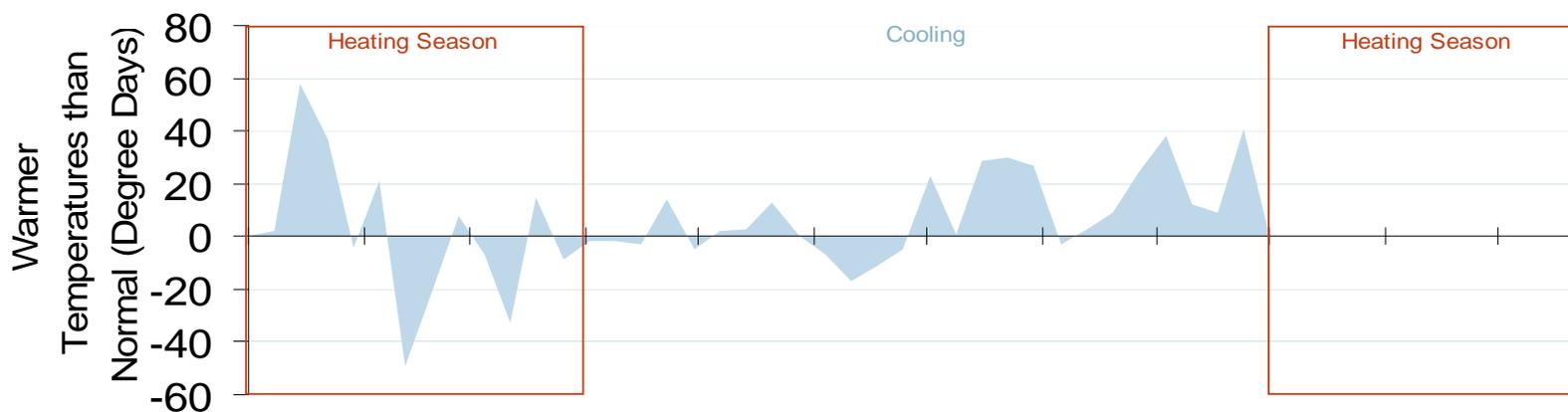
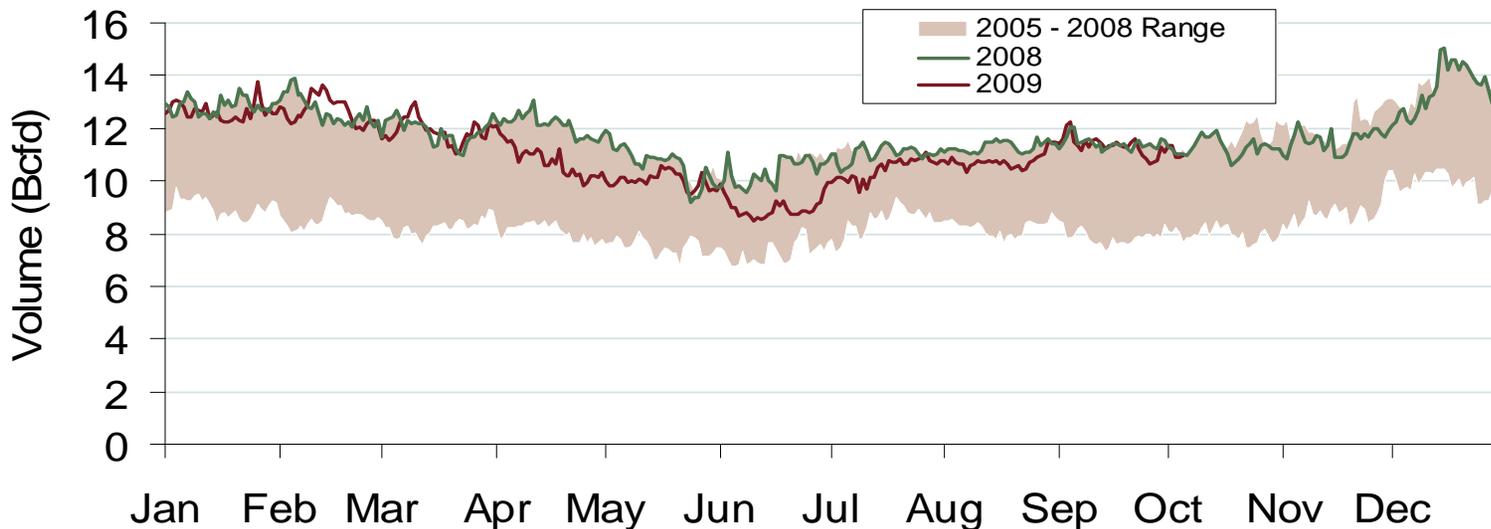
U.S. Oil and Natural Gas Drilling Rig Count by Type



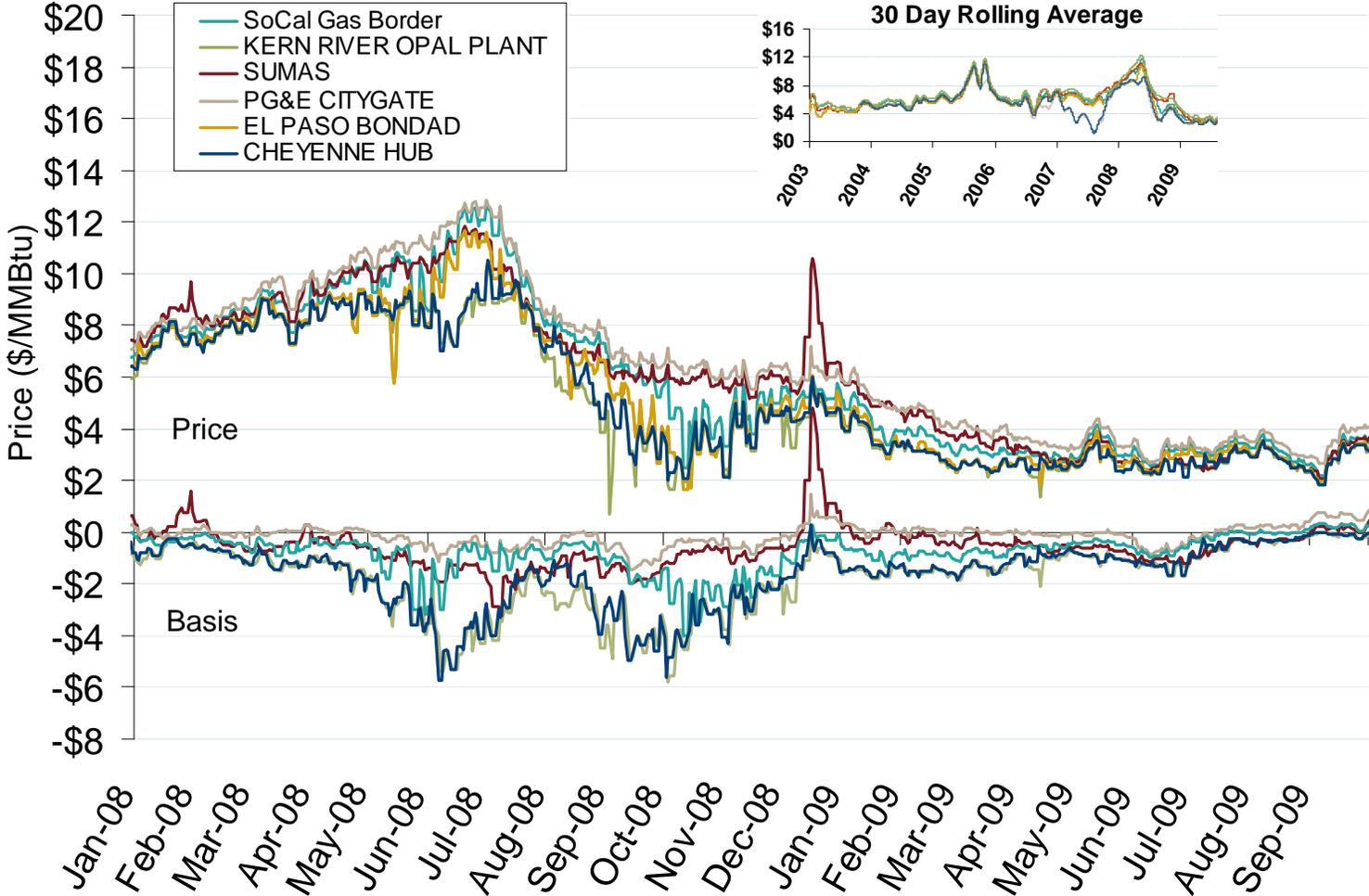
Source: Derived from *Platts* and *Baker Hughes* data.
 October 2009 Western Snapshot Report

Updated October 7, 2009

Daily Western Natural Gas Demand All Sectors



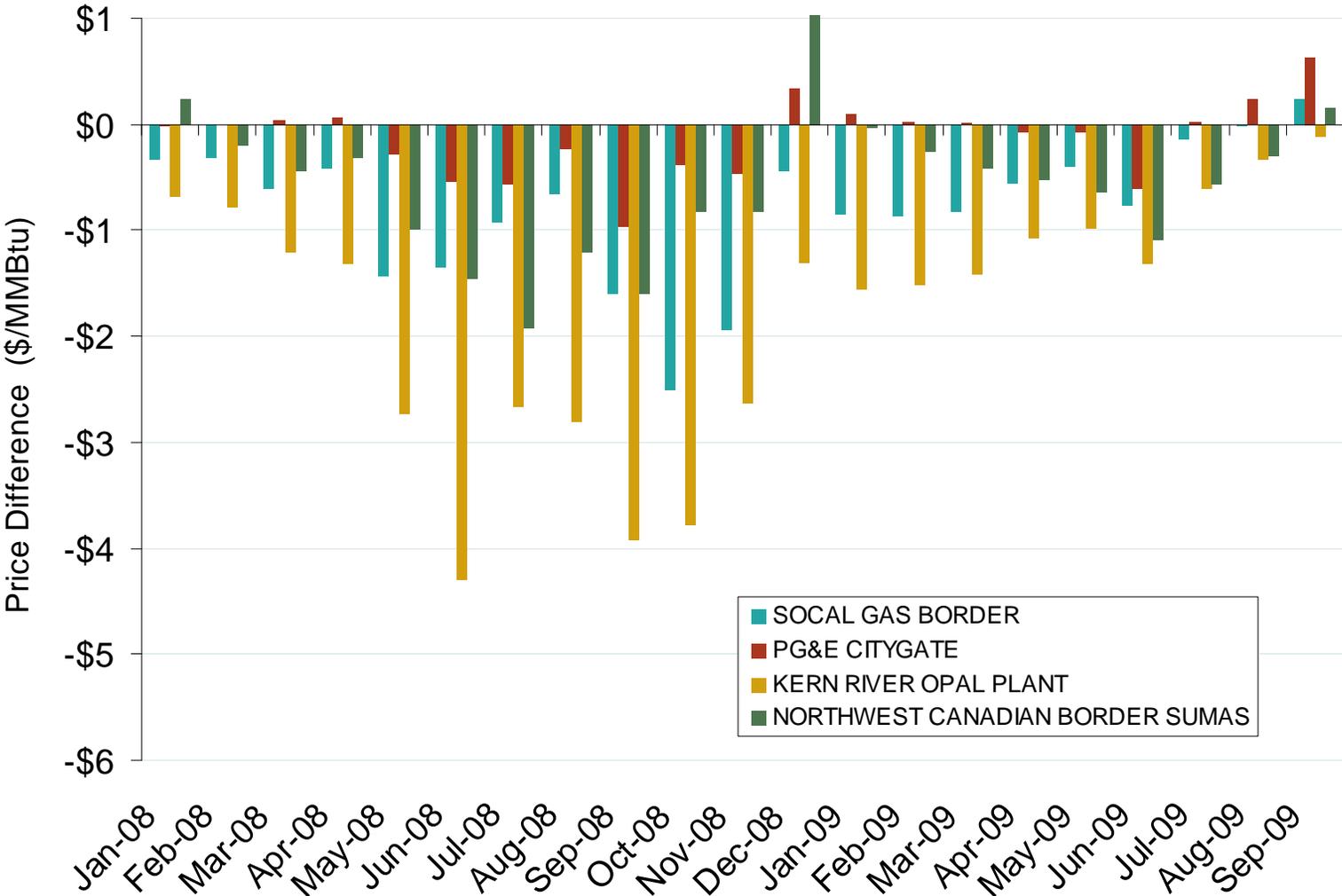
Western Day-Ahead Hub Spot Prices and Basis



