

OE ENERGY MARKET SNAPSHOT

Western States Version – April 2009 Data

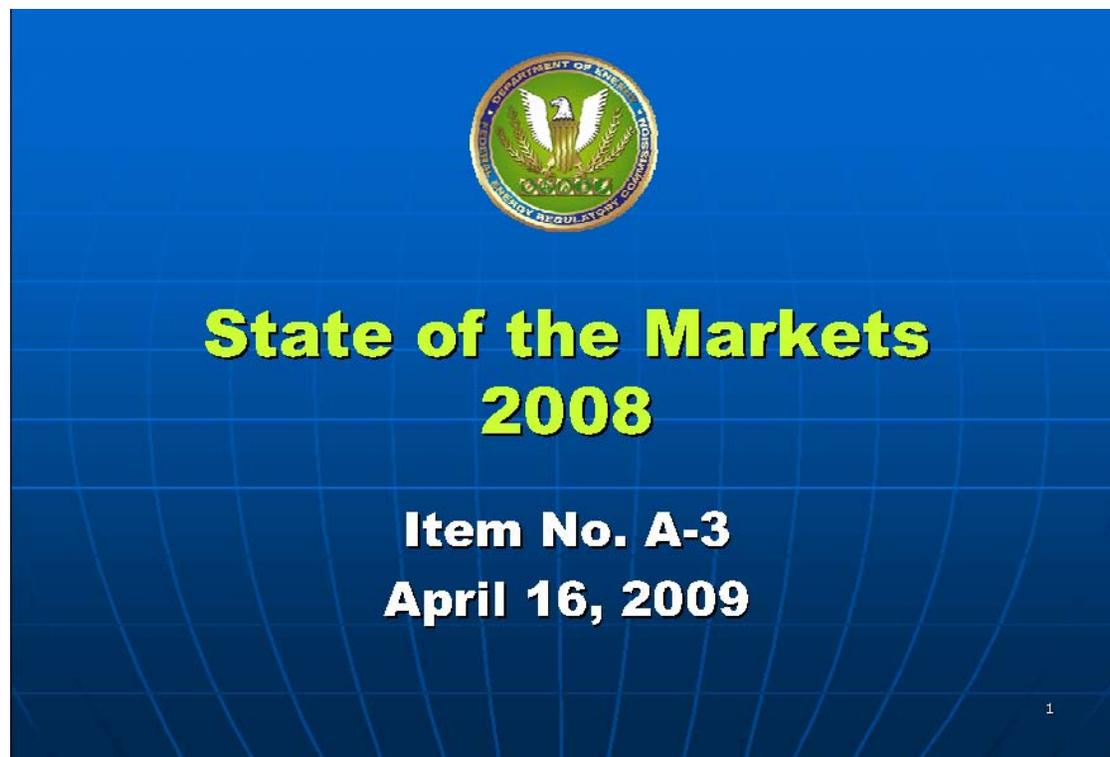
- **Special Report**
- **Natural Gas and Fuel Markets**
- **Electricity Markets**

Office of Enforcement
Federal Energy Regulatory Commission
May 2009



Special Report:

- **2008 State of the Markets Report**

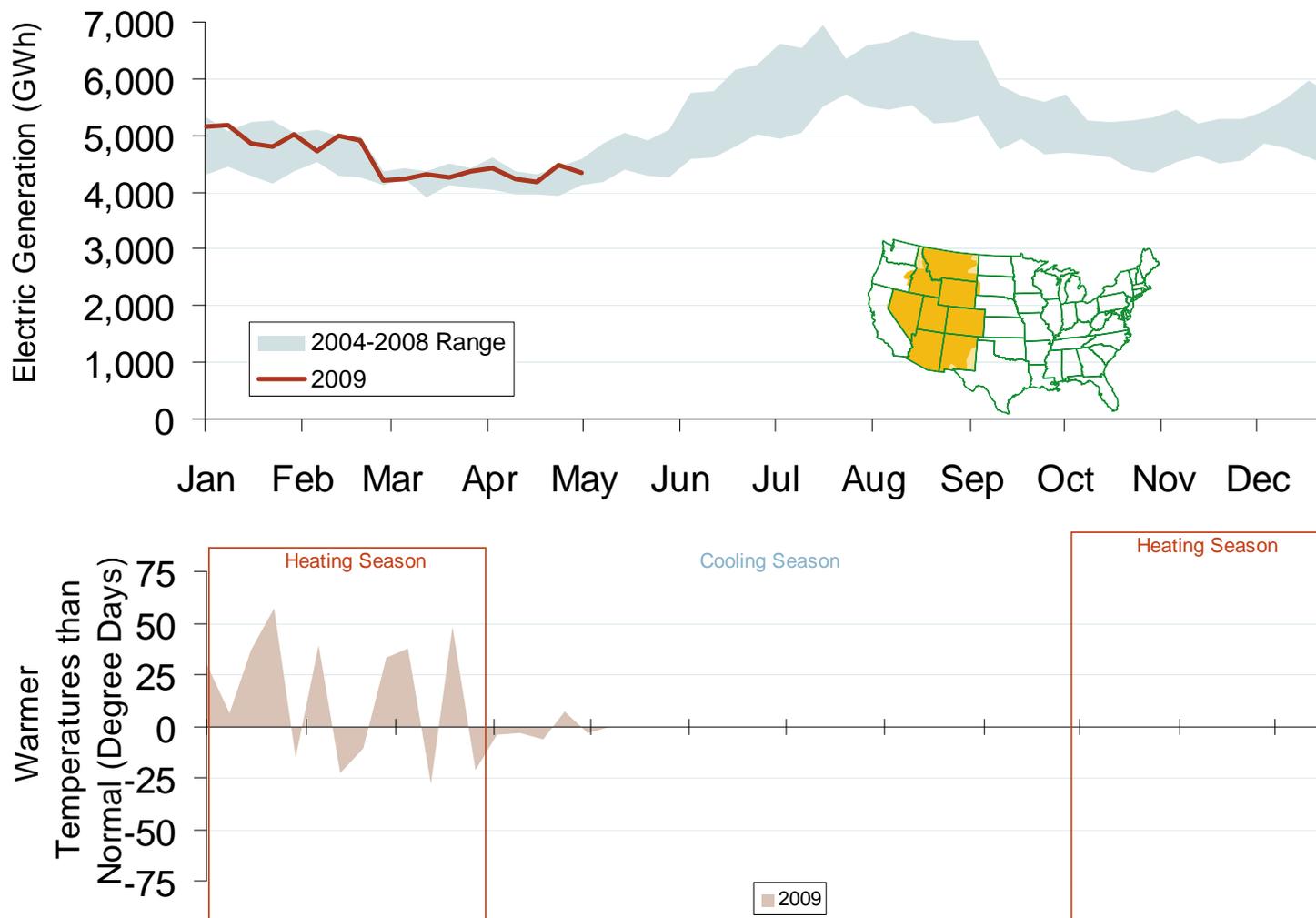


www.ferc.gov/market-oversight/st-mkt-ovr/som-rpt-2008.pdf

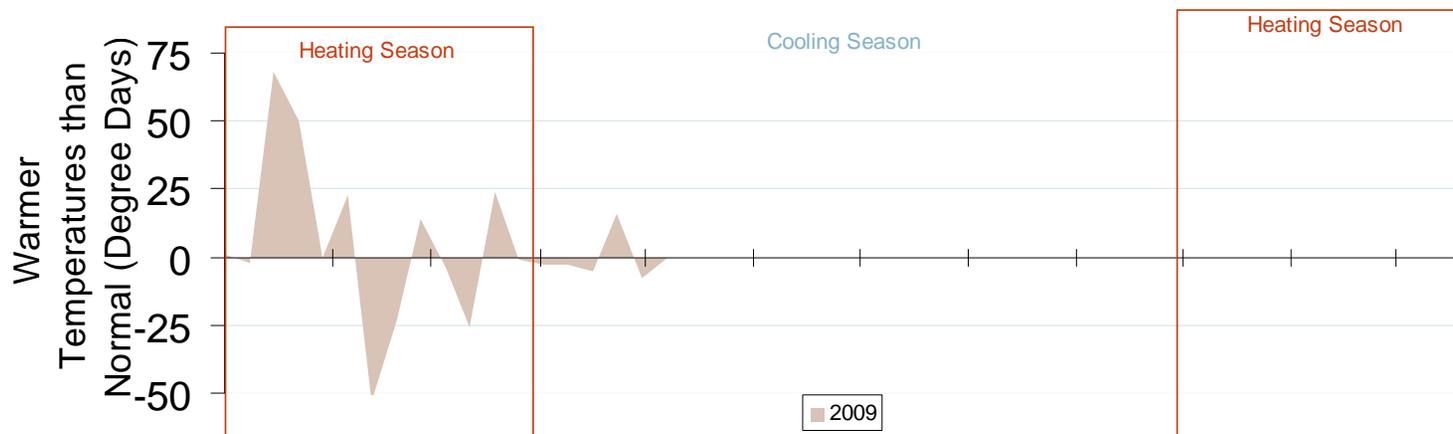
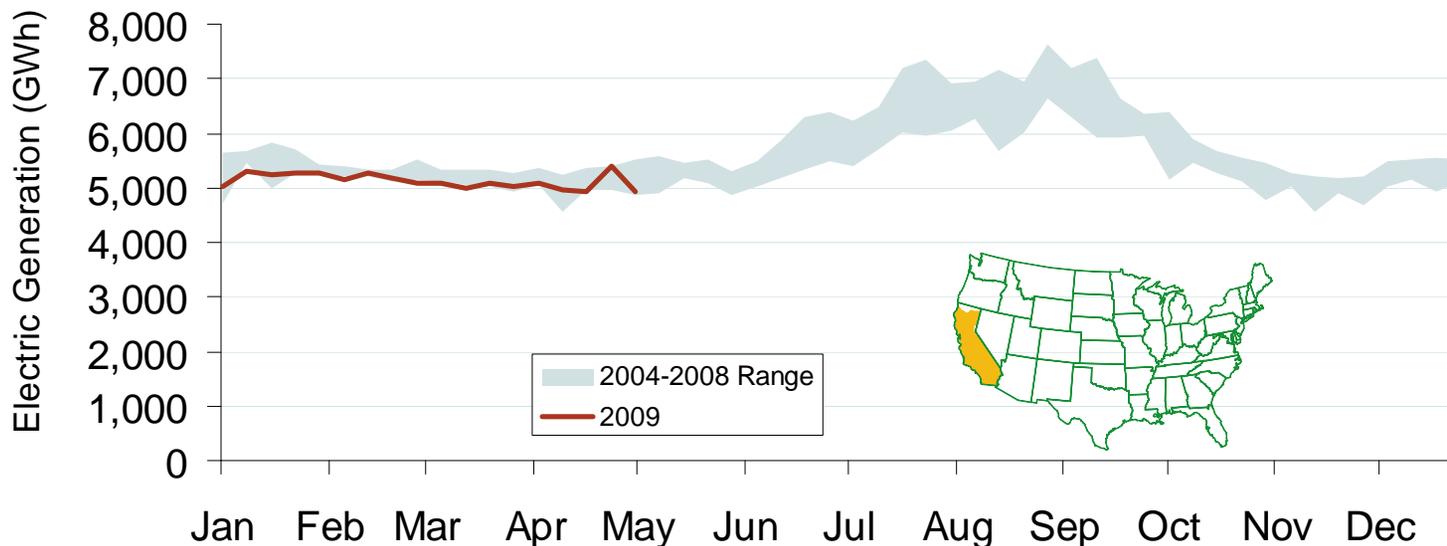


