# OE ENERGY MARKET SNAPSHOT

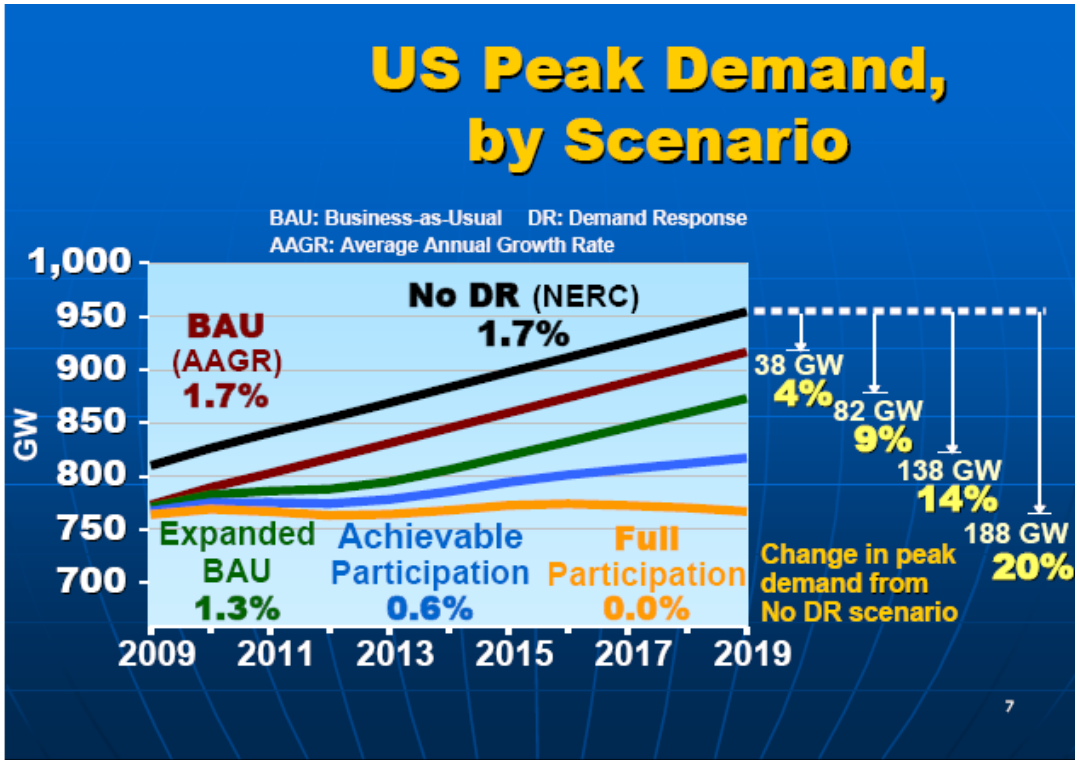
## Mid-Atlantic States Version – June 2009 Data

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

Office of Enforcement
Federal Energy Regulatory Commission
July 2009

# Electricity Markets

# National Assessment of Demand Response Potential

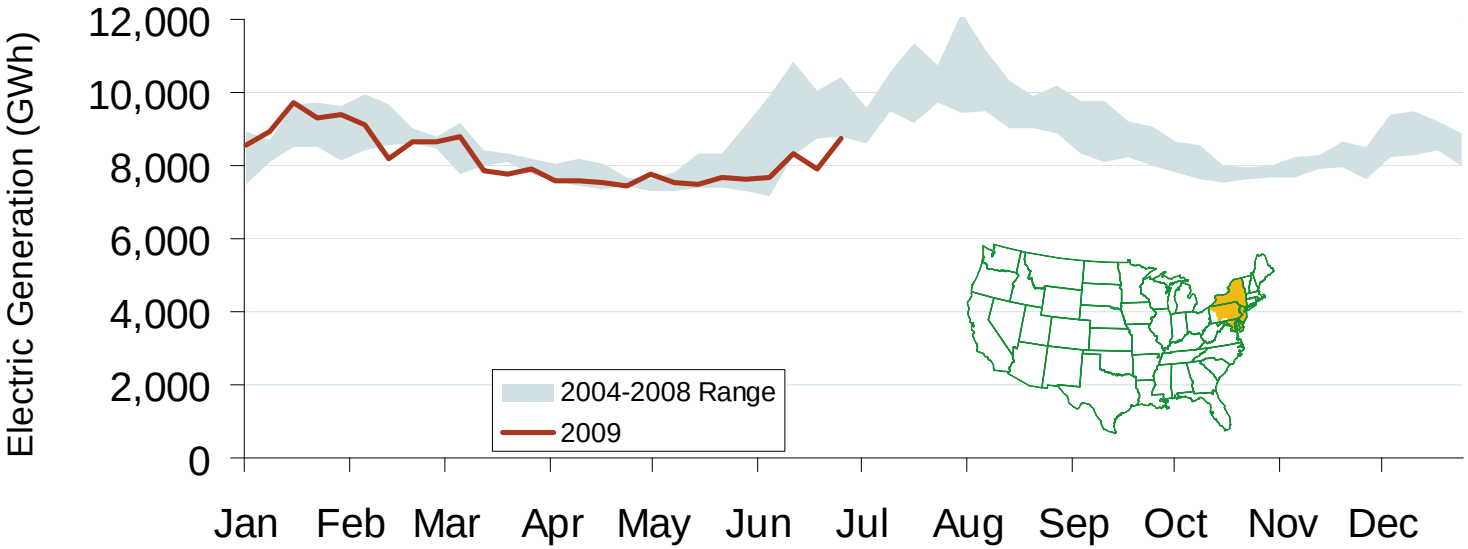


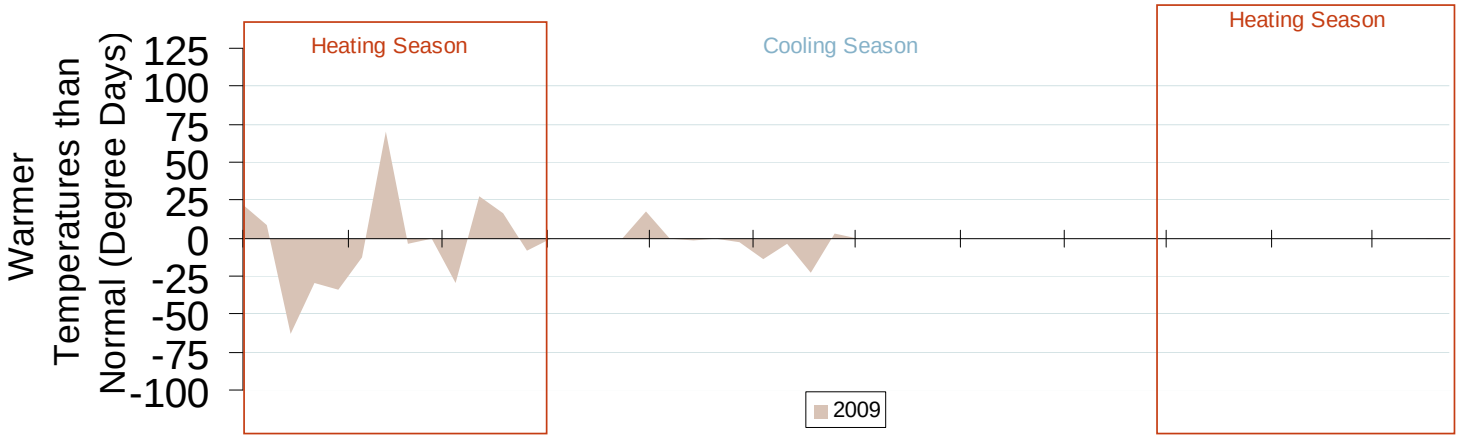

In response to EPACT 2007, staff released a report on June 18, 2009.

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 Mid Atlantic Region




Source: Derived from *EEI* and *NOAA* data.