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

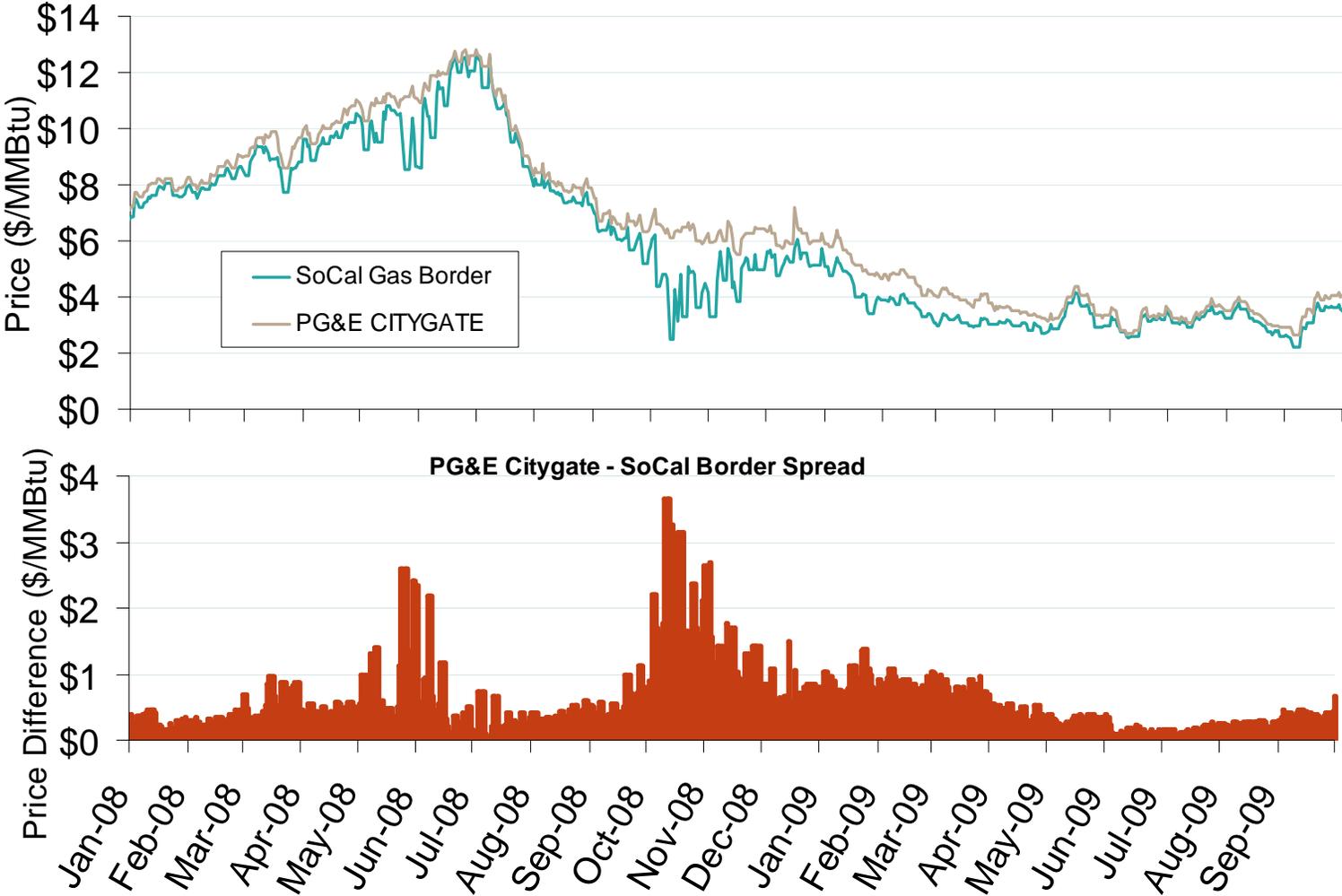
Updated October 7, 2009

Western Monthly Average Basis Value to Henry Hub



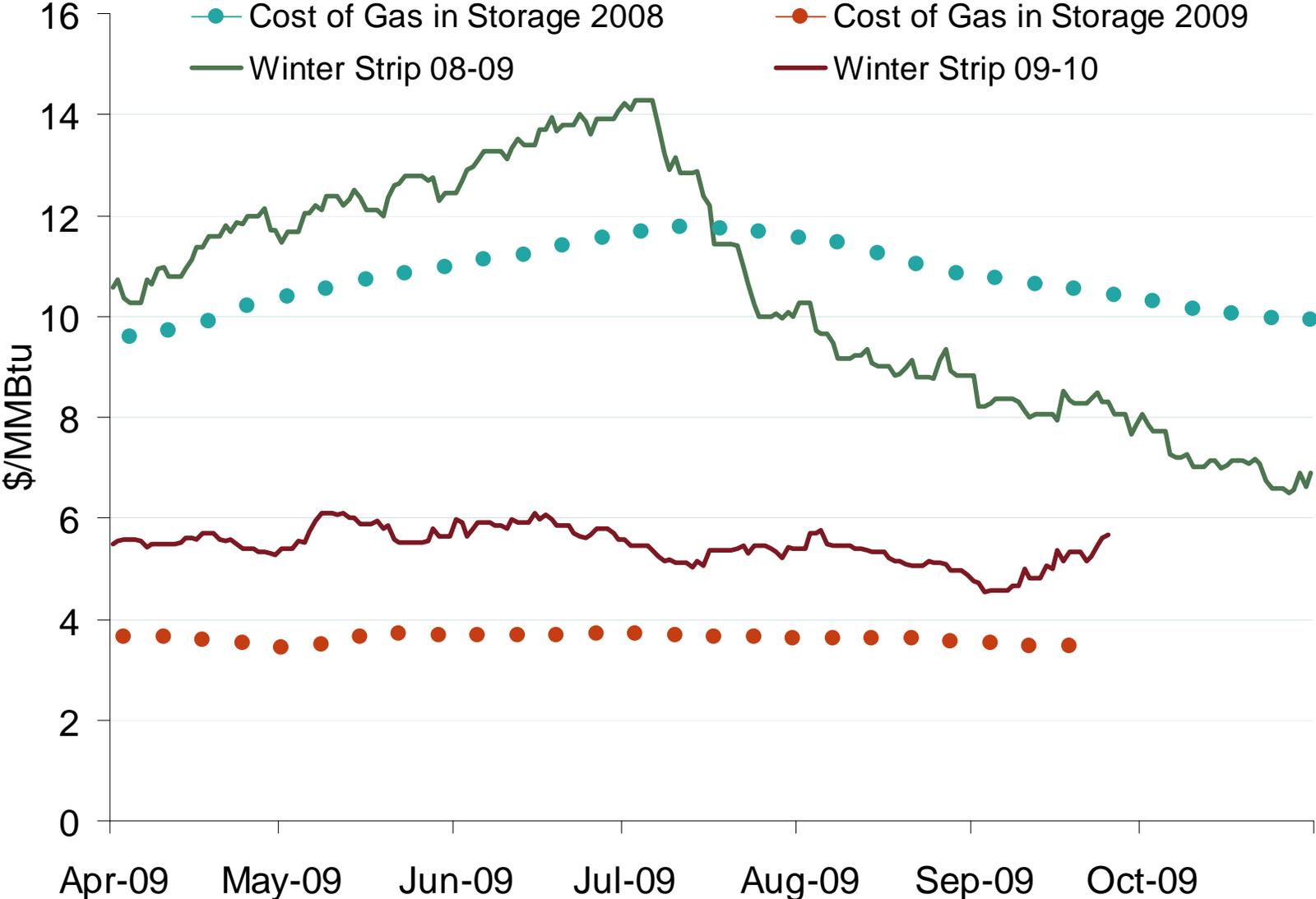
Source: Derived from *Platts* data.
October 2009 Western Snapshot Report

Difference in Northern and Southern California Daily Spot Prices



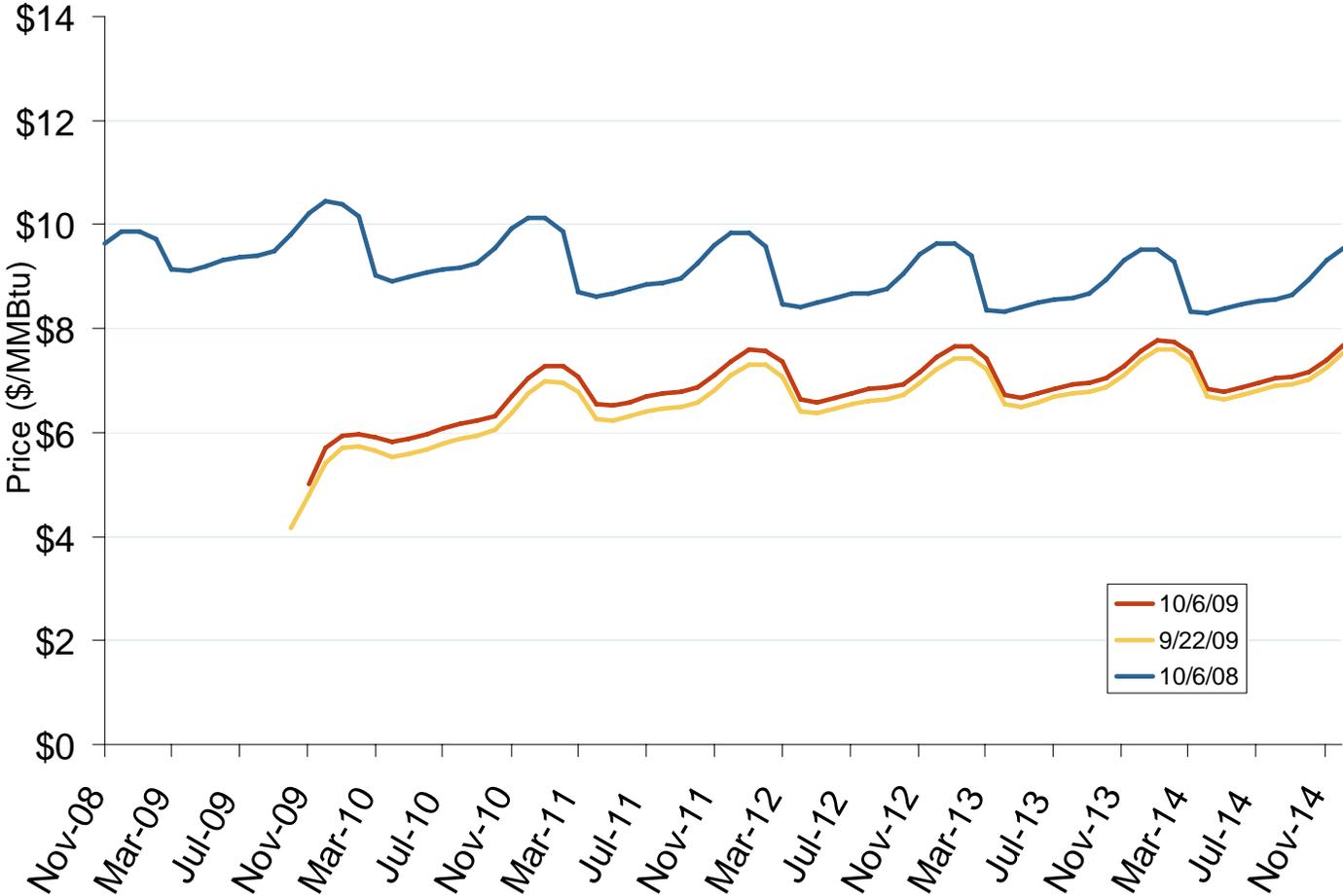
Source: Derived from *Platts* data.
October 2009 Western Snapshot Report

Winter Forwards Lower Than Last Year



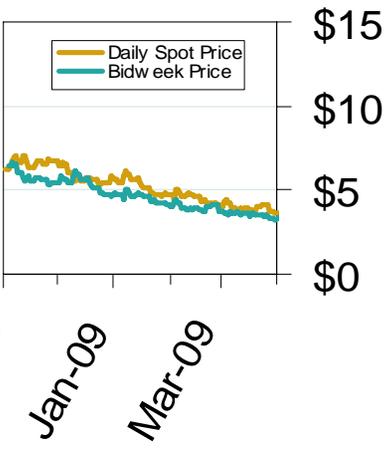
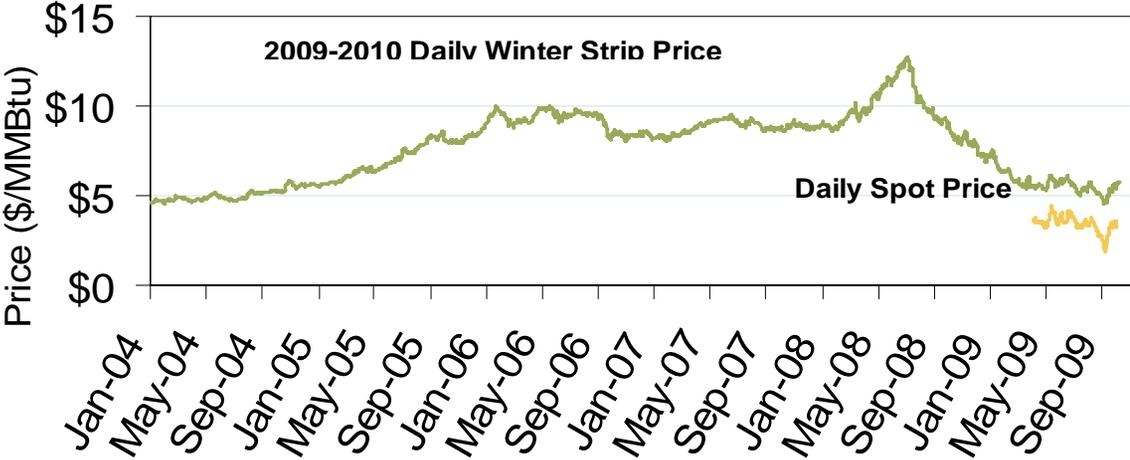
Source: Derived from NYMEX Clearport
October 2009 Western Snapshot Report

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.