Electricity Markets

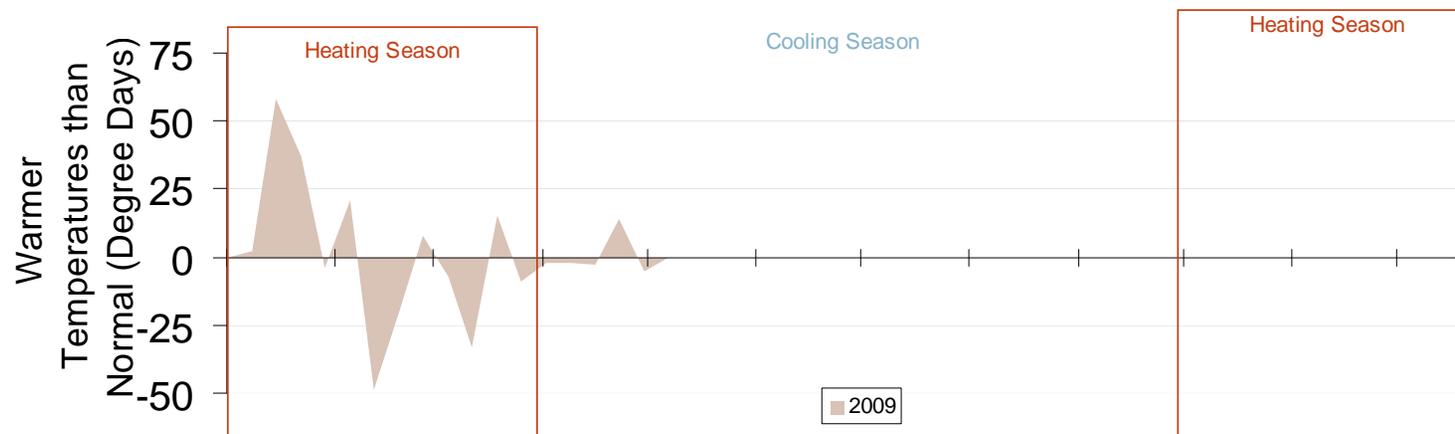
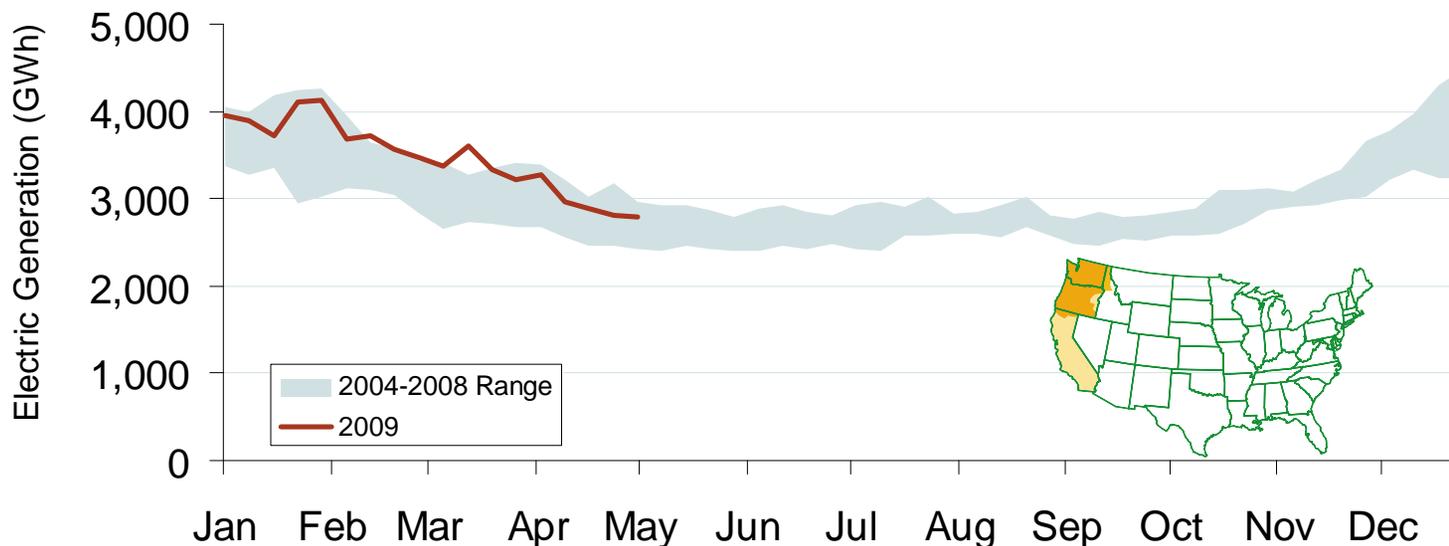
Weekly Electric Generation Output and Temperatures Rocky Mountains Region



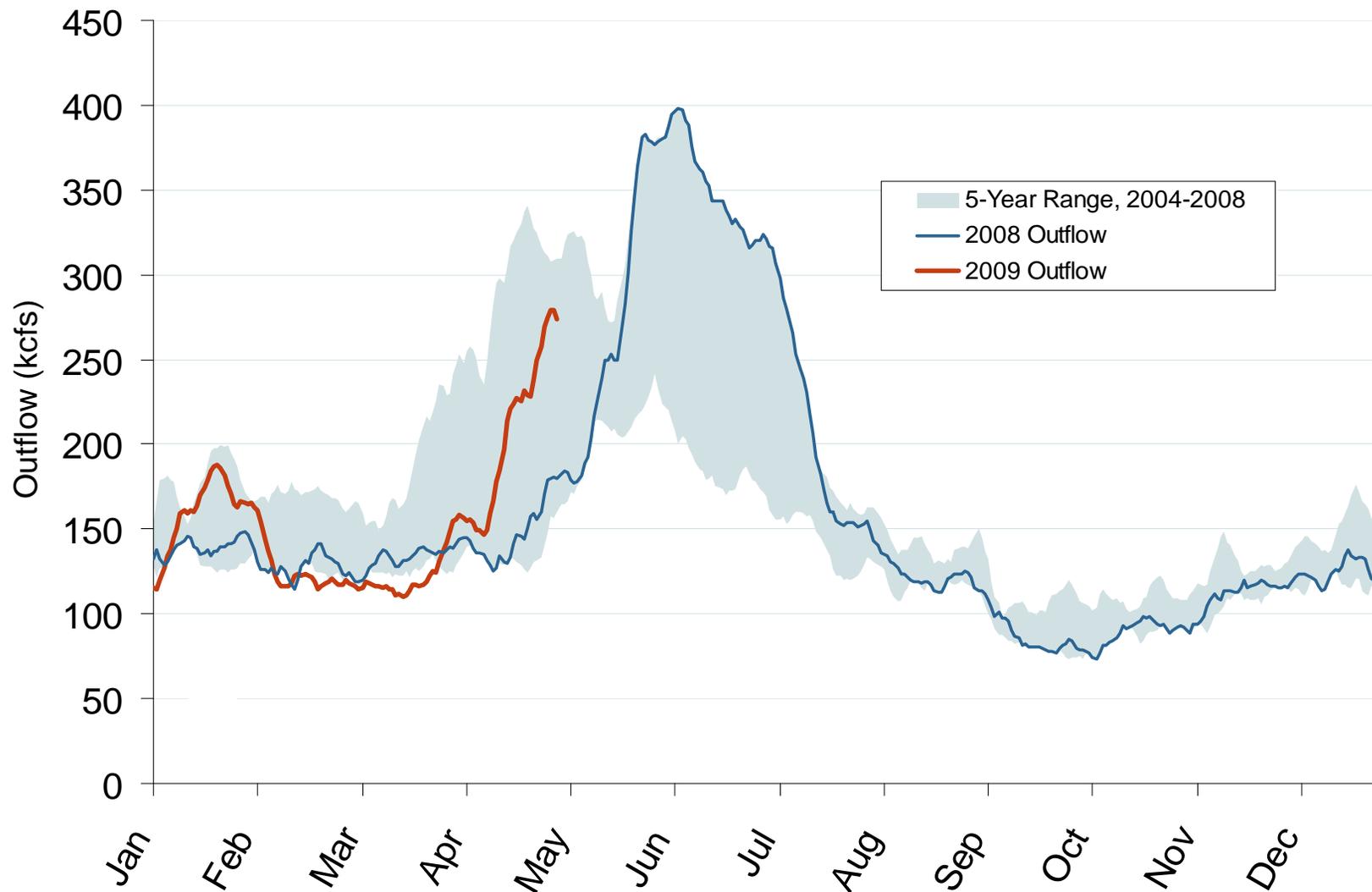
Weekly Electric Generation Output and Temperatures California



Weekly Electric Generation Output and Temperatures Pacific Northwest Region



Stream Flow at The Dalles Dam



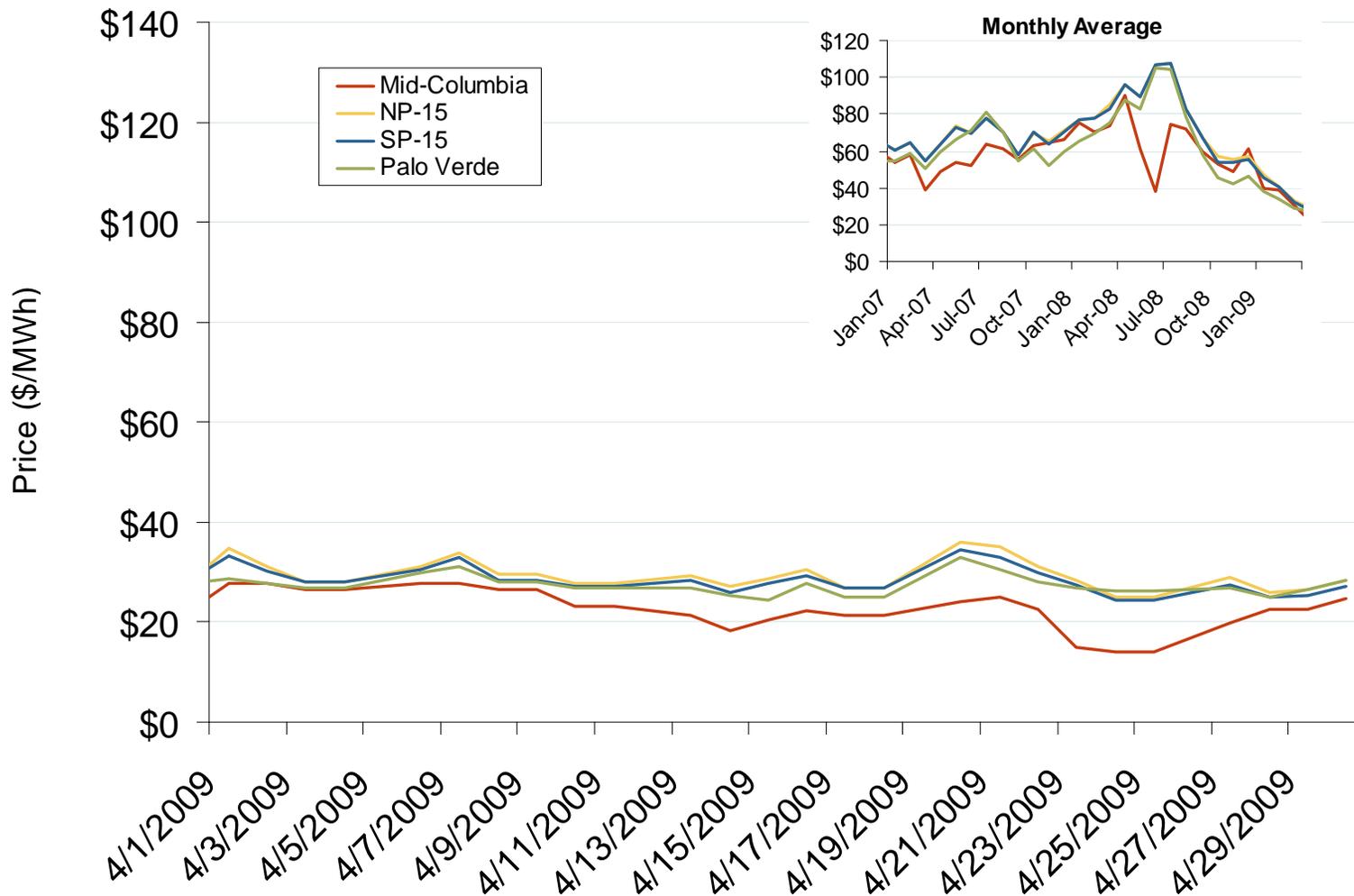
Source: Derived from USACE data.

Trend lines are 7-day moving averages.

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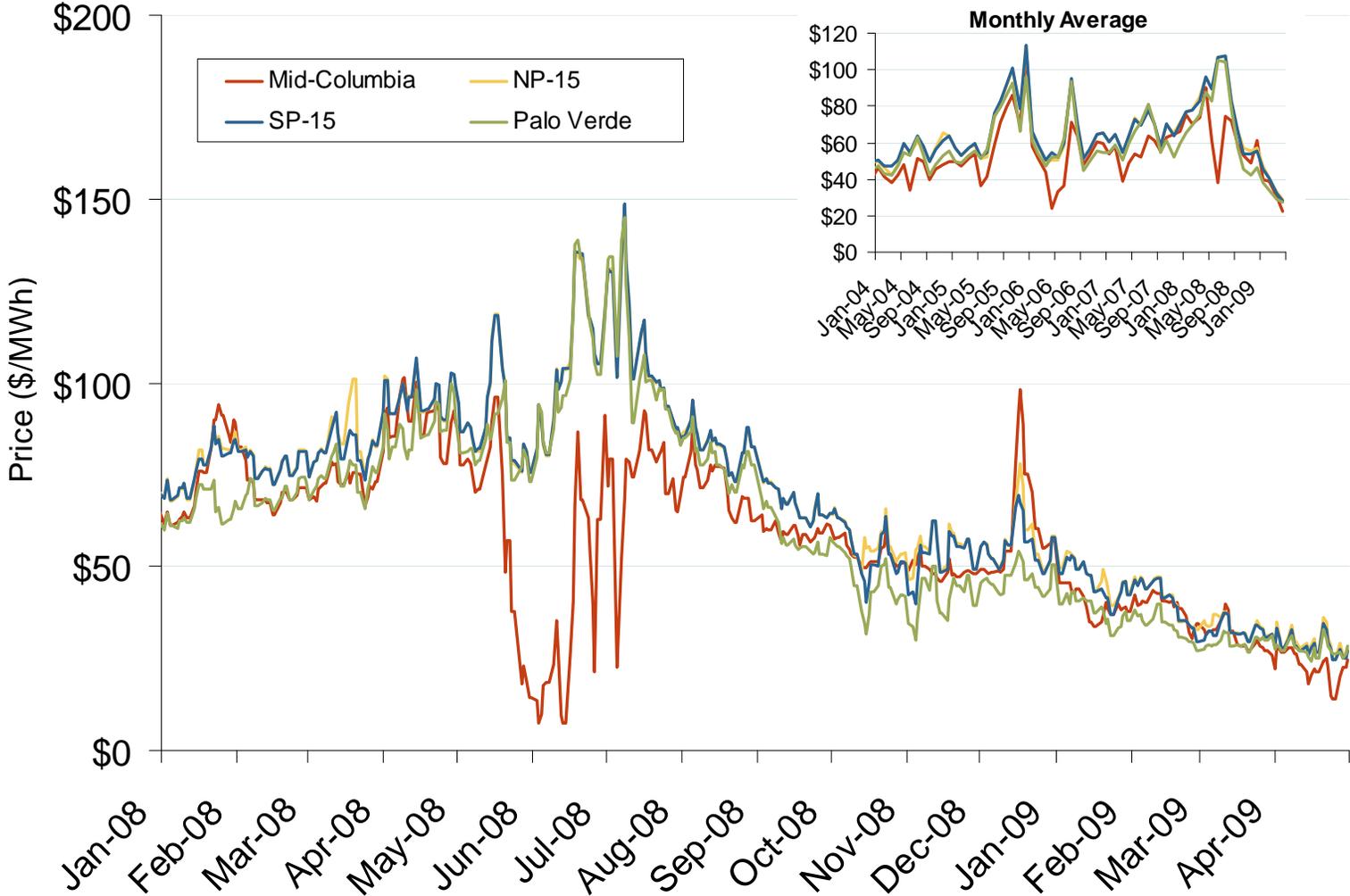
Updated May 7, 2009

