

OE ENERGY MARKET SNAPSHOT

Western States Version – June 2009 Data

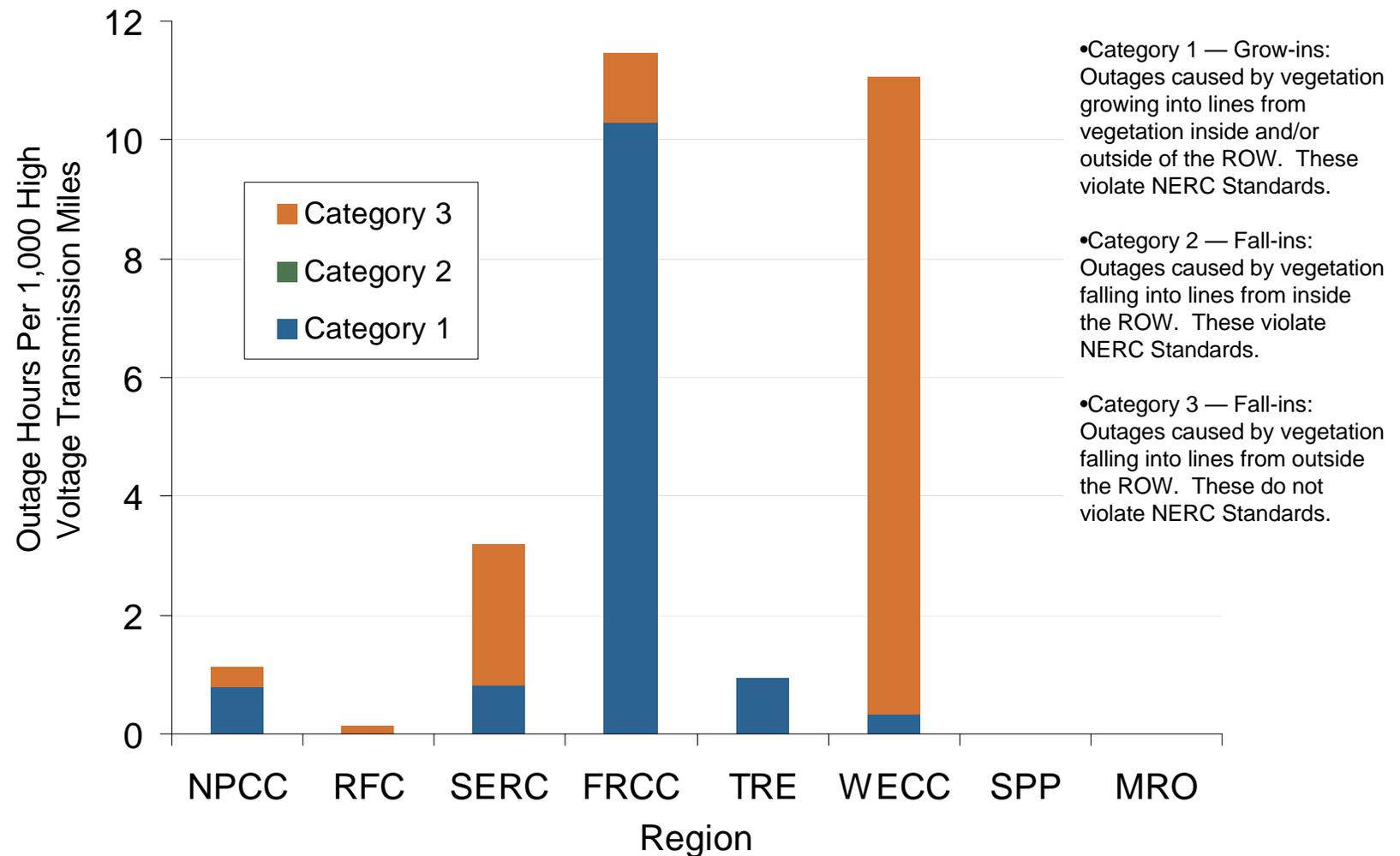
- **Electricity Markets**
- **Natural Gas and Fuel Markets**

Office of Enforcement
Federal Energy Regulatory Commission
July 2009

Electricity Markets

- **Vegetation management follow-up (page 3)**
- **A National Assessment of Demand Response Potential (page 4)**
- **Regional Greenhouse Gas initiative (RGGI) auctions update (page 12)**

2008 Vegetation Relation Transmission Outages 230kV and Above

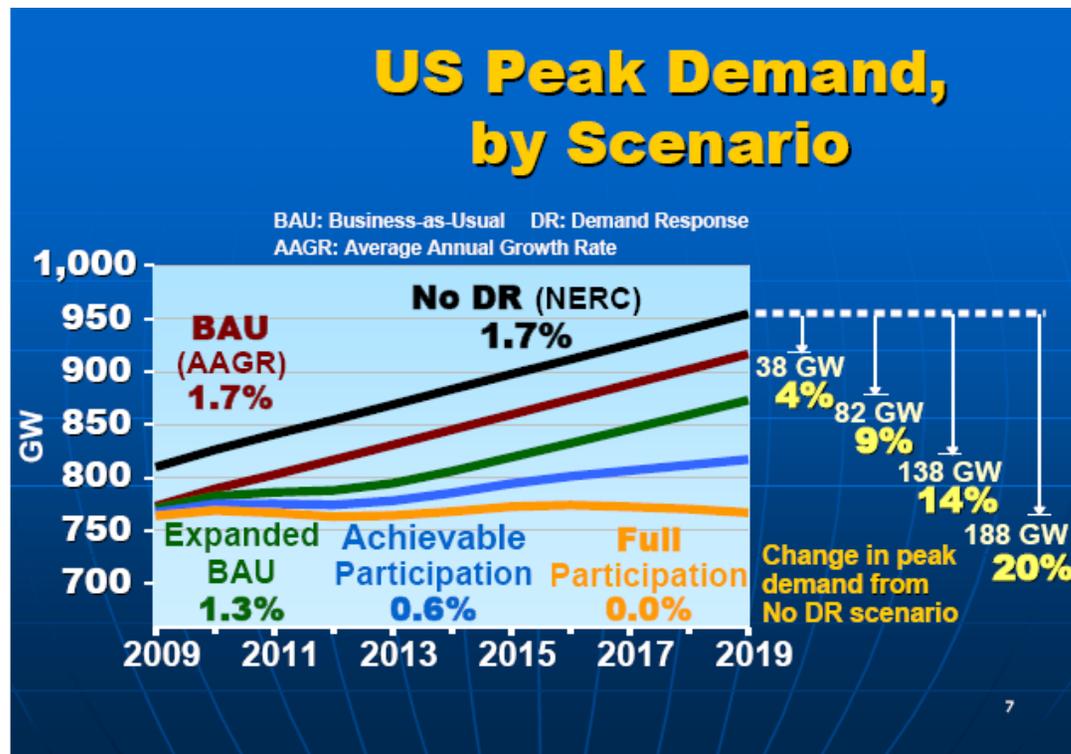


Note: There were no Category 2 outages reported in 2008.

Source: NERC vegetation reports by quarter <http://www.nerc.com/page.php?cid=3|26>

High voltage transmission miles as of 2005, <http://www.nerc.com/page.php?cid=1|9|119>

National Assessment of Demand Response Potential



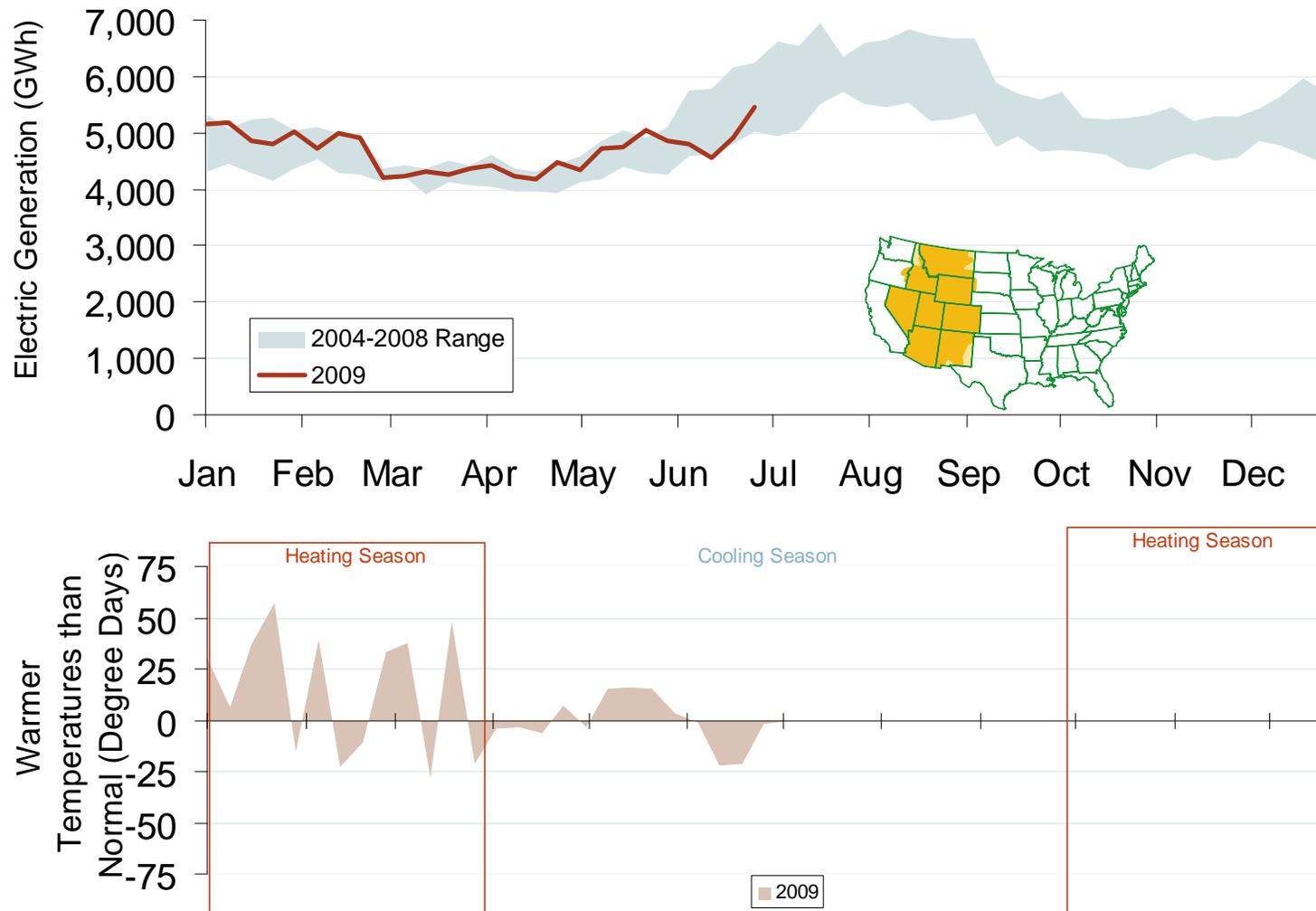
In response to EPACT 2007, staff released a report on June 18, 2009.

The report assesses potential under multiple scenarios on a state by state basis.

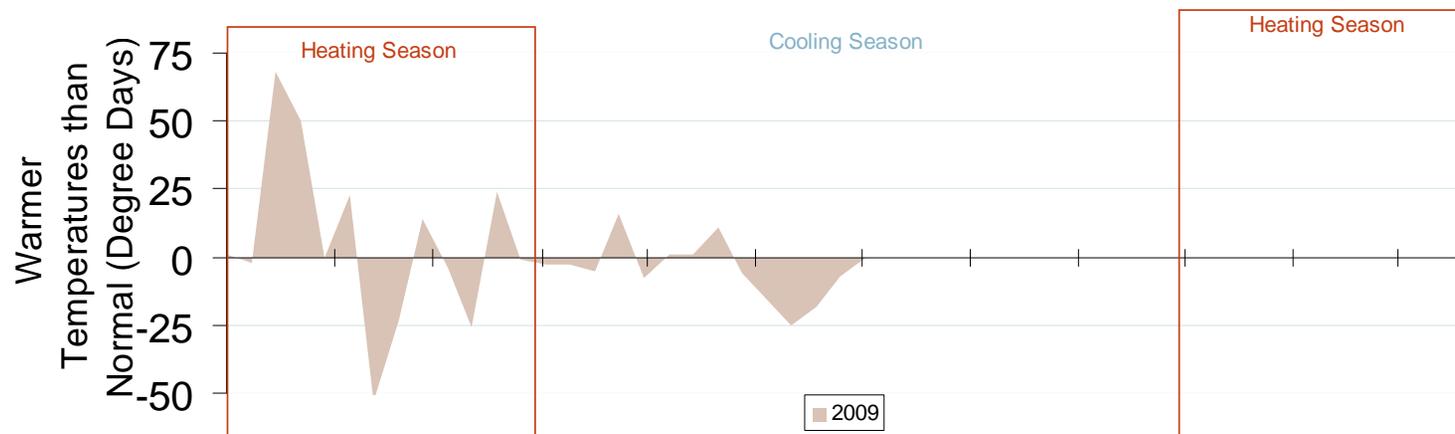
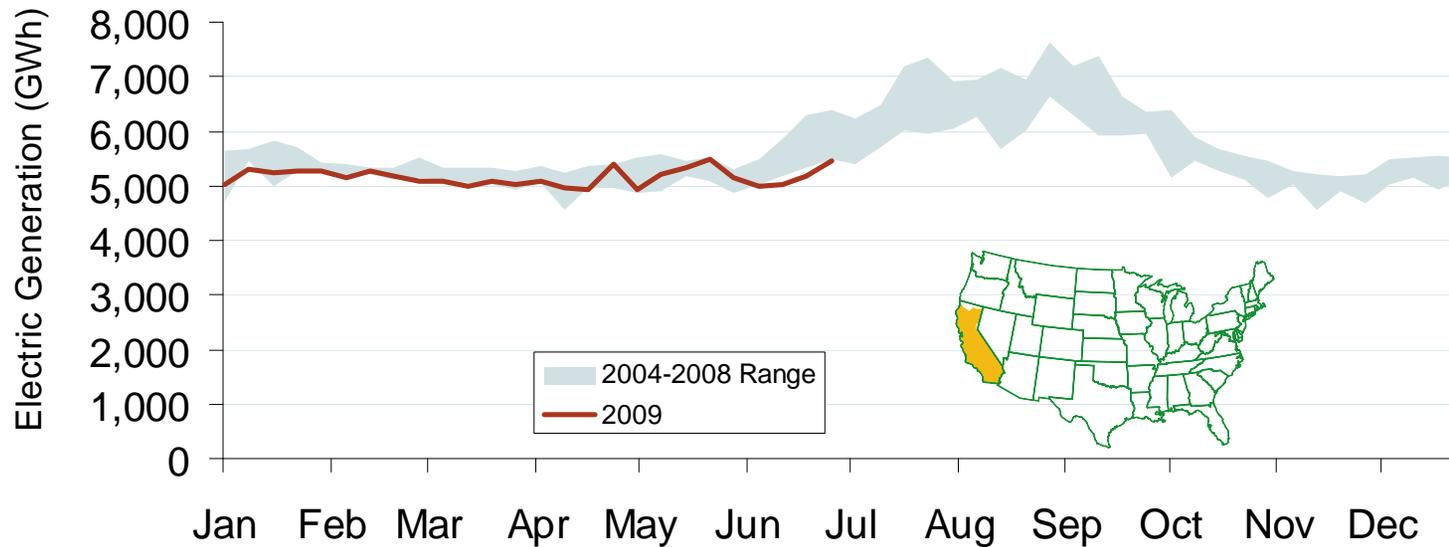
The report, along with a spreadsheet model and user's guide to the model are available online at:

<http://www.ferc.gov/industries/electric/indus-act/demand-response/dr-potential.asp>