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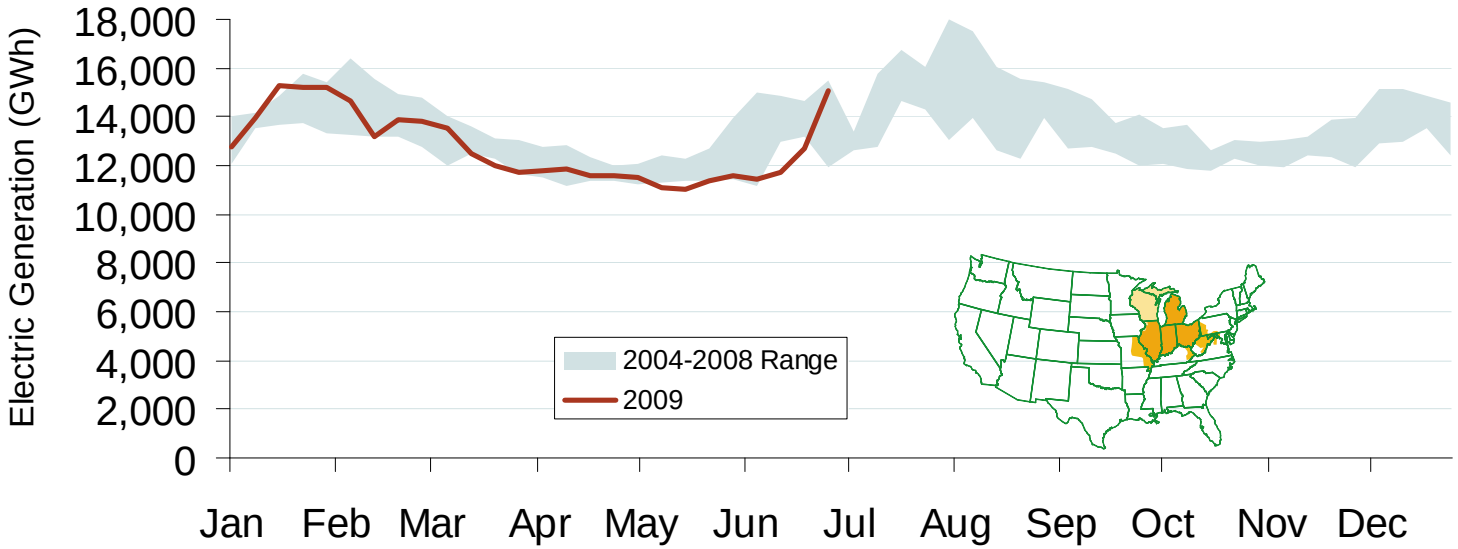
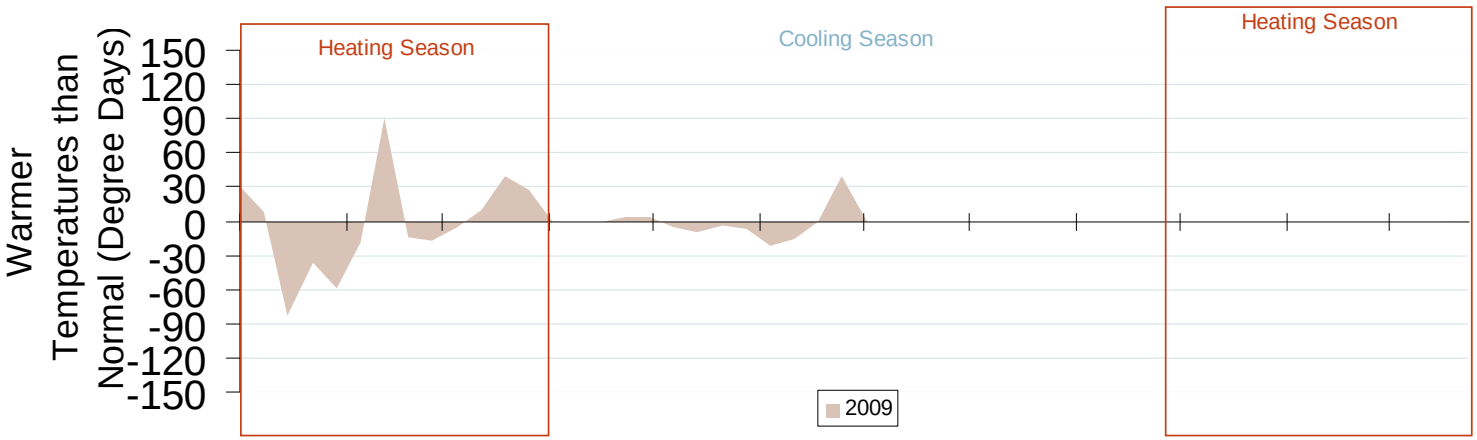
# Weekly Electric Generation Output and Temperatures
# Central Industrial Region




Source: Derived from *EEI* and *NOAA* data.

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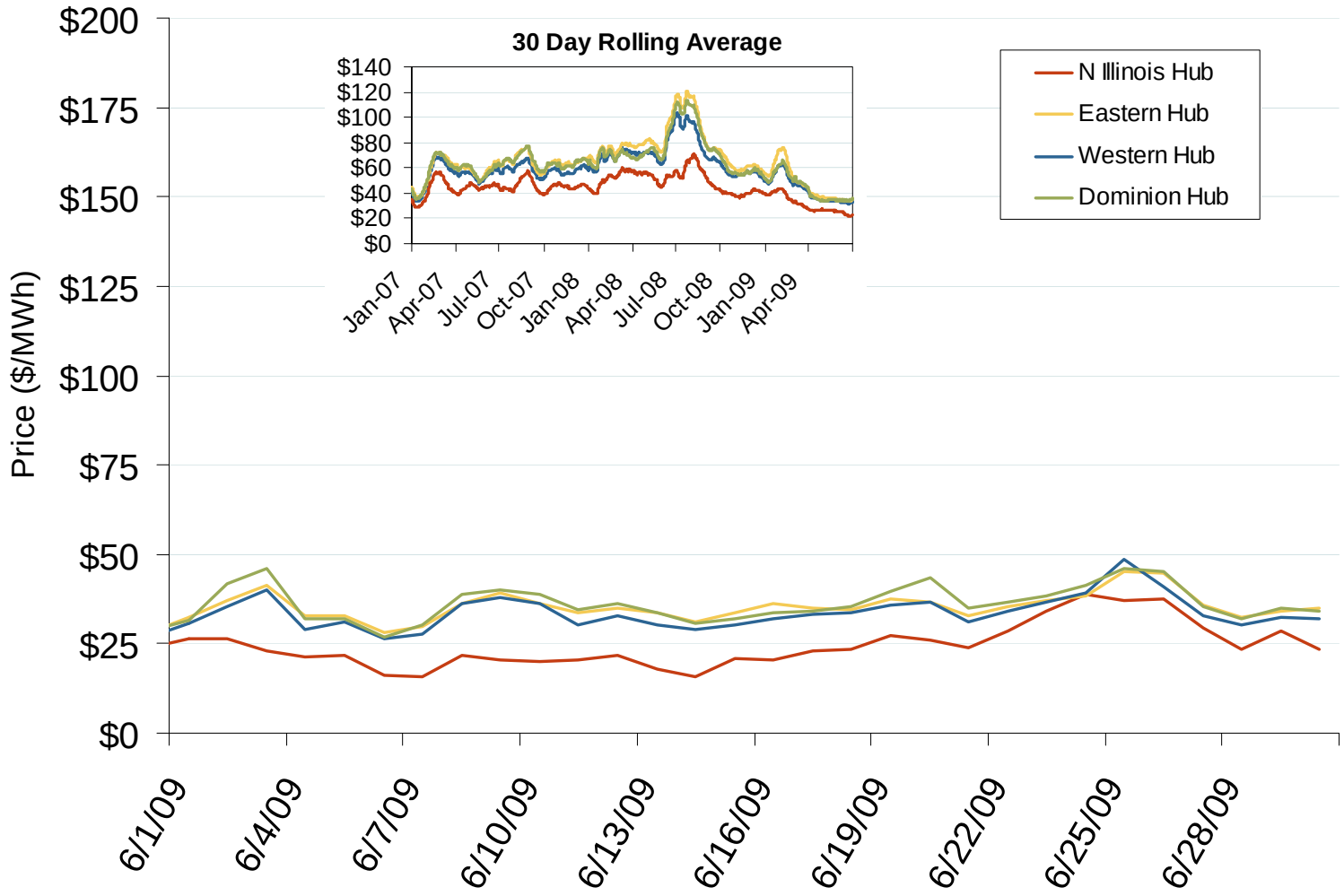
# Daily Average of PJM Day-Ahead Prices - All Hours




Source: Derived by *Bloomberg* from *PJM* data as reported by *Bloomberg*.

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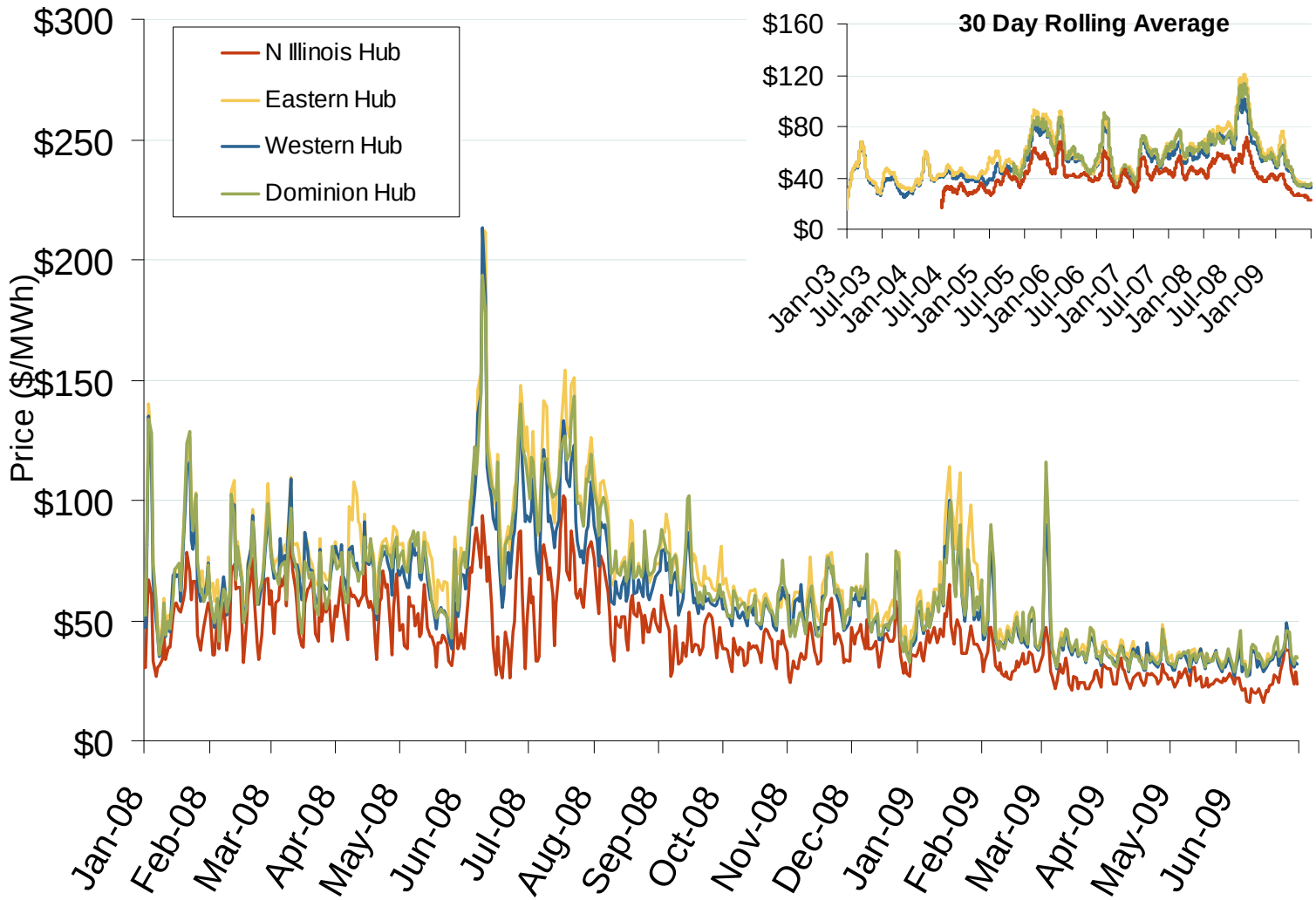