Western Daily Bilateral Day-Ahead On-Peak Prices



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

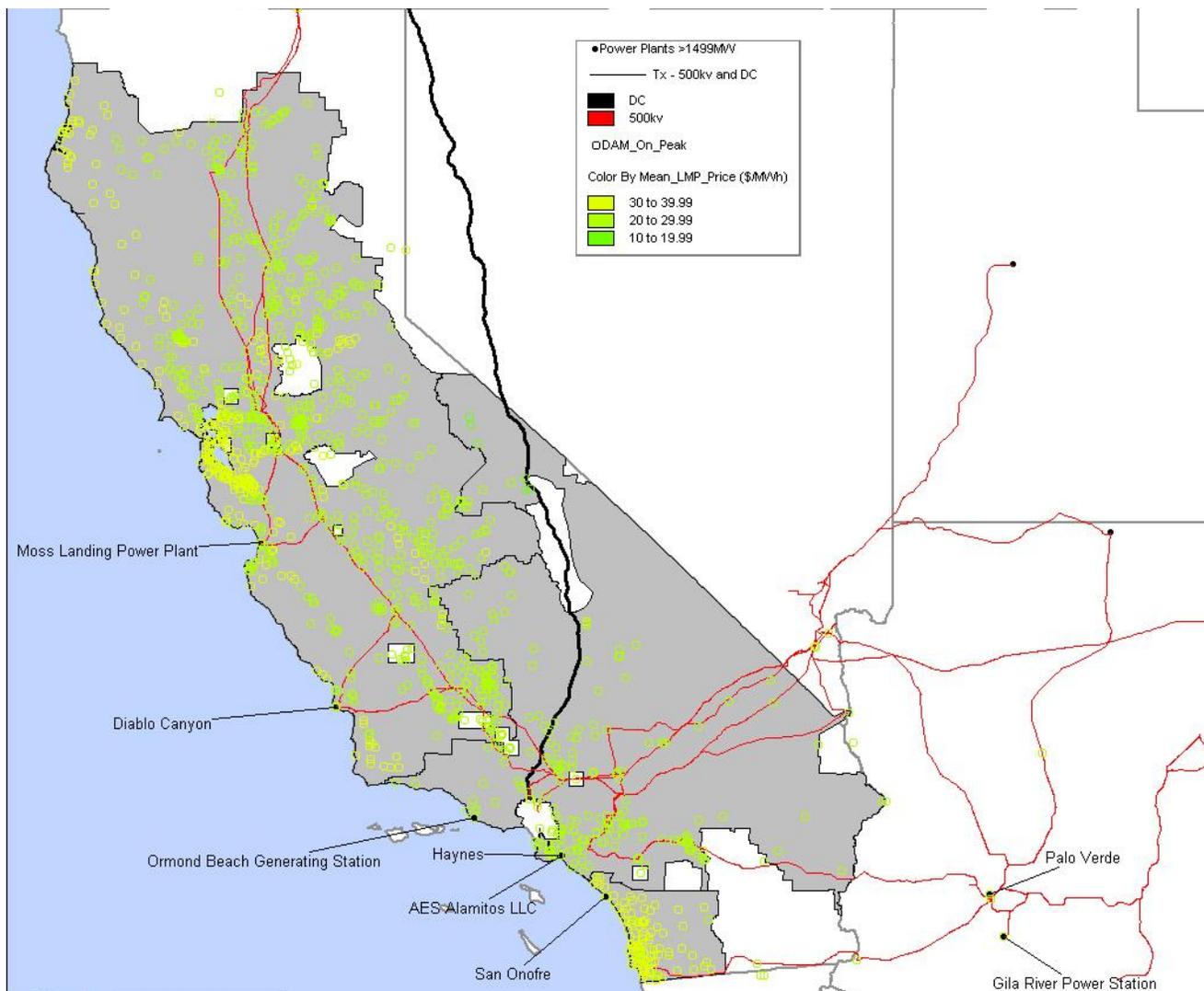
Western Daily Bilateral Day-Ahead On-Peak Prices



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

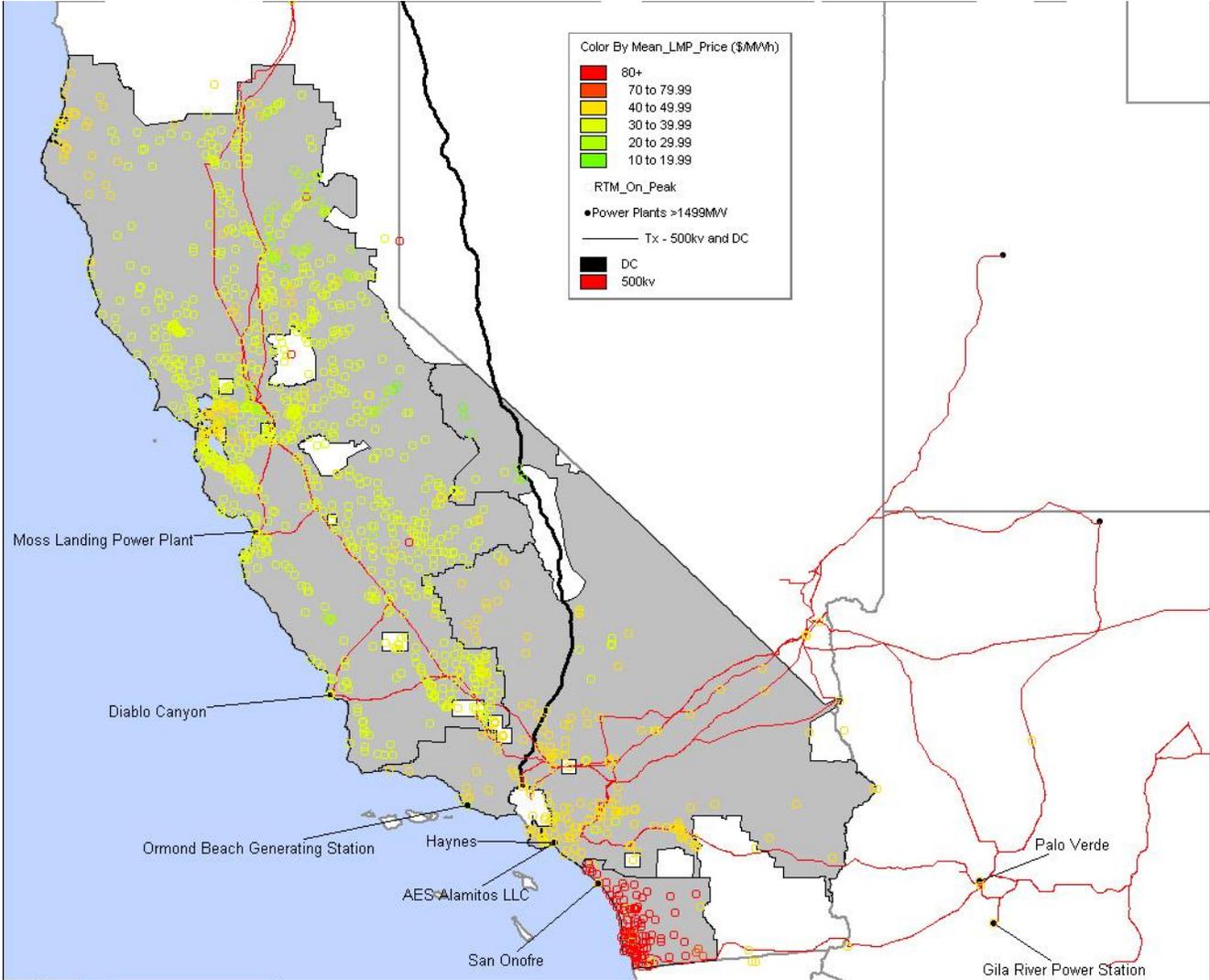
Updated May 7, 2009

Average April 2009 CAISO On-Peak Day Ahead LMP Prices



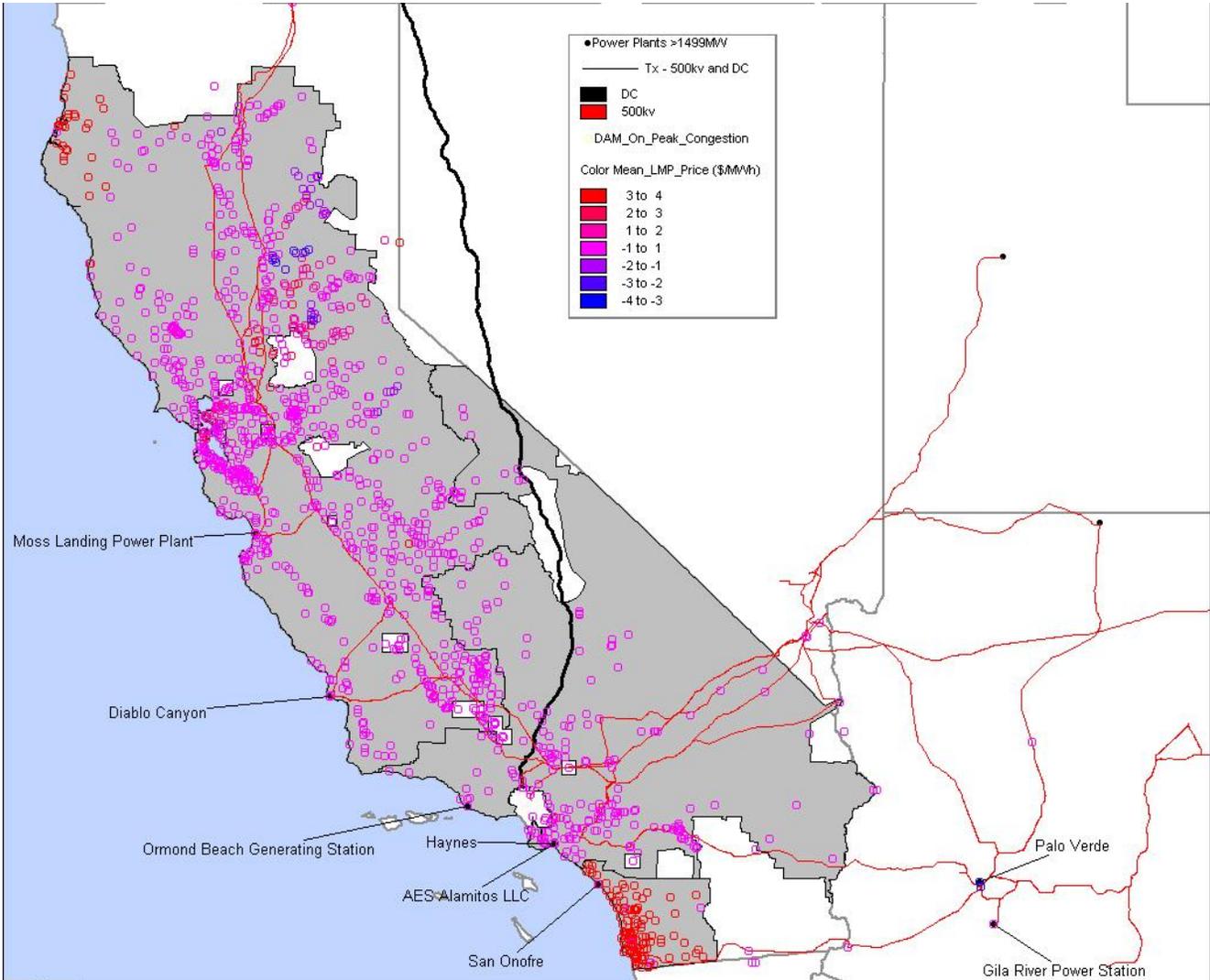
Source: Created using Ventyx Energy Velocity using CAISO data.
May 2009 Western Snapshot Report