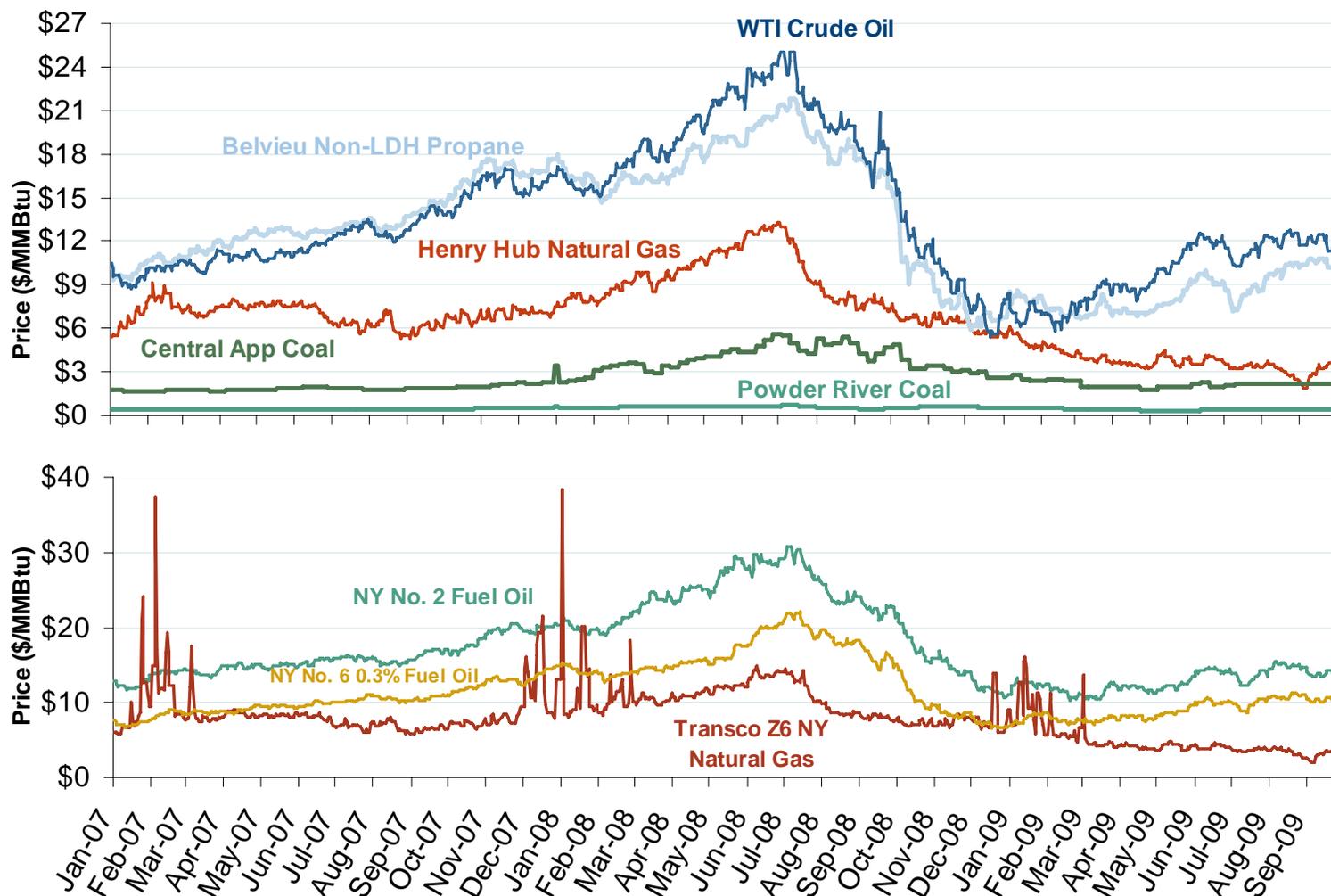
Natural Gas Winter Futures Strip and Daily Henry Hub Spot and Bidweek Prices



Source: Derived from *Platts* and *Nymex* data.
October 2009 Western Snapshot Report

Updated October 7, 2009

Oil, Coal, Natural Gas and Propane Daily Spot Prices

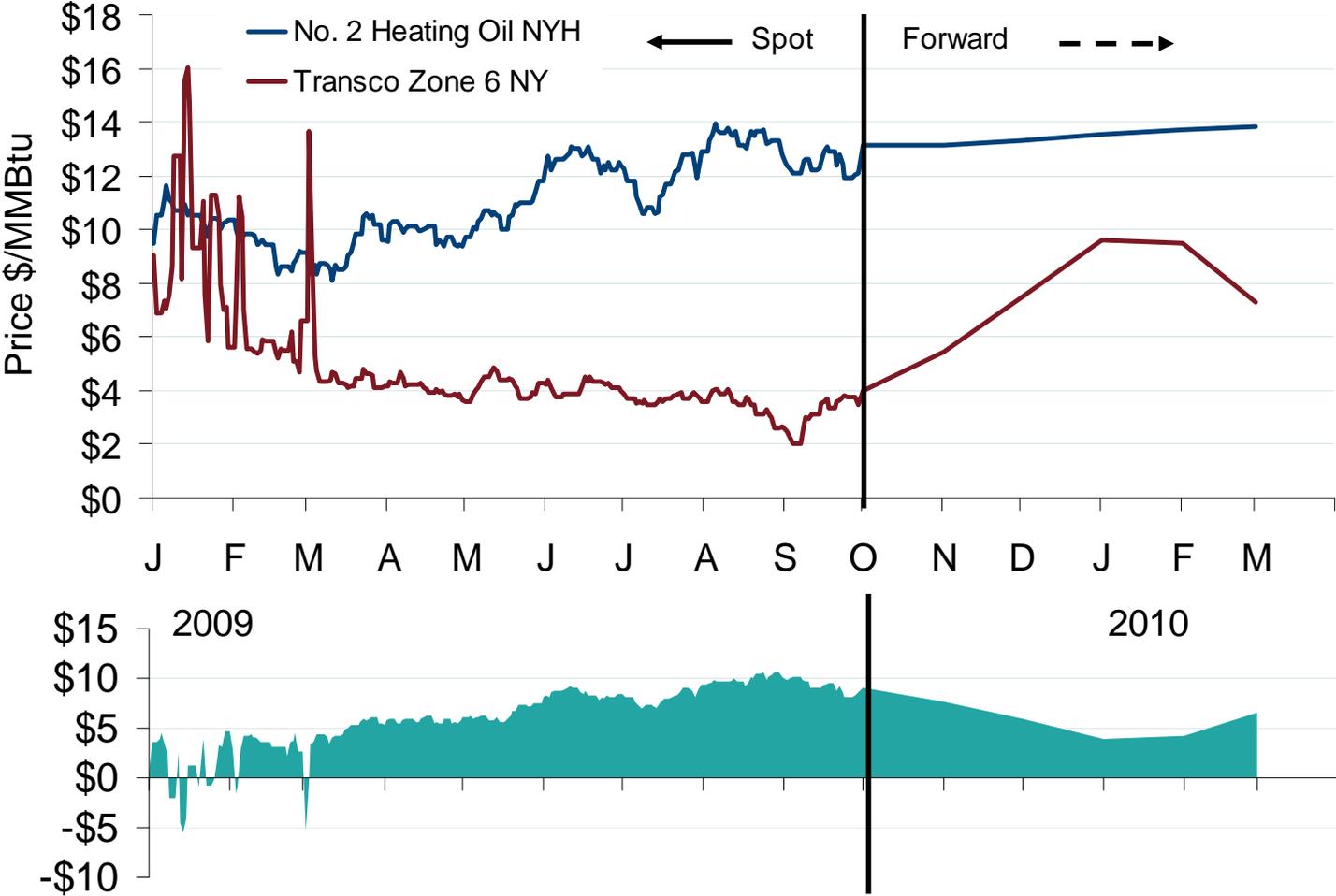


Source: Derived from *ICE* and *Bloomberg* data.

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

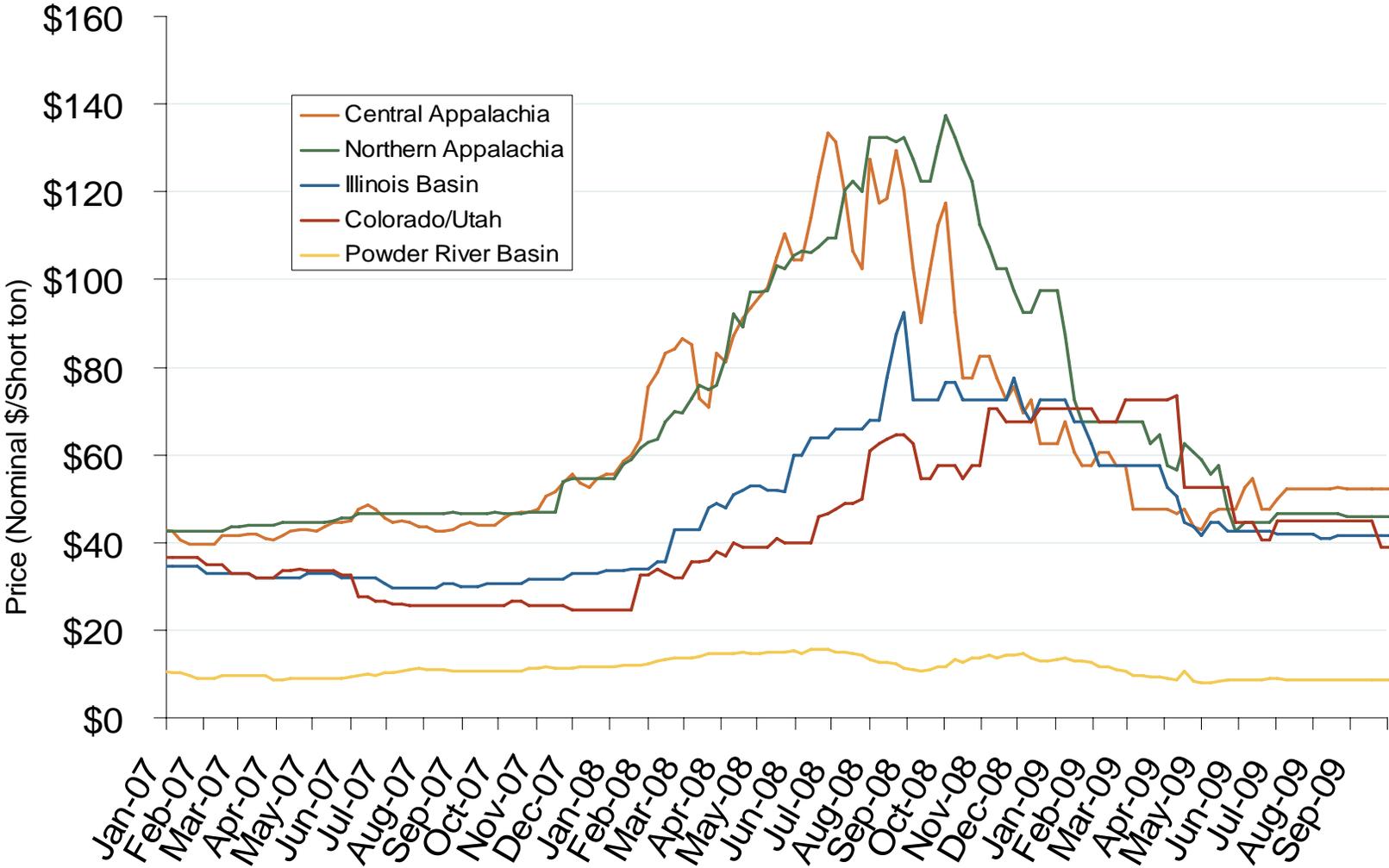
Northeast Heating Oil vs. Natural Gas Spread



Source: Derived from ICE & NYMEX Clearport

Updated October 5, 2009

Regional Coal Spot Prices

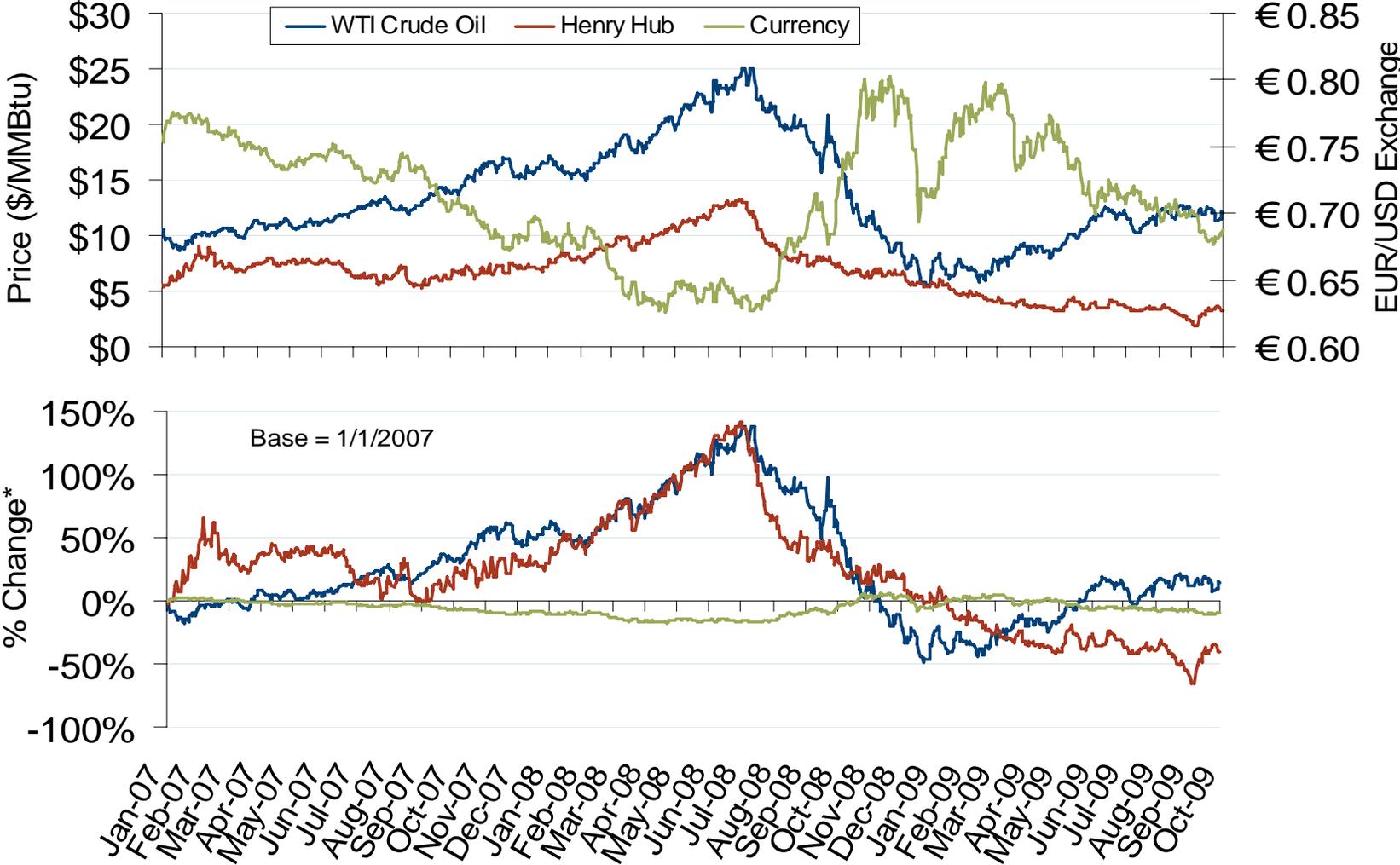


Note: Does not reflect the delivered price of coal; excludes incremental cost of emissions allowances.