Source: Derived by *Bloomberg* from *PJM* data as reported by *Bloomberg*.

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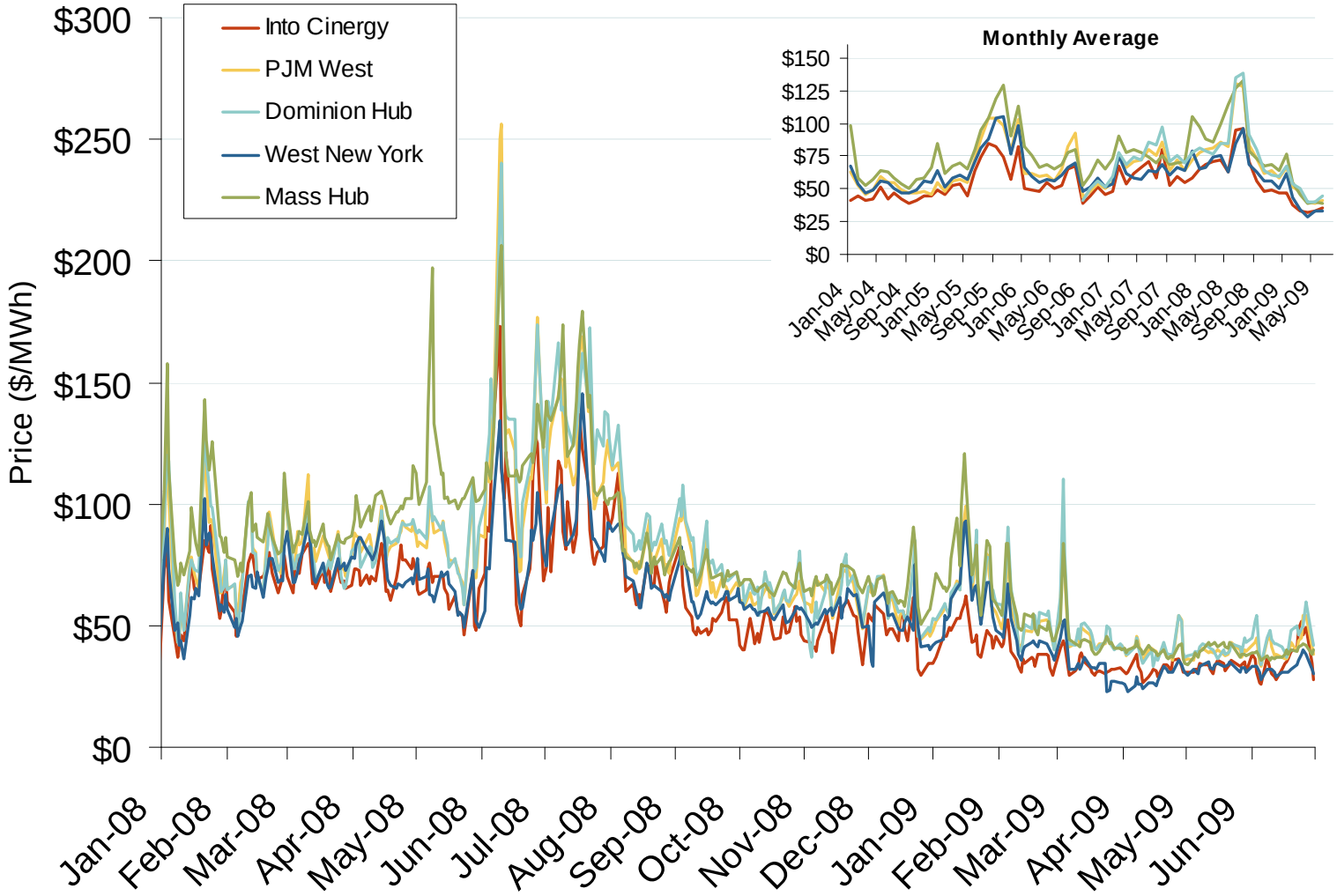
# Eastern Daily Bilateral Day-Ahead On-Peak Prices




Source: Derived from *Platts* data.

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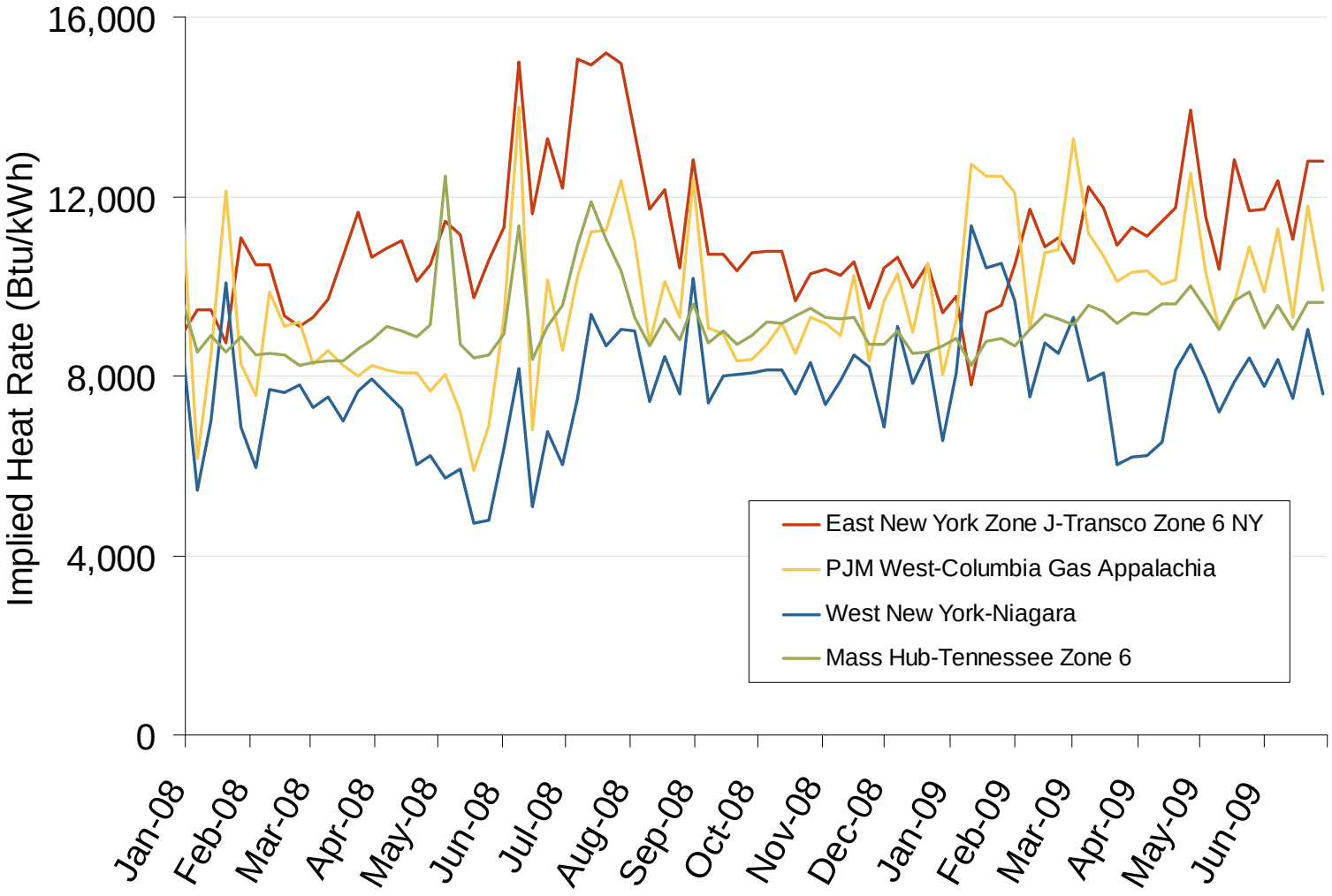
# Implied Heat Rates at Eastern Trading Points
# Weekly Averages