Average April 2009 CAISO On-Peak Real Time LMP Prices



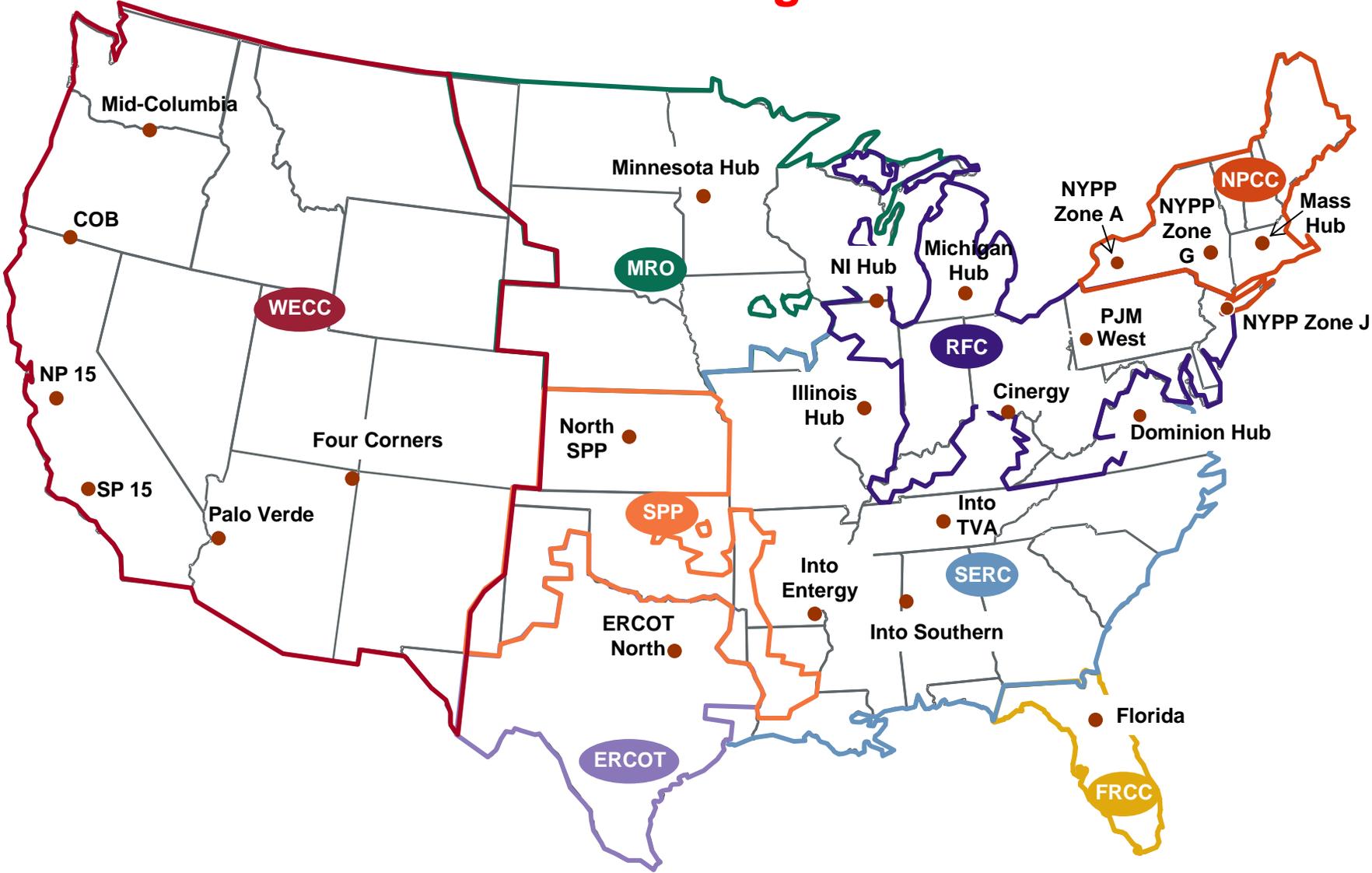
Source: Created using Ventyx Energy Velocity using CAISO data.
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Average April 2009 CAISO On-Peak Day Ahead LMP Prices (Congestion Component)



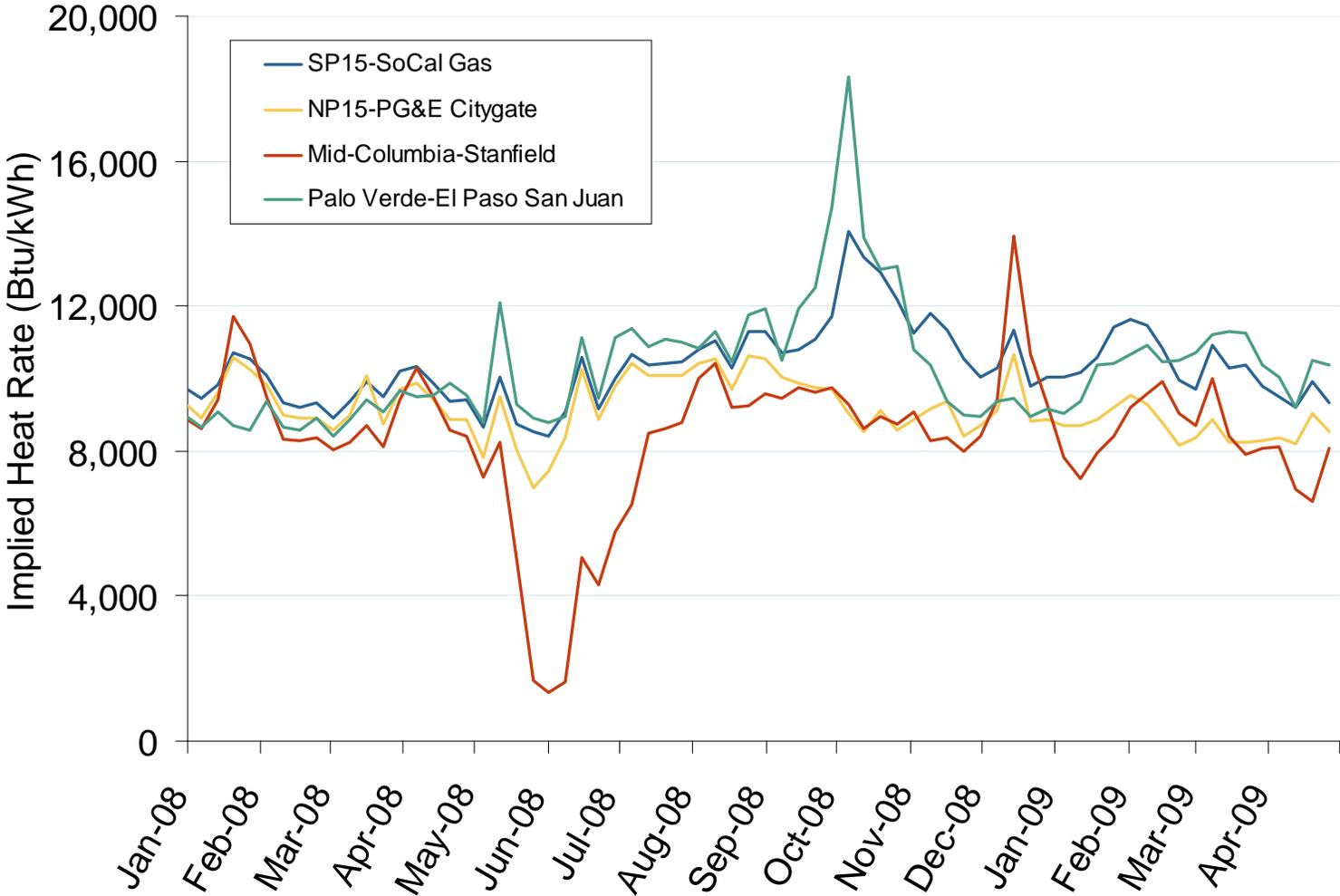
Source: Created using Ventyx Energy Velocity using CAISO data.
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Electric Pricing Points



Note: Pricing points reflect general locations. Actual trading regions may not be point specific.
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Implied Heat Rates at Western Trading Points Weekly Averages



Source: Derived from *Platts* data
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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):

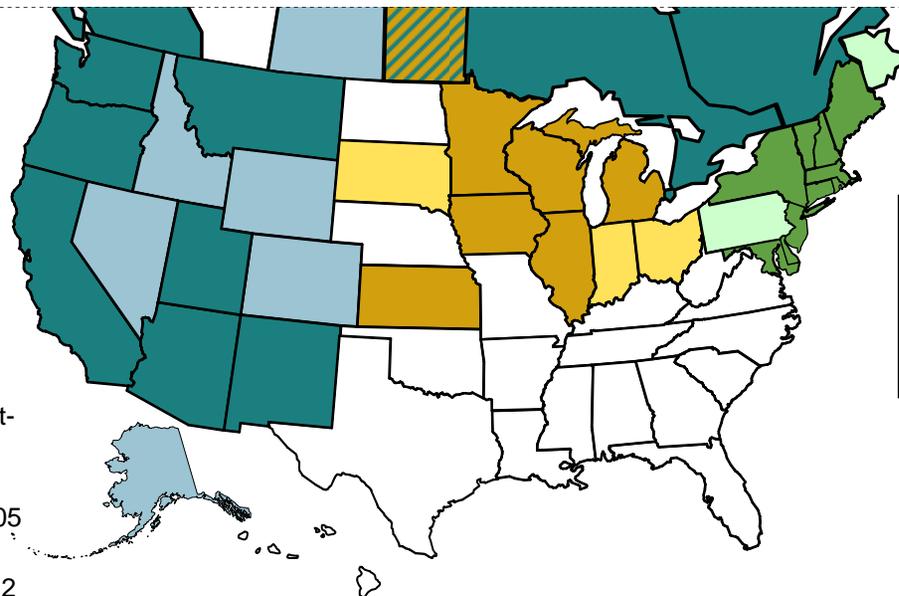
- Created February 2007
- Partners: 7 states, 4 provinces; Observers: 5 states, 1 province
- Announced its design for a market-based, *multi-sector* cap-and-trade program, Sept 2008:
 - 15% CO₂ reduction below 2005 levels by 2020
 - Phase I to take effect Jan 2012

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

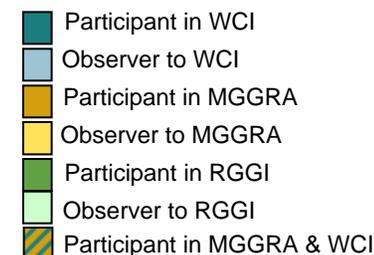
Regional Greenhouse Gas Initiative (RGGI):

- 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



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

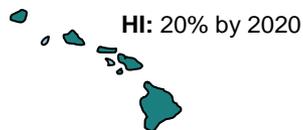
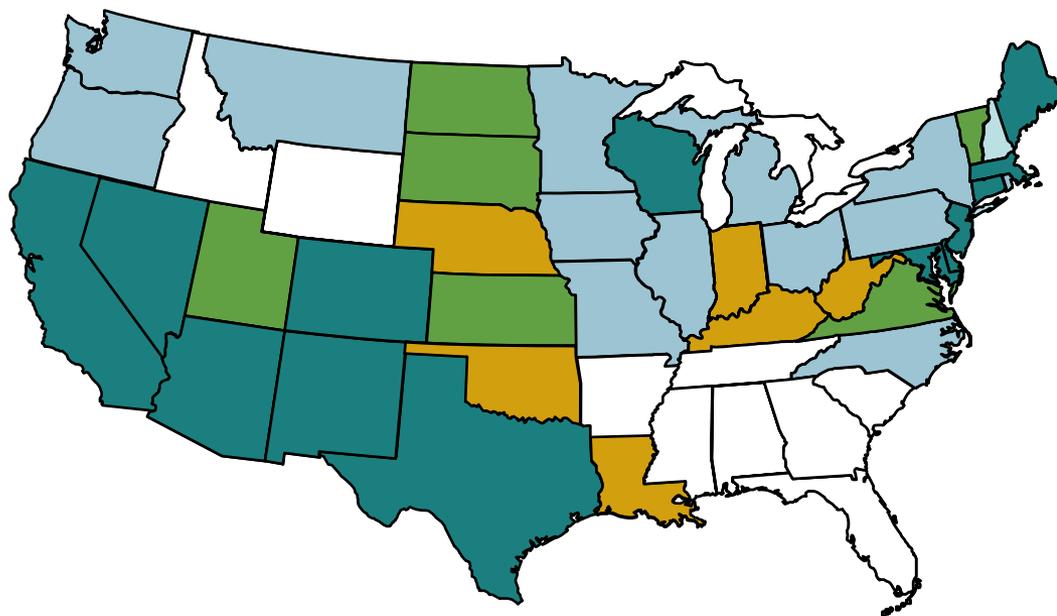
29 States including D.C. have Renewable Energy Portfolio Standards (RPS)

ND: 10% by 2015	MN: 25% by 2025	MI: 10% MWh and 1,100 MW by 2015
SD: 10% by 2015	IA: 105 MW	IN: different bills pending
NE: studying an RPS	MO: 15% by 2021	OH: 12.5% by 2025
KS: Goal - 20% wind by 2020	WI: 10% by 2015	WV: 25% by 2025 (bill pending)
OK: Studying an RPS	IL: 25% by 2025	KY: Report recommends RPS

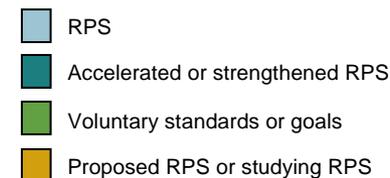
WA: 15% by 2020
OR: 25% by 2025
CA: 20% by 2010;
 Exec order: 33% by 2020
MT: 15% by 2015
NV: 20% by 2015
UT: 20% by 2025
CO: 20% by 2020
AZ: 15% by 2025
NM: 20% by 2020
TX: 5,880 MW by 2015

ME: 40% by 2017
NH: 23.8% by 2025
VT: 25% by 2025
MA: 15% by 2020
RI: 16% by end 2019
CT: 27% by 2020
NY: 25% by 2013
PA: 18% by 2020
NJ: 22.5% by 2020
DE: 20% by 2019
DC: 20% by 2020
MD: 20% by 2022
VA: 12% by 2022
NC: 12.5% by 2021
TVA: 50% by 2020*

HI: 20% by 2020

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.

Alaska has no RPS; TVA's goal is not state policy; it called for 50% zero- or low-carbon generation by 2020.