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

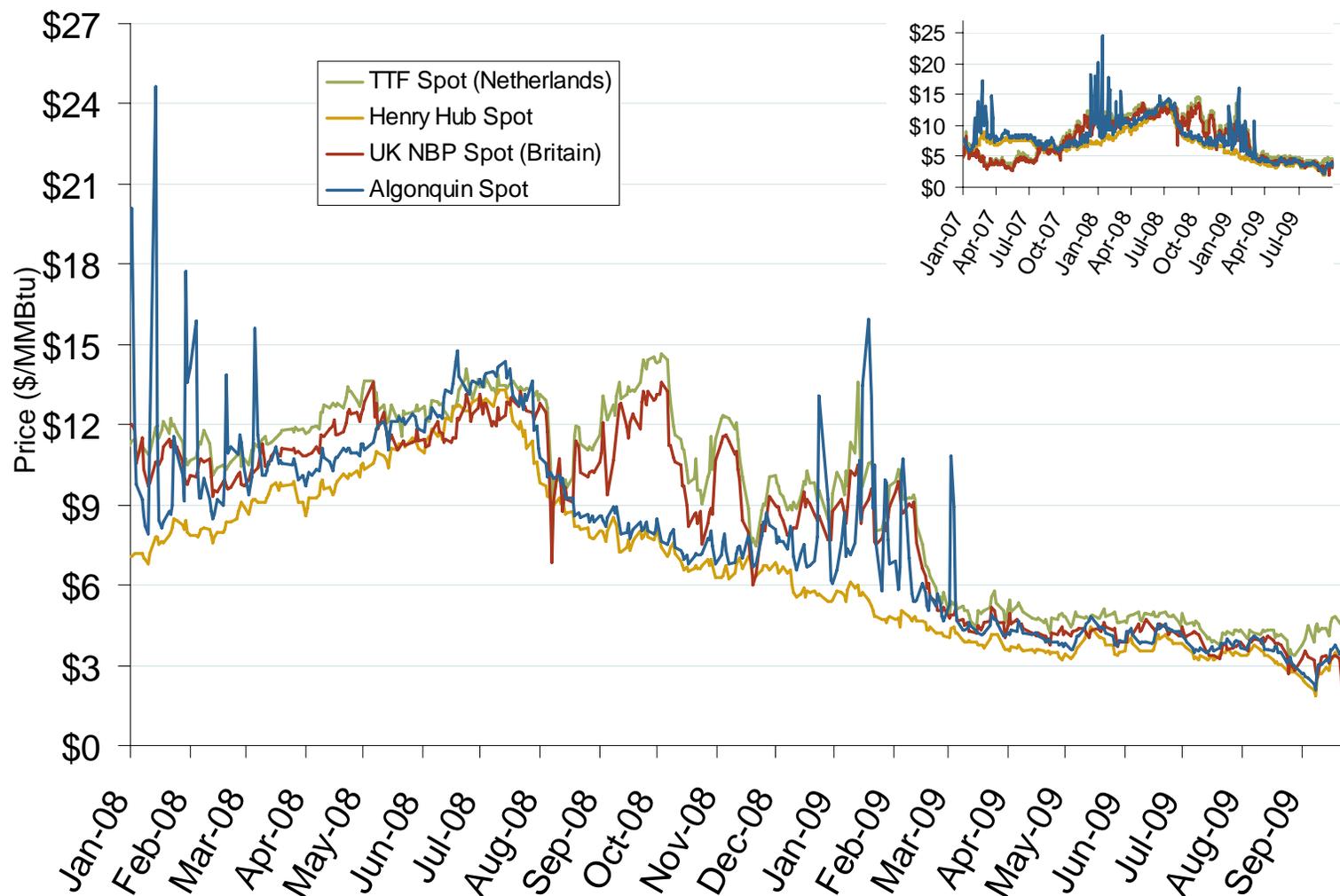
Updated October 7, 2009

Oil, Natural Gas and Currency Spot Prices



Source: Derived from *Bloomberg* data.

Atlantic Basin European and US Spot Natural Gas Prices



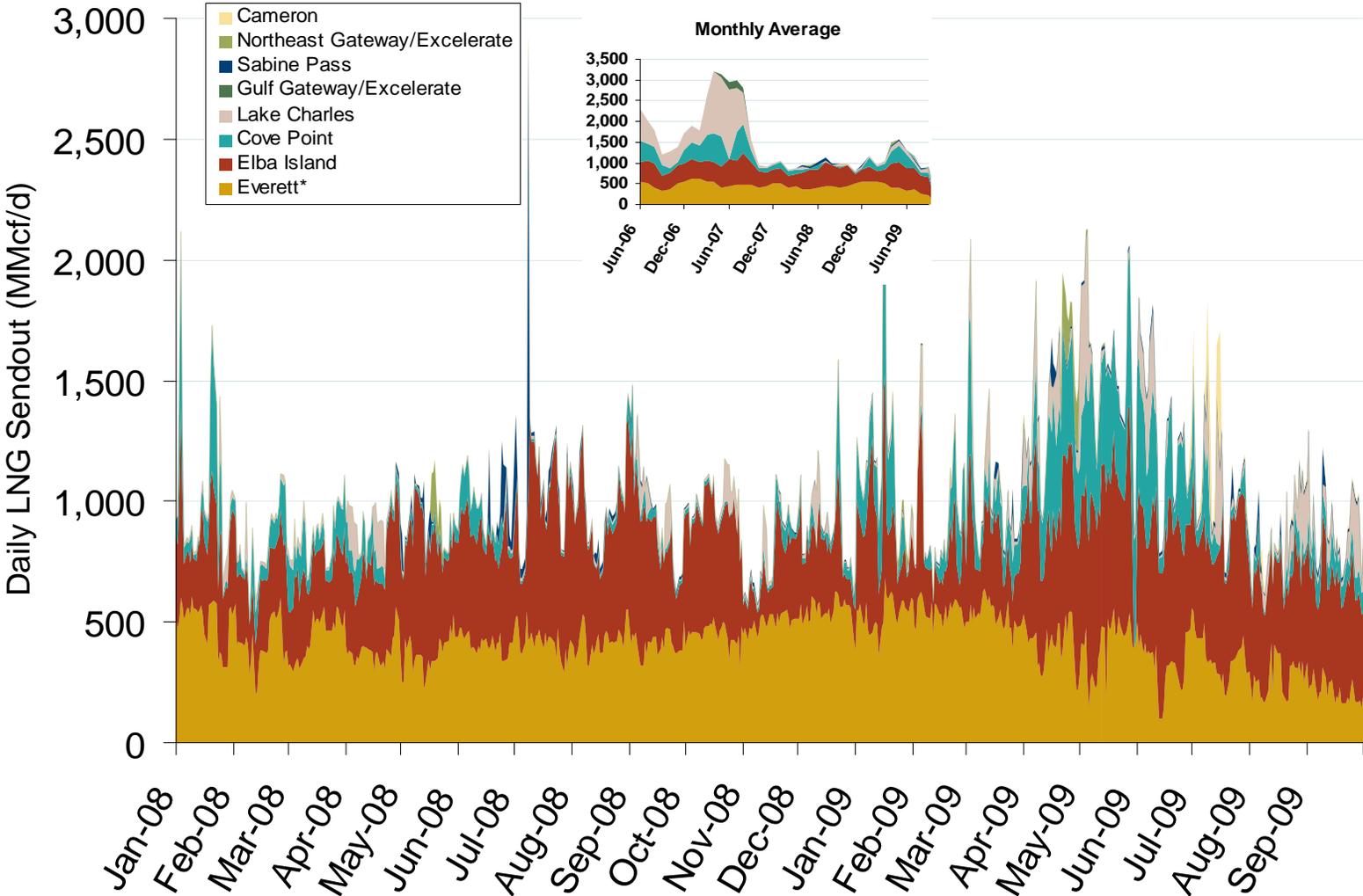
World LNG Estimated October 2009 Landed Prices



Source: Waterborne Energy, Inc. Data in \$US/MMBtu.
October 2009 Western Snapshot Report

Updated October 7, 2009

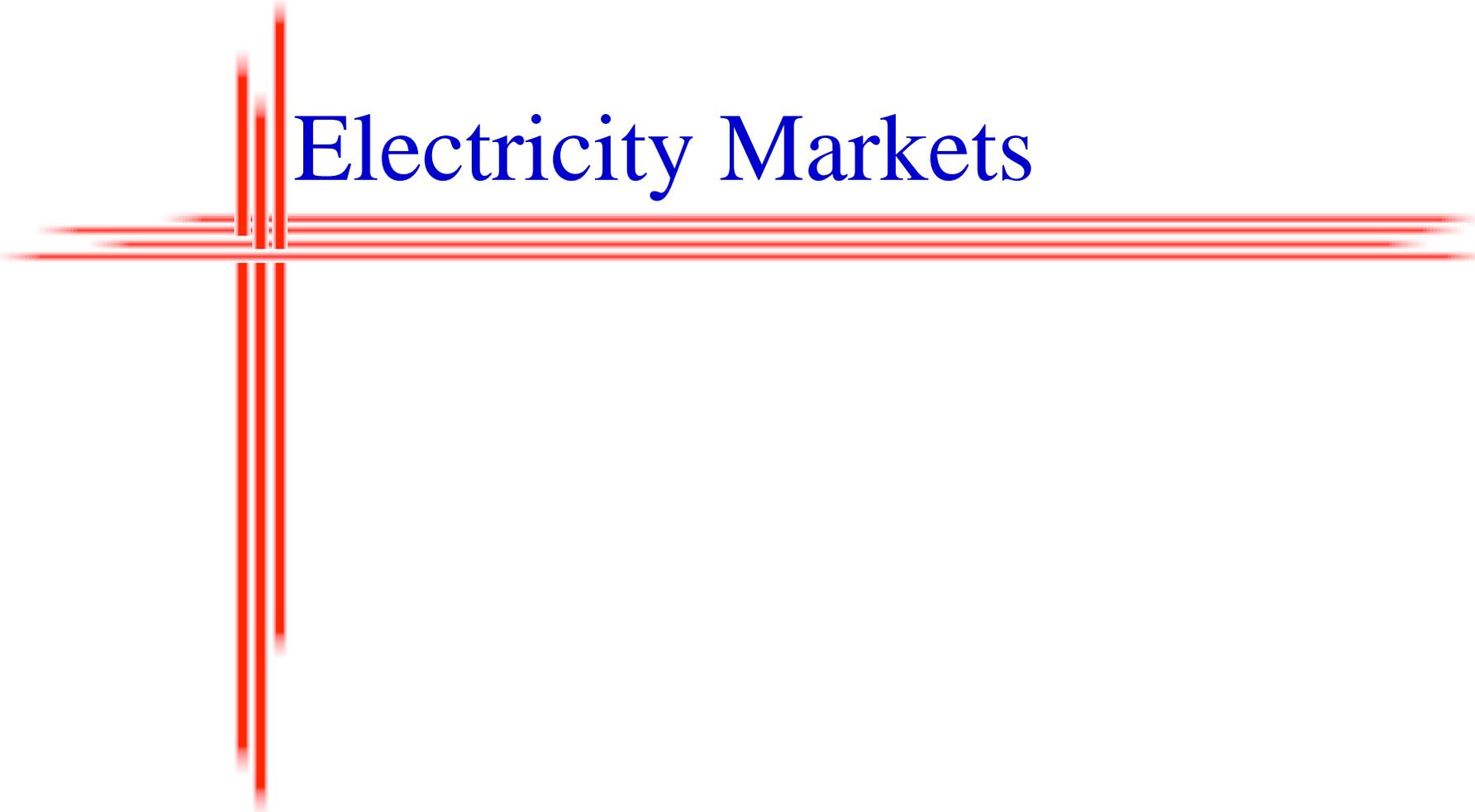
Daily Gas Sendout from Existing U.S. LNG Facilities



Source: Derived from Bentek data.