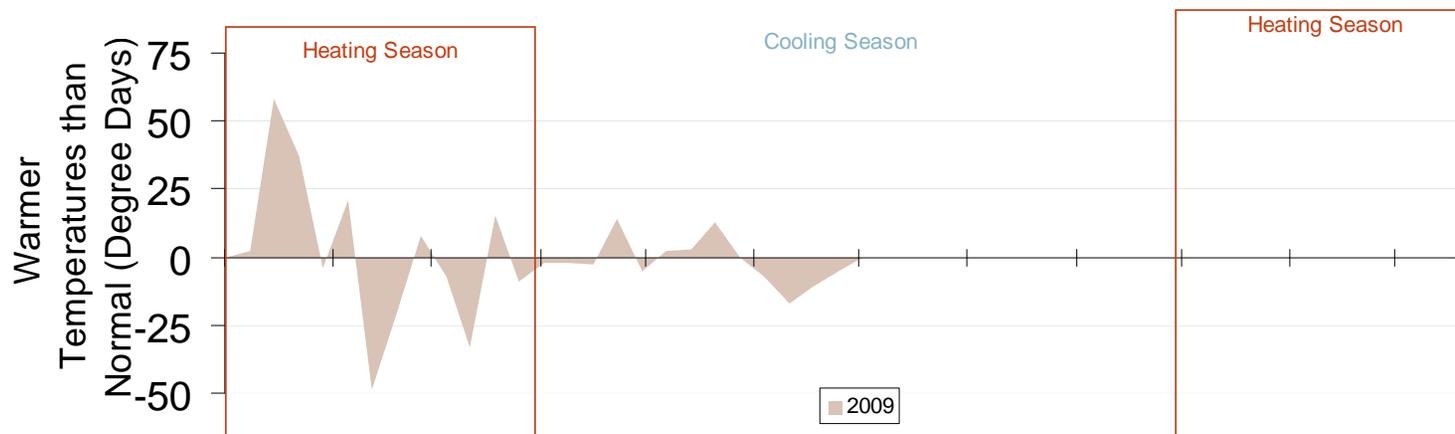
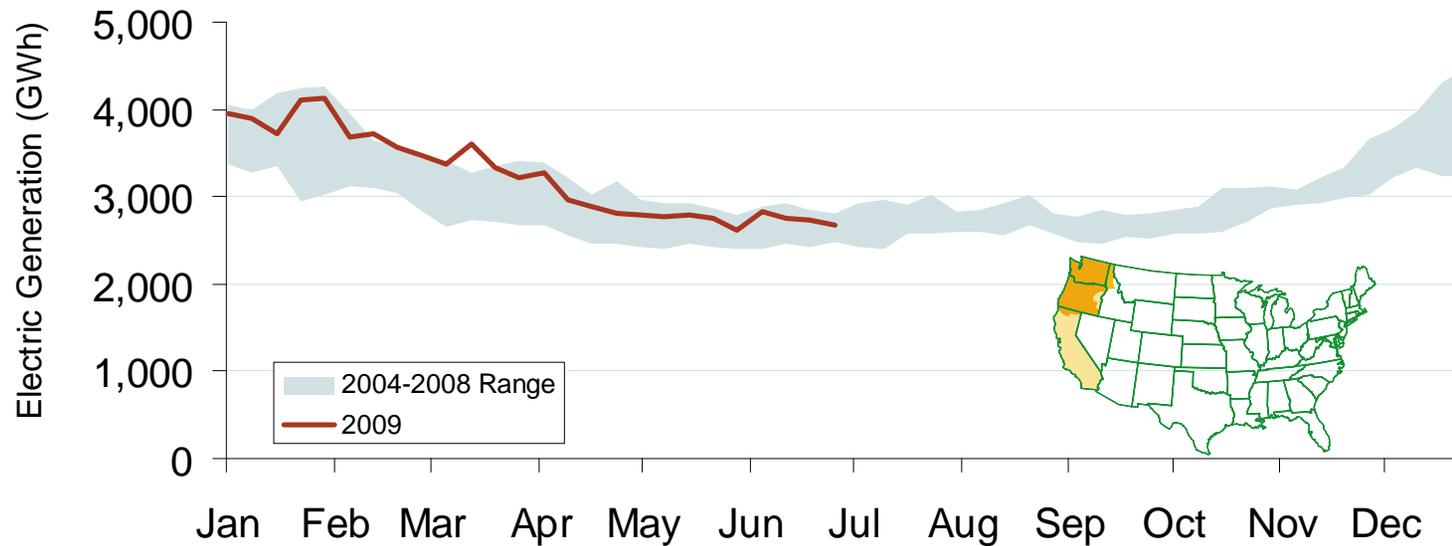
Weekly Electric Generation Output and Temperatures Rocky Mountains Region



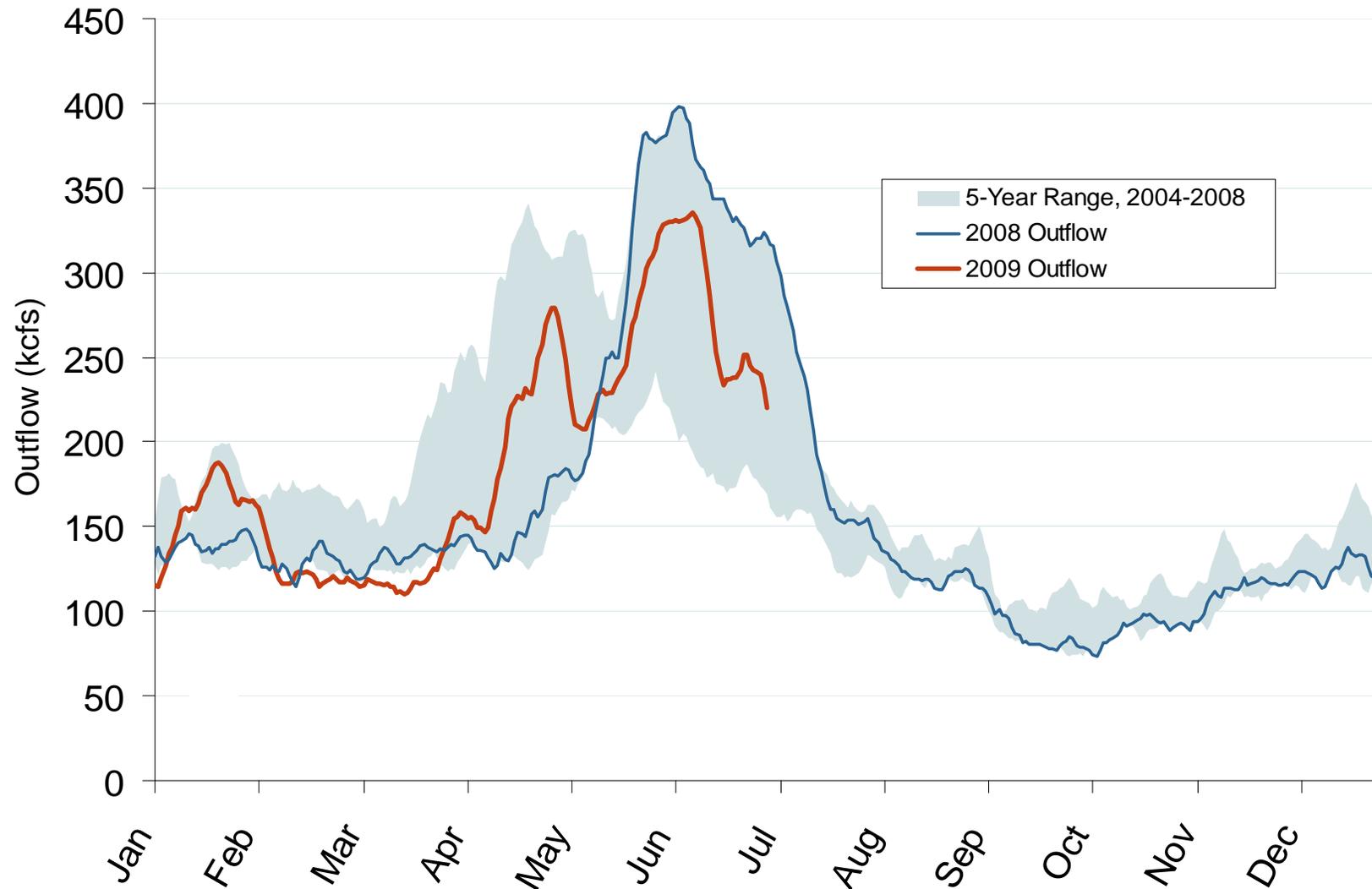
Weekly Electric Generation Output and Temperatures California



Weekly Electric Generation Output and Temperatures Pacific Northwest Region



Stream Flow at The Dalles Dam



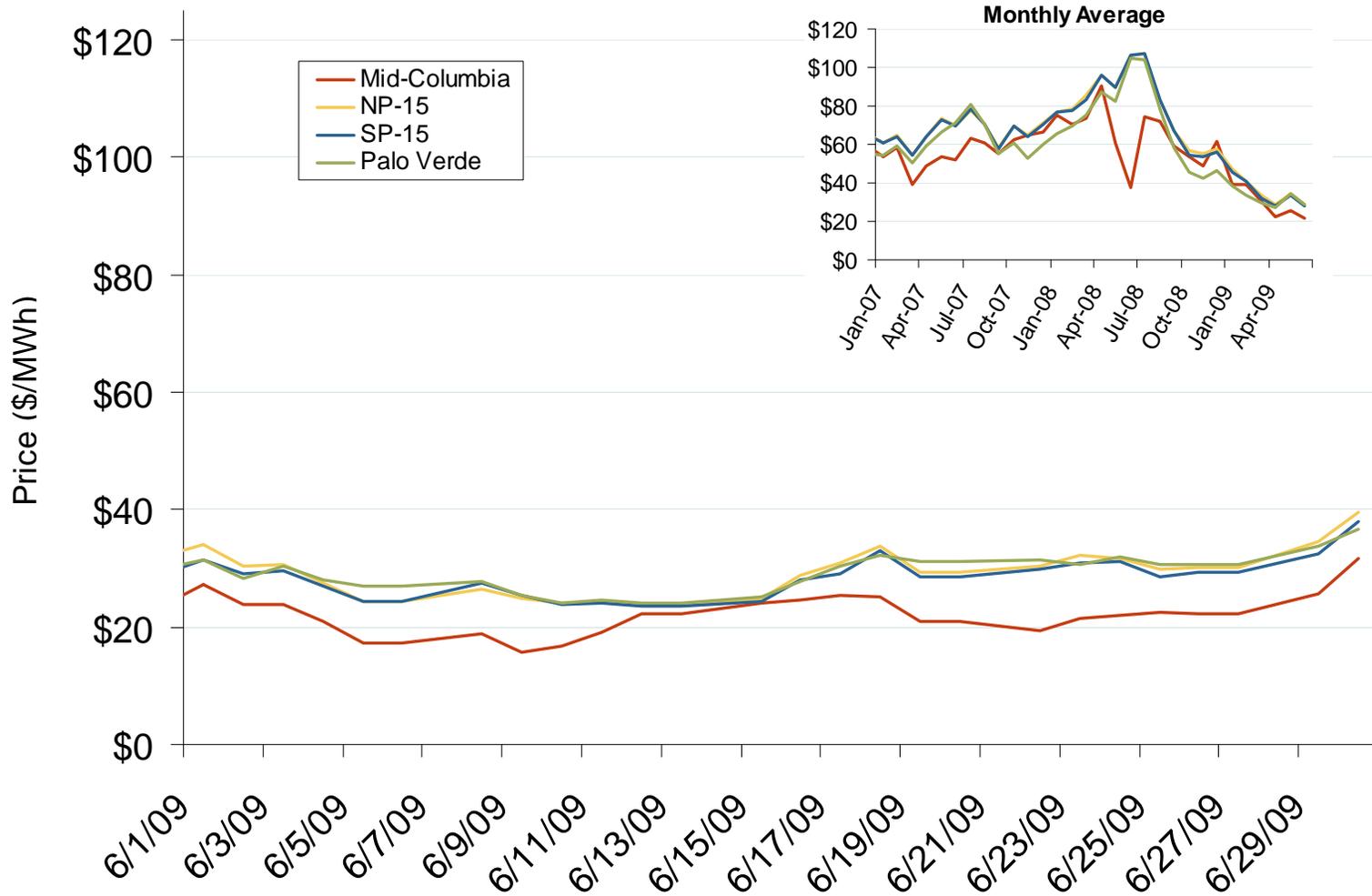
Source: Derived from USACE data.

Trend lines are 7-day moving averages.

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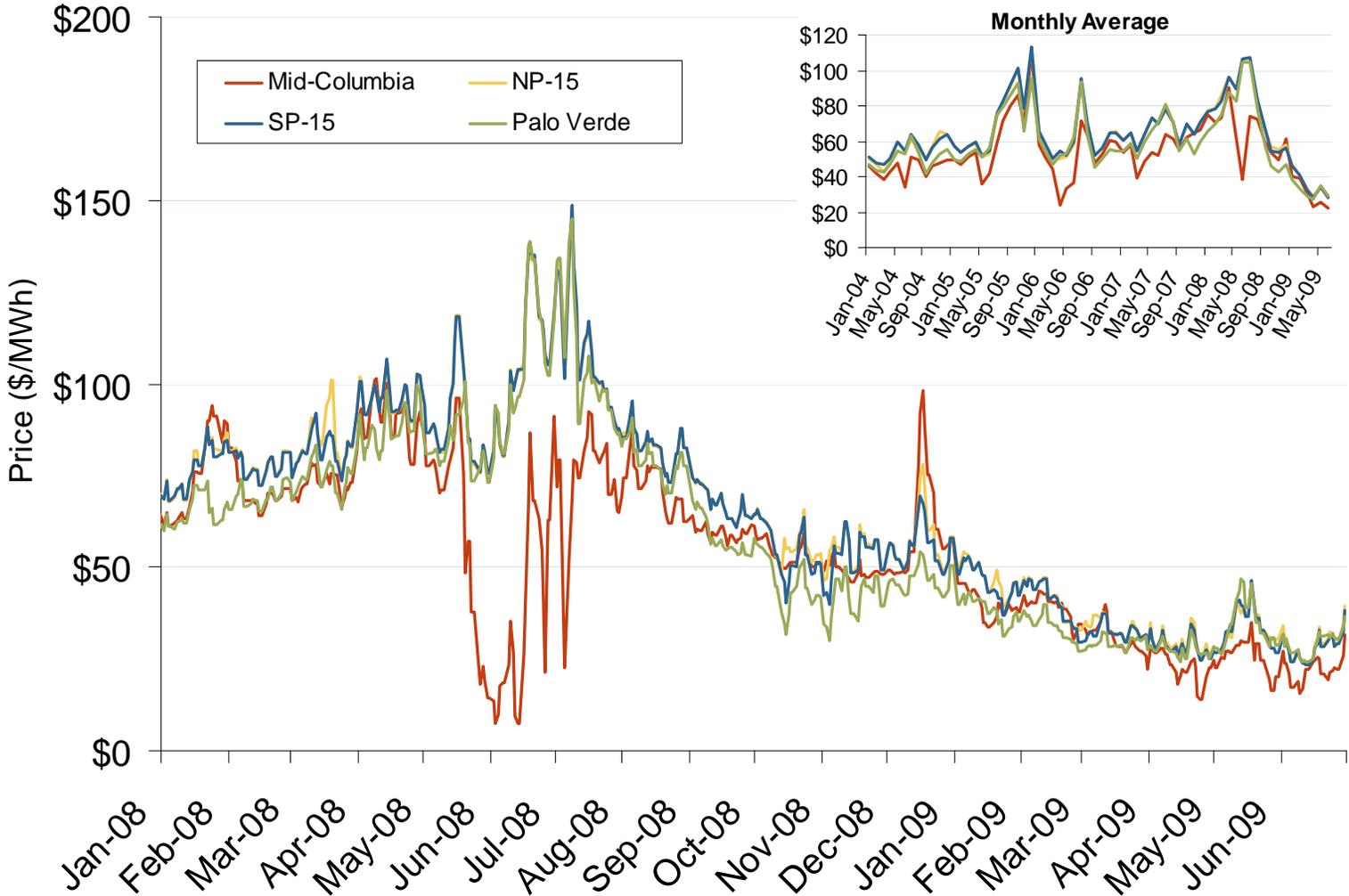
Western Daily Bilateral Day-Ahead On-Peak Prices