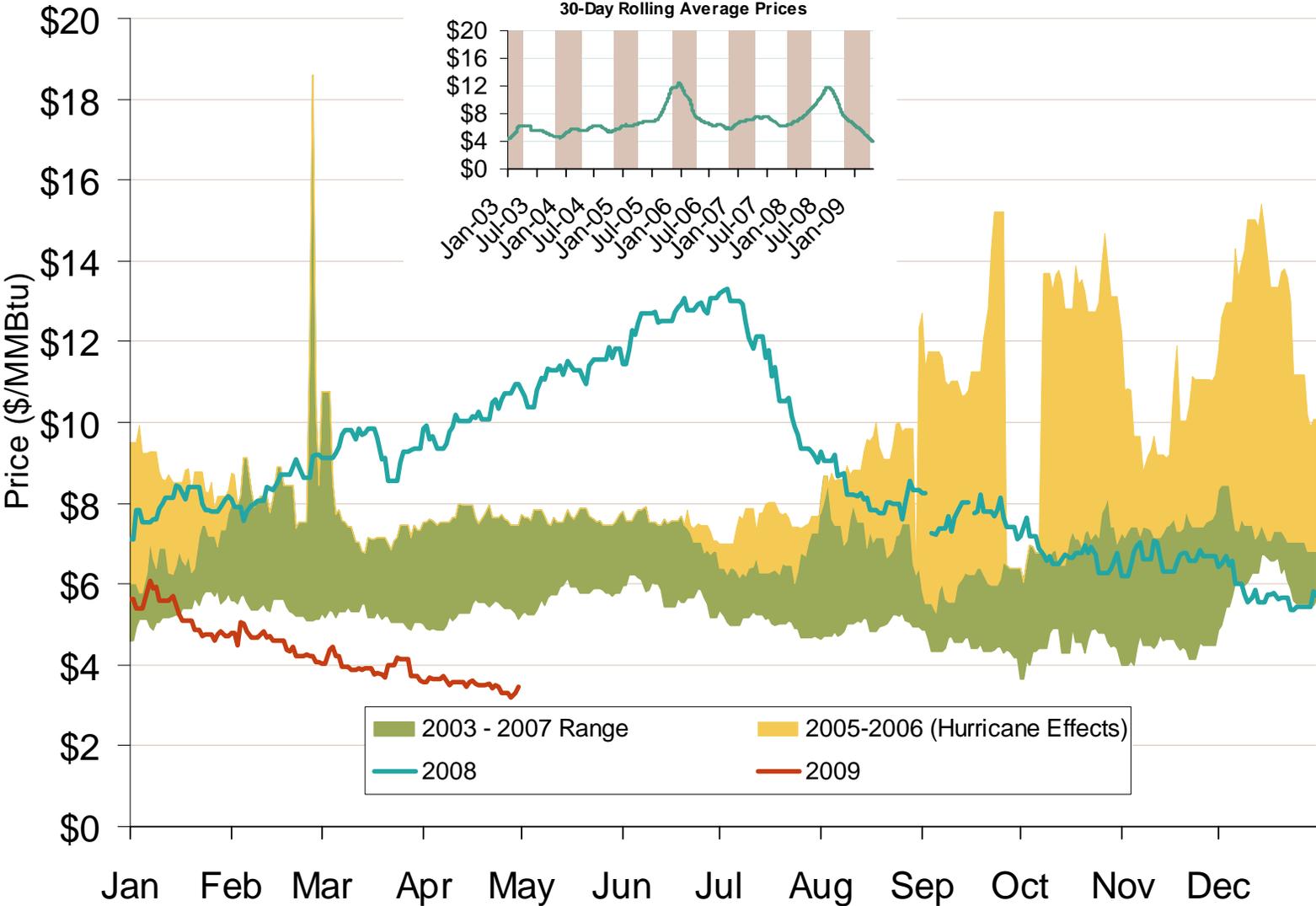
Sources: Derived from data in: LBNL, PUCs, State legislative tracking services, Pew Center, and the Union of Concerned Scientists. Details, including timelines, are in the Database of State Incentives for Renewables and Energy Efficiency: <http://www.dsireusa.org>



Natural Gas and Fuel Markets

Federal Energy Regulatory Commission • Market Oversight @ FERC.gov

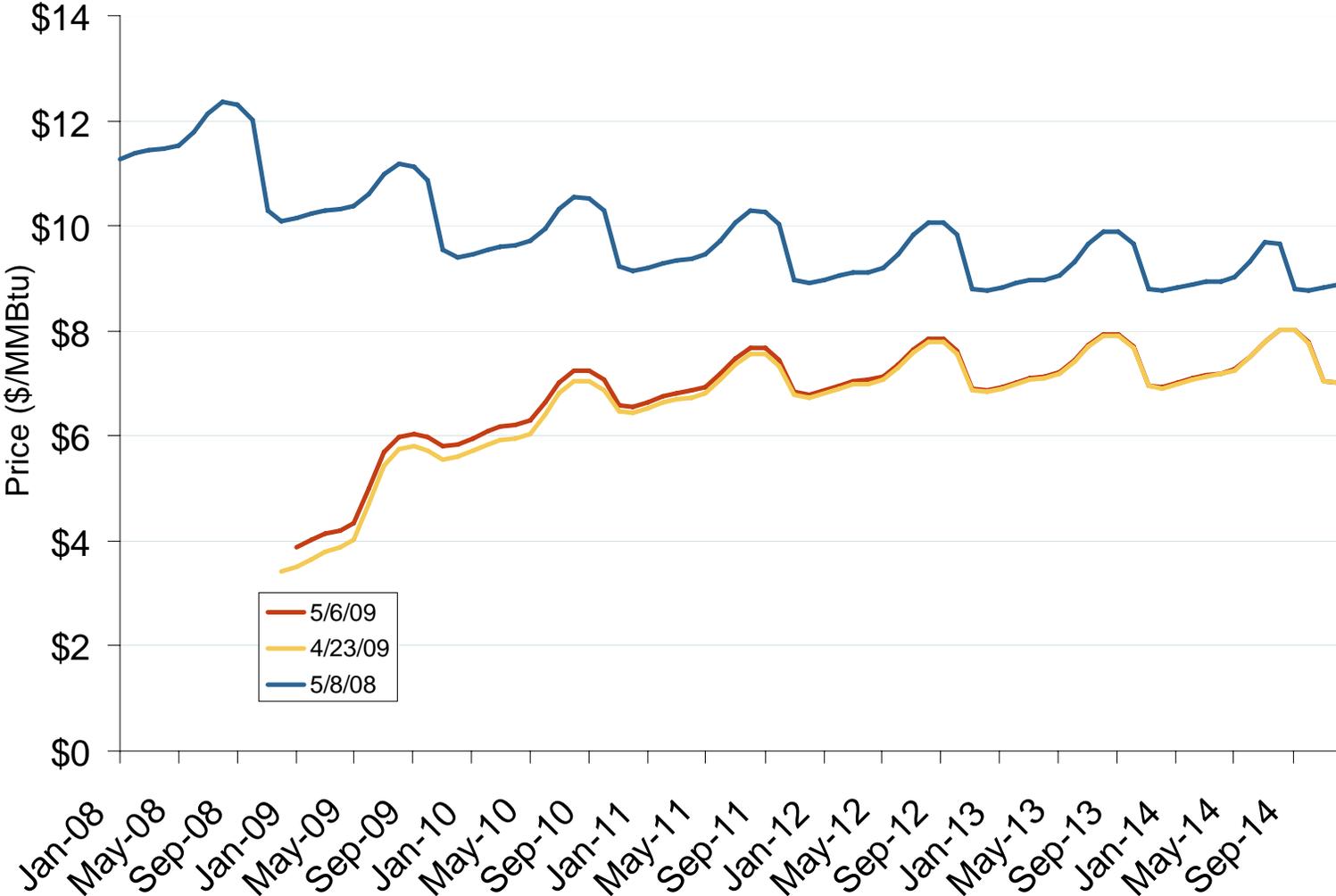
Henry Hub Natural Gas Daily Spot Prices 2008, 2009 and 2003-2007 Year Range



Source: Derived from *Platts* data.
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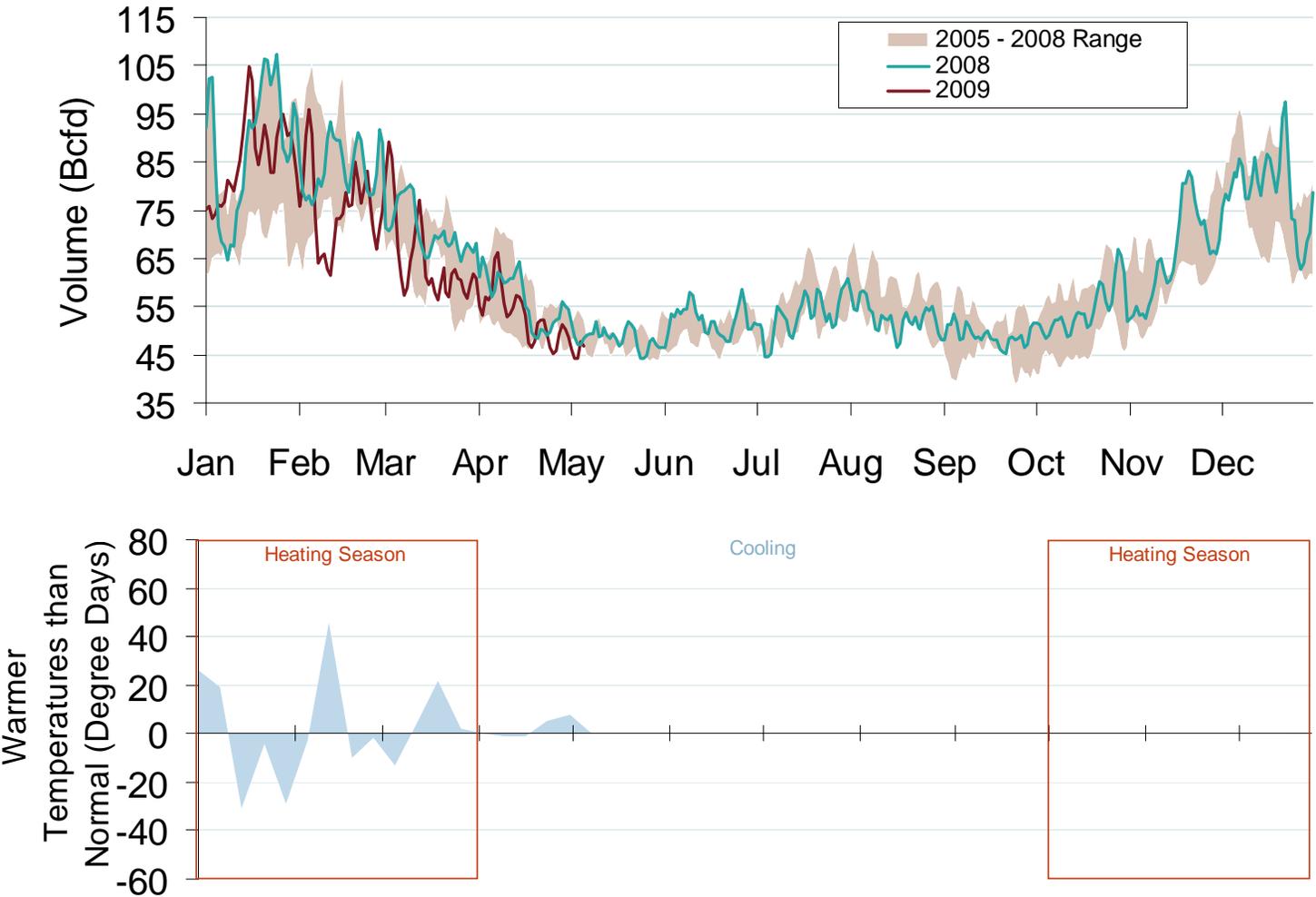
NYMEX Natural Gas Forward Price Curve



Source: Derived from NYMEX data.
May 2009 Western Snapshot Report

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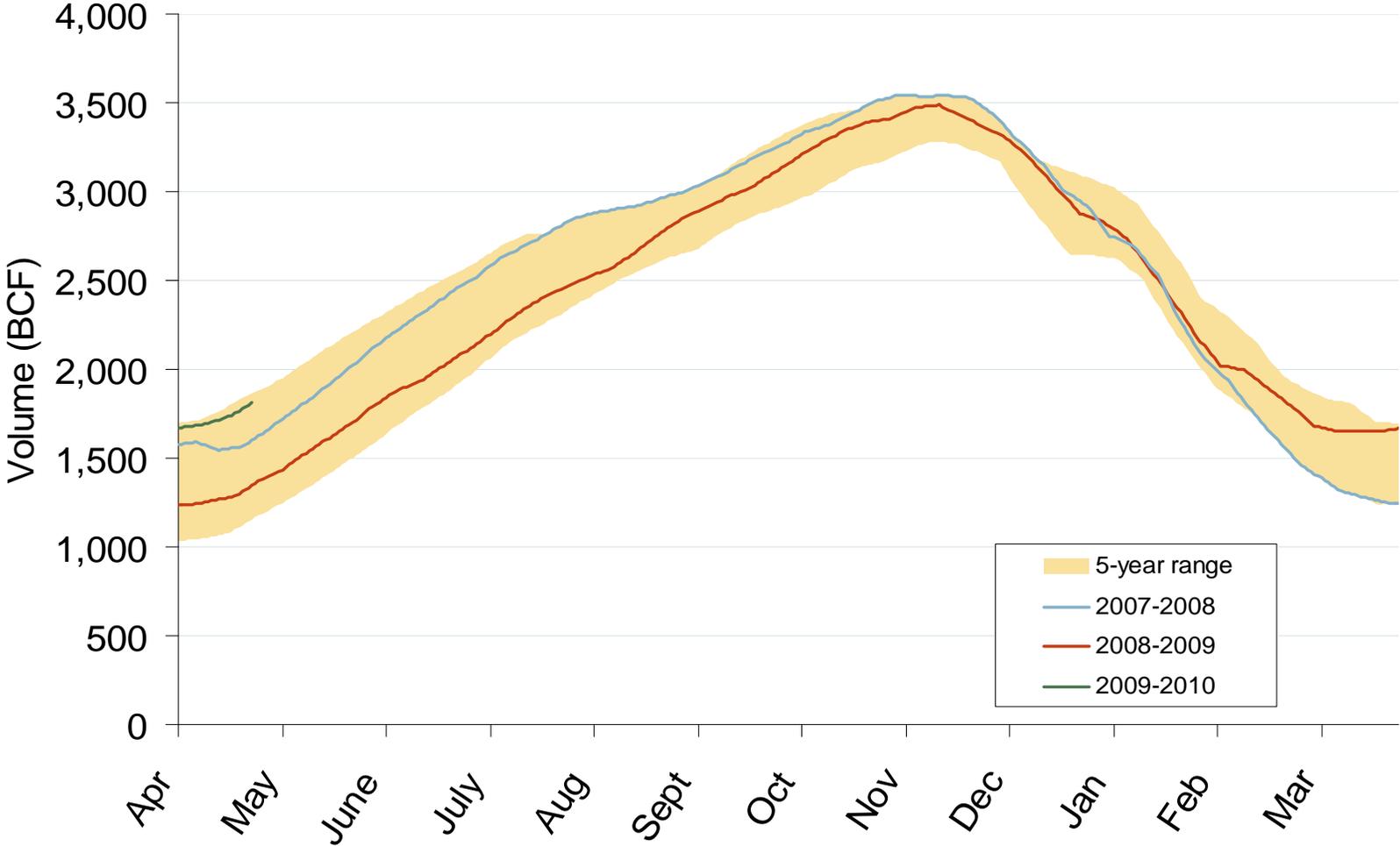
Total U.S. Natural Gas Demand (All Sectors) and Temperatures