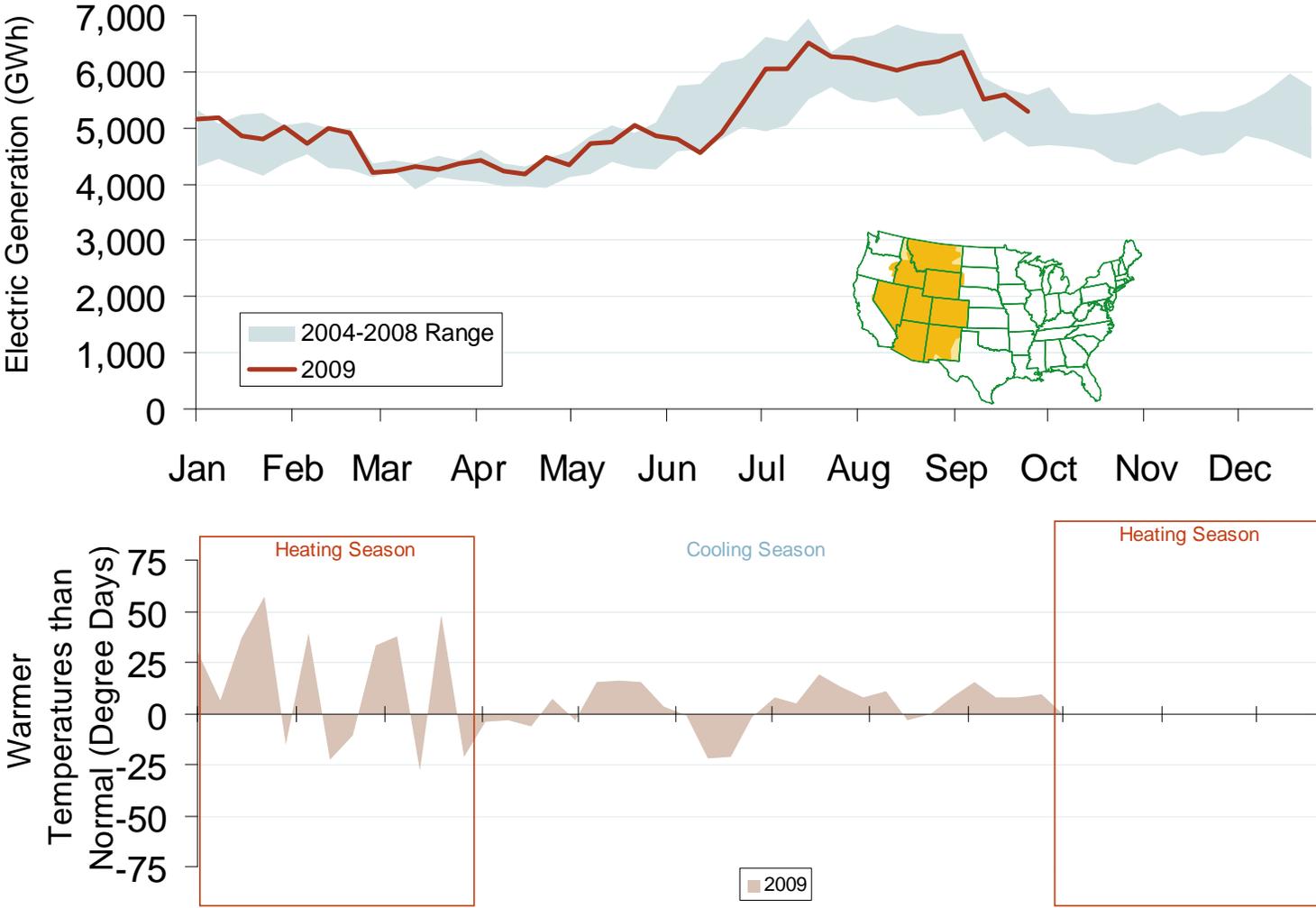
* Everett data includes flows onto the AGT and TGP interstate lines, plus estimates of flows to the Mystic 7 power plant, Keyspan Boston Gas, and LNG trucked out of the terminal. Excludes Freeport LNG which flows via intrastate pipelines.

Updated October 7, 2009



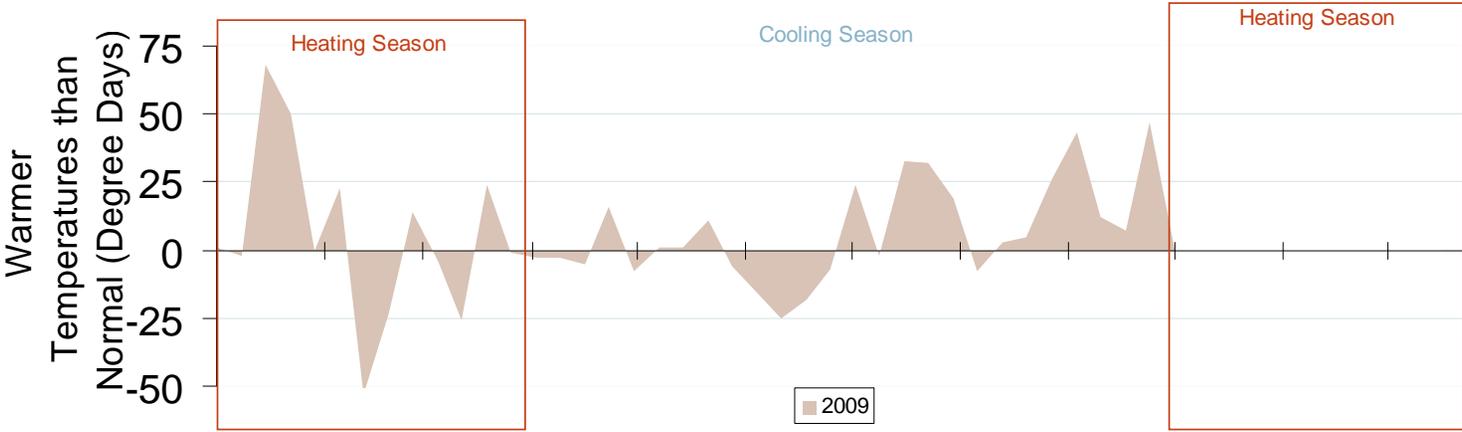
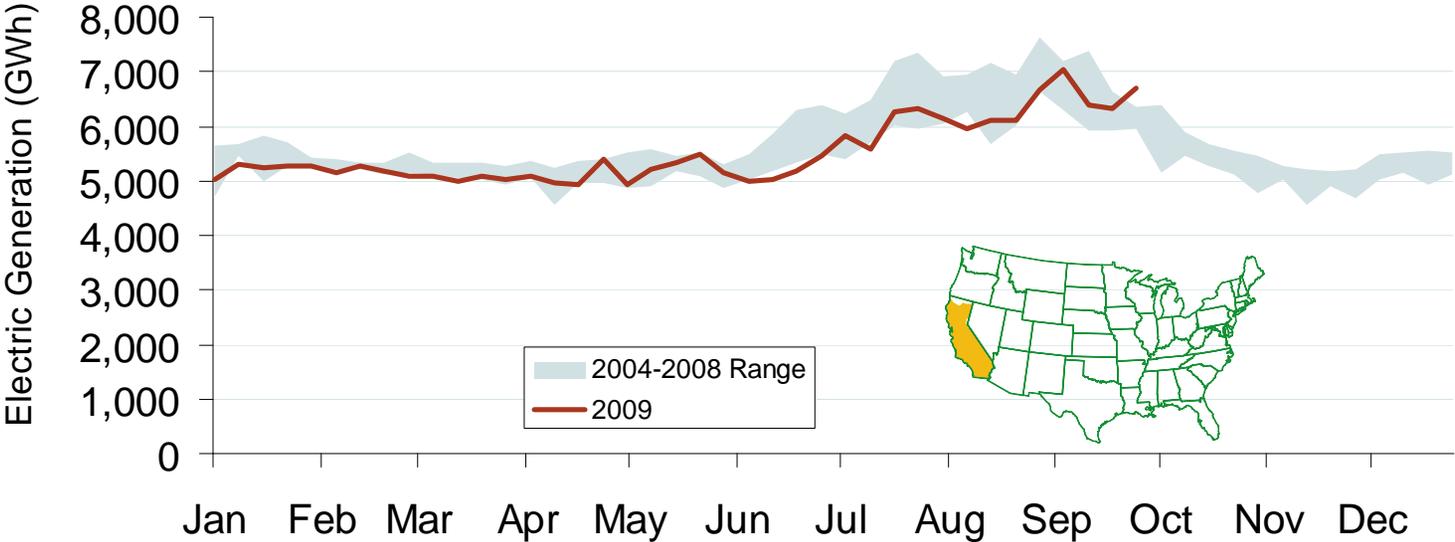
Electricity Markets

Weekly Electric Generation Output and Temperatures Rocky Mountains Region



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

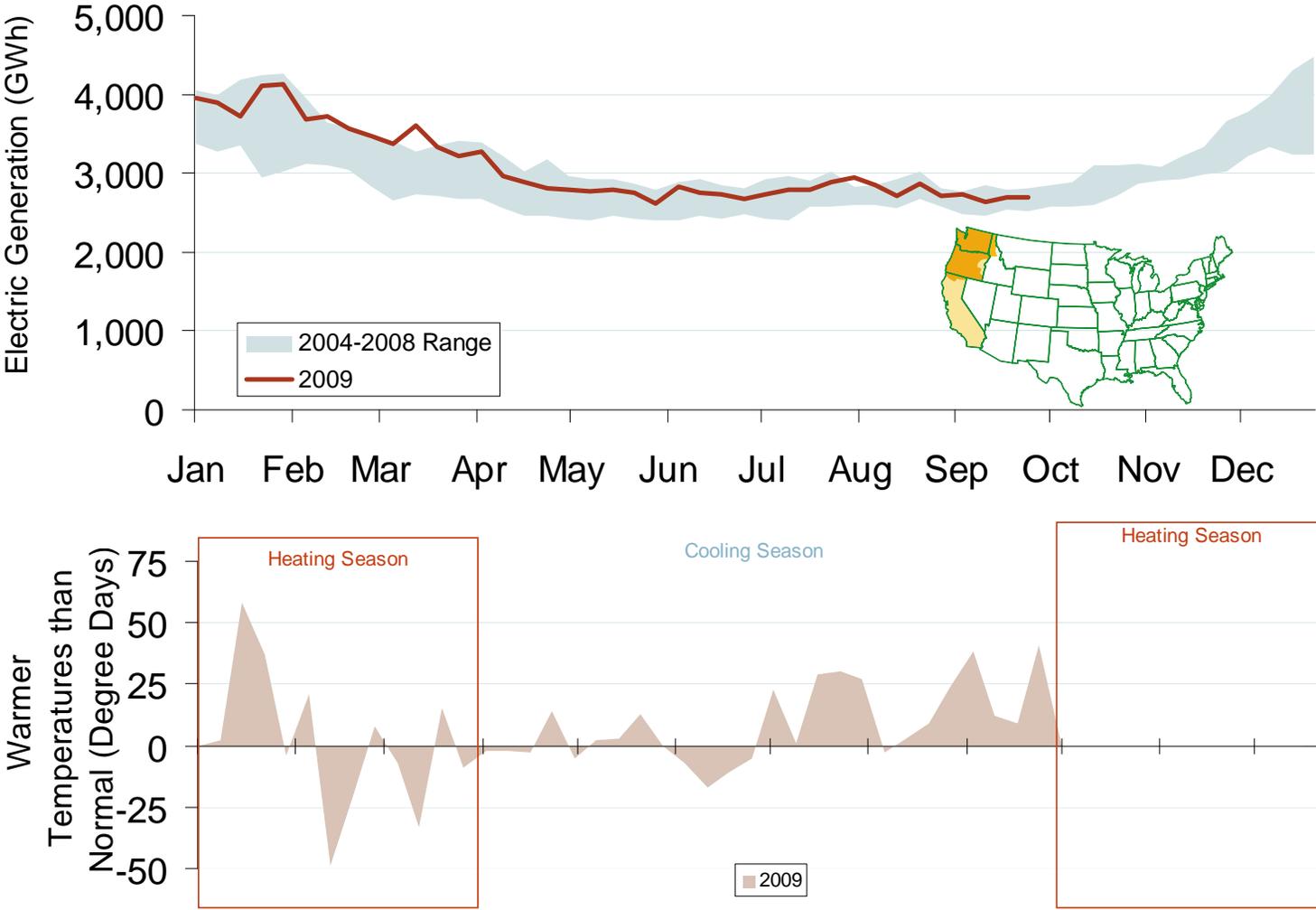
Weekly Electric Generation Output and Temperatures California