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

Updated July 8, 2009

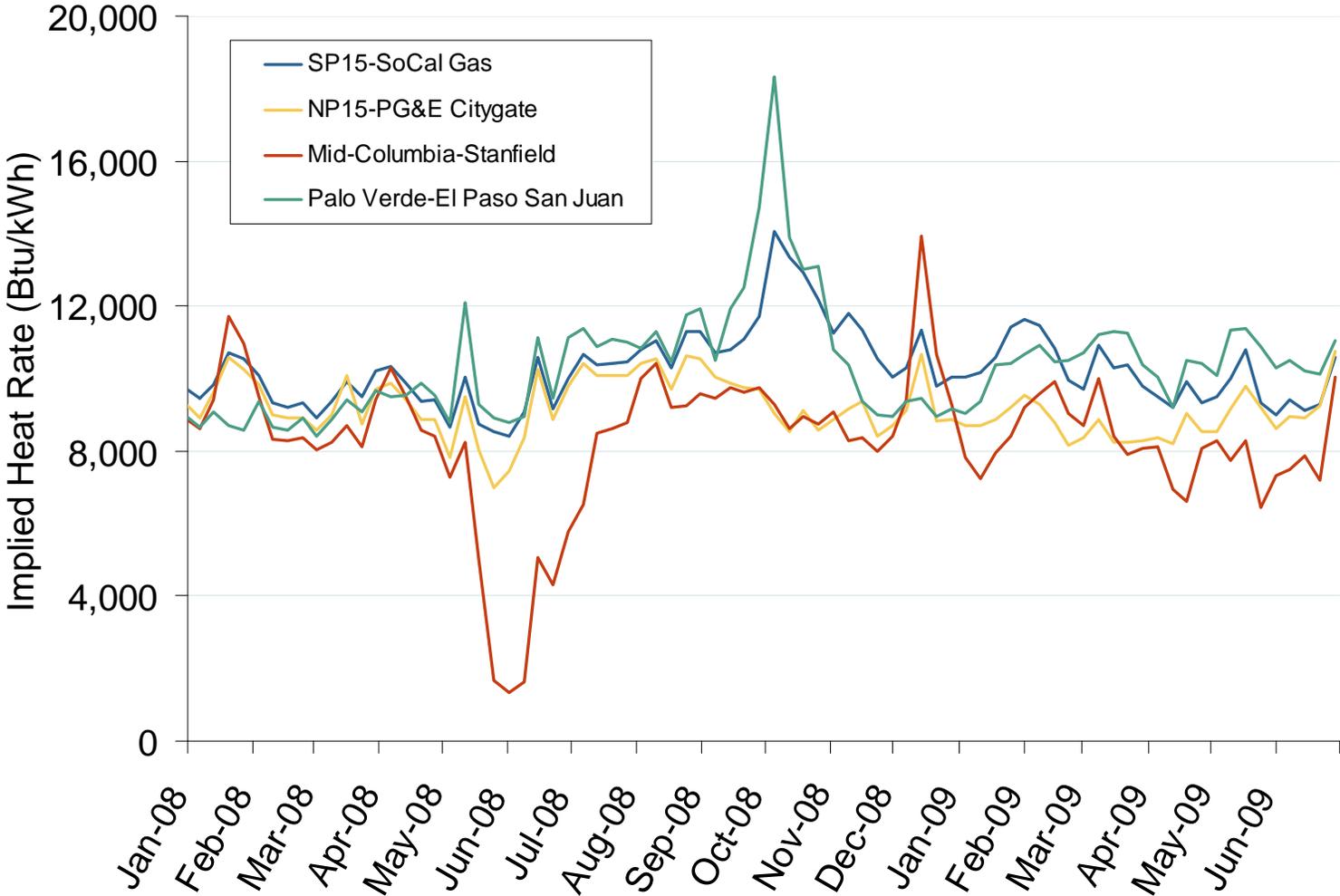
Western Daily Bilateral Day-Ahead On-Peak Prices



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

Updated July 8, 2009

Implied Heat Rates at Western Trading Points Weekly Averages



Source: Derived from *Platts* data
July 2009 Western Snapshot Report

Updated July 8, 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):

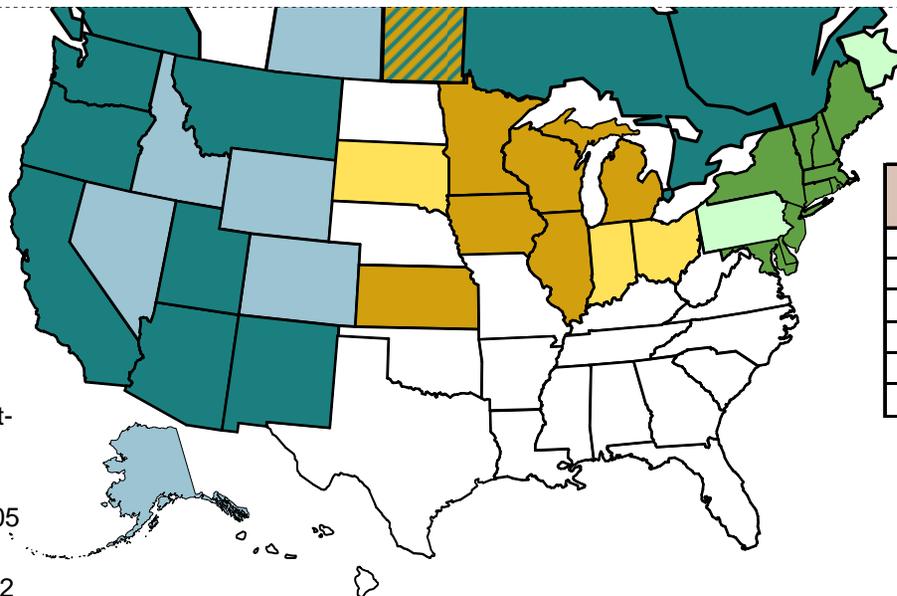
- Created February 2007
- Partners: 7 states, 4 provinces; Observers: 5 states, 1 province
- Announced its design for a market-based, *multi-sector* cap-and-trade program, Sept 2008:
 - 15% CO₂ reduction below 2005 levels by 2020
 - Phase I to take effect Jan 2012

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

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

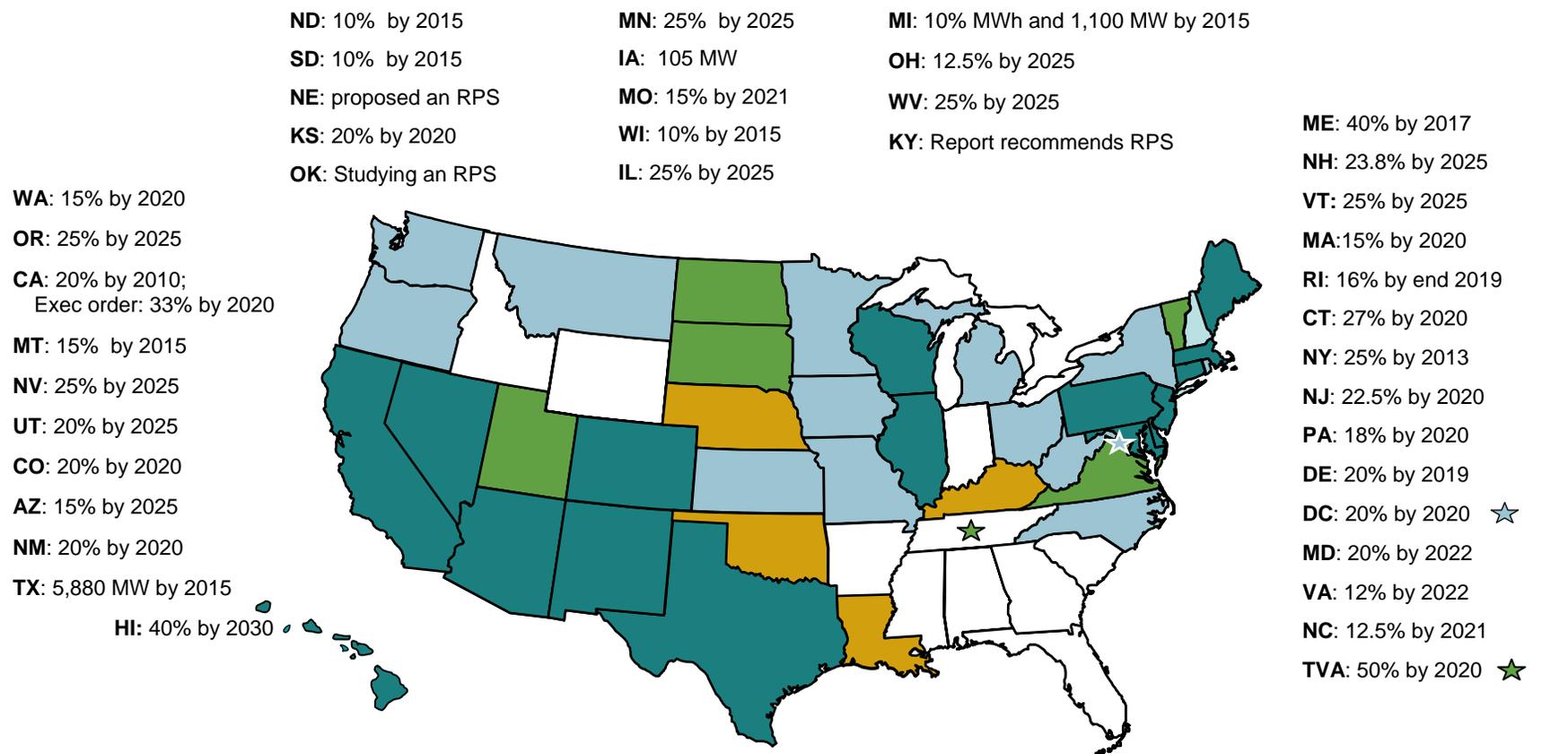
Updates at: <http://www.ferc.gov/market-oversight/mkt-electric/overview/elec-ovr-ghg.pdf>

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

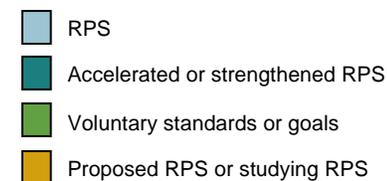
Electric Market Overview: Renewable Portfolio Standards

Federal Energy Regulatory Commission • Market Oversight @ FERC.gov

31 States including D.C. have Renewable Energy Portfolio Standards (RPS)Updates at: <http://www.ferc.gov/market-oversight/mkt-electric/overview/elec-ovr-rps.pdf>

Notes: An RPS requires a percent of an electric provider's energy sales (MWh) or installed capacity (MW) to come from renewable resources. Most specify sales (MWh). Map percents are final years' targets. *TVA's goal is not state policy; it calls for 50% zero- or low-carbon generation by 2020. Alaska has no RPS.

Sources: Derived from data in: LBNL, *RPS in the U.S. through 2007 (4/08)*, PUCs, State legislative tracking services, Pew Center, and the Union of Concerned Scientists. Details, including timelines, are in the Database of State Incentives for Renewables and Energy Efficiency: <http://www.dsireusa.org>



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Electric Market Overview: Energy Efficiency Resource Standards (EERS) and Goals

Federal Energy Regulatory Commission • Market Oversight @ FERC.gov

21 States have Energy Efficiency Resource Standards

NE: Interim Energy Plan stresses multi-sector EE improvements

KS: Voluntary utility programs

OK: PSC approved quick-start utility EE & DR programs

MN: 1.5% annual savings based on prior-3 years average, to 2015

IA: 5.4% energy savings by 2020 - 1.5% annual

MI: 1% annual energy savings as a percent of from prior year's sales

IL: reduce energy use 2% by 2015 and peak 0.1% from prior year

OH: 22% energy savings by 2025 (from 2009); reduce peak 8% by 2018

KY: proposed RPS-EE to offset 18% of projected 2025 demand

ME: 30% energy savings; 100 MW peak electric reduction by 2020

VT: 11% energy reductions by 2011 (2% annual); administered by Efficiency VT

MA: 25% of electric load from DSR, EE by 2020: capacity and energy

NY: reduce electric use 15% by 2015 from levels projected in 2008

CT: 4% energy savings (1.5% annual) & 10% peak reduction by 2010 (from '07)

RI: reduce 10% of 2006 sales by 2022

NJ: proceeding on Energy Master Plan to reduce consumption, peak

DE: Sustainable Energy Utility charged with 30% energy reduction by 2015

PA: reduce consumption 3%, peak 4.5% by 2013 as percent of 2009-10 sales

MD: reduce per capita electricity use and peak 15% by 2015 from 2007

VA: reduce electric use 10% by 2022 (from '06)

WV: EE & DR earn one credit for each MWh conserved in the 25% by 2025 A&RES

NC: EE to meet up to 25% of RPS to 2011

TVA: reduce energy consumption 25% and cut peak 1,400 MW by 2012 (from '08) in 7-state territory ★

WA: pursue all cost-effective conservation: ~ 10% by 2025

OR: IOU 2008 goals 34 MW; administered by Energy Trust OR

CA: 8% energy savings; 4,885 MW peak reduction by 2013 (from '04)

ID: Energy Plan set conservation, DR, EE as priority resources

NV: EE up to 25% of RPS: ~ 5% electric reduction by 2015

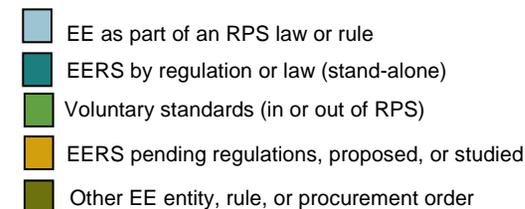
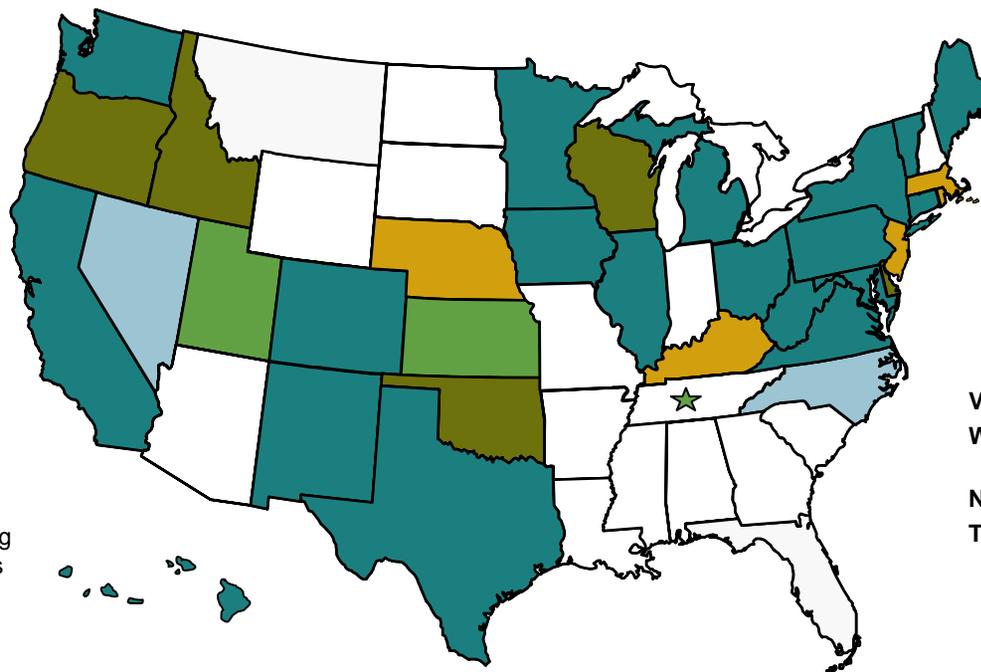
UT: EE earns incentive credits in RE goal

CO: 11.5% energy savings by 2020: ~ 3,669 GWh (from '08)

NM: 10% retail electric sales savings by 2020 (from '05)

TX: 20% of load growth by 2010, using average growth rate of prior 5 years

HI: 30% electricity reduction: ~ 4,300 GWh by 2030 (from '09)



Updates at: <http://www.ferc.gov/market-oversight/mkt-electric/overview/elec-ovr-eeeps.pdf>

* TVA is a Public Power Authority – this is not a state action.