Source: Derived from *Bentek Energy* data.
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Total U.S. Working Gas in Storage

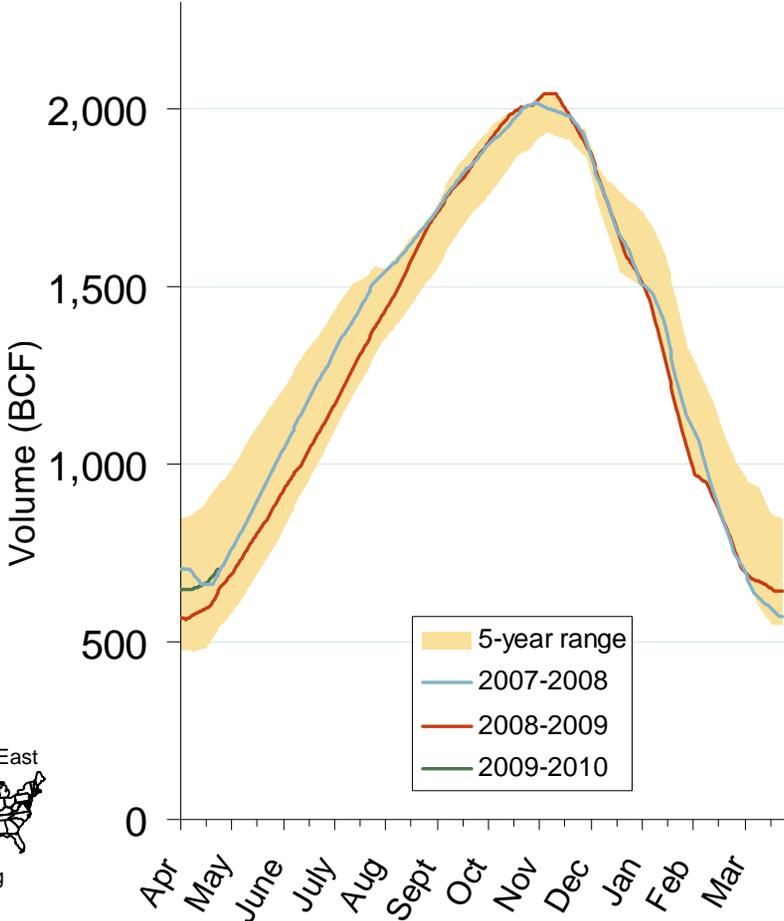


Source: Derived from EIA data.
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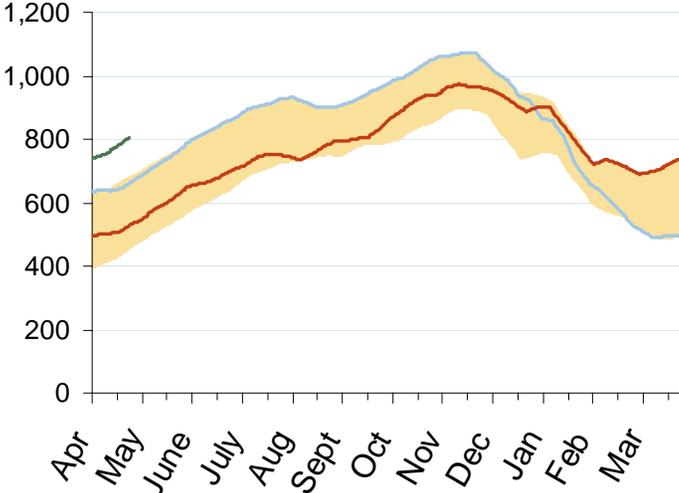
Updated May 7, 2009

Regional Totals of Working Gas in Storage

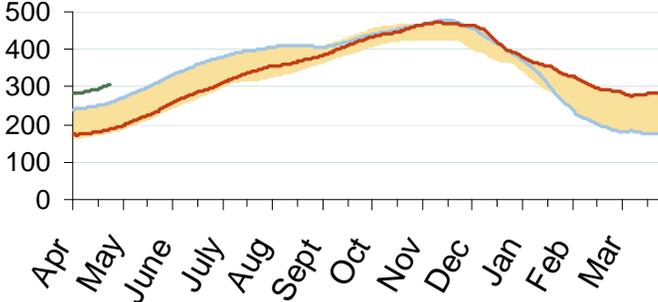
Eastern Consuming Region



Producing Region

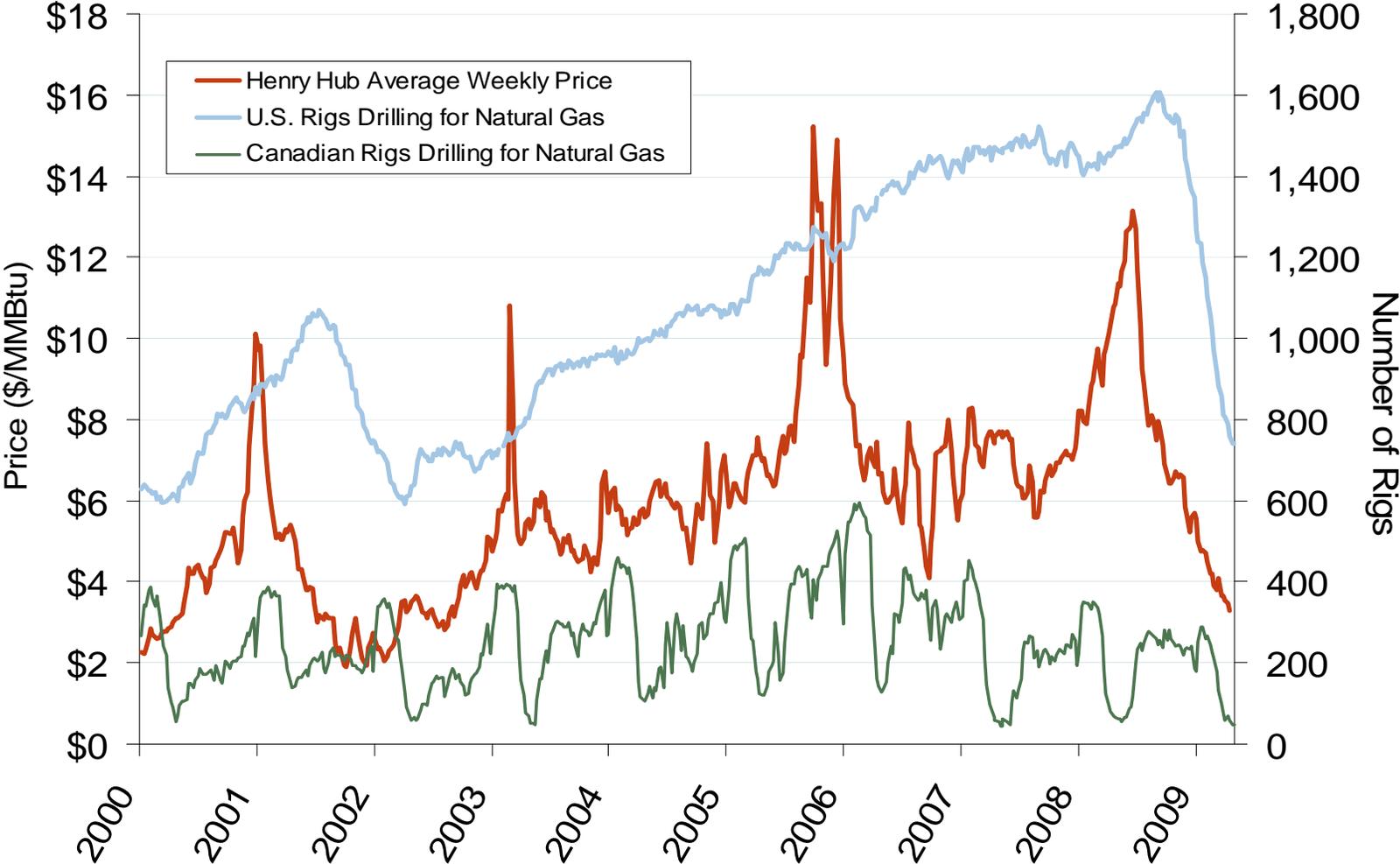


Western Consuming Region



Source: Derived from EIA data.

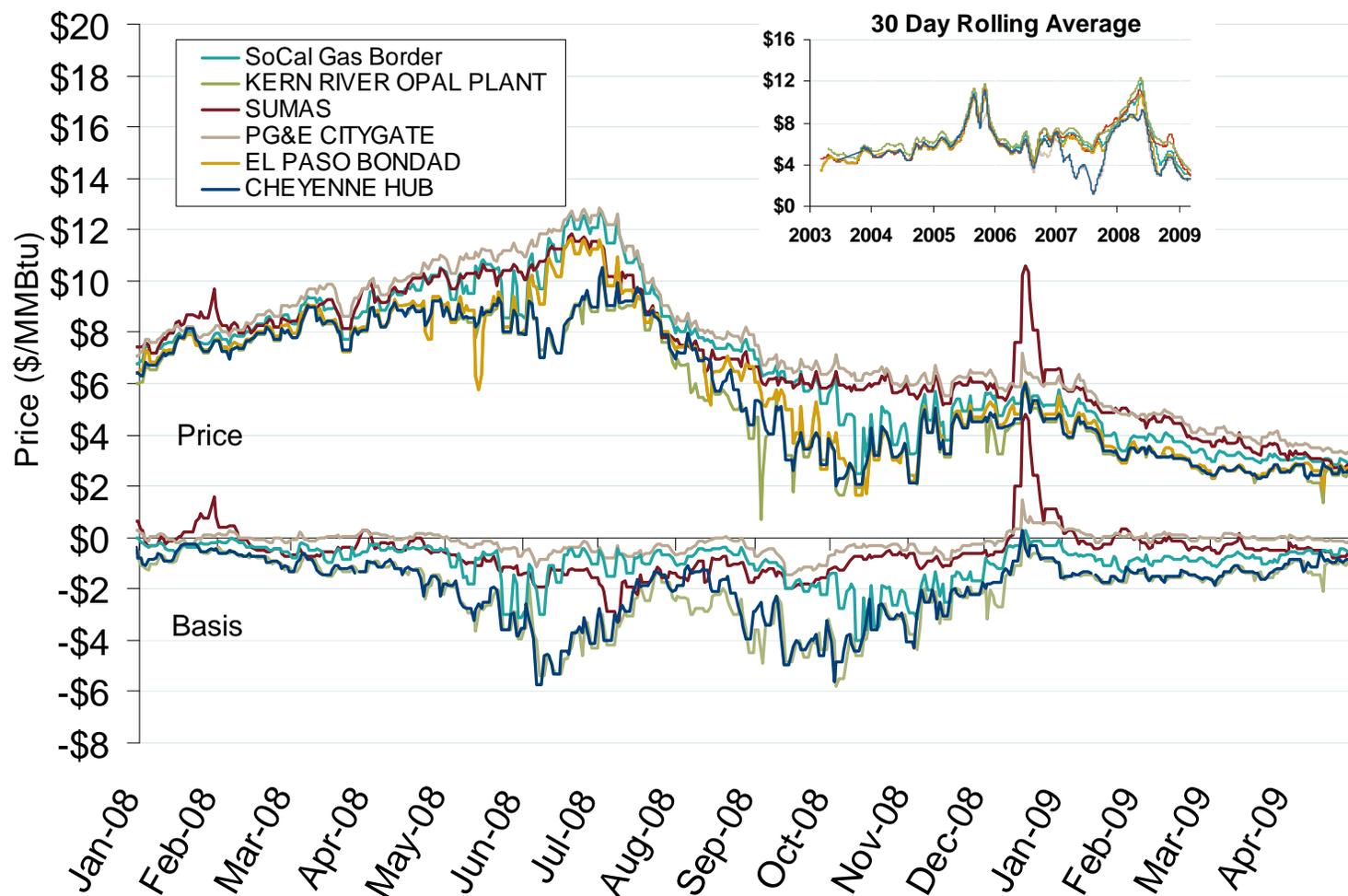
U.S. and Canadian Natural Gas Drilling Rig Count and Daily Spot Prices



Source: Derived from *Platts* and *Baker Hughes* data.
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Western Day-Ahead Hub Spot Prices and Basis