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):**

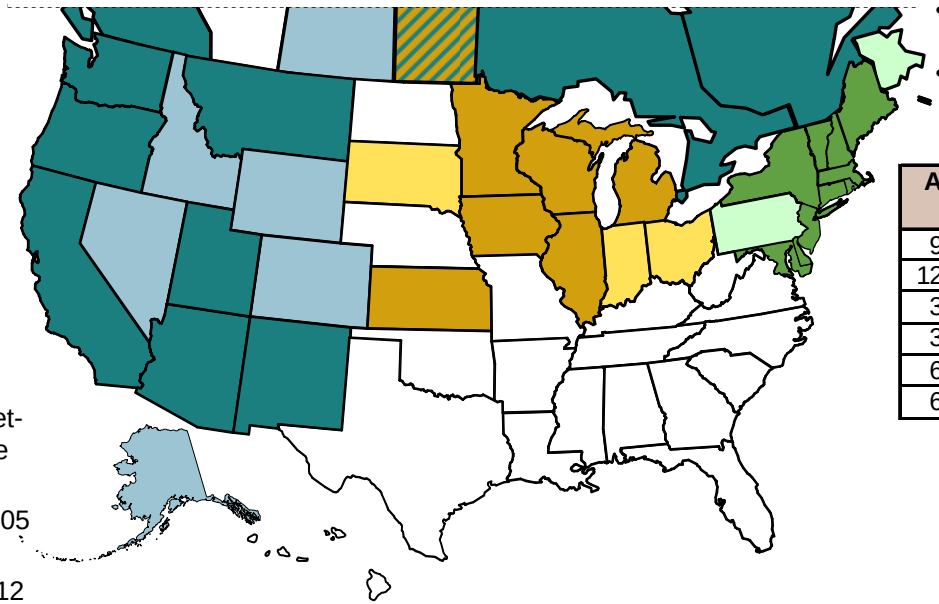
- Created February 2007
- Partners: 7 states, 4 provinces; Observers: 5 states, 1 province
- Announced its design for a market-based, *multi-sector* cap-and-trade program, Sept 2008:
  - 15% $CO_2$ reduction below 2005 levels by 2020
  - Phase I to take effect Jan 2012

**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* $CO_2$ emissions.
- 10% $CO_2$ reduction by 2018 covers over 200 plants
- One allowance is the right to emit 1 ton of $CO_2$
- 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

Updated June 19, 2009

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

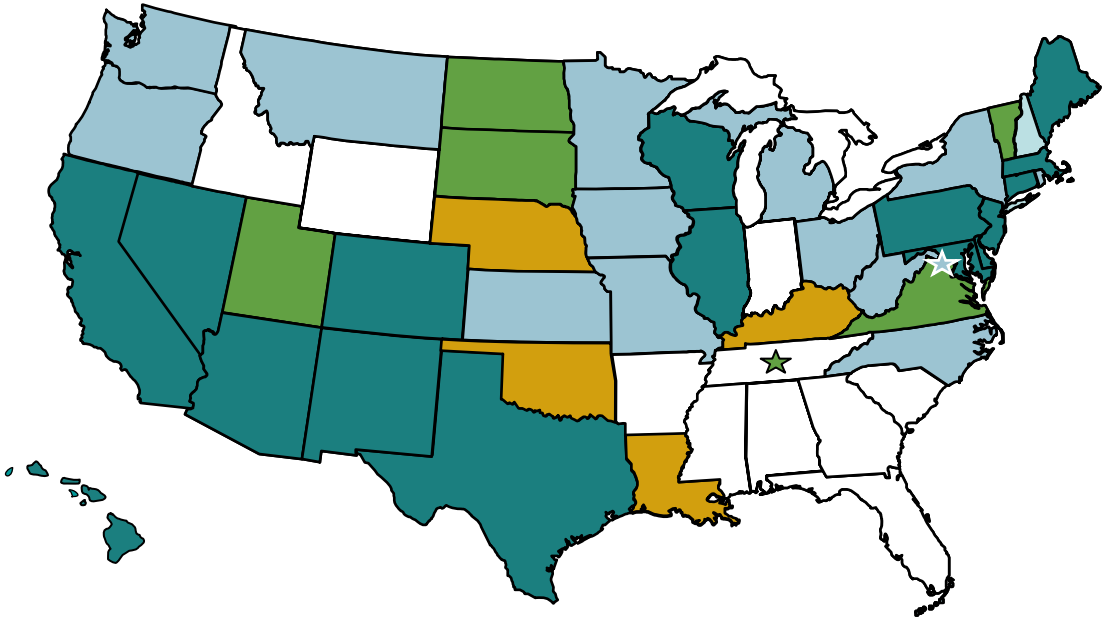
# 31 States including D.C. have Renewable Energy Portfolio Standards (RPS)

**ND**: 10% by 2015
**SD**: 10% by 2015
**NE**: proposed an RPS
**KS**: 20% by 2020
**OK**: Studying an RPS

**MN**: 25% by 2025
**IA**: 105 MW
**MO**: 15% by 2021
**WI**: 10% by 2015
**IL**: 25% by 2025

**MI**: 10% MWh and 1,100 MW by 2015
**OH**: 12.5% by 2025
**WV**: 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**: 25% by 2025
**UT**: 20% by 2025
**CO**: 20% by 2020
**AZ**: 15% by 2025
**NM**: 20% by 2020
**TX**: 5,880 MW by 2015
**HI:** 40% by 2030



**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
**NJ**: 22.5% by 2020
**PA**: 18% 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 ★

Updates at: **http://www.ferc.gov/market-oversight/mkt-electric/overview/elec-ovr-rps.pdf**

- RPS
- Accelerated or strengthened RPS
- Voluntary standards or goals
- Proposed RPS or studying RPS

**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

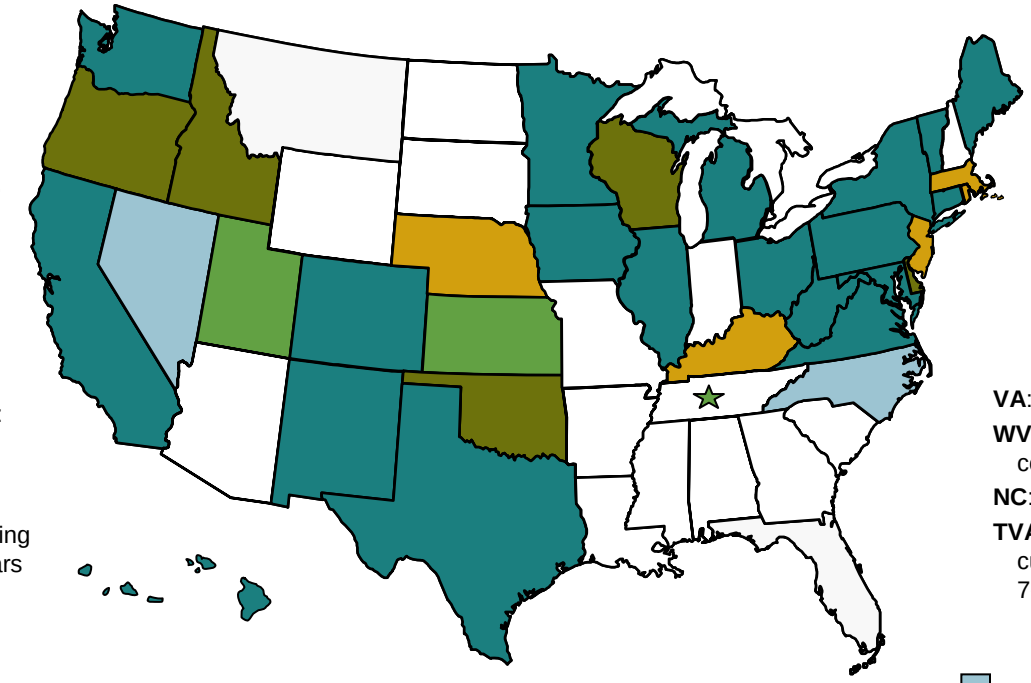
**UT**: EE earns incentive credits in RE goal

**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-eeps.pdf

- EE as part of an RPS law or rule
- EERS by regulation or law (stand-alone)
- Voluntary standards (in or out of RPS)
- EERS pending regulations, proposed, or studied
- Other EE entity, rule, or procurement order