Abbreviations: A&RES – Alternative & Renewable Energy Standard; DR - demand response; DSR – demand-side resources; EE - energy efficiency; E&G: electric and gas utilities; RPS: Renewable Portfolio Standard;

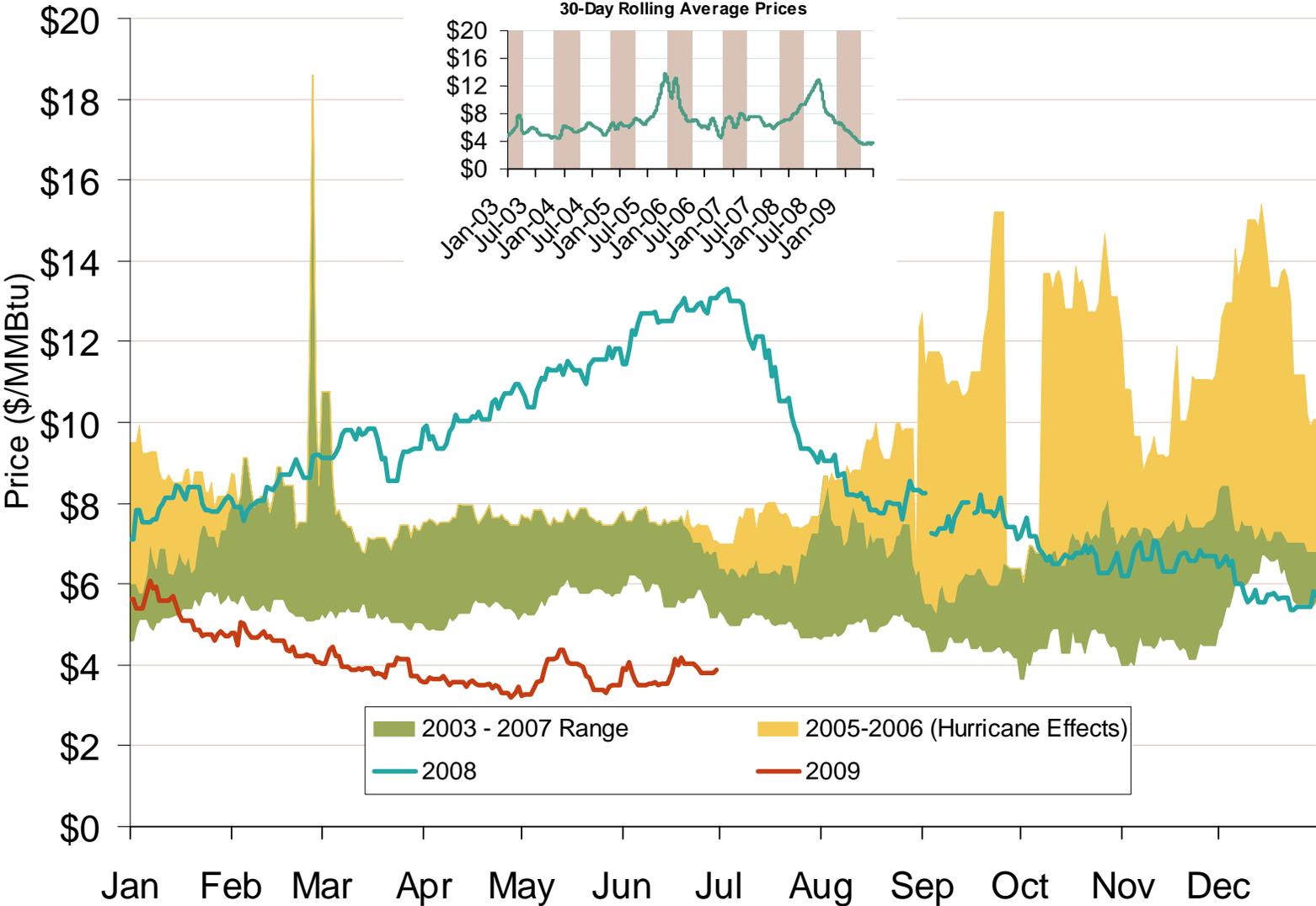
Sources: ACEEE, DOE- EERE, EPA, Institute for Electricity Efficiency (IEE); Regulatory Assistance Project, State regulatory and legislative sites, State Efficiency Agency reports, trade press

Natural Gas and Fuel Markets

- **Implications of rapid storage fill (pages 18-21)**
- **Rockies Express pipeline (REX) extends east (pages 24-25)**
- **Form 552: Annual Report of Natural Gas Transactions (pages 31-32)**
- **Natural gas price formation (pages 33-34)**

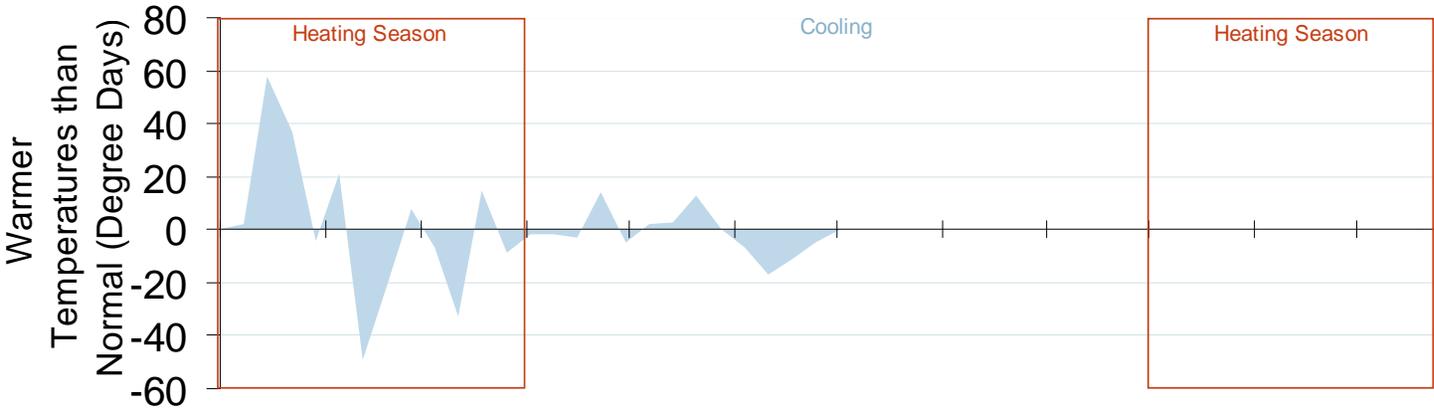
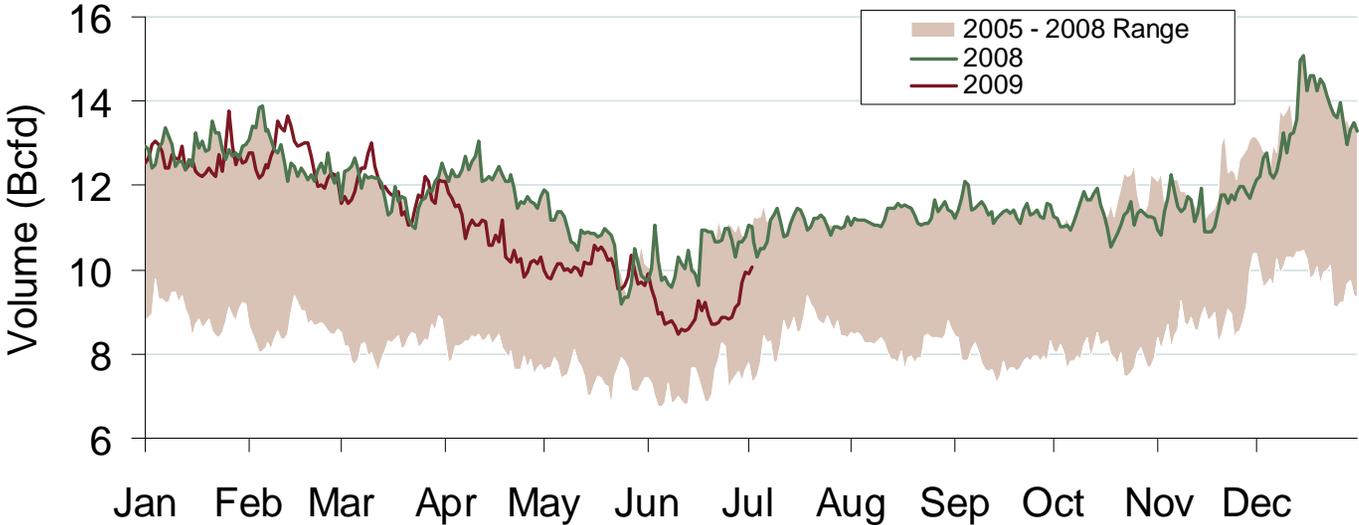
Federal Energy Regulatory Commission • Market Oversight @ FERC.gov

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

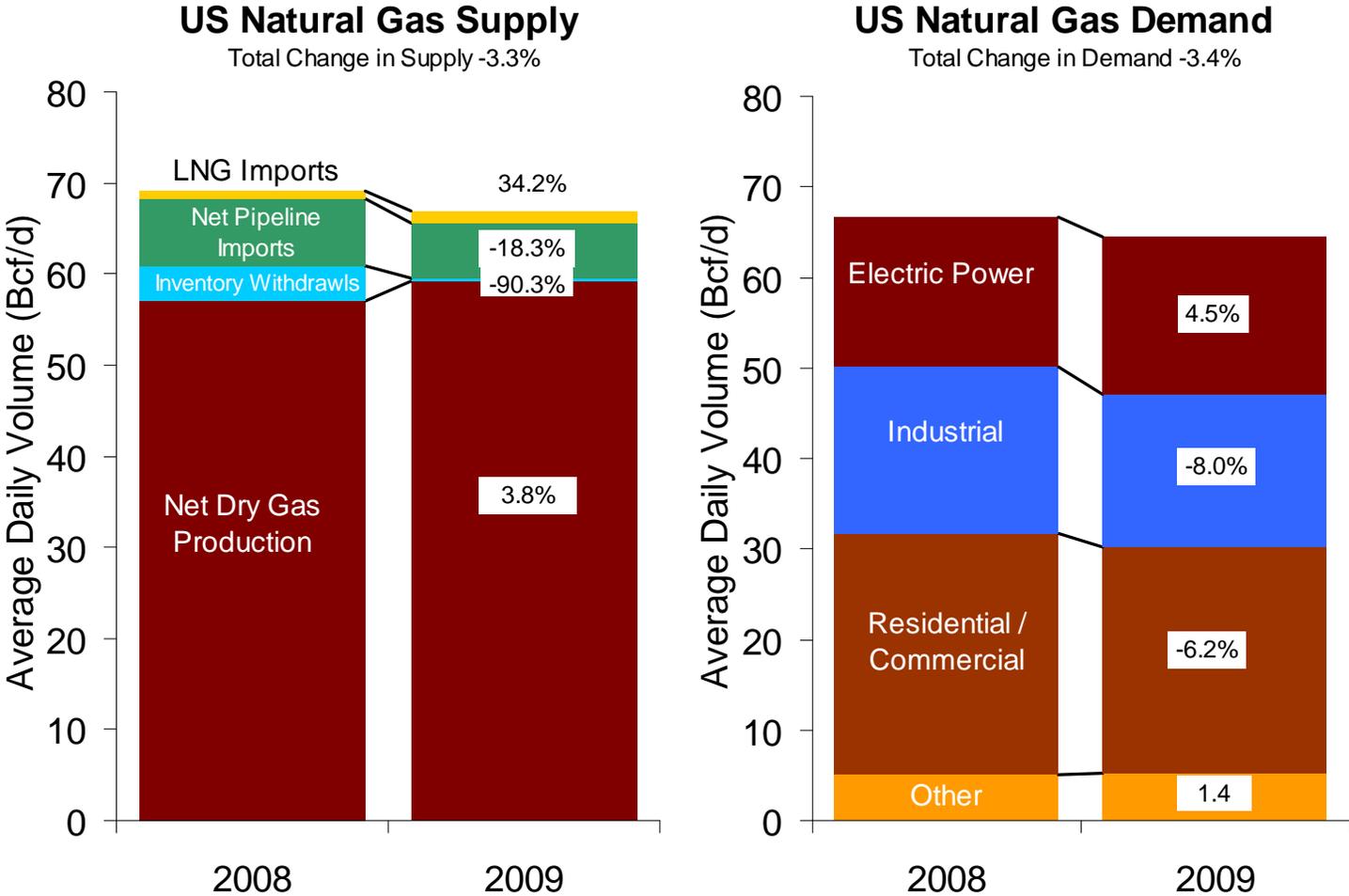


Source: Derived from *Platts* data.

Daily Western Natural Gas Demand All Sectors



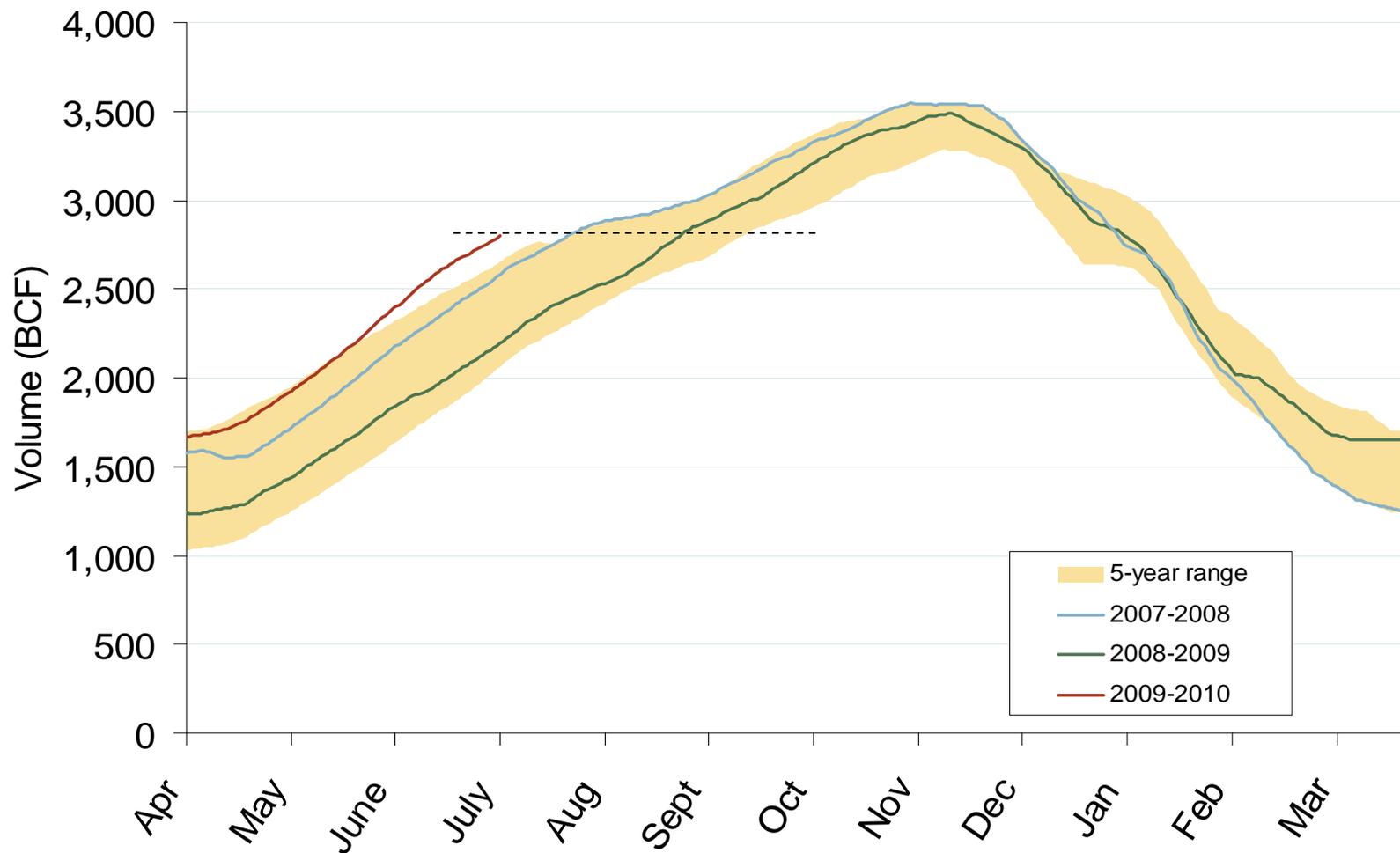
U.S. Natural Gas Supply and Demand 2008 vs. 2009: January - June