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

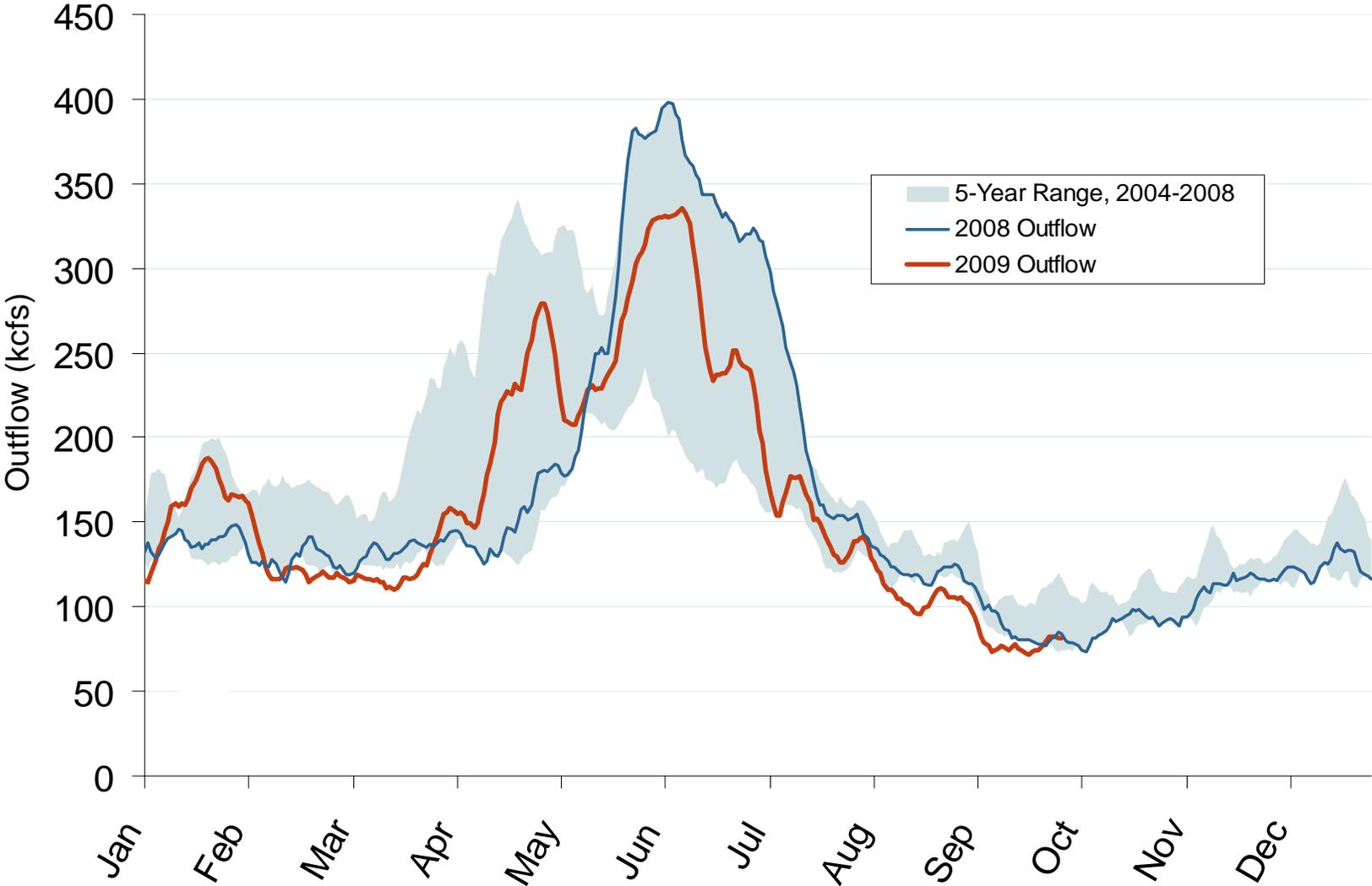
Updated October 7, 2009

Weekly Electric Generation Output and Temperatures Pacific Northwest Region



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

Stream Flow at The Dalles Dam



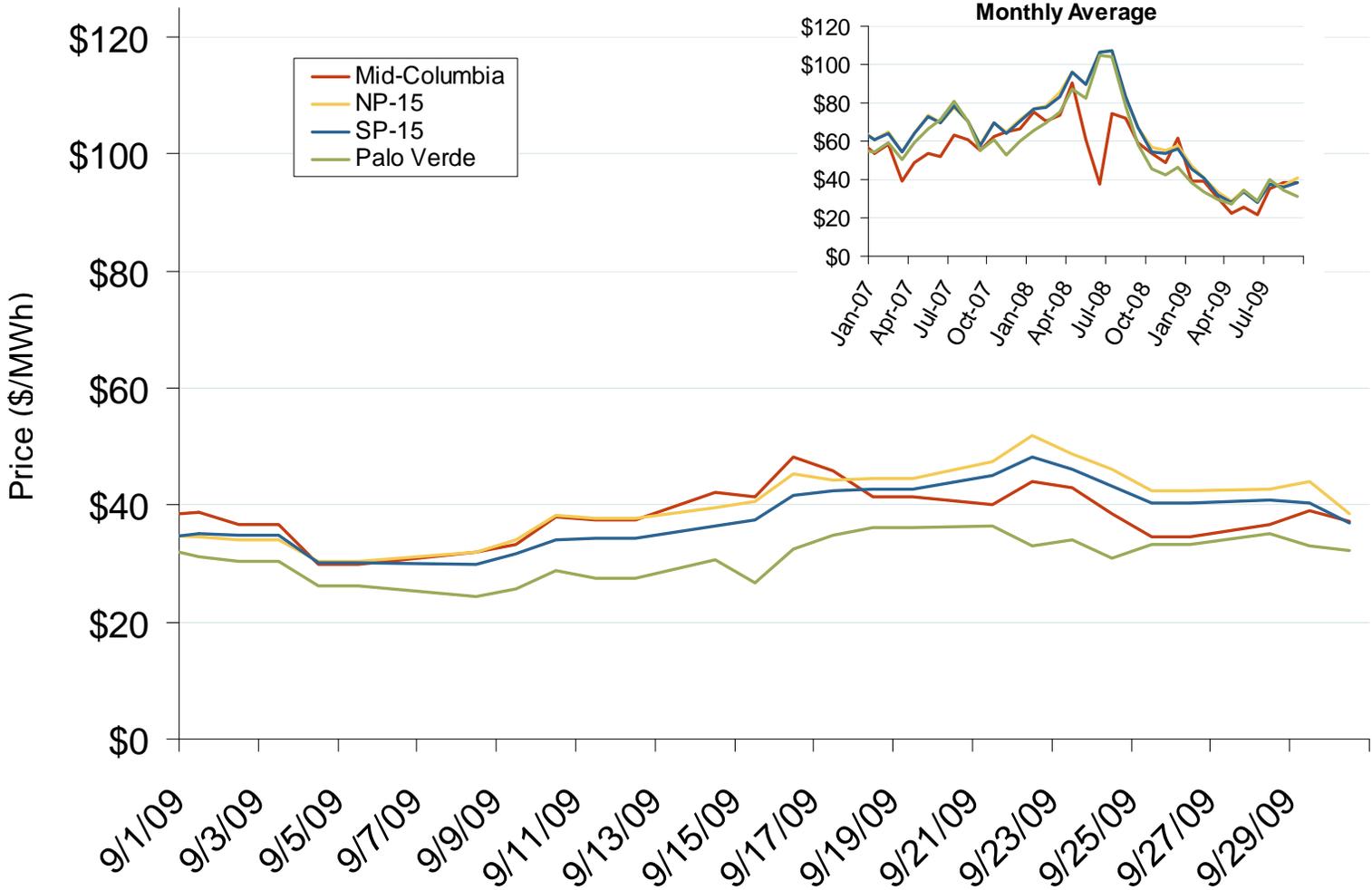
Source: Derived from USACE data.

Trend lines are 7-day moving averages.

October 2009 Western Snapshot Report

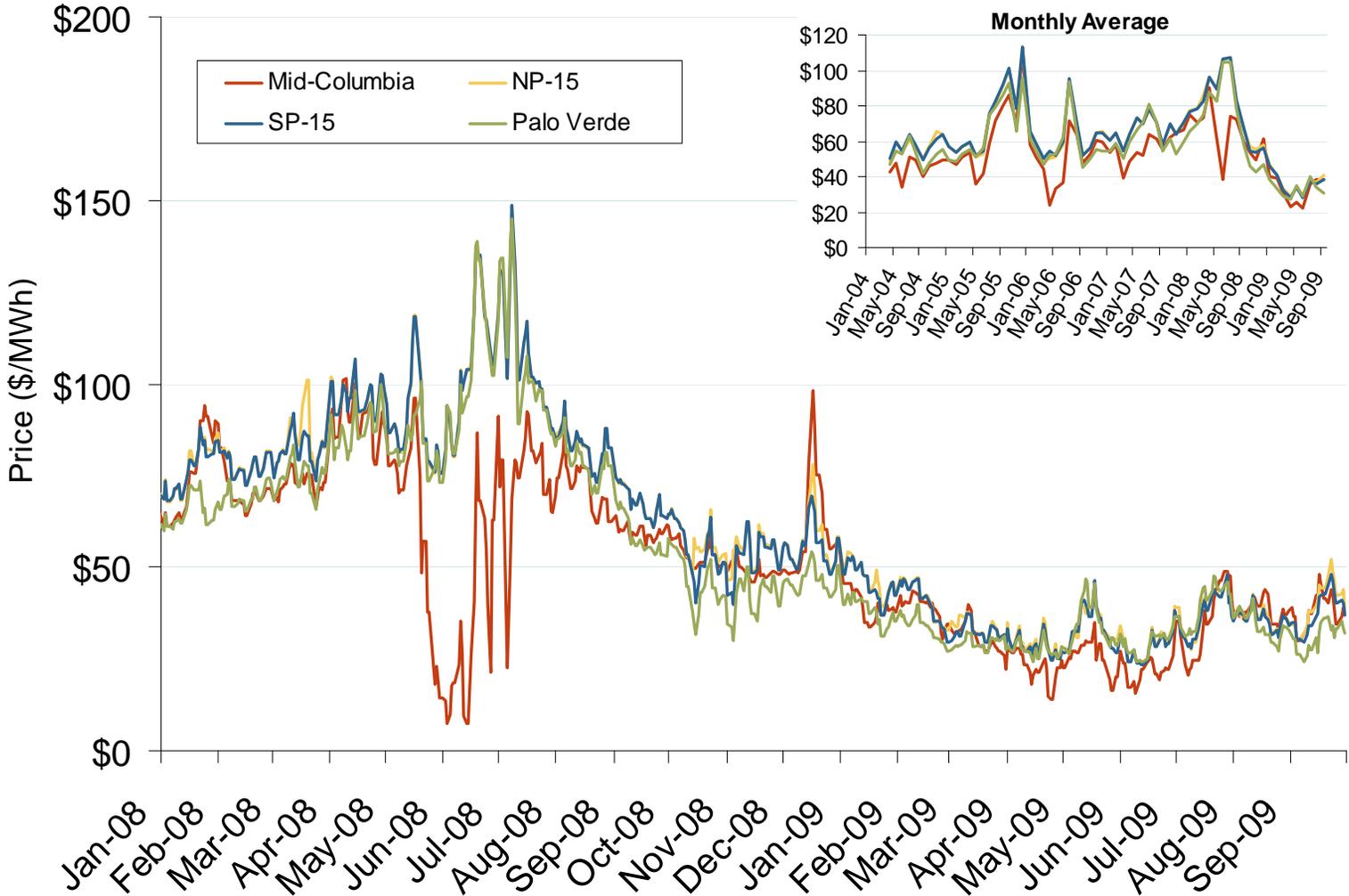
Updated October 7, 2009

Western Daily Bilateral Day-Ahead On-Peak Prices



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

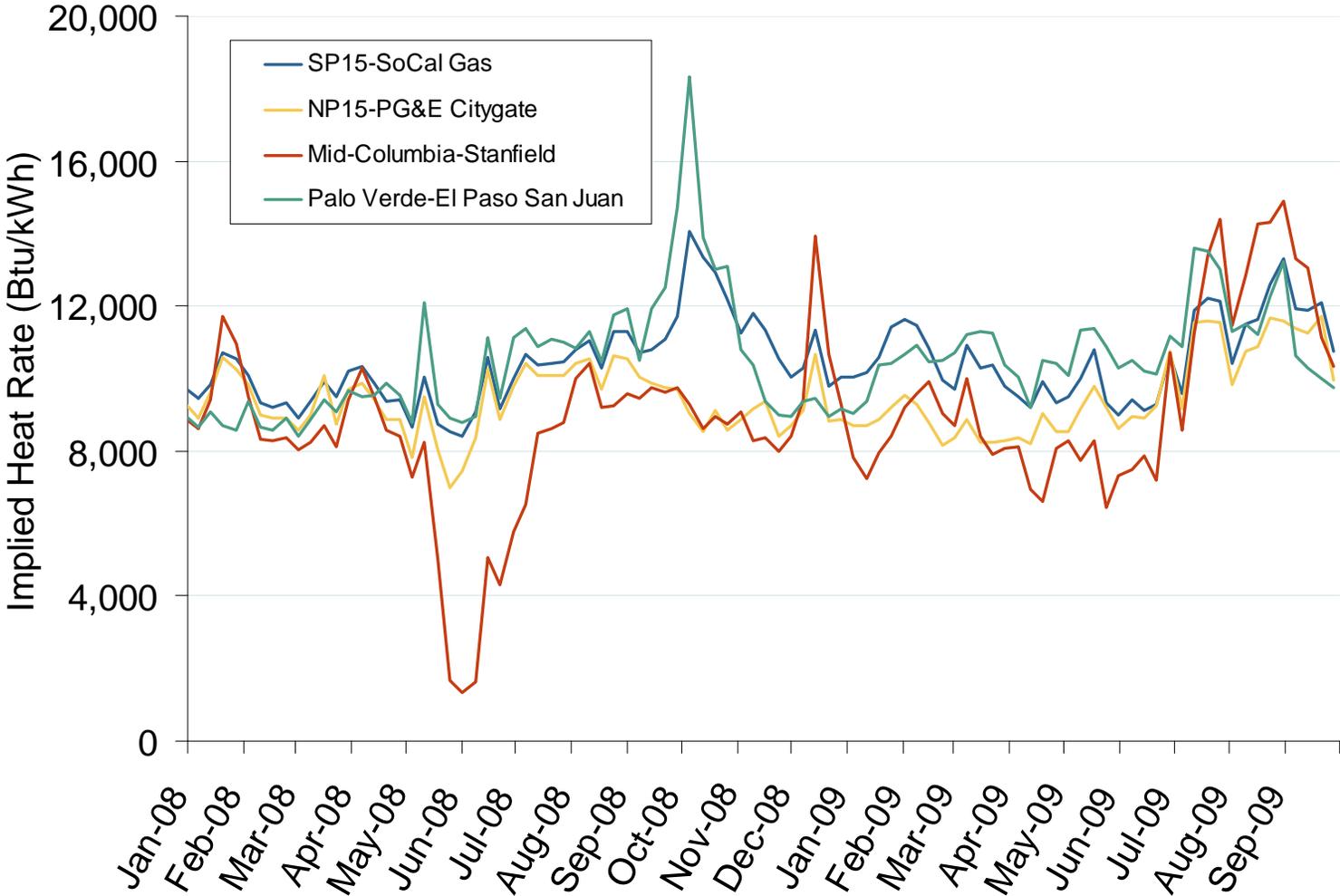
Western Daily Bilateral Day-Ahead On-Peak Prices