* 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

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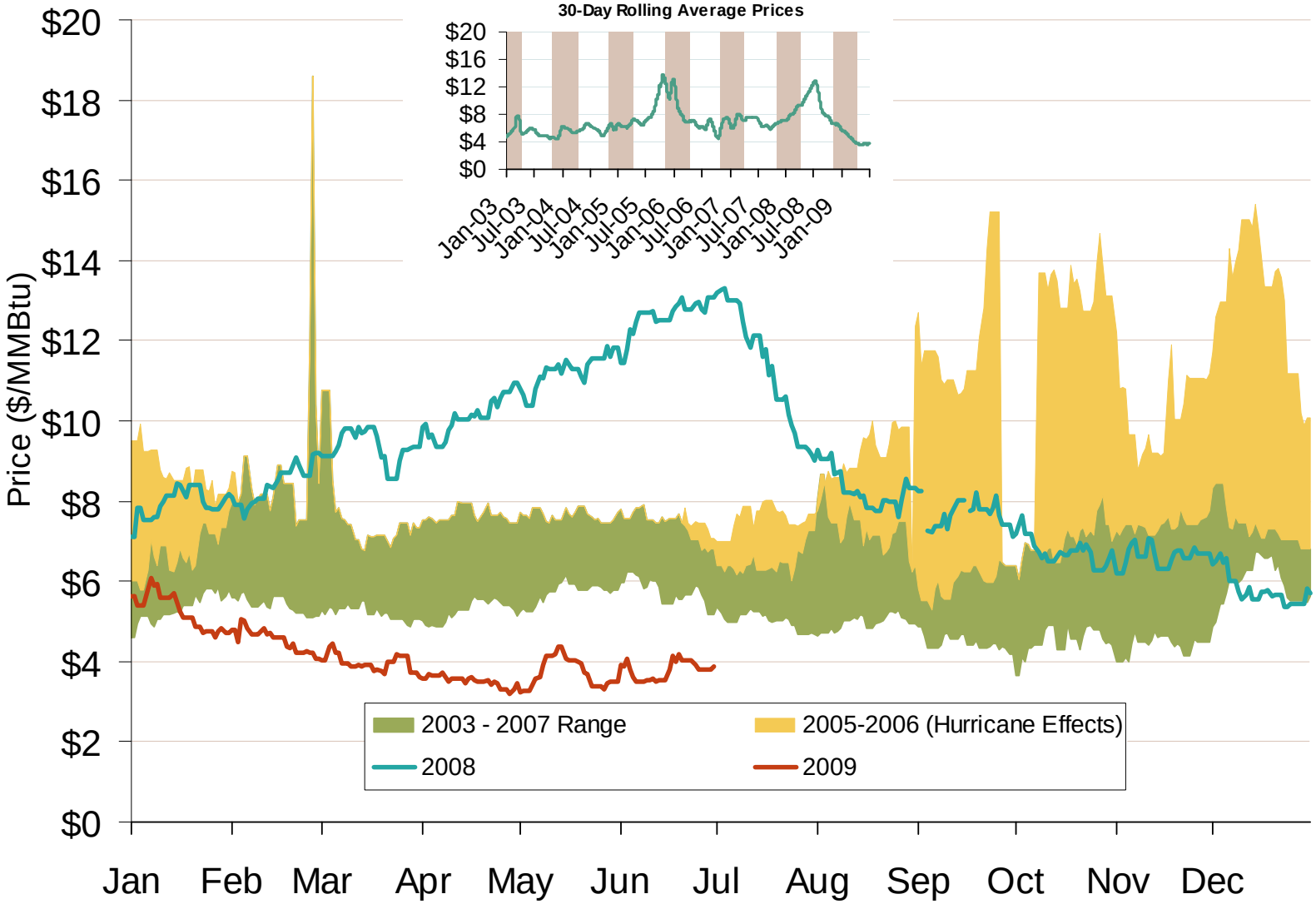
# Natural Gas and Fuel Markets

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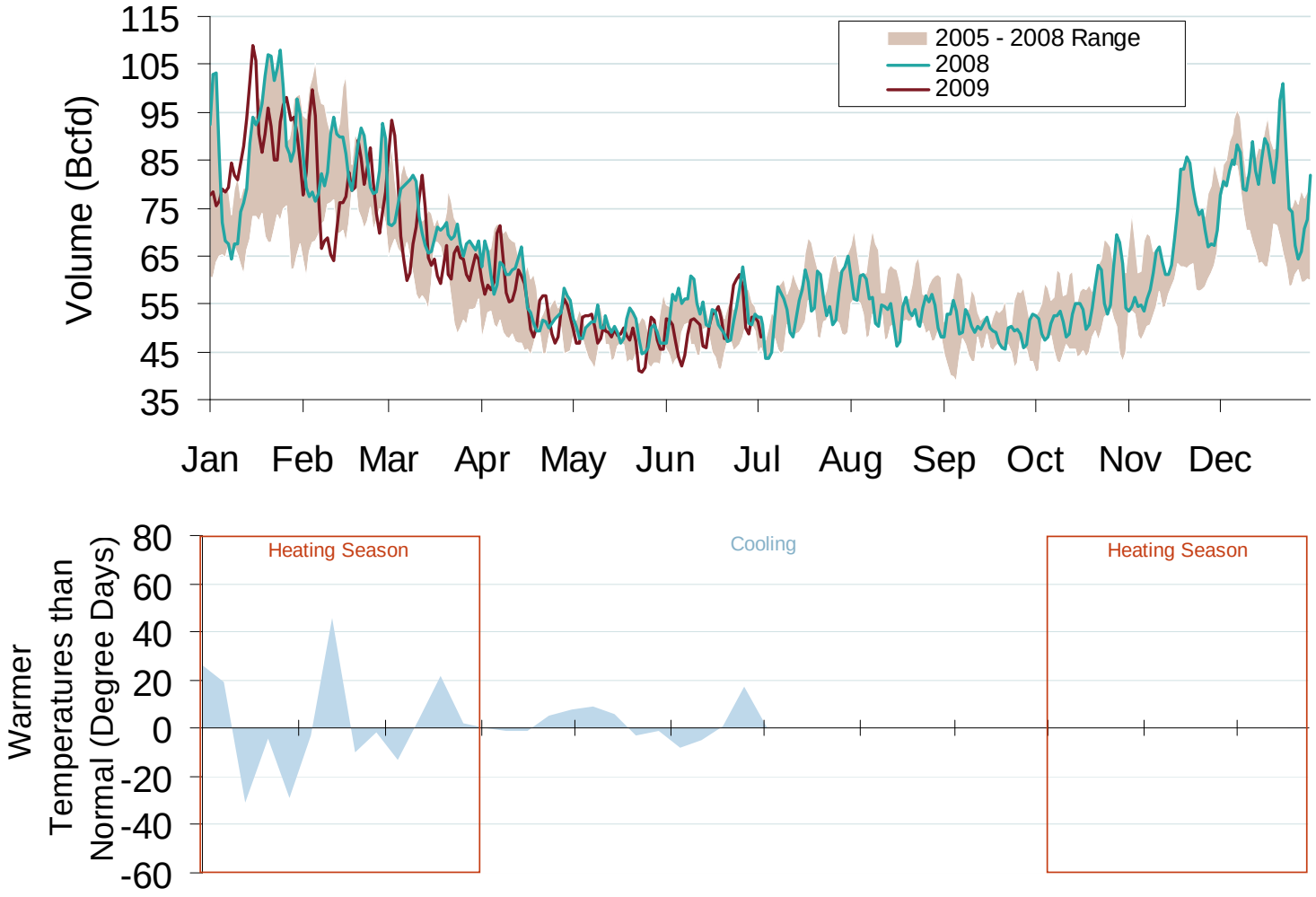
# Total U.S. Natural Gas Demand (All Sectors) and Temperatures




Source: Derived from *Bentek Energy* data.

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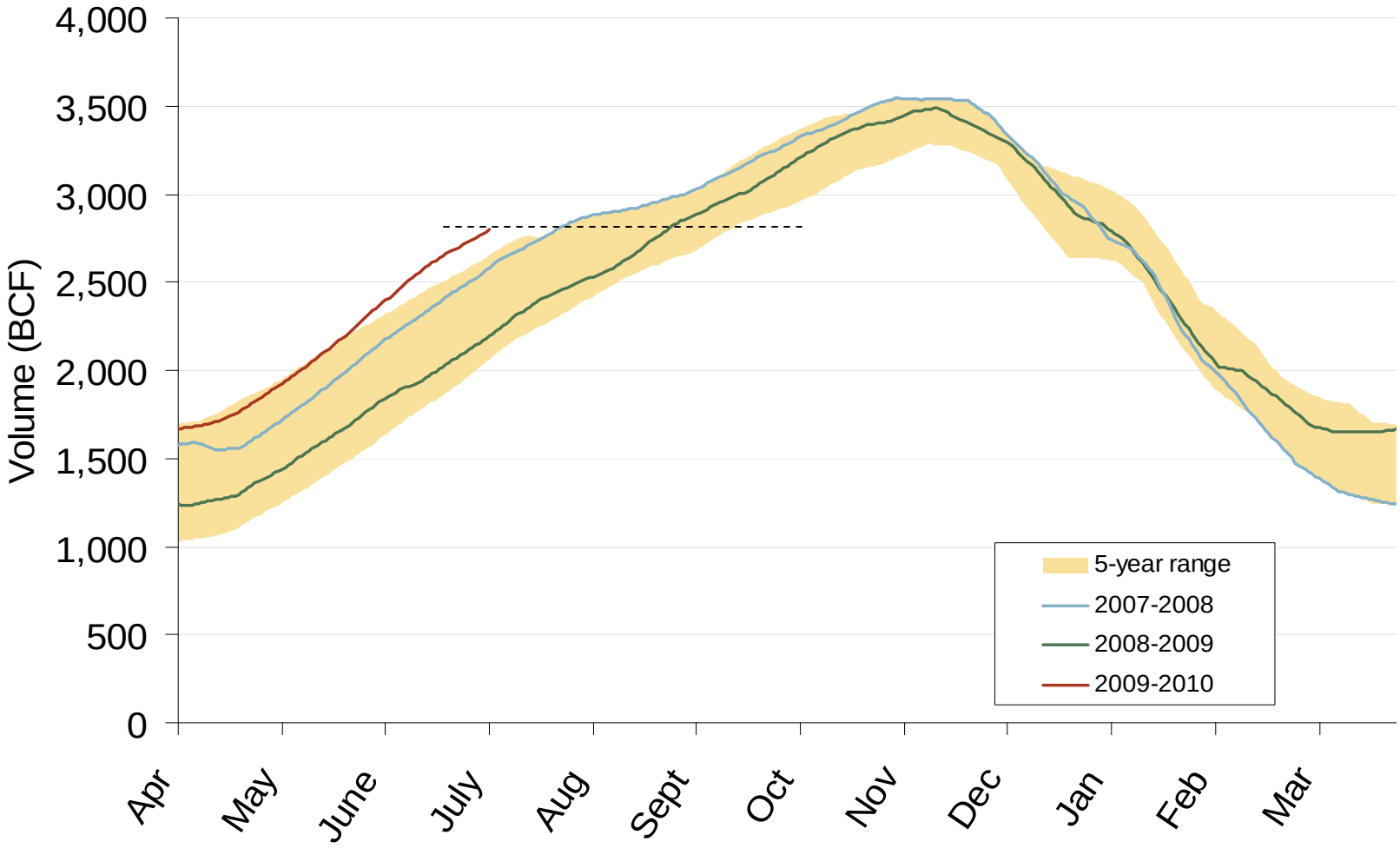
# Total U.S. Working Gas in Storage




Source: Derived from *EIA* data.