Source: Derived from Bentek data.
July 2009 Western Snapshot Report

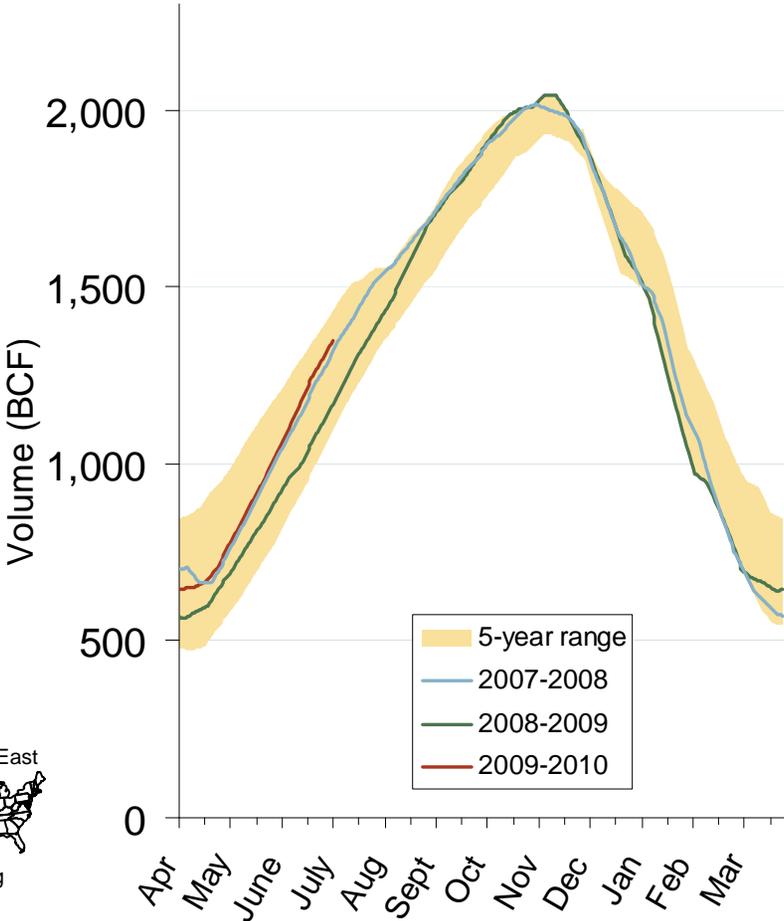
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Total U.S. Working Gas in Storage

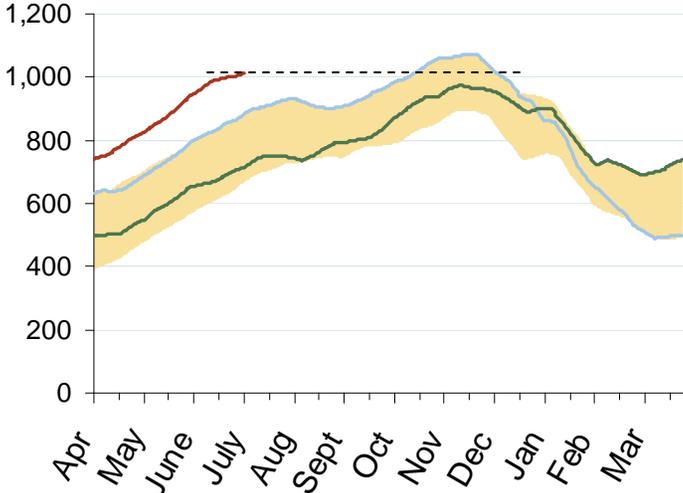


Regional Totals of Working Gas in Storage

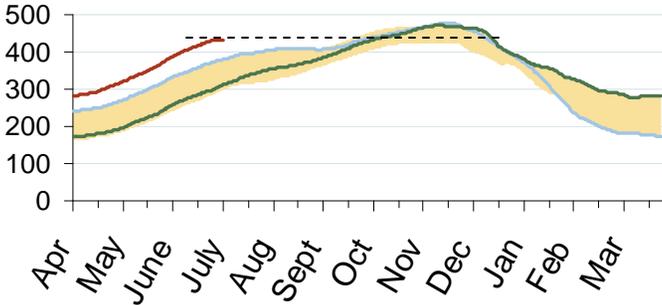
Eastern Consuming Region



Producing Region



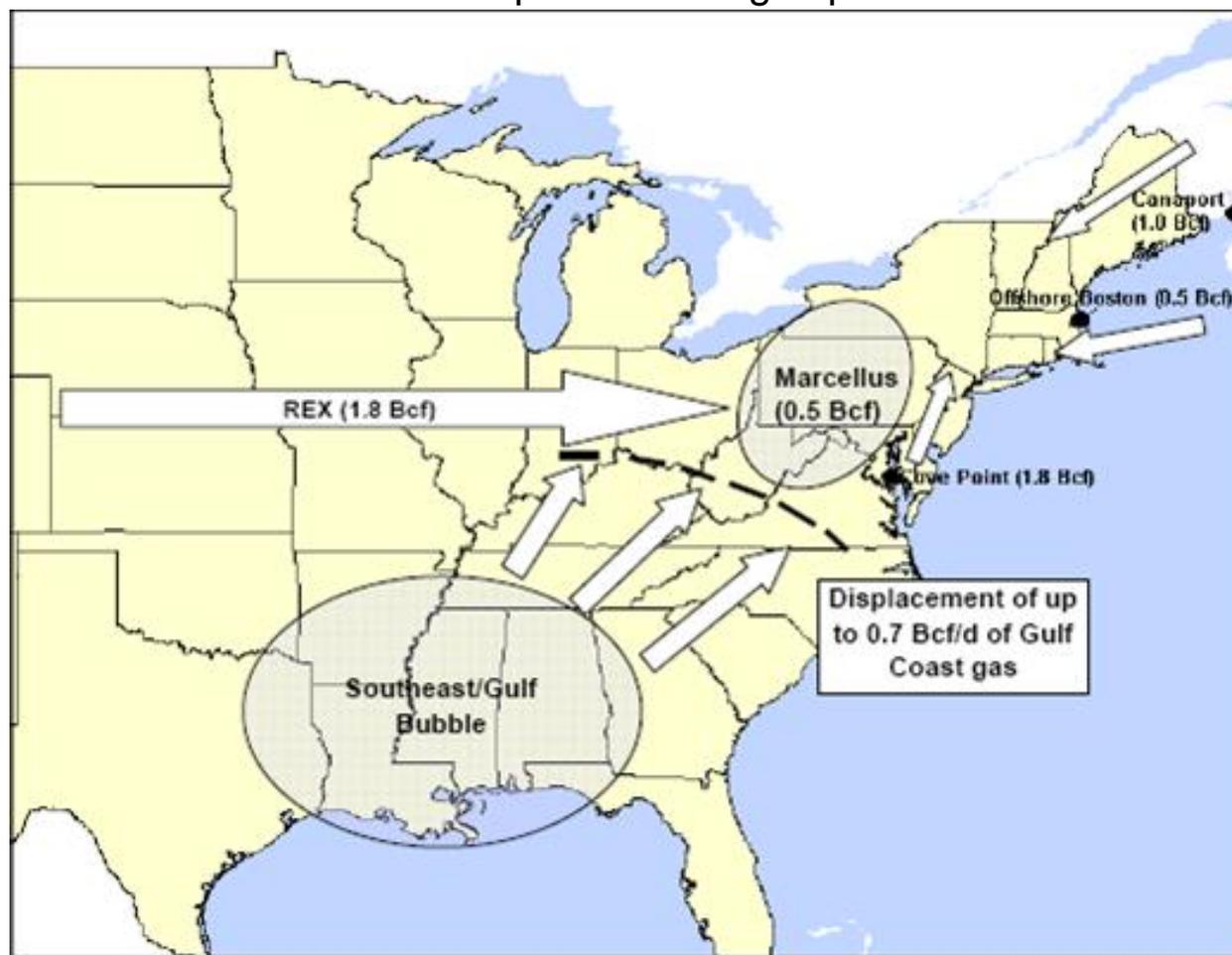
Western Consuming Region



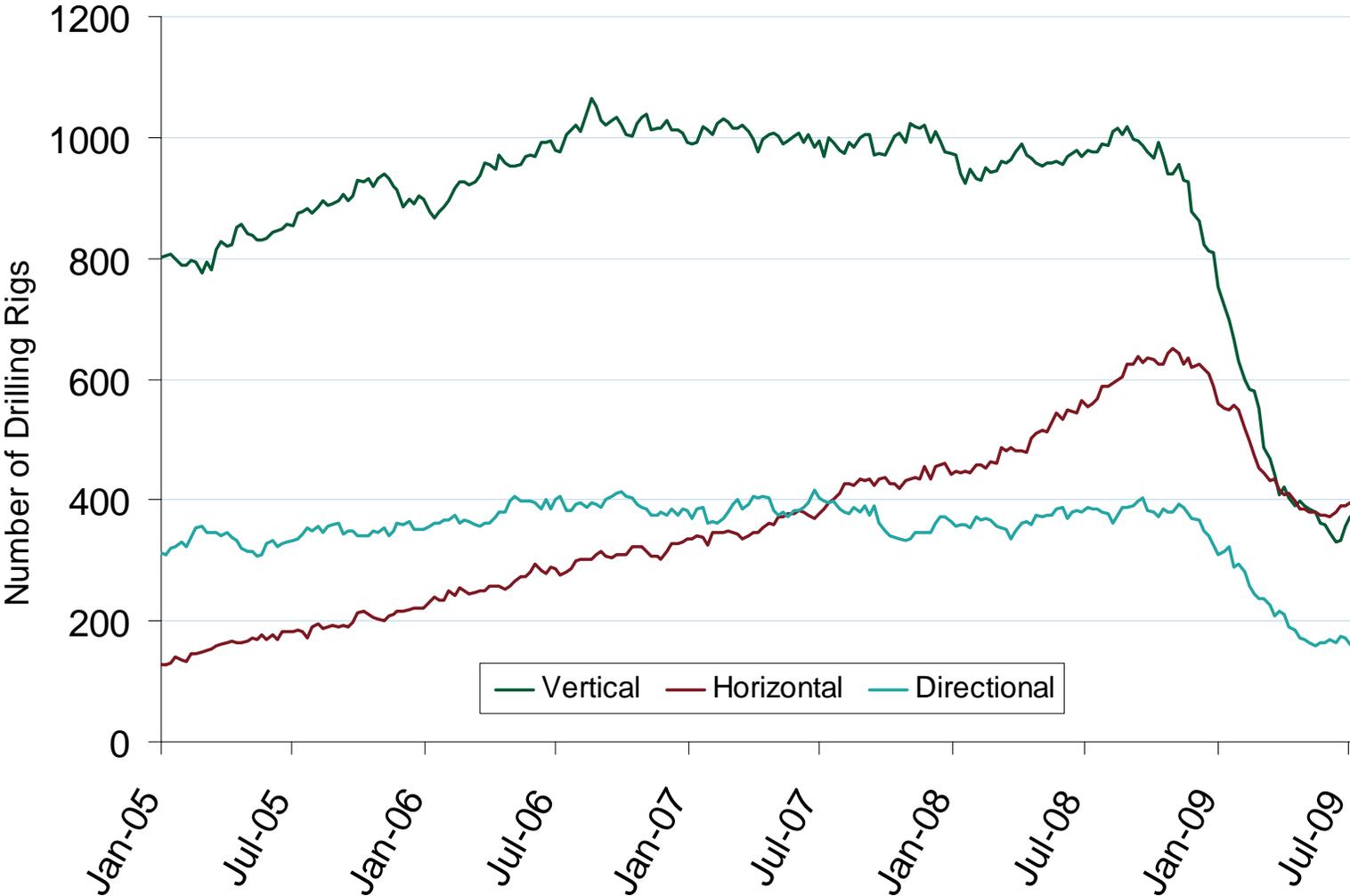
Source: Derived from EIA data.

Changing Gas Supply Picture

Competing gas sources are displacing Gulf Coast gas and coupled with high storage add downward pressure on gas prices



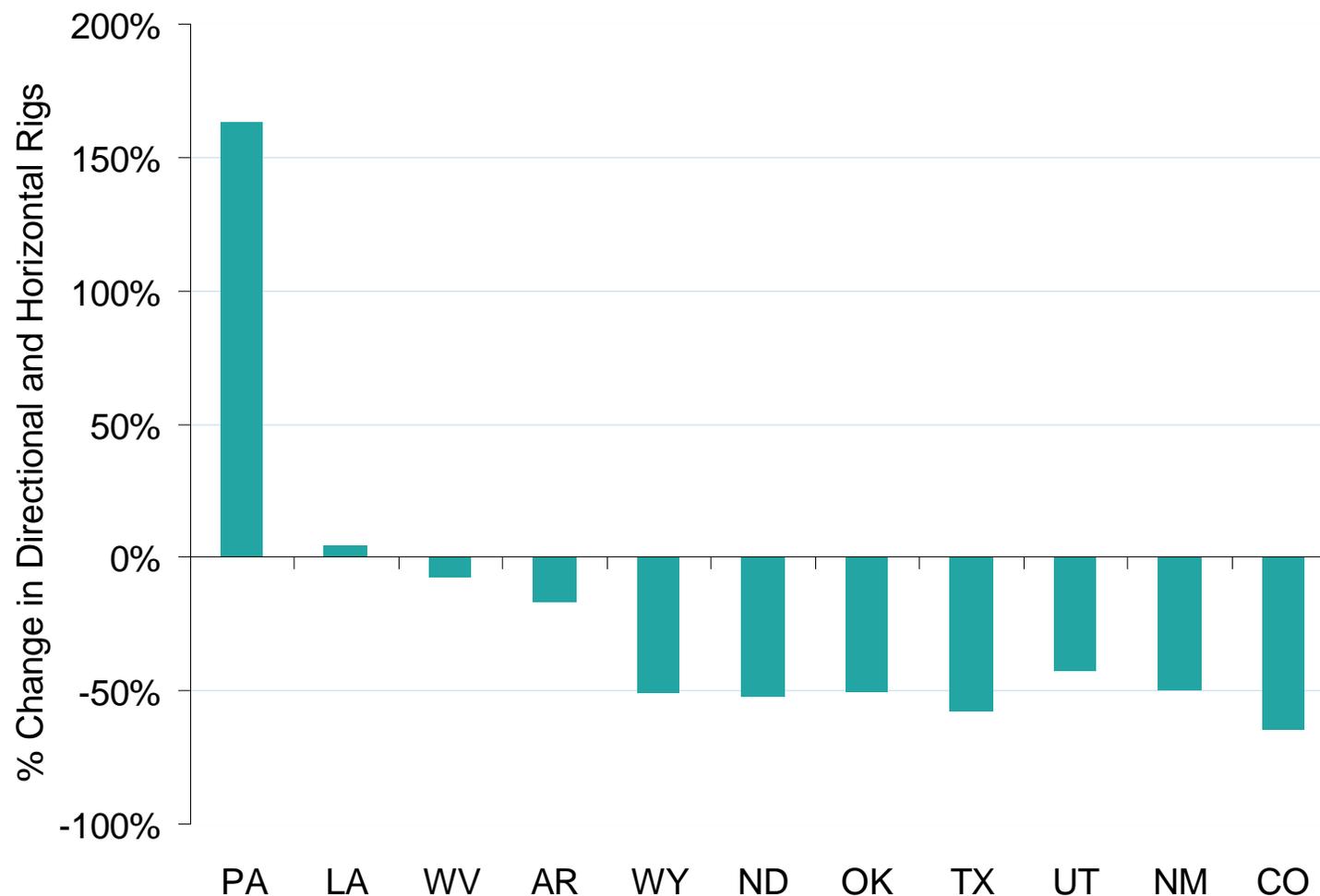
U.S. Oil and Natural Gas Drilling Rig Count by Type