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

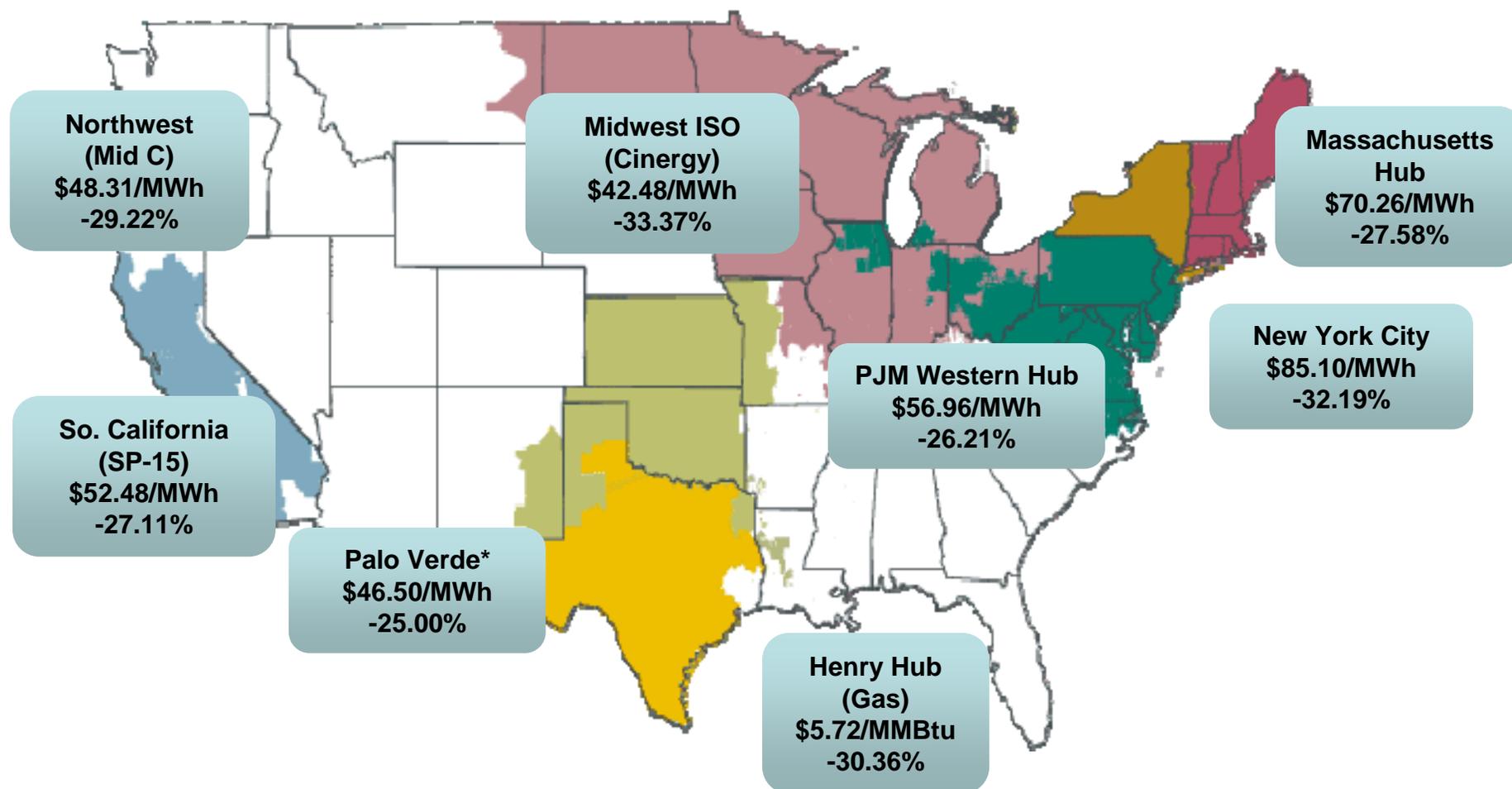
Updated October 7, 2009

Implied Heat Rates at Western Trading Points Weekly Averages



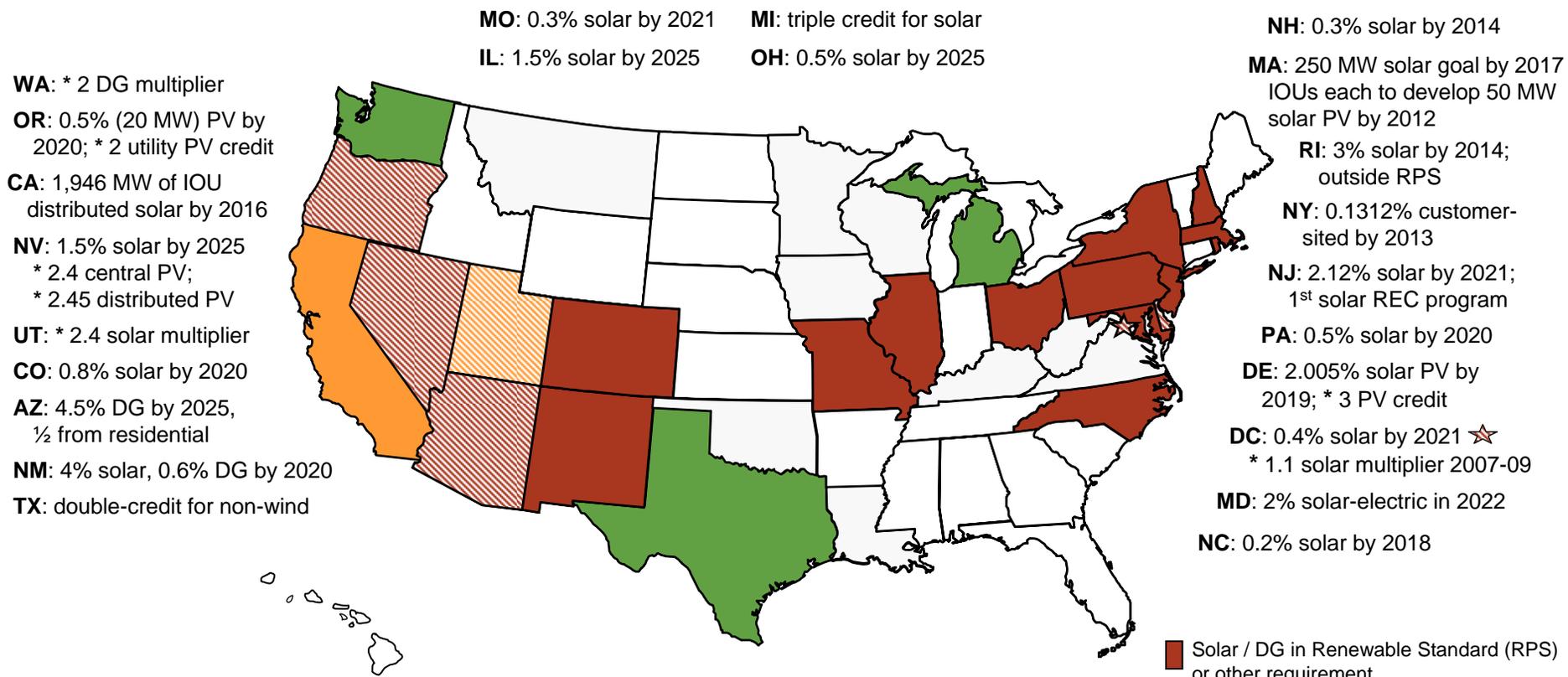
Source: Derived from *Platts* on-peak electric and natural gas price data.
October 2009 Western Snapshot Report

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.

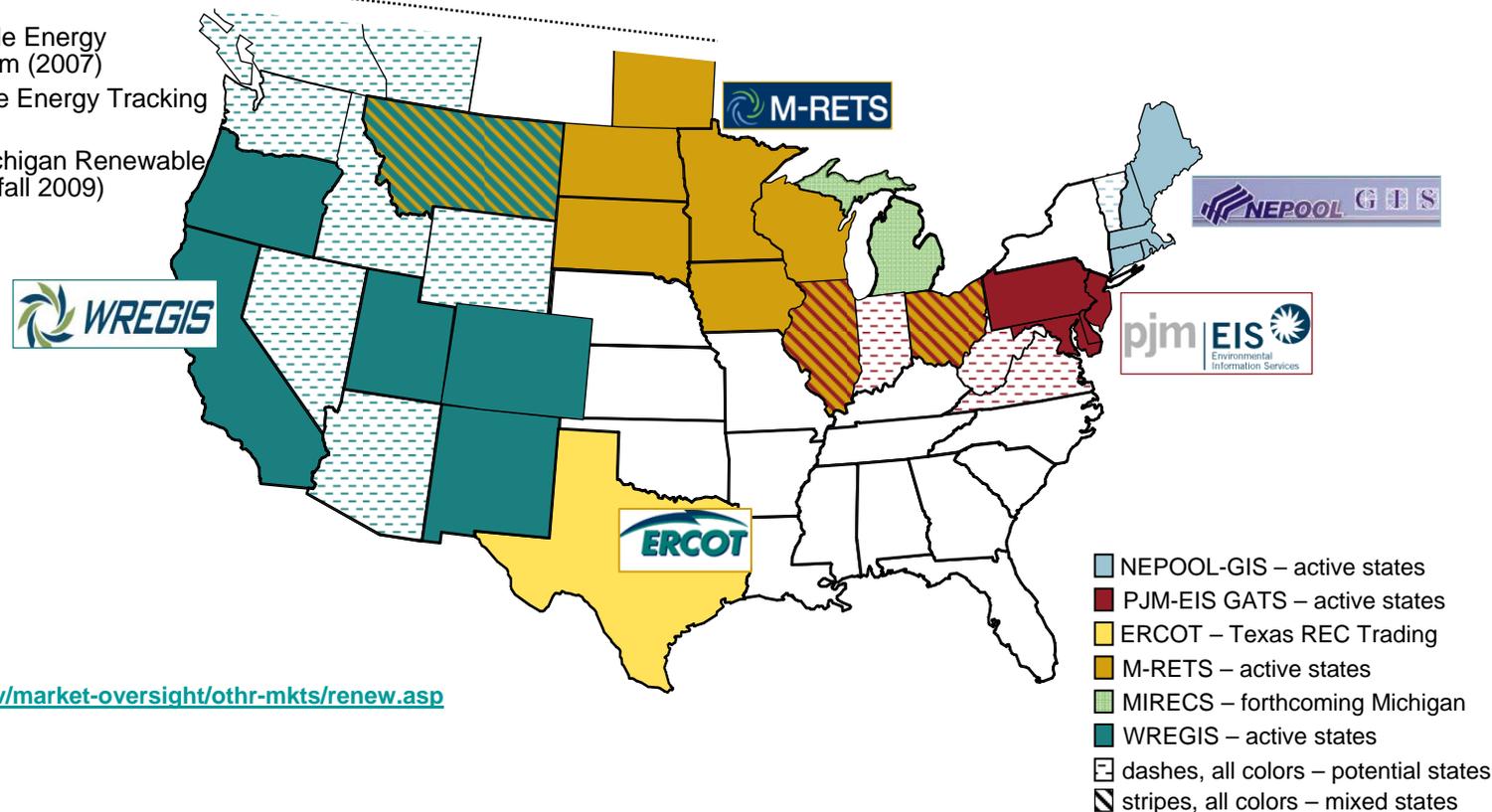
Abbreviations: DG – Distributed Generation; PV – solar photo-voltaic; RPS – Renewable Portfolio Standard

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;