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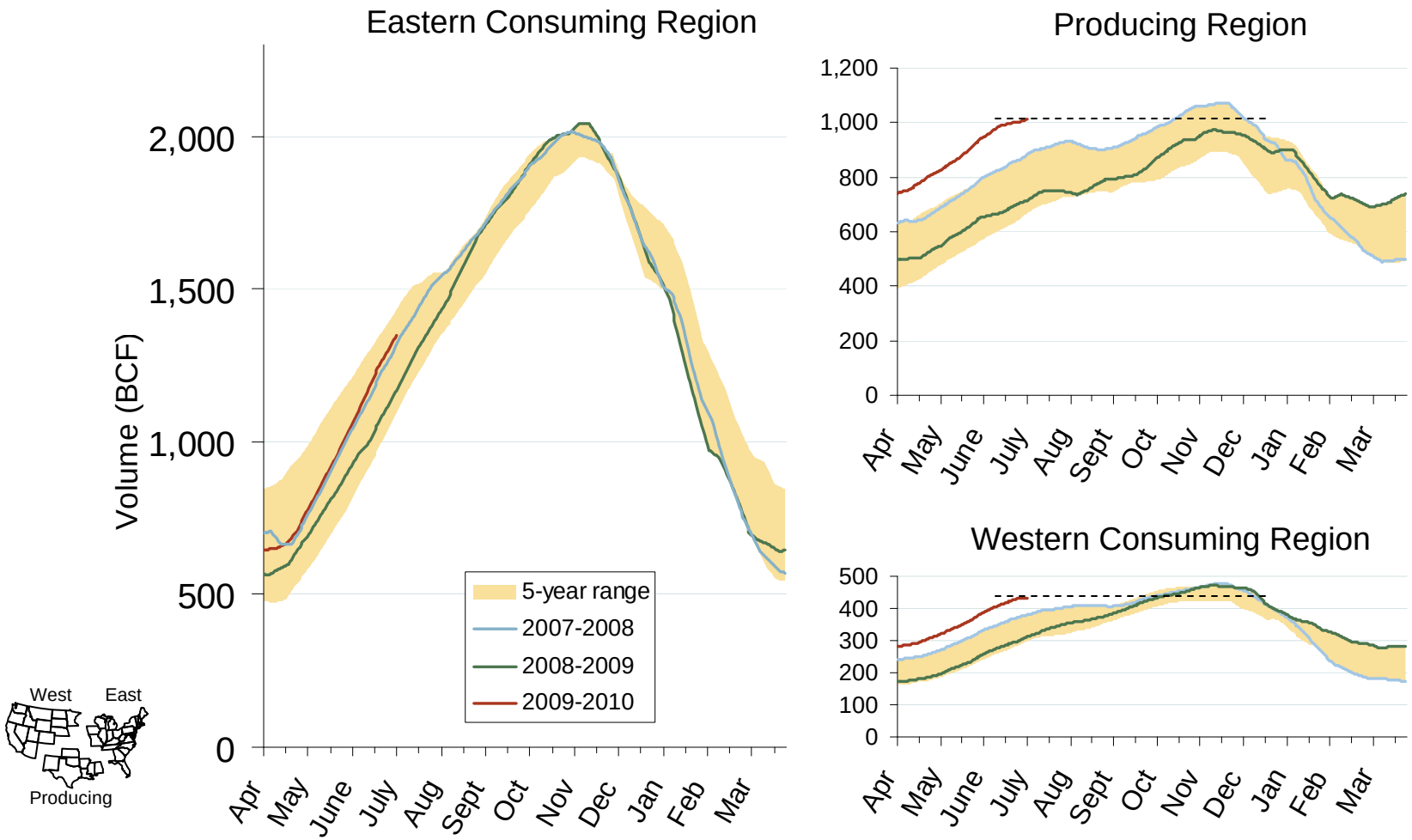
# Regional Totals of Working Gas in Storage




Source: Derived from *EIA* data.

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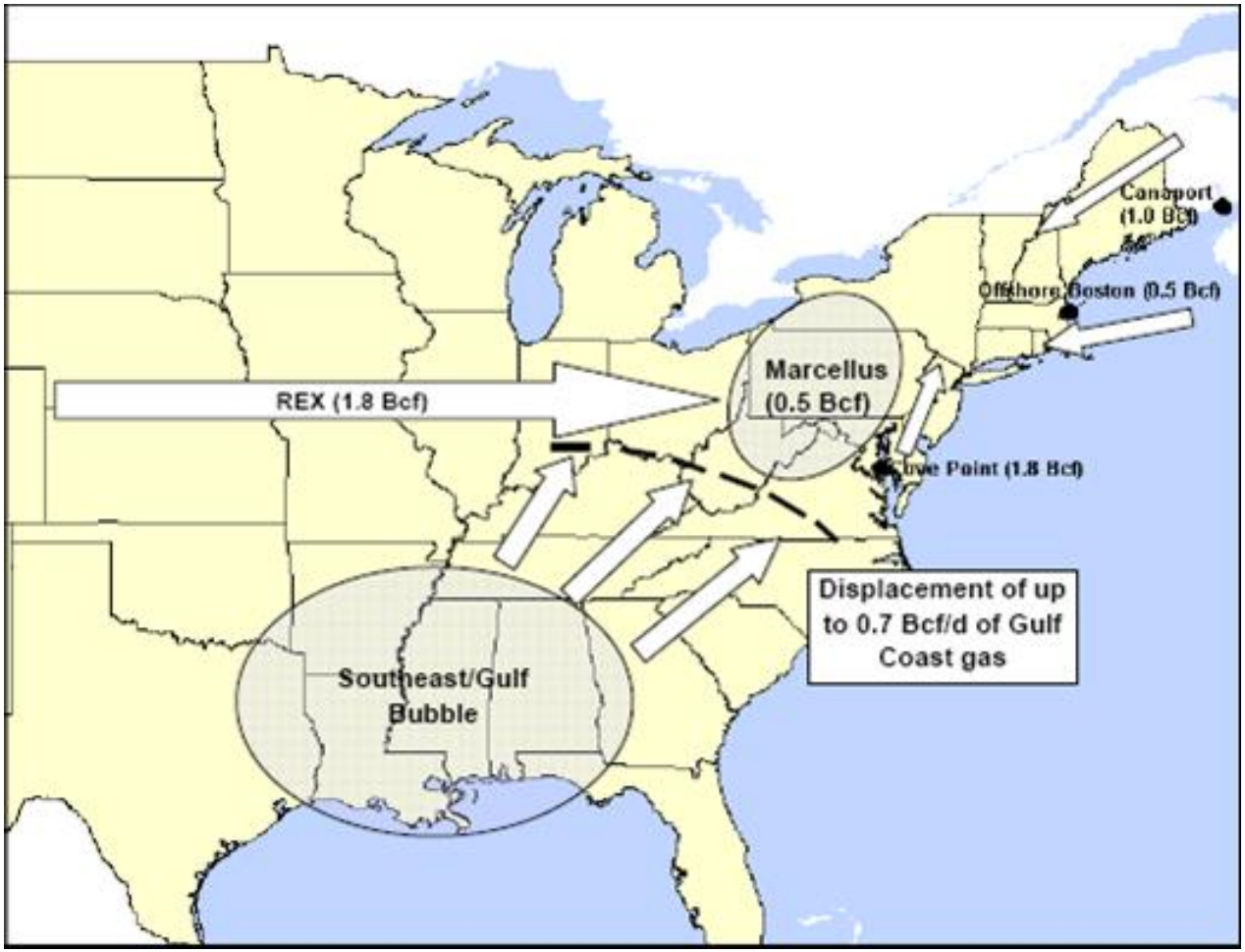
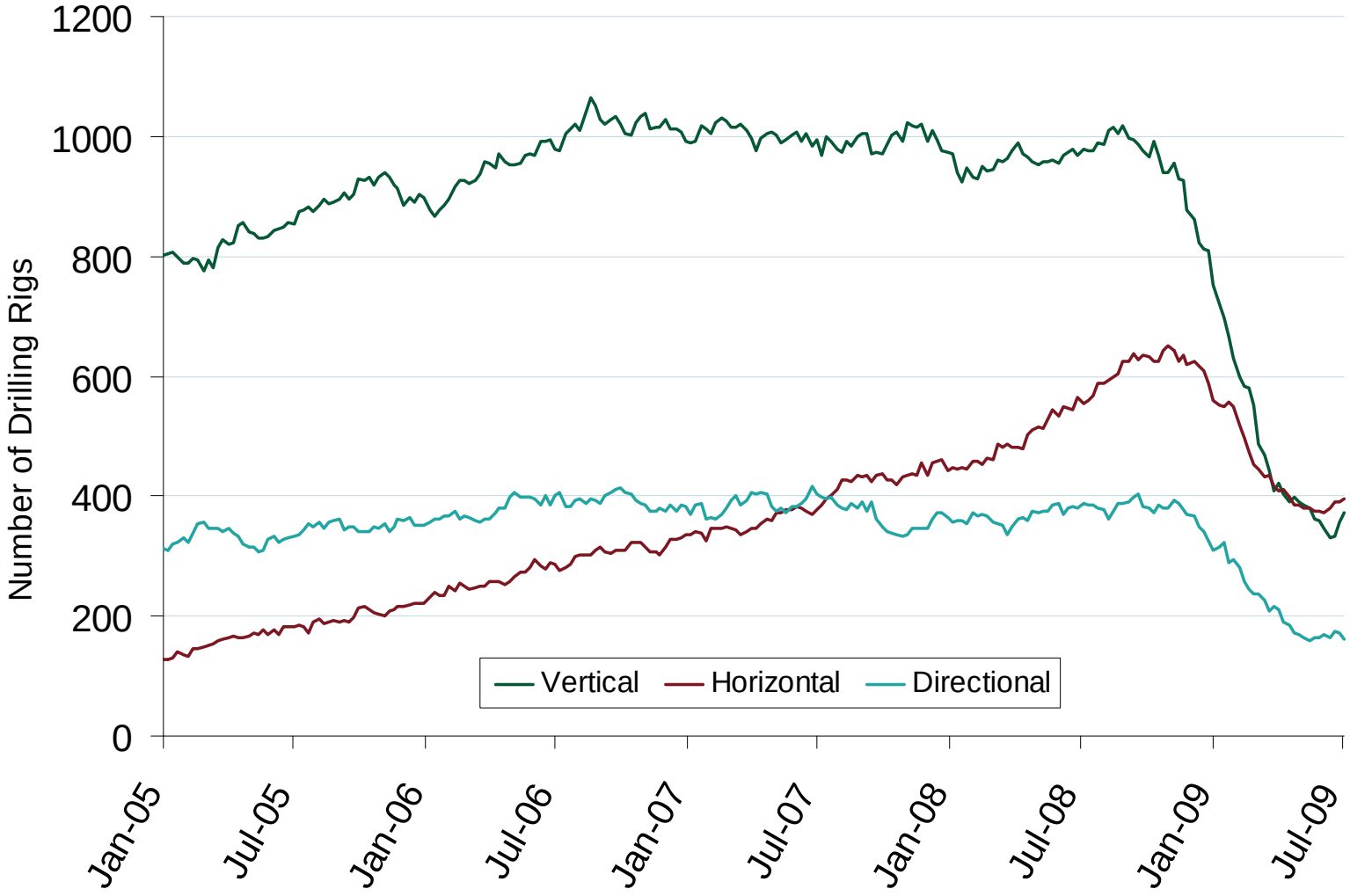
# Changing Gas Supply Picture