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

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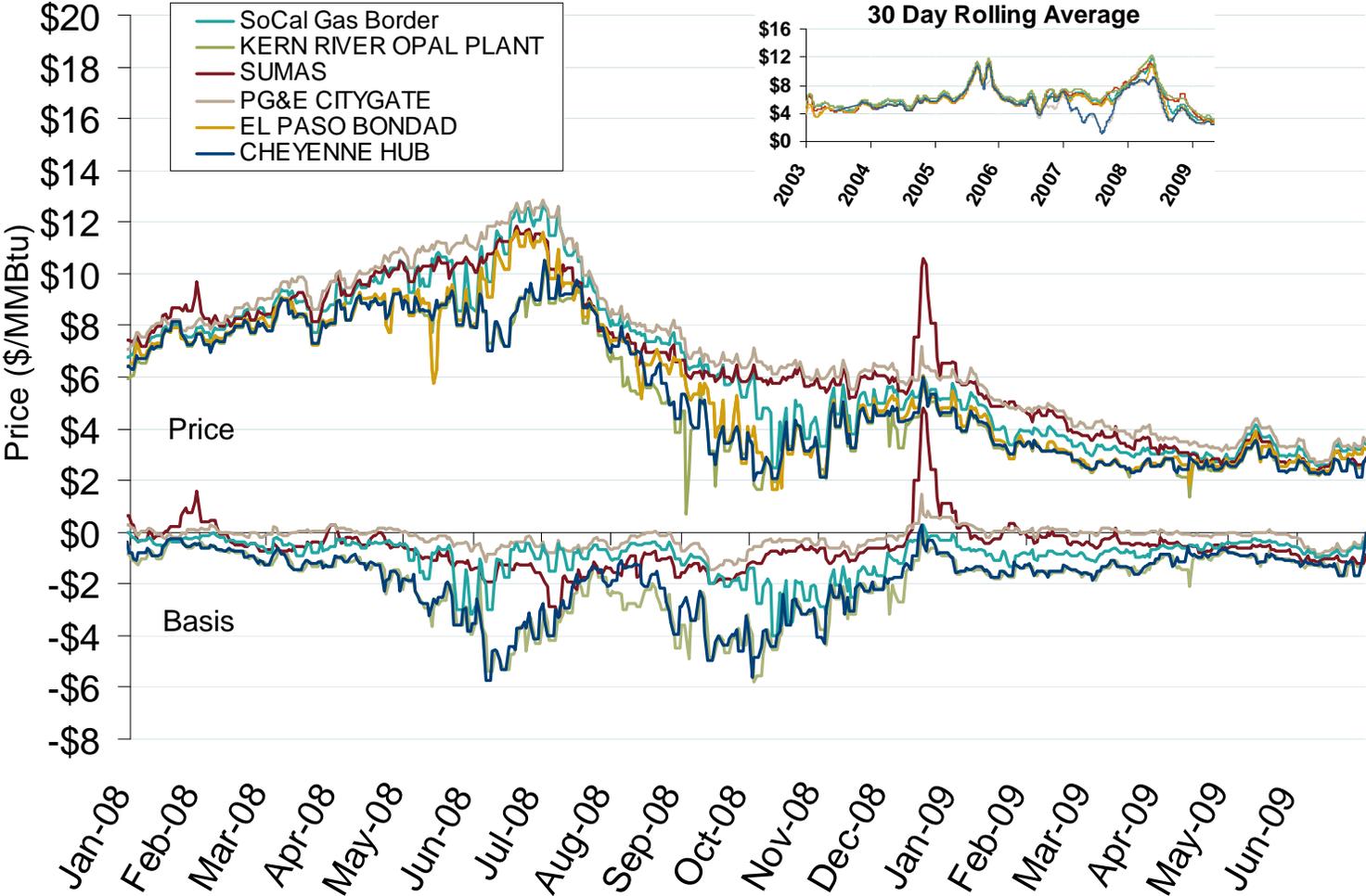
State Level Oil and NG Drilling Rig Count Change From the September 2008 Peak



REX Causes Changes in Flows and Prices

	Pre-REX East (4/30 - 6/29)	Post-REX East (6/30 – 7/9)
Rex Deliveries to old Midcon interconnections (NE, KS, MO)	1.404 Bcf/d	0.419 Bcf/d
Rex Deliveries to new Midwest interconnections (IL, IN, OH)	0.0 Bcf/d	1.278 Bcf/d
Lebanon, OH to Rockies (CIG) Basis	\$1.32	\$0.66
Rockies (CIG) to Henry Hub Basis	-\$1.16	-\$0.80
Lebanon, OH to Henry Hub Basis	\$0.16	-\$0.14

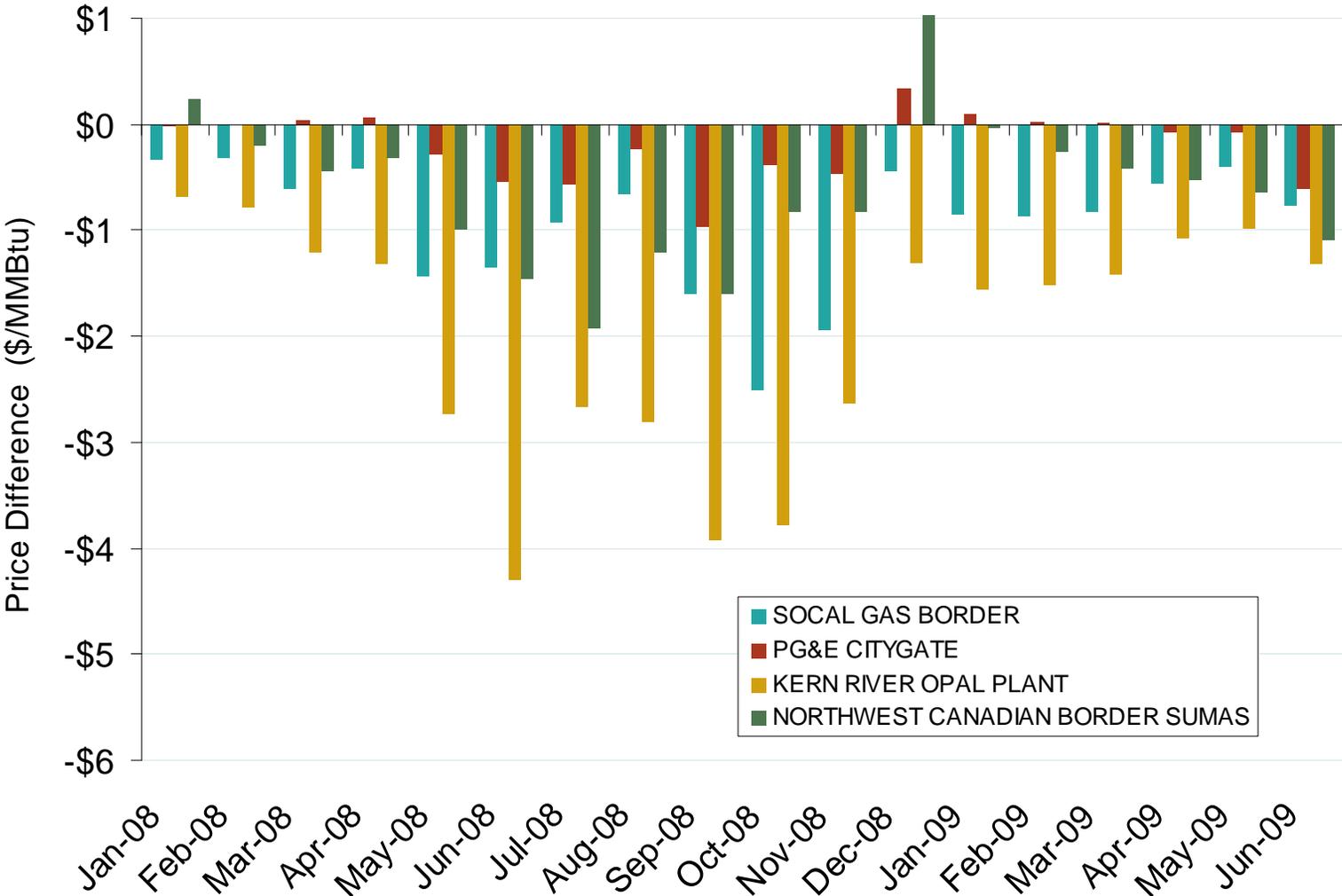
Western Day-Ahead Hub Spot Prices and Basis



Source: Derived from *Platts* data.
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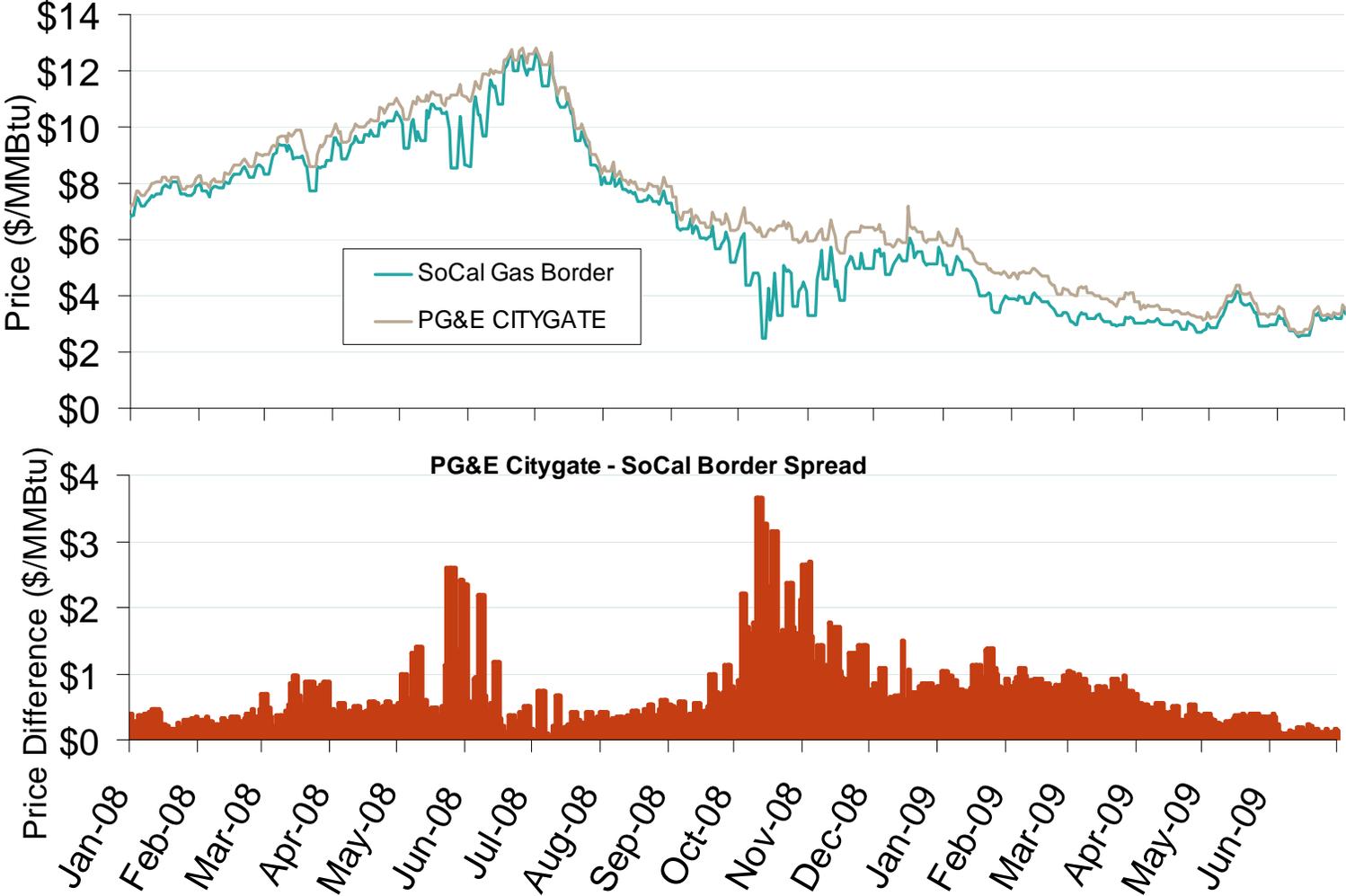
Western Monthly Average Basis Value to Henry Hub



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

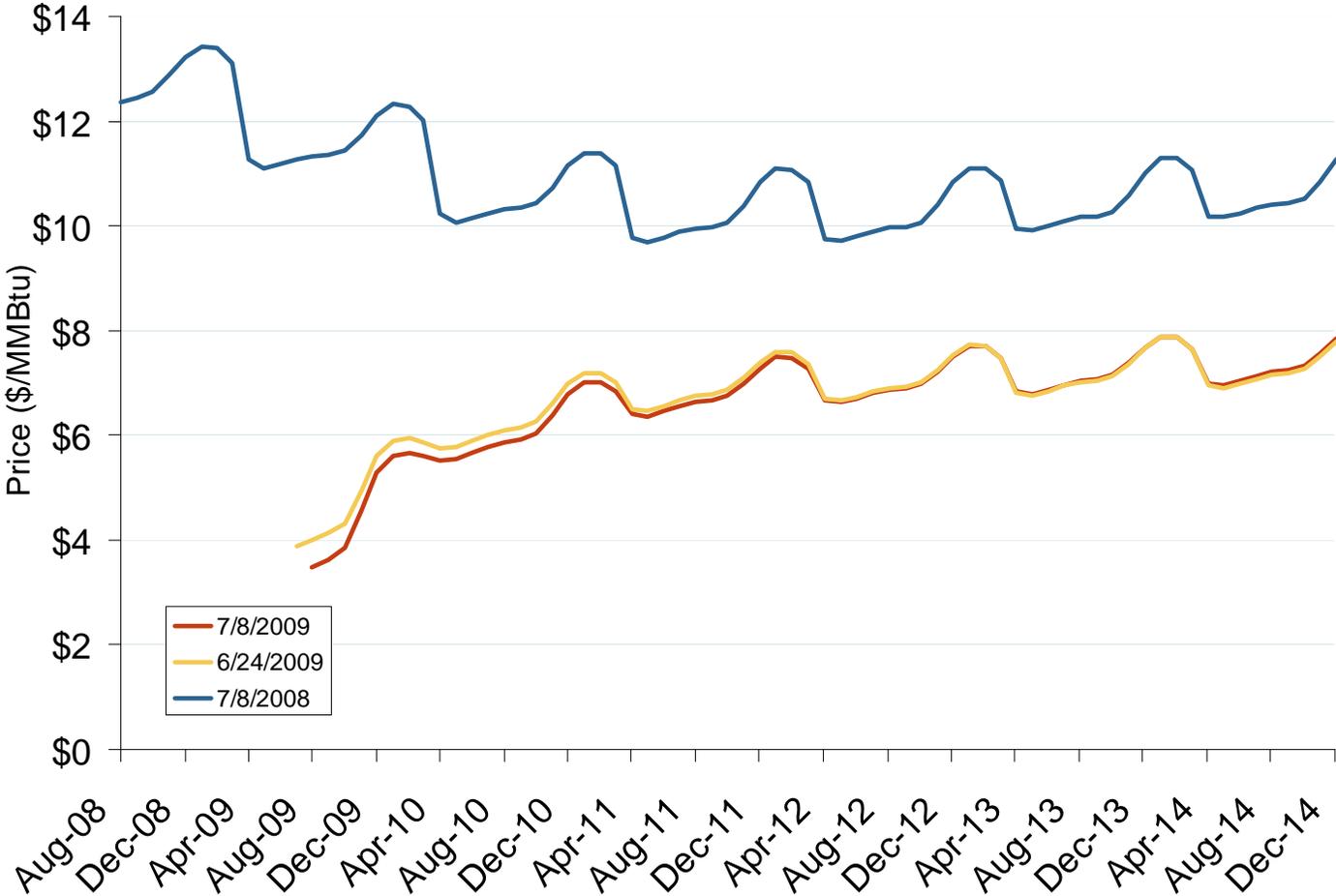
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Difference in Northern and Southern California Daily Spot Prices



Source: Derived from *Platts* data.