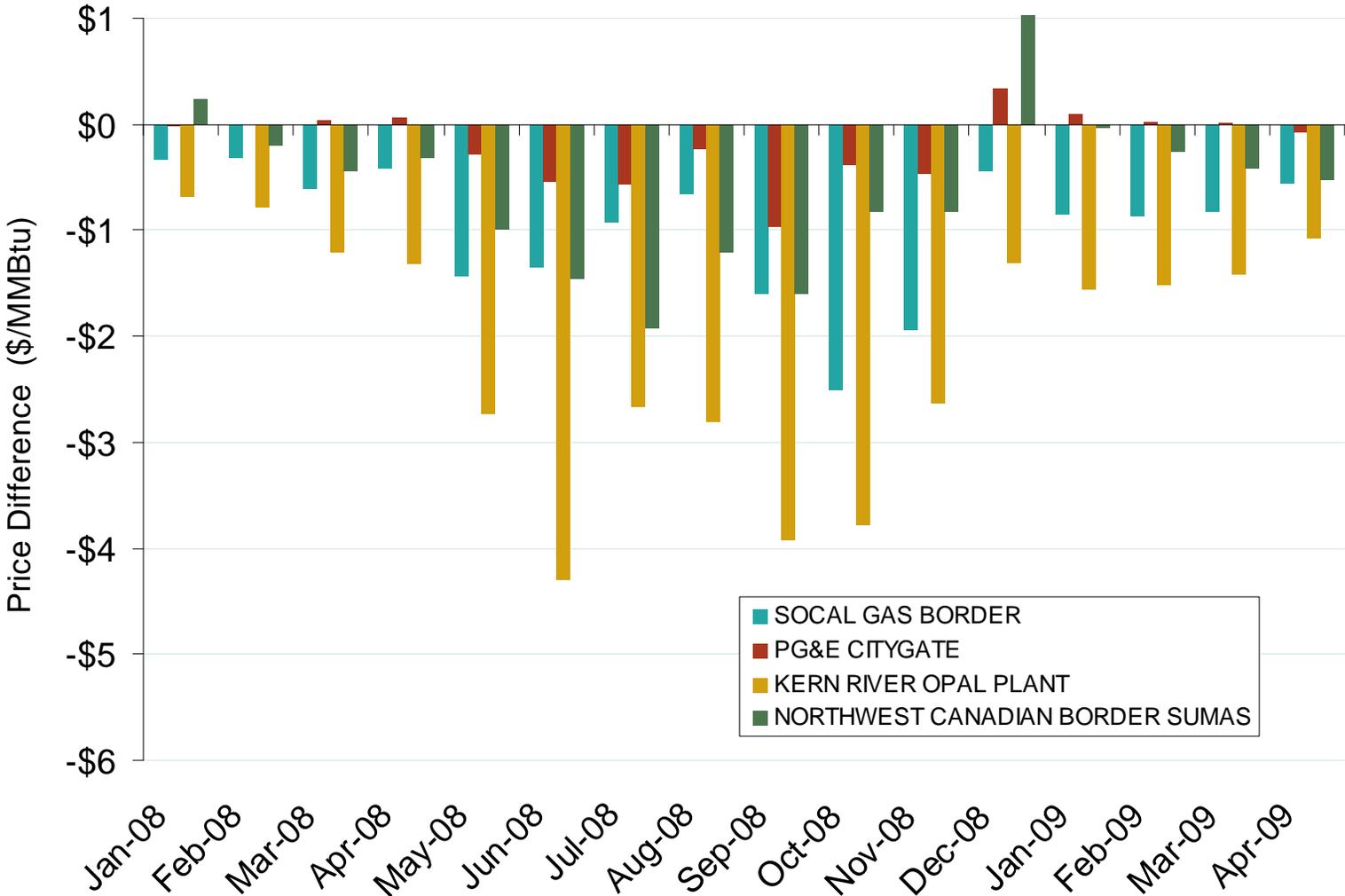


Gas Pricing Points



Note: Price Points reflect general locations.
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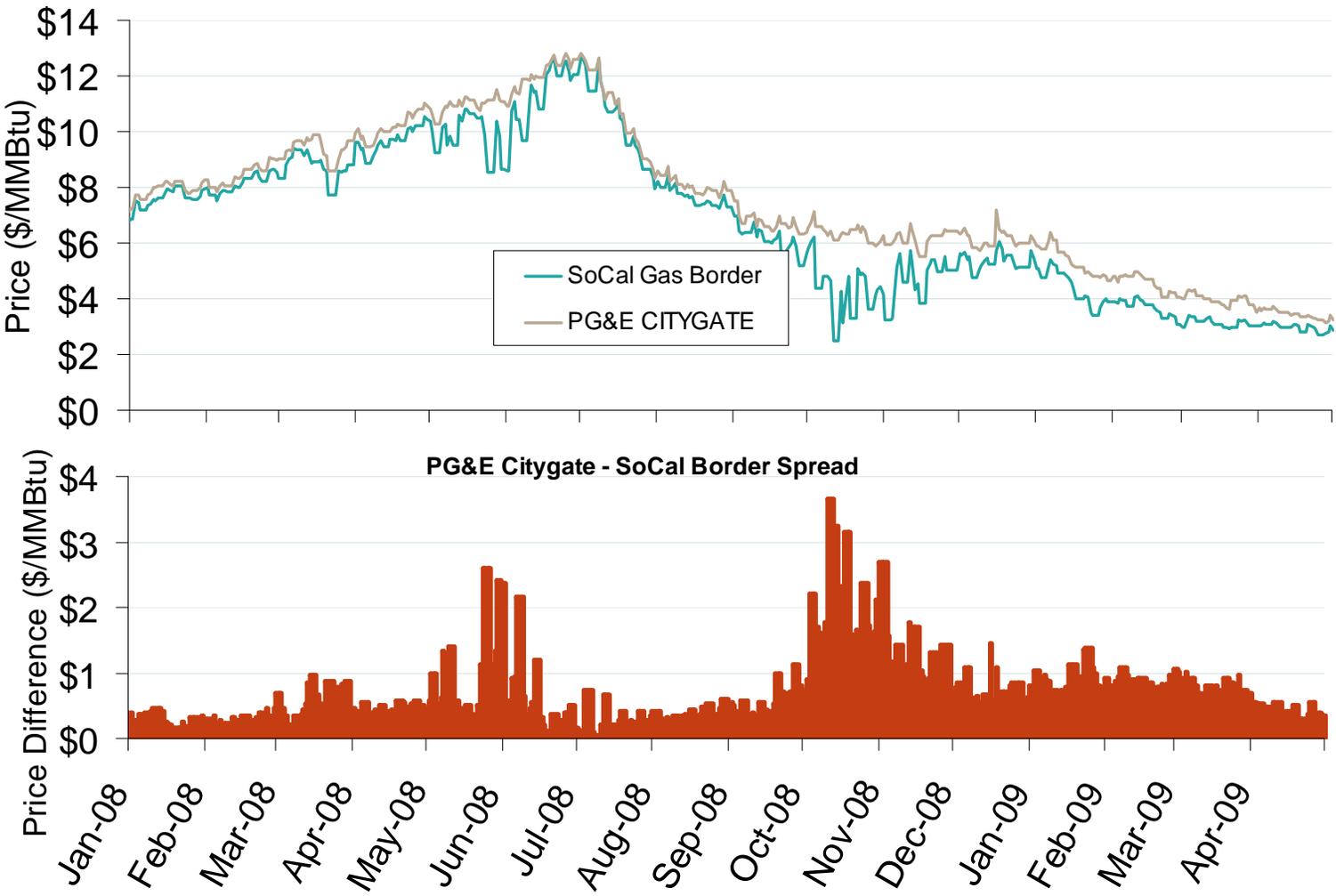
Western Monthly Average Basis Value to Henry Hub



Source: Derived from Platts data.
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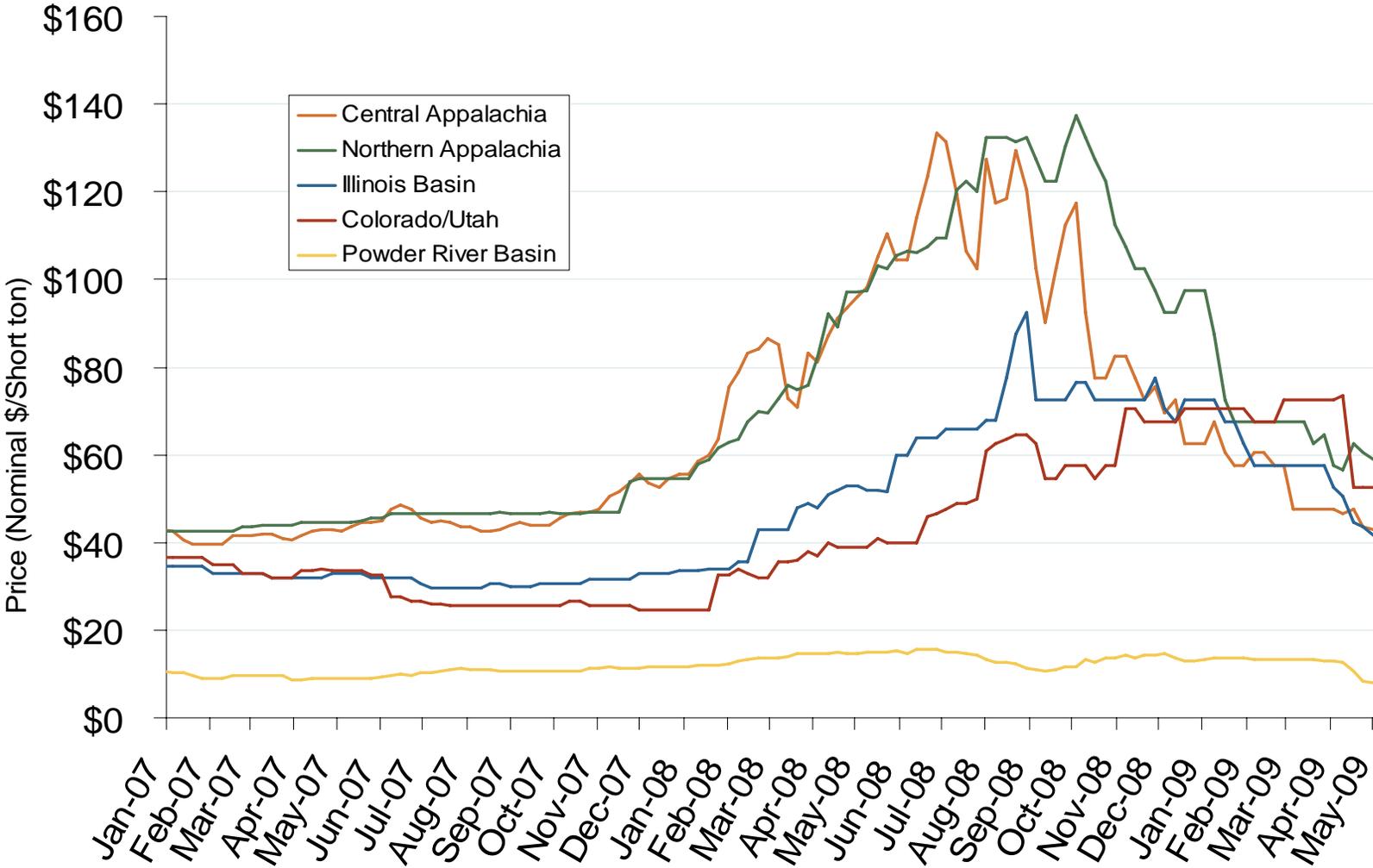
Difference in Northern and Southern California Daily Spot Prices



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

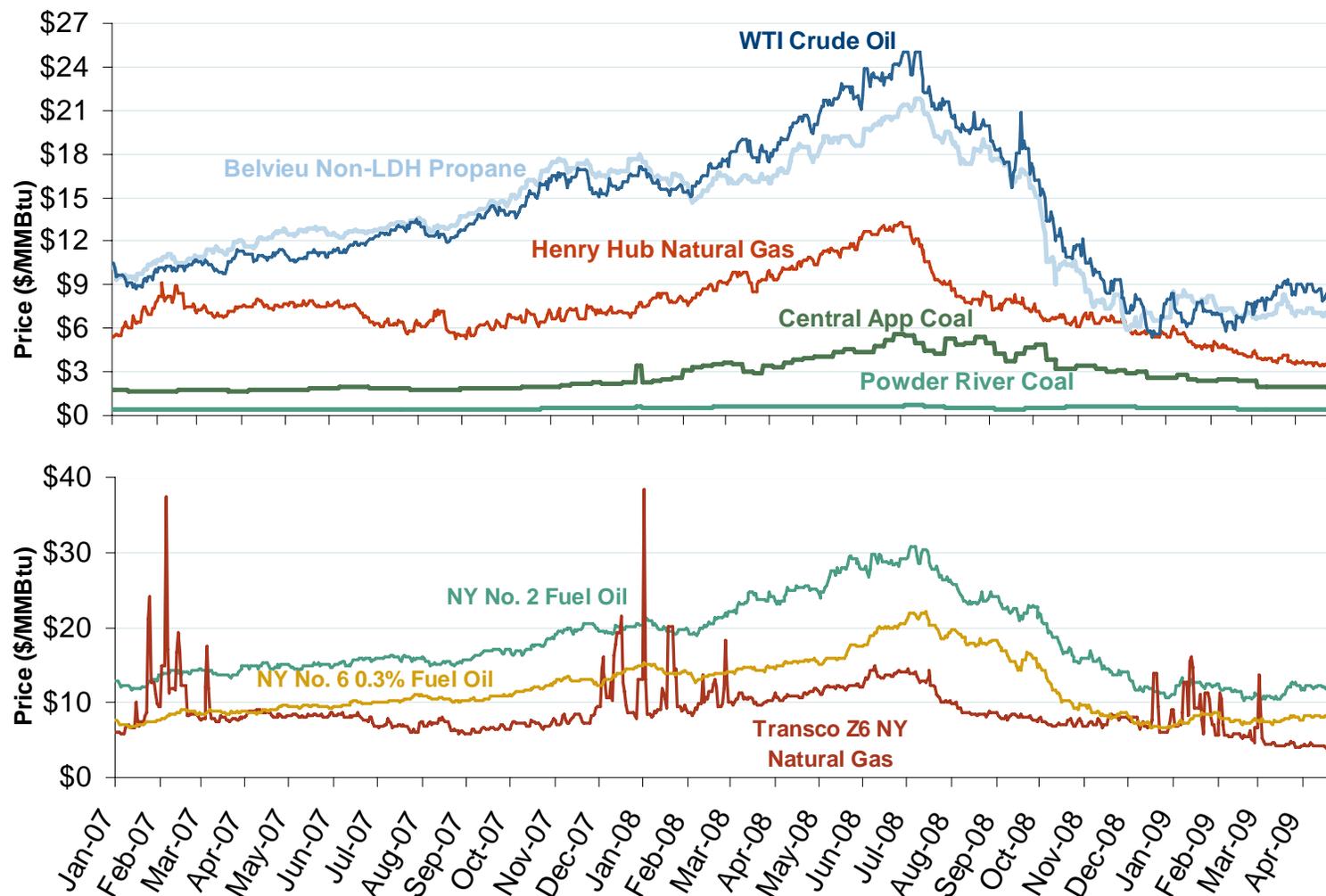
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Natural Gas Winter Futures Strip and Daily Henry Hub Spot and Bidweek Prices