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




. Source: Derived from *Bentek and Ventex* data.

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




Source: Derived from *Platts* and *Baker Hughes* data.

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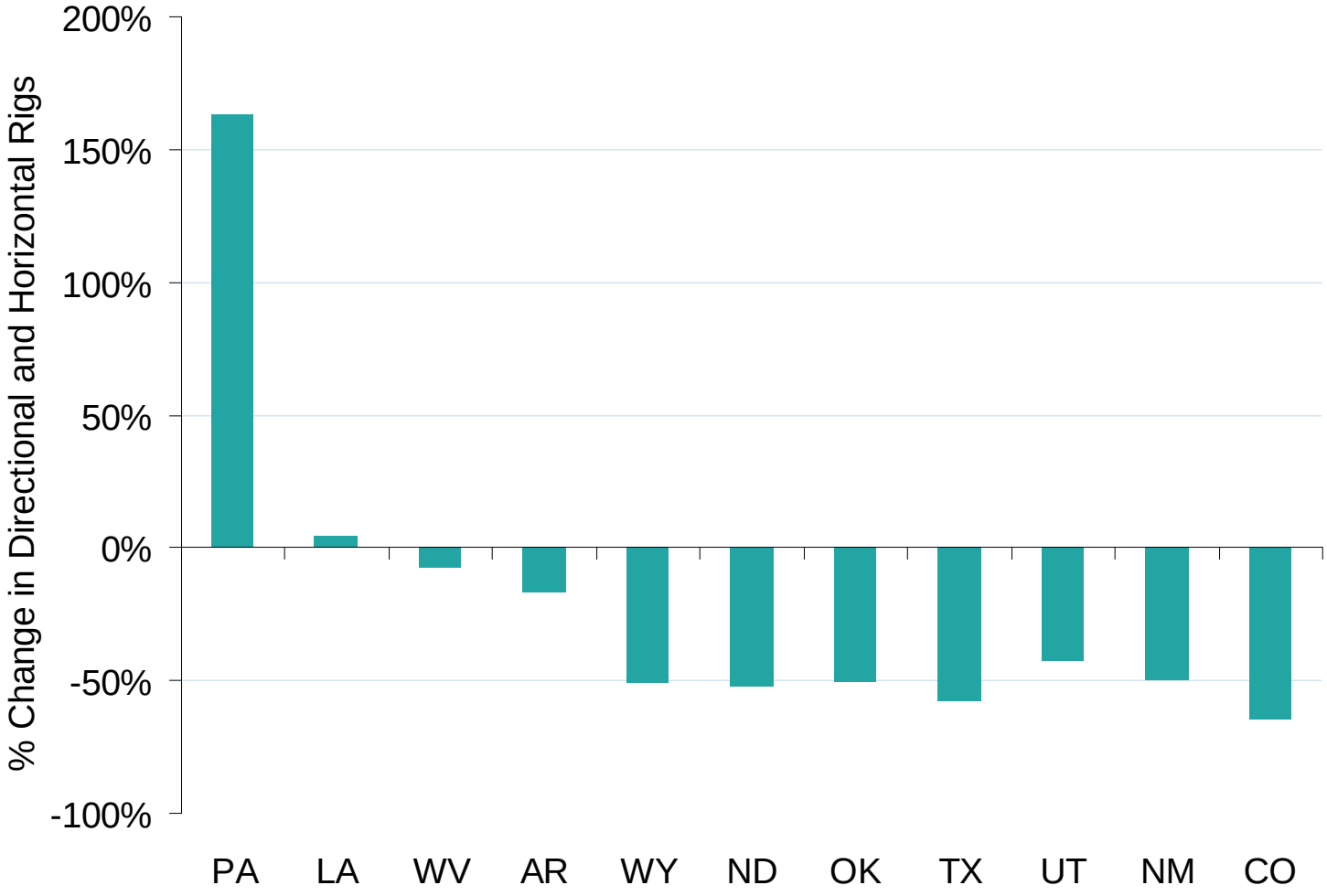
# State Level Oil and NG Drilling Rig Count Change From the September 2008 Peak




Source: Derived from *Platts* and *Baker Hughes* data.

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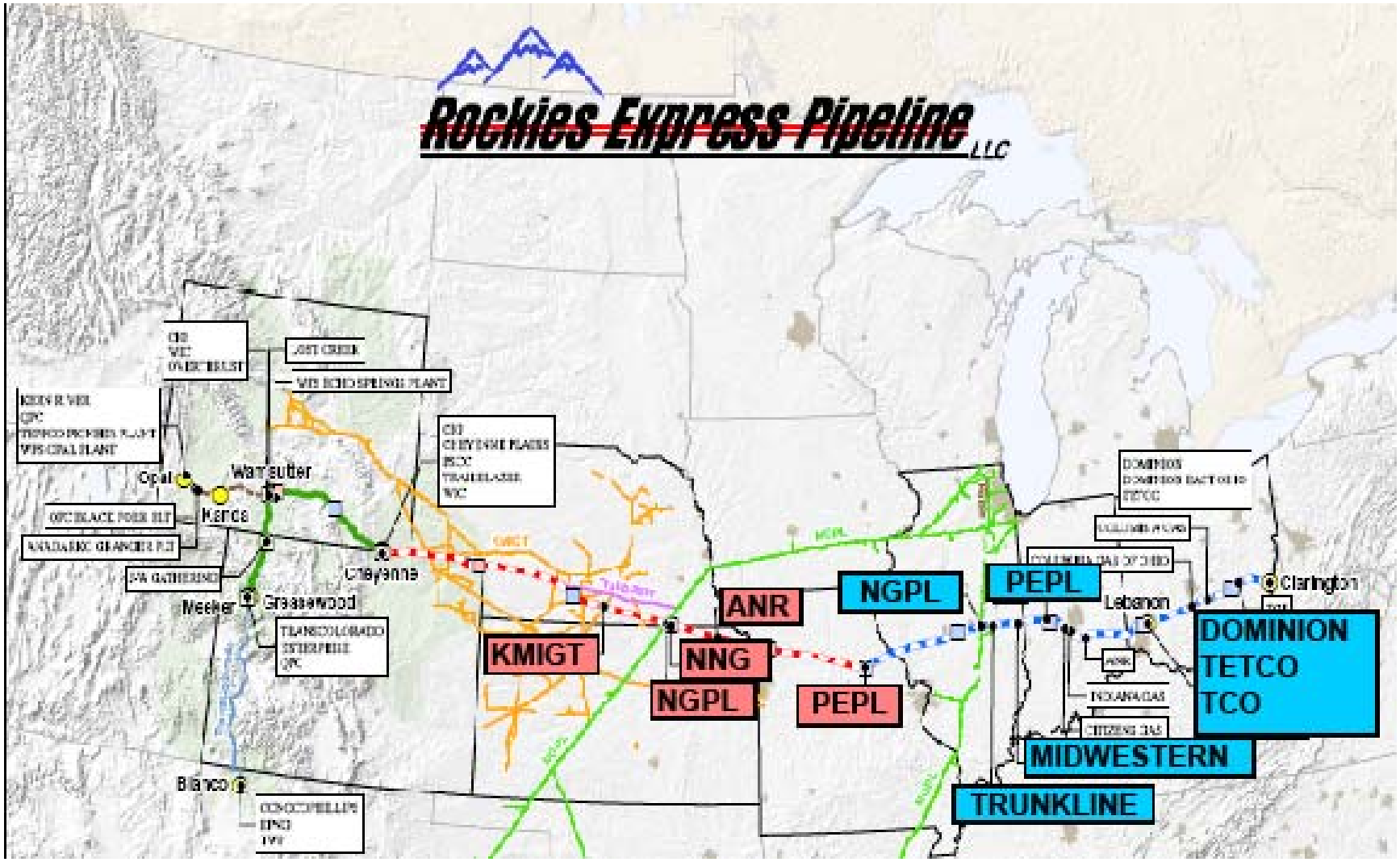
# REX East opens, delivering Rockies gas into eastern markets