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.
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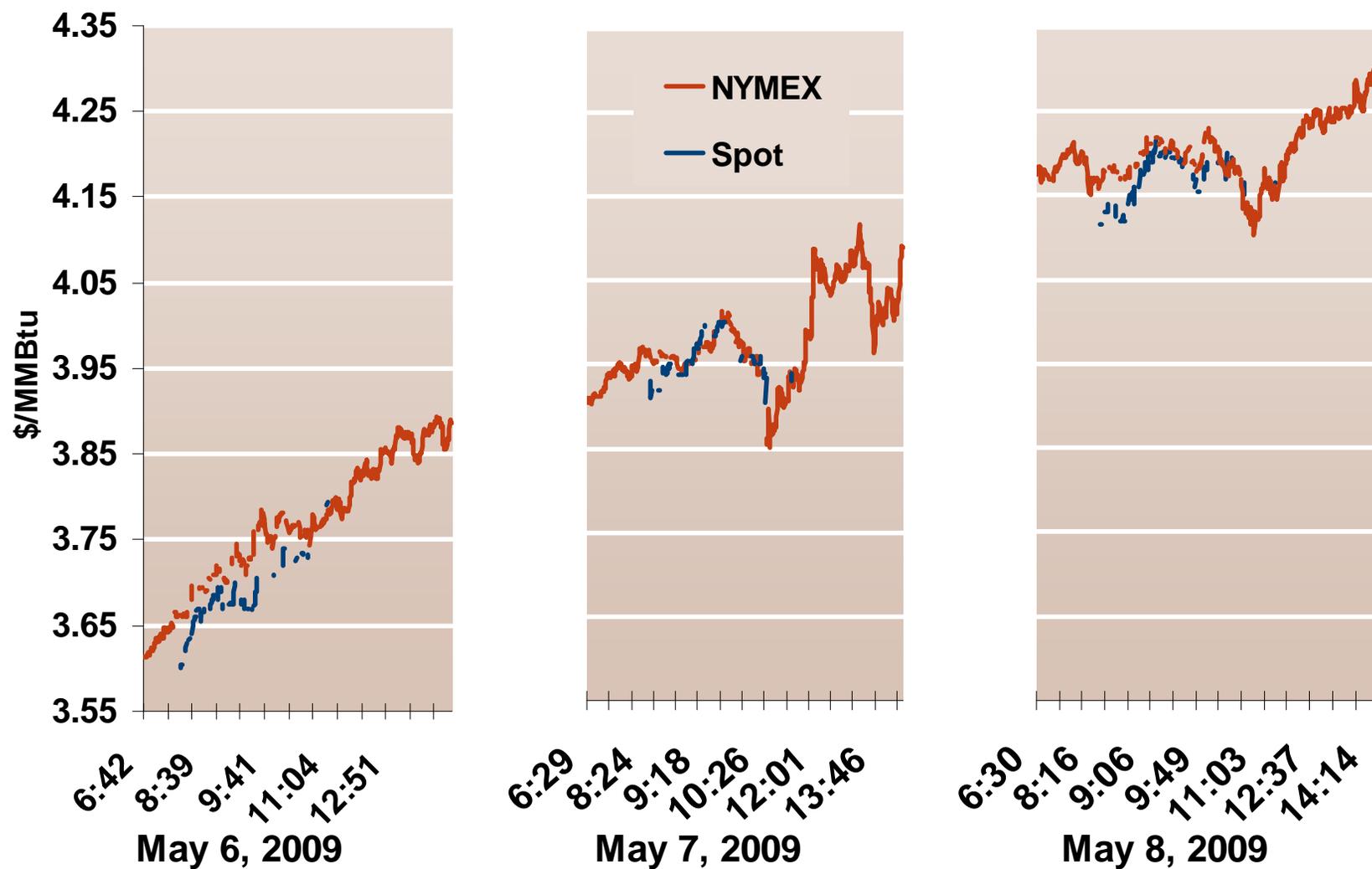
Two-Thirds of Gas Sales Are Based on Indexes

- FERC ordered large sellers and purchasers of natural gas to file annually their transaction volumes.
- The first filings were due on July 1 for 2008.
- Many filers are not otherwise subject to FERC's jurisdiction.
- 1,050 respondents filed on behalf of 1,900 companies.
- 56 Tcf of gas was reported sold in 2008.
- Two-thirds of the volume was sold at a price based on a published index, a quarter employed fixed-price transactions and a tenth was sold at prices based on New York Mercantile Exchange (Nymex) trading.
- The index-based trading included bilateral, arms-length, fixed-price physical natural gas transactions between unaffiliated companies at all trading locations.
- Reported purchases were nearly identical, both in total volume and types of transactions.

Two-Thirds of Gas Sales Are Based on Indexes

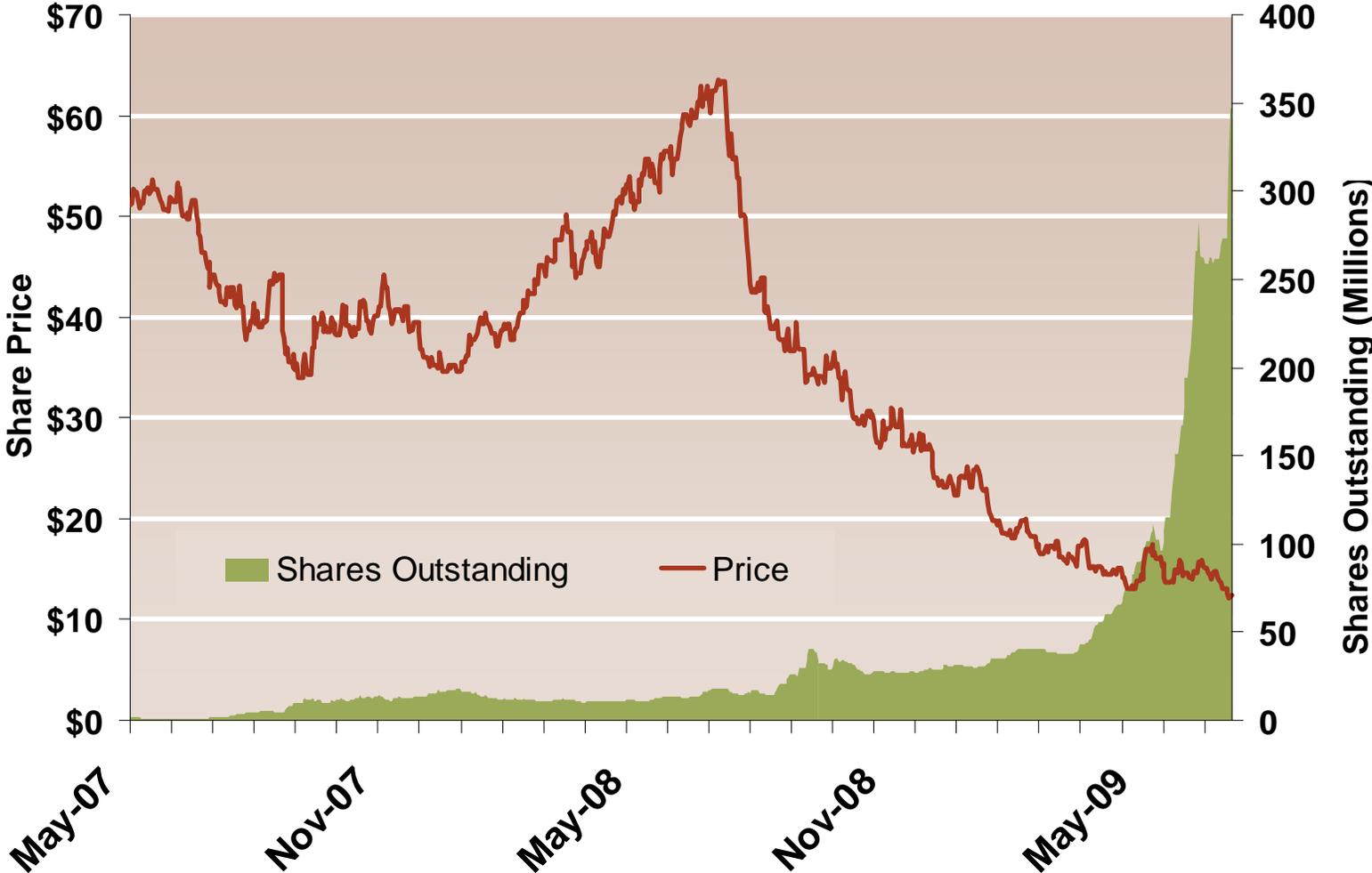
- The top 50 sellers accounted for 78% (43 Bcf) of total sales and the top 5 sold 29% (16 Bcf).
- BP led the way with more than 5.4 Tcf of gas sold, while ConocoPhillips (3.5 Tcf), Shell (2.5 Tcf), Constellation (2.3 Tcf) and Chevron (2.1 Tcf) finished off the rest of the top 5.
- Nineteen of the top 50 sellers sold at least 75% of their gas at index.
- The majority of sales – more than 35 Tcf, or 64% of total sales – were made by companies that said they report these transactions to market index publishers.
- Form 552-reported day-ahead and next-month sales totaled more than 1.5 times the volume of similar transactions reported in trading on the IntercontinentalExchange (ICE).
- Half of the gas was sold using monthly contracts.

NYMEX Futures Prices Help to Frame Spot Market Prices



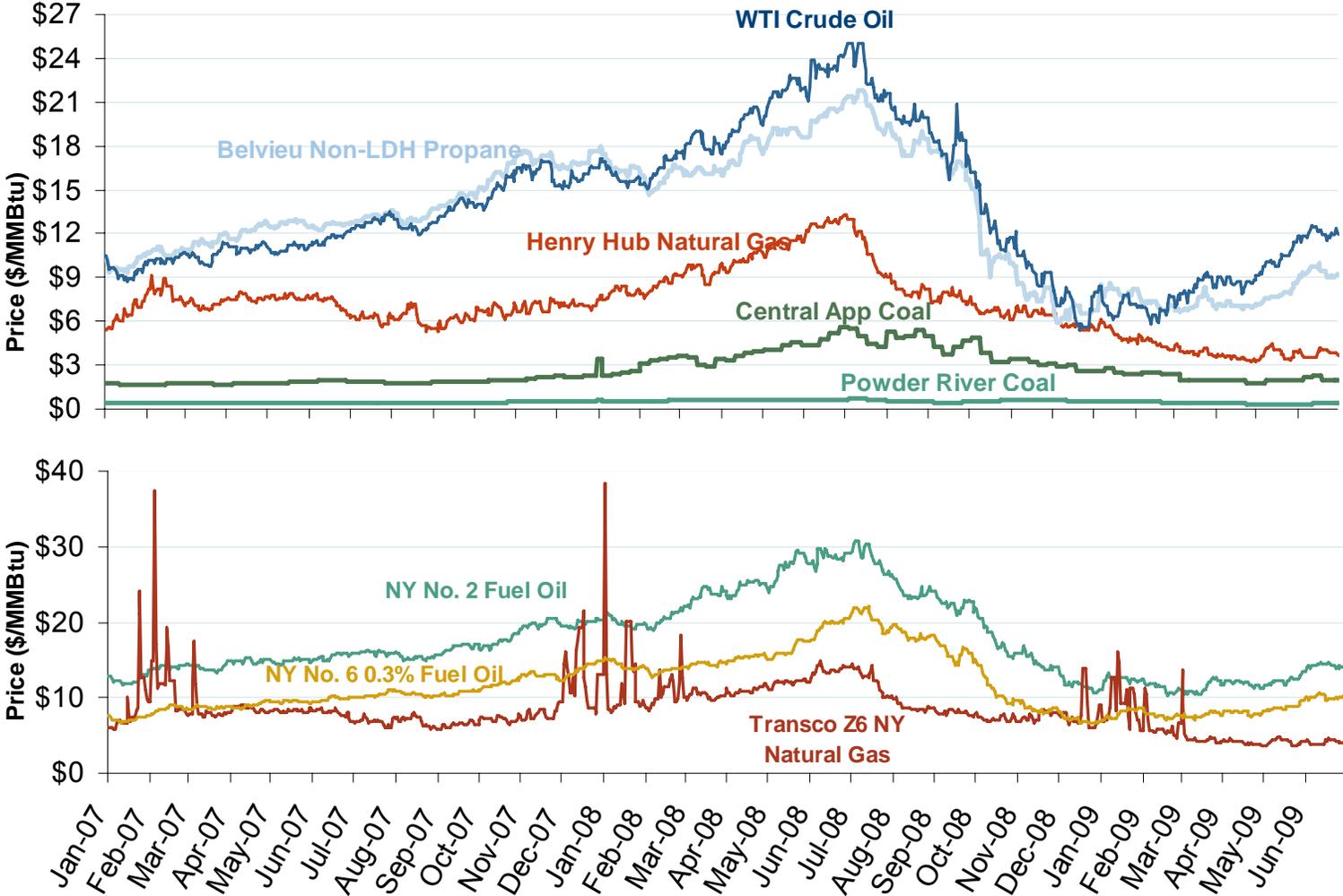
Source: Derived from *Bloomberg* data for Henry Hub Contract.
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Trends in Share Price and Units Outstanding for United States Natural Gas Fund (UNG)



Source: Derived from *Bloomberg* data.
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Oil, Coal, Natural Gas and Propane Daily Spot Prices

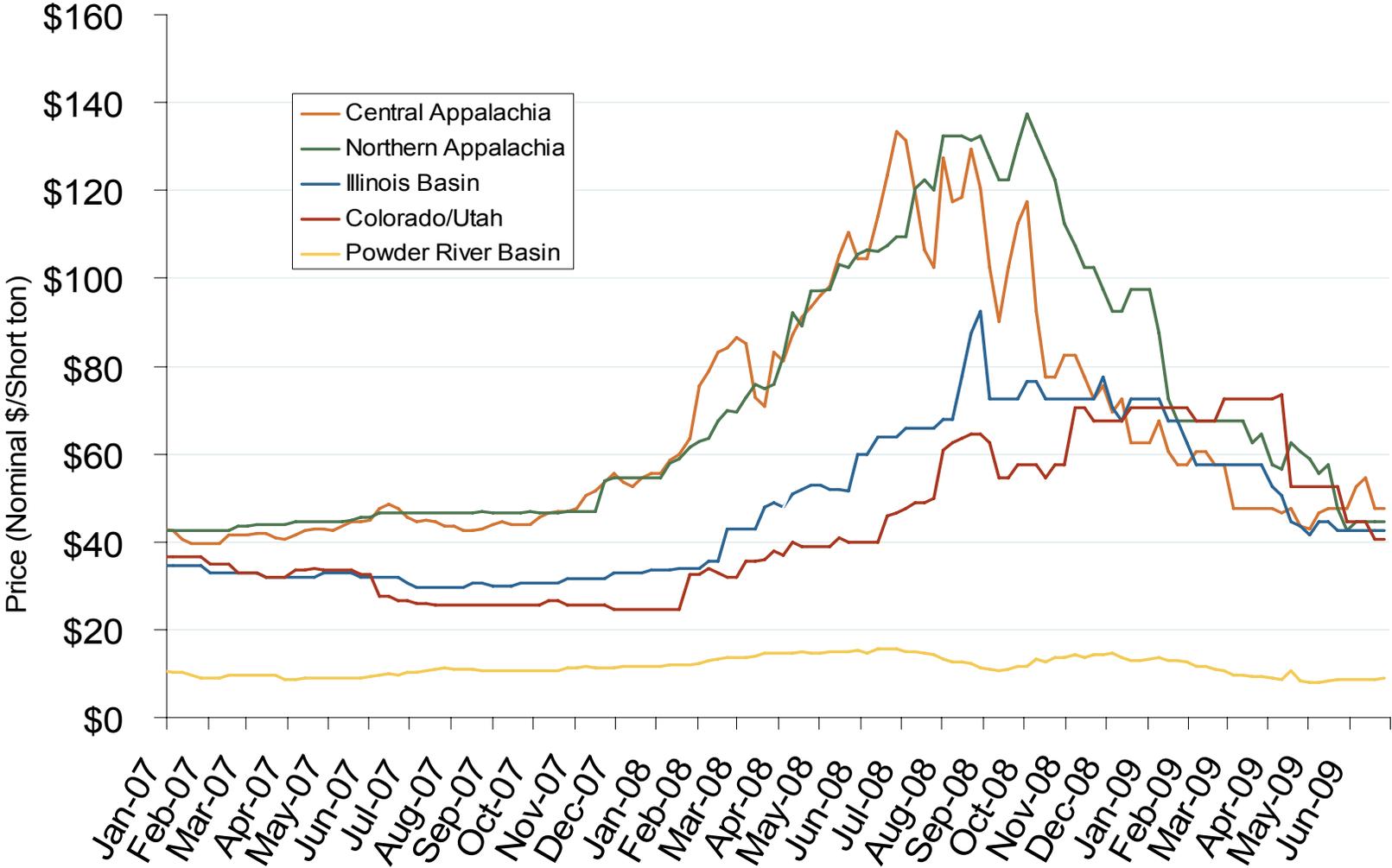


Source: Derived from ICE and Bloomberg data.