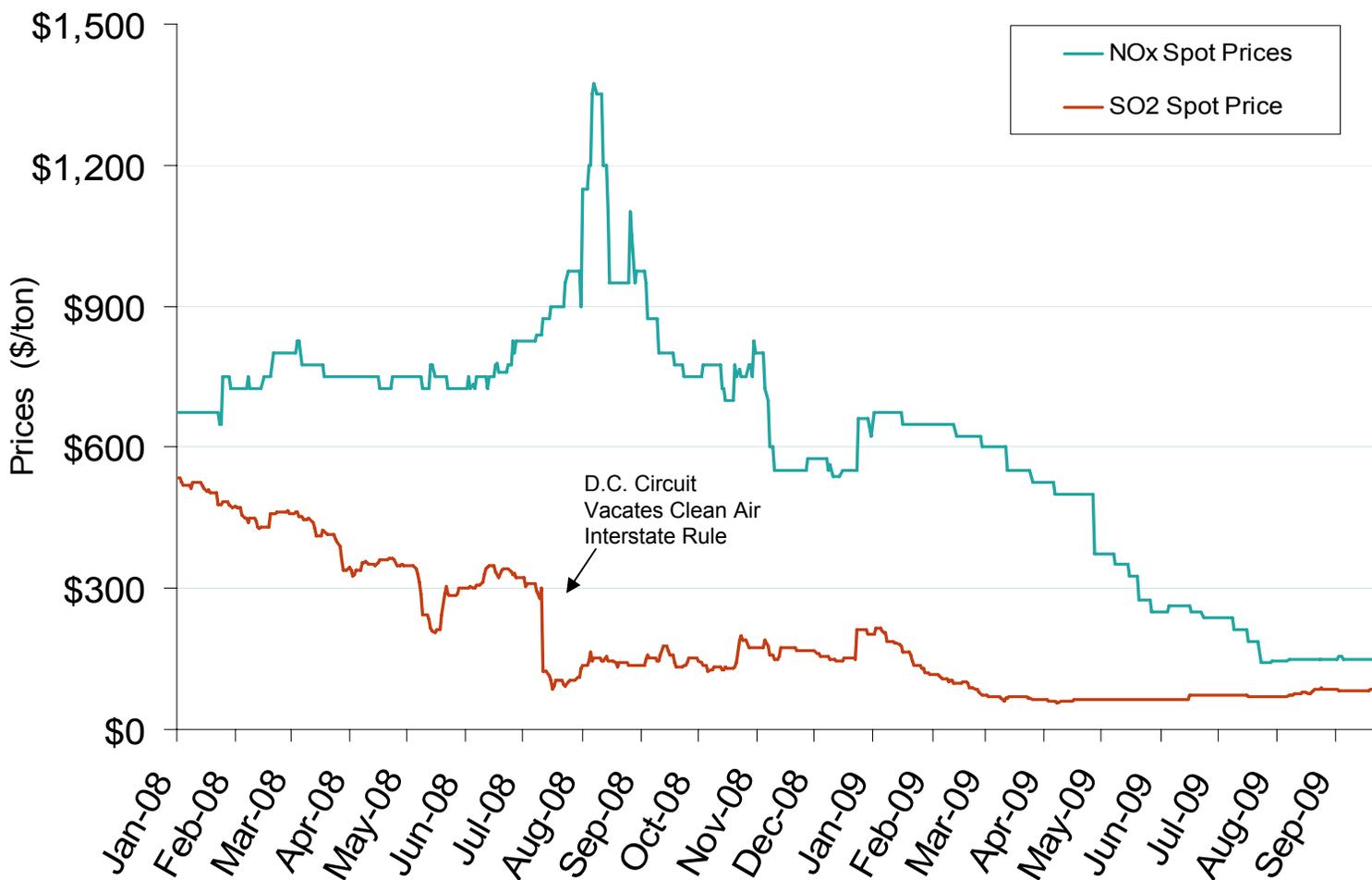
RPS – Renewable Portfolio Standard (also known as RES, Renewable Electricity Standard); SREC – Solar REC

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

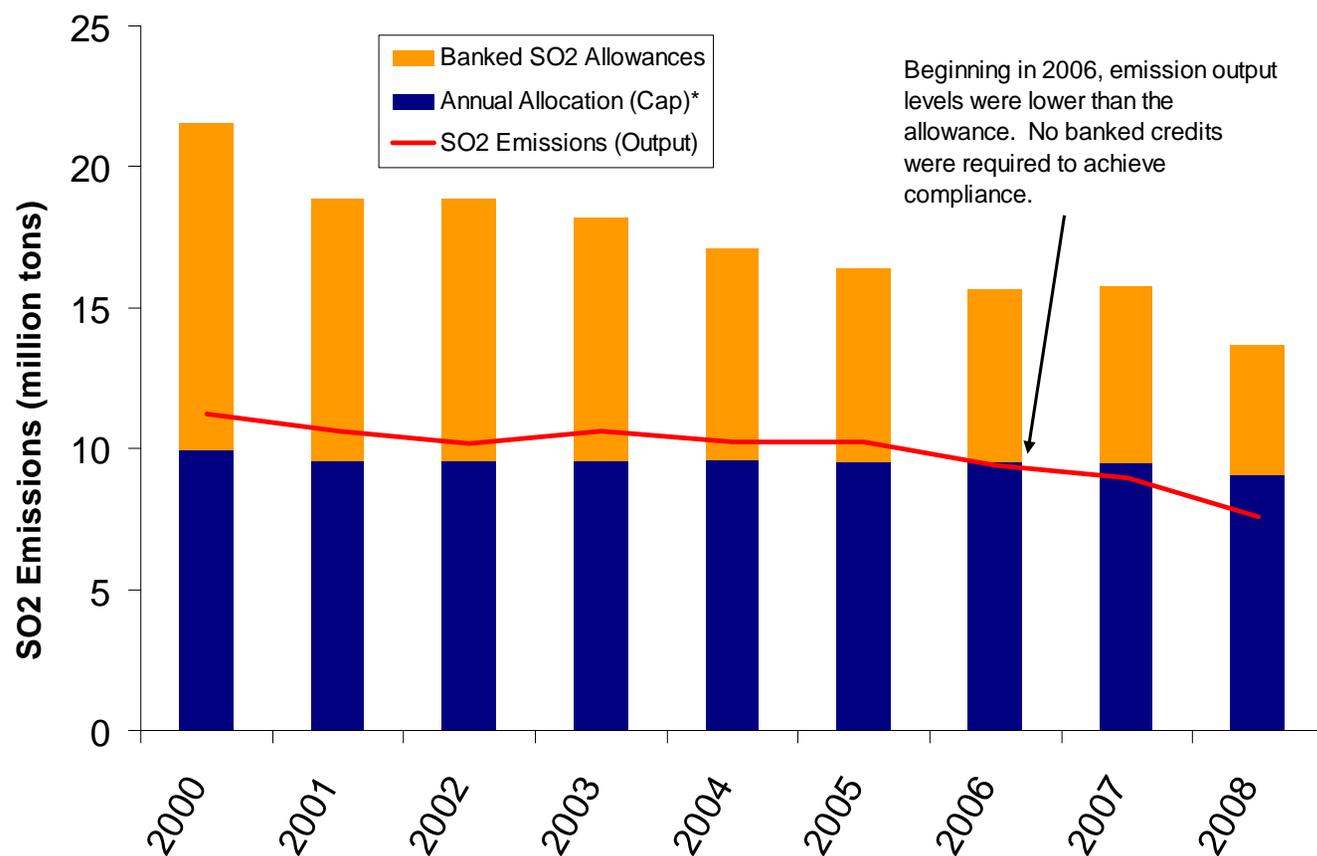
www.nepoolgis.com, www.texasrenewables.com, www.pjm-eis.com/gats/about-gats.html, www.wregis.org,

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

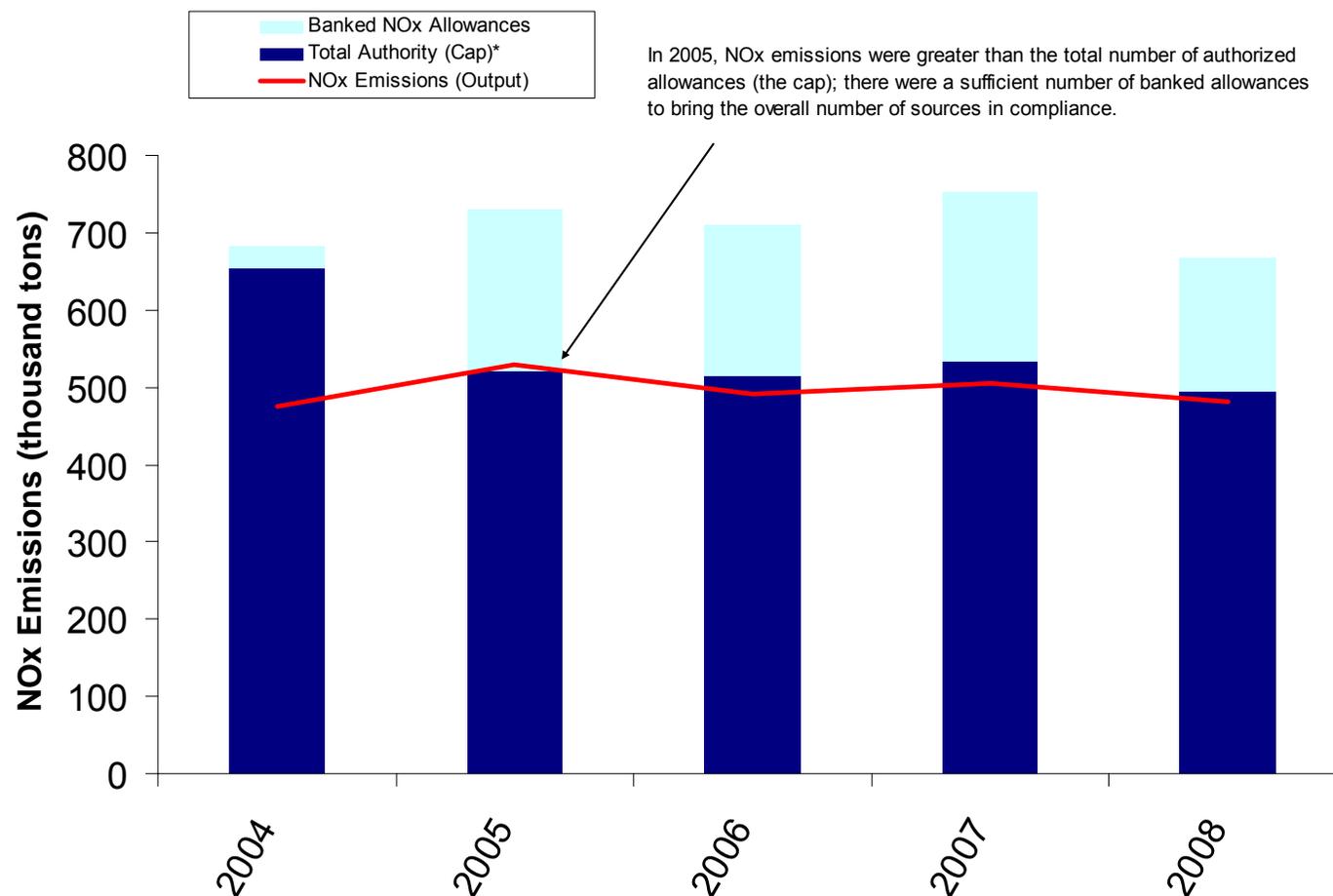


Source: EPA

* See overview on following slide.
October 2009 Western 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 Western 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):

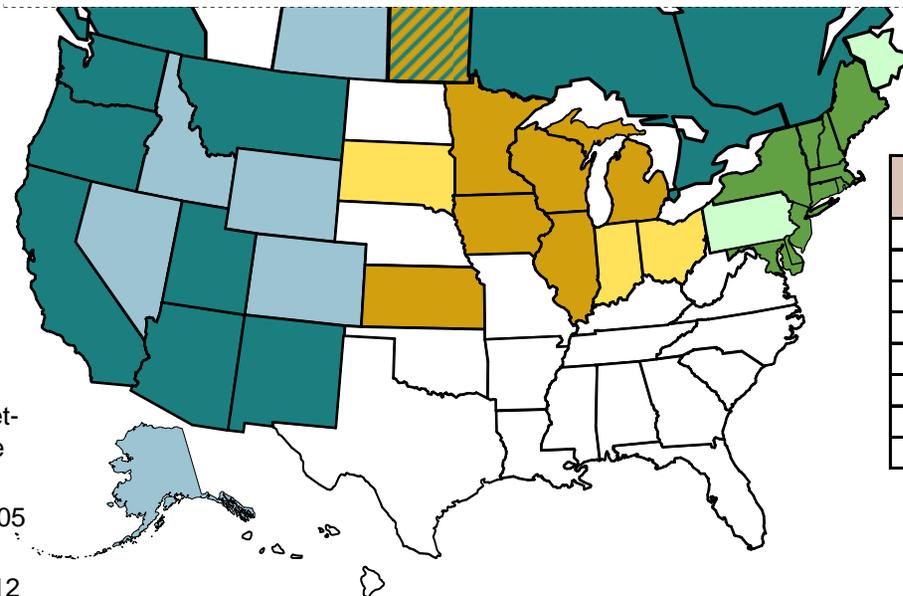
- Created February 2007
- Partners: 7 states, 4 provinces; Observers: 5 states, 1 province
- Announced its design for a market-based, *multi-sector* cap-and-trade program, Sept 2008:
 - 15% CO₂ reduction below 2005 levels by 2020
 - Phase I to take effect Jan 2012

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