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

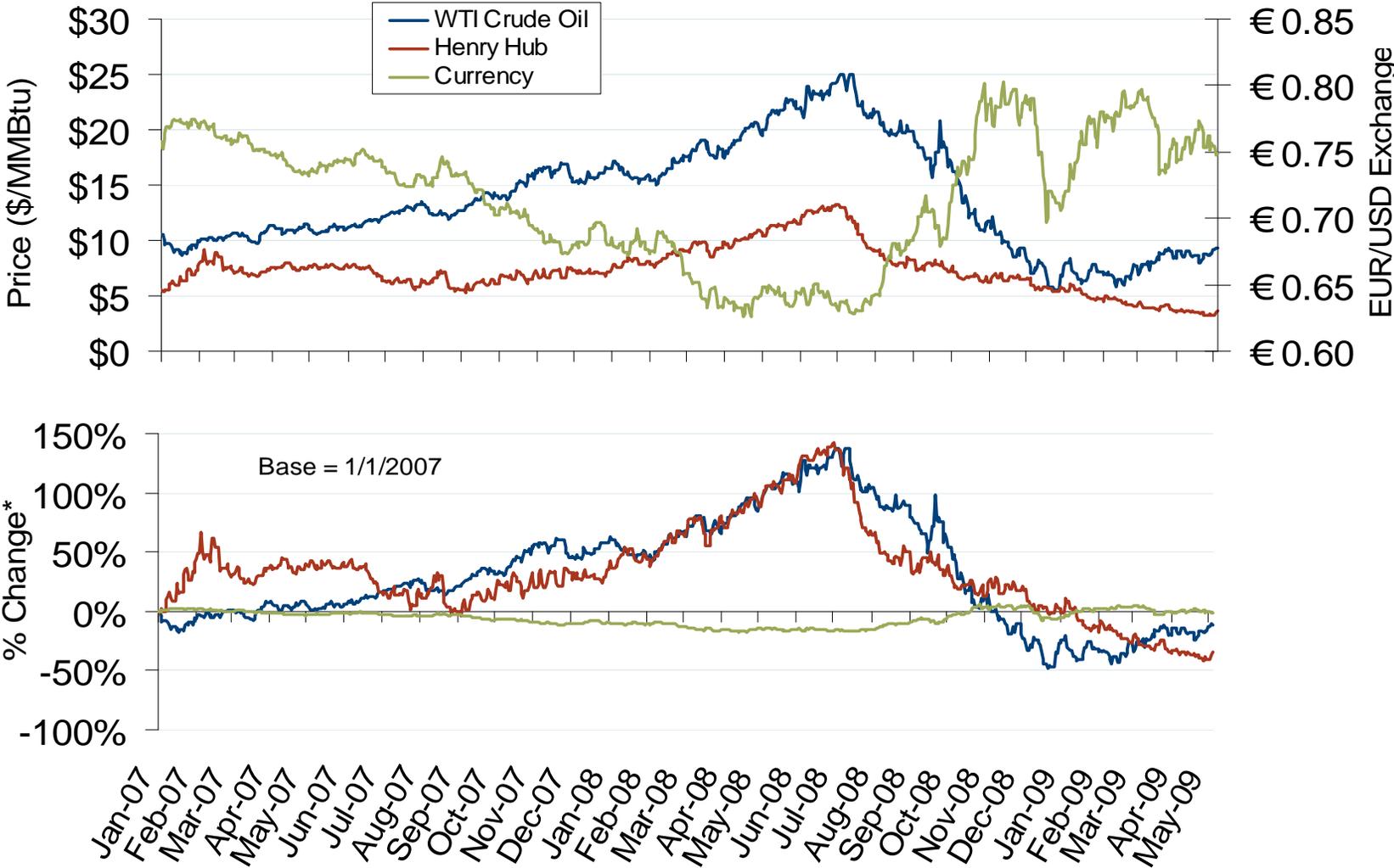


Source: Derived from *ICE* and *Bloomberg* data.

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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Oil, Natural Gas and Currency Spot Prices



Source: Derived from *Bloomberg* data.

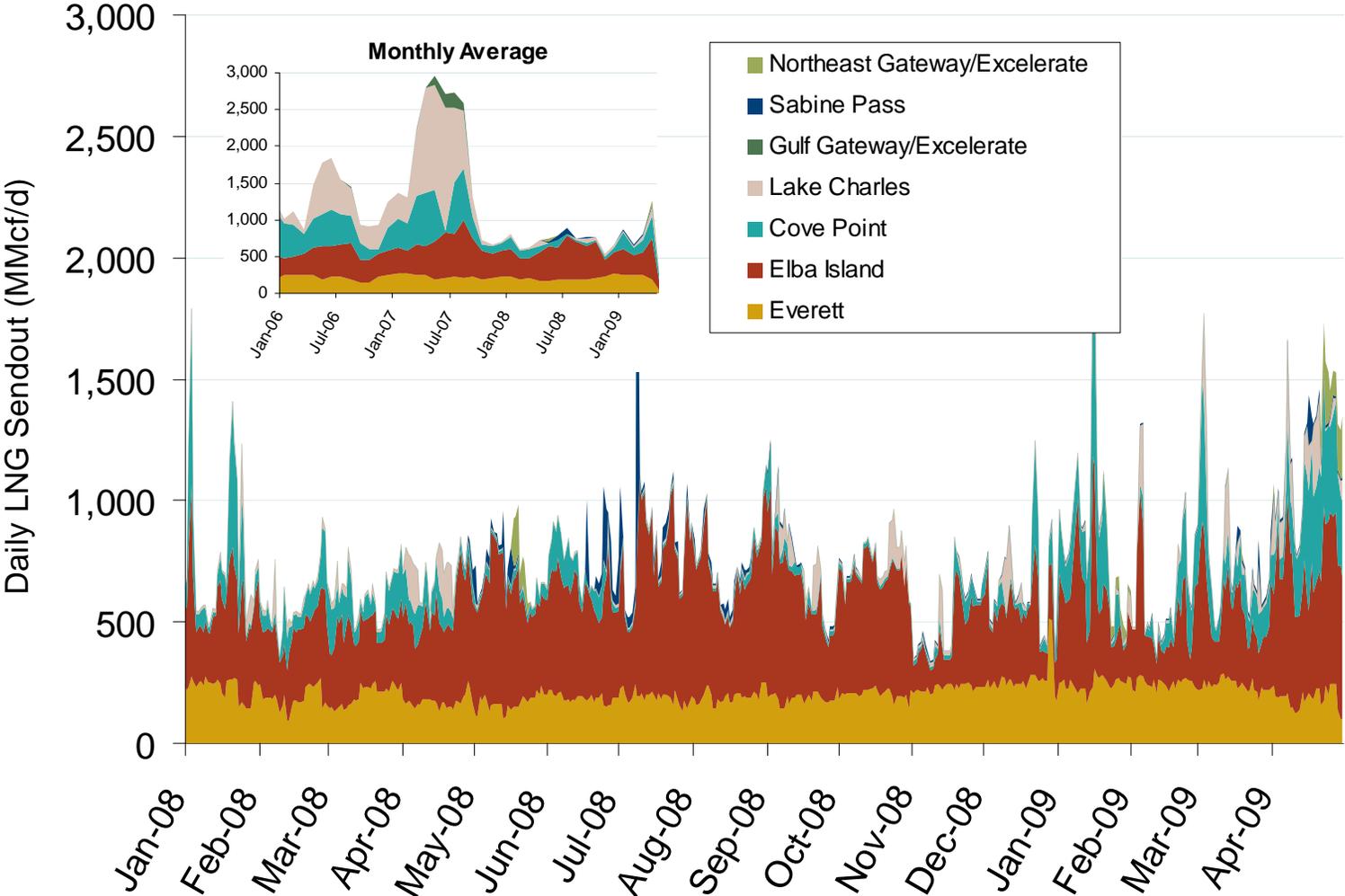
World LNG Estimated May 2009 Landed Prices



Source: Waterborne Energy, Inc. Data in \$US/MMBtu.
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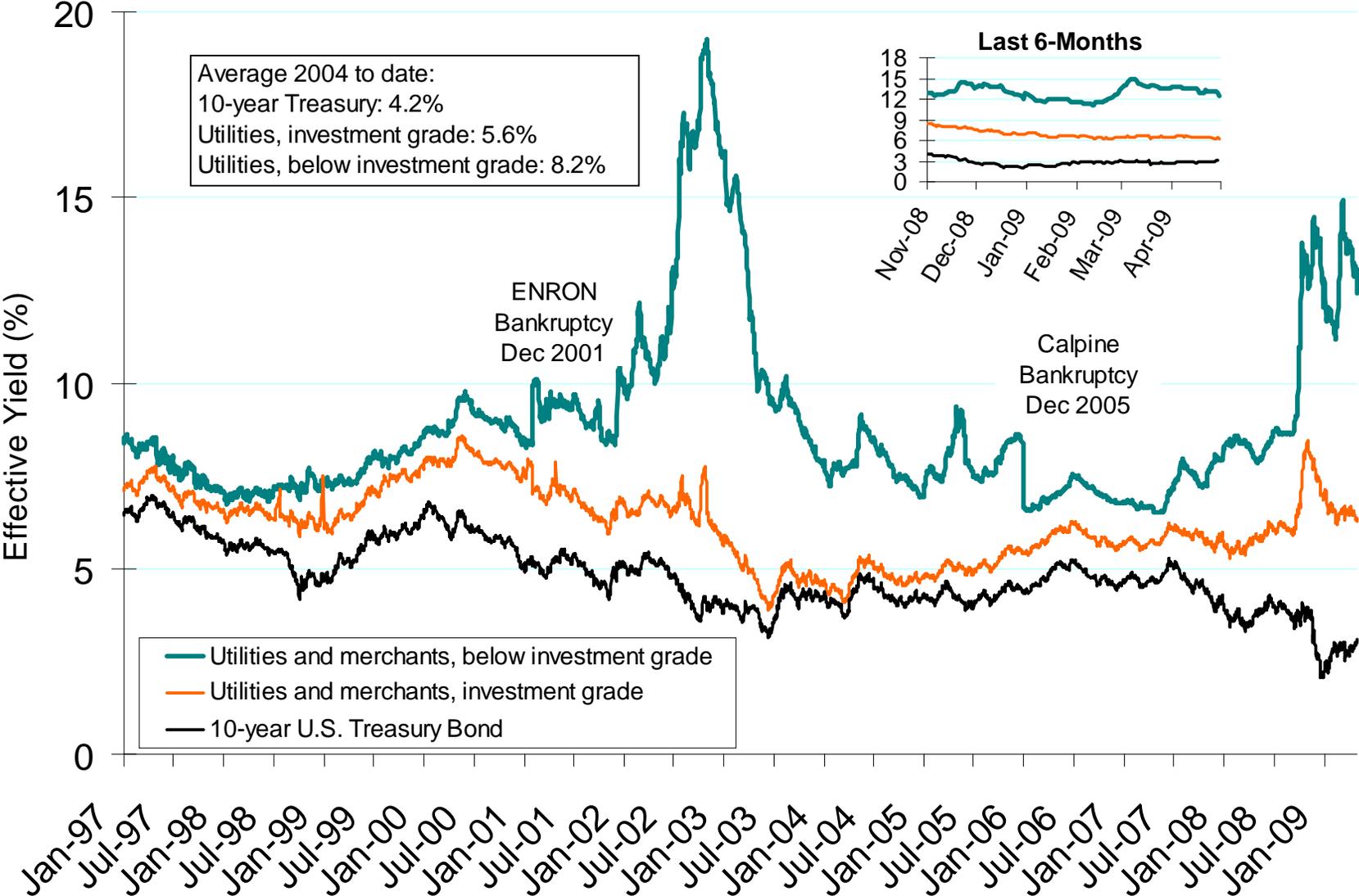
Updated May 7, 2009

Daily Gas Sendout from Existing U.S. LNG Facilities



Source: Derived from *Bentek* data. Excludes Everett LNG delivered via truck and consumed by the Mystic plant as well as Freeport LNG which flows via intrastate pipelines.
 May 2009 Western Snapshot Report

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.
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