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.

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Regional Coal Spot Prices

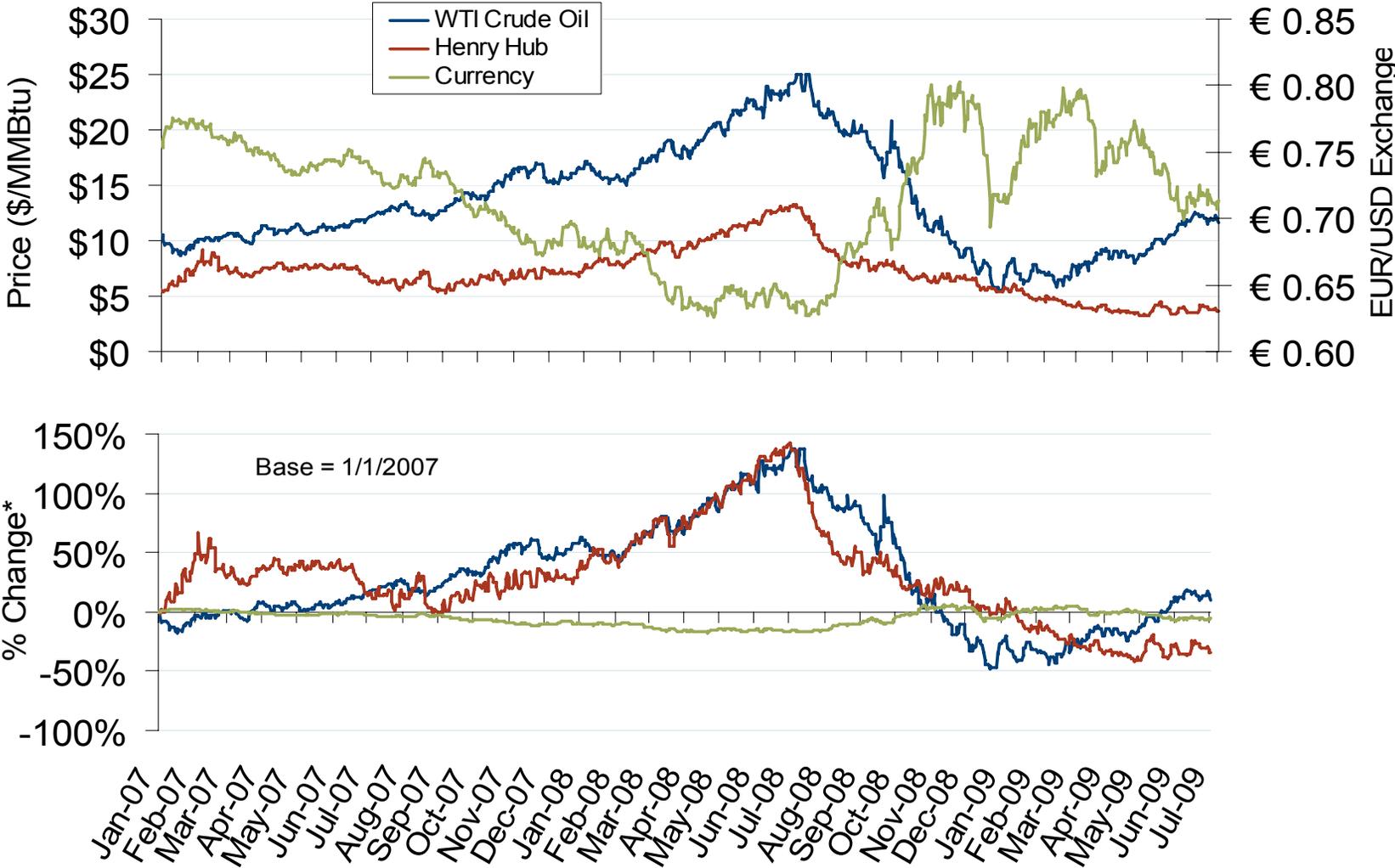


Note: Does not reflect the delivered price of coal; excludes incremental cost of emissions allowances.

Source: Derived from *Bloomberg* data.
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Oil, Natural Gas and Currency Spot Prices



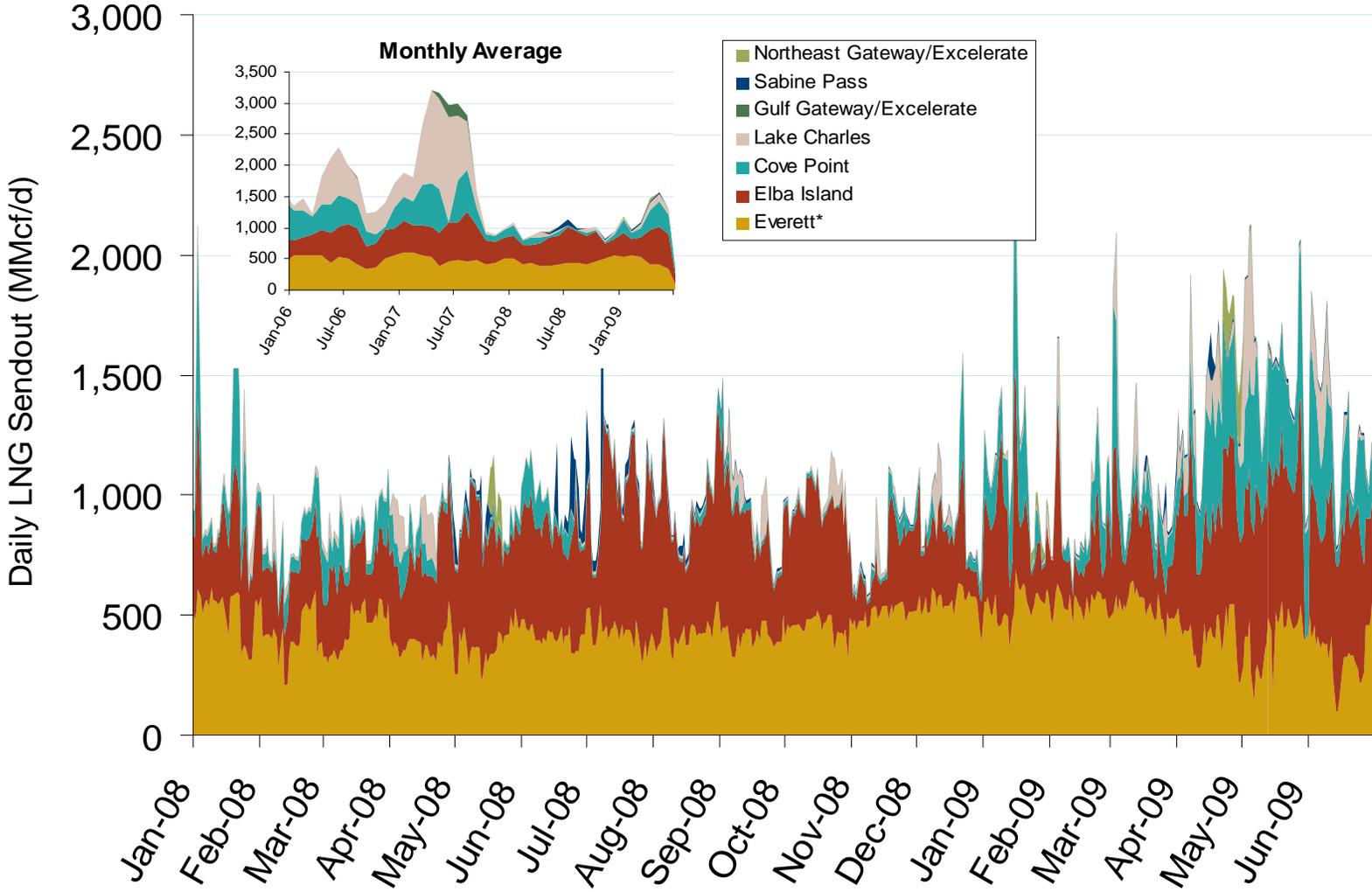
Source: Derived from *Bloomberg* data.

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World LNG Estimated July 2009 Landed Prices



Daily Gas Sendout from Existing U.S. LNG Facilities

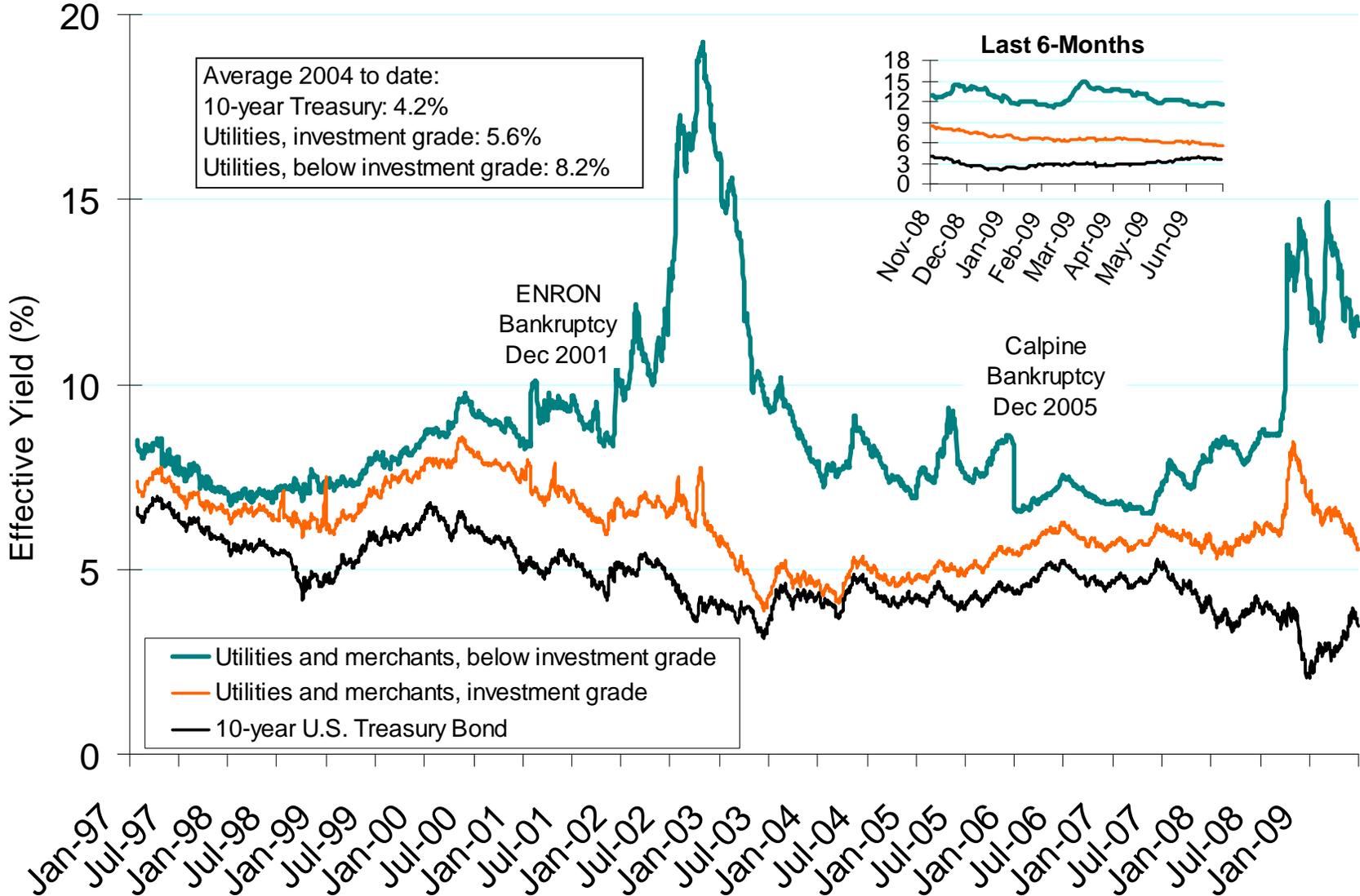


Source: Derived from Bentek data.

* 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.
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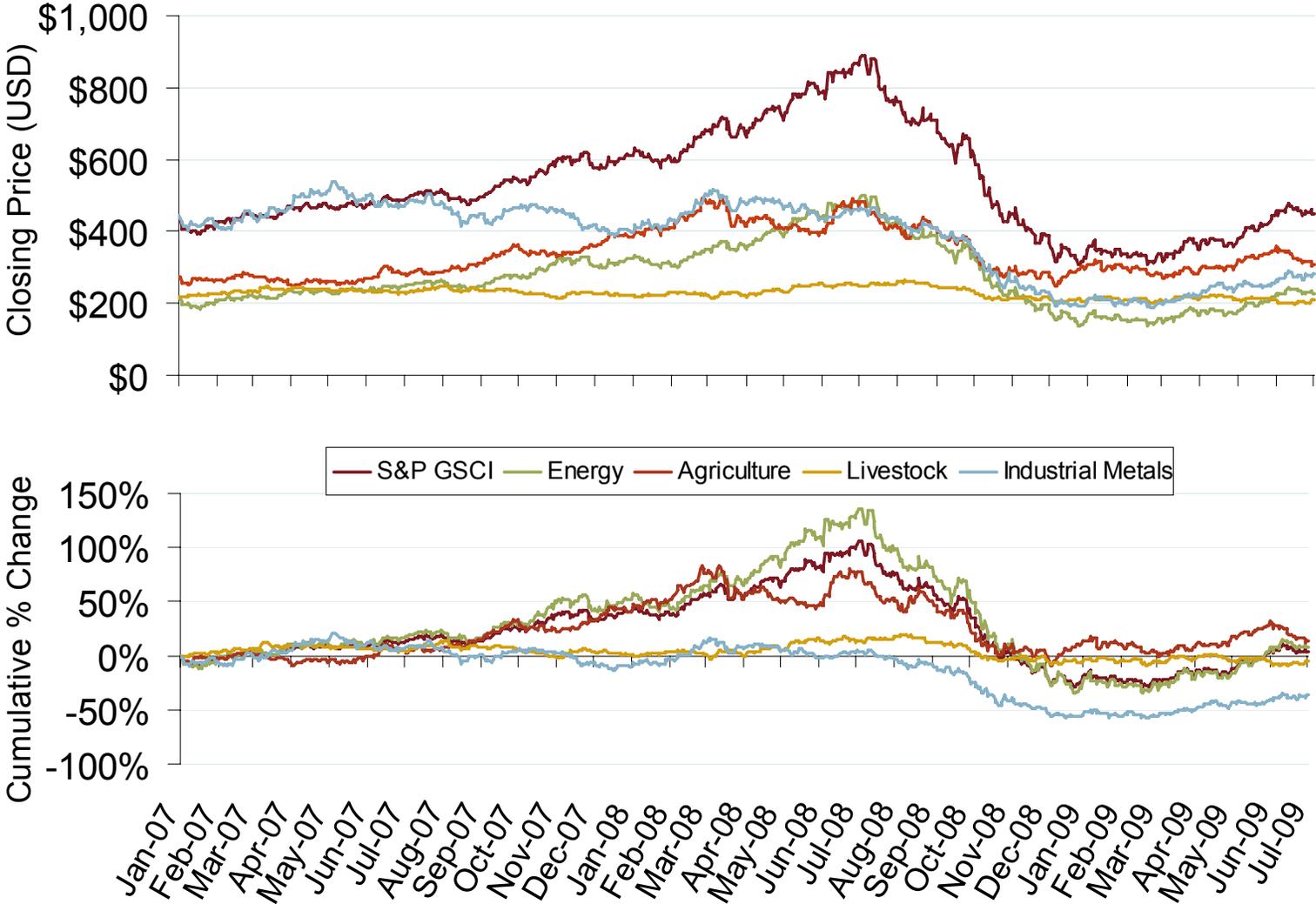
Yields of Utilities, Merchants and Ten Year Treasury Bonds



Source: Derived from Merrill Lynch Index U.S Corporates, Gas and Electric Utilities and Bloomberg data.

Updated July 8, 2009

S&P Goldman Sachs Commodity Index Official Closing Price



Source: Bloomberg Data
July 2009 Western Snapshot Report

Updated July 8, 2009