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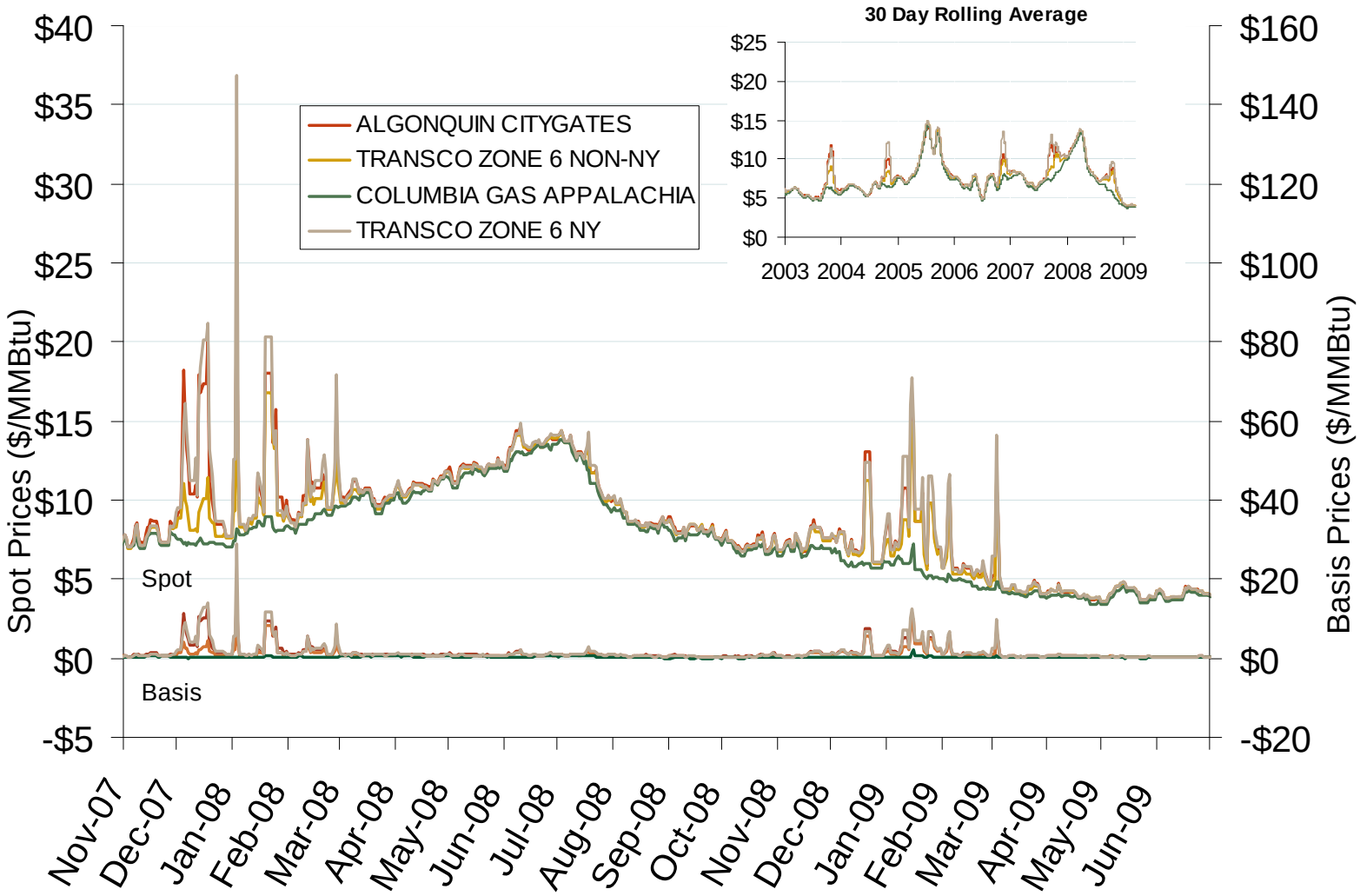
# REX Causes Changes in Flows and Prices

| | 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 |

. Source: Dervived from Bentek Energy LLC and InterContinentalExchage data

# Northeastern Spot Prices and Basis




Source: Derived from *Platts* data.

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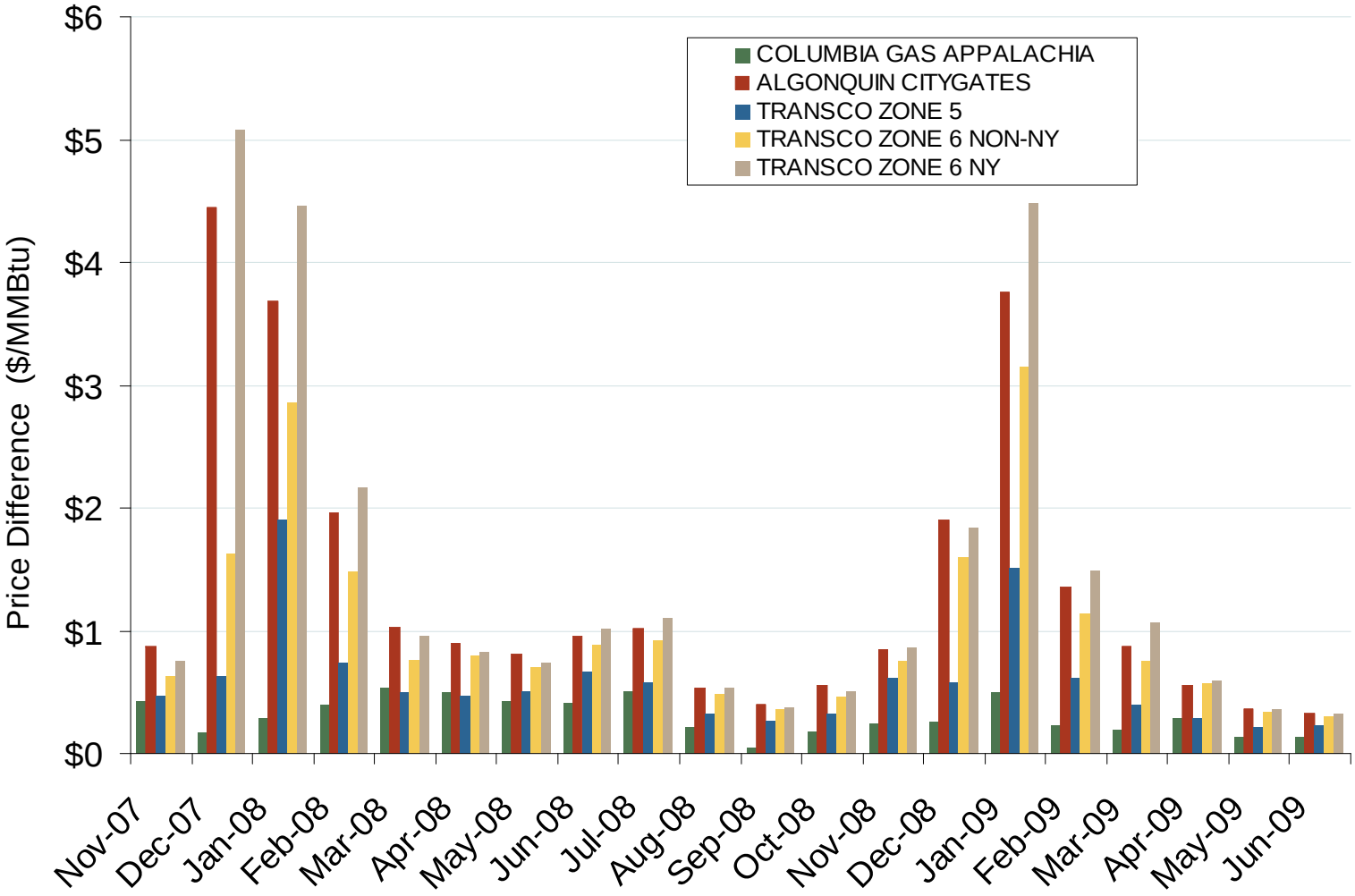
# Northeastern Monthly Average Basis Value to Henry Hub




Source: Derived from *Platts* data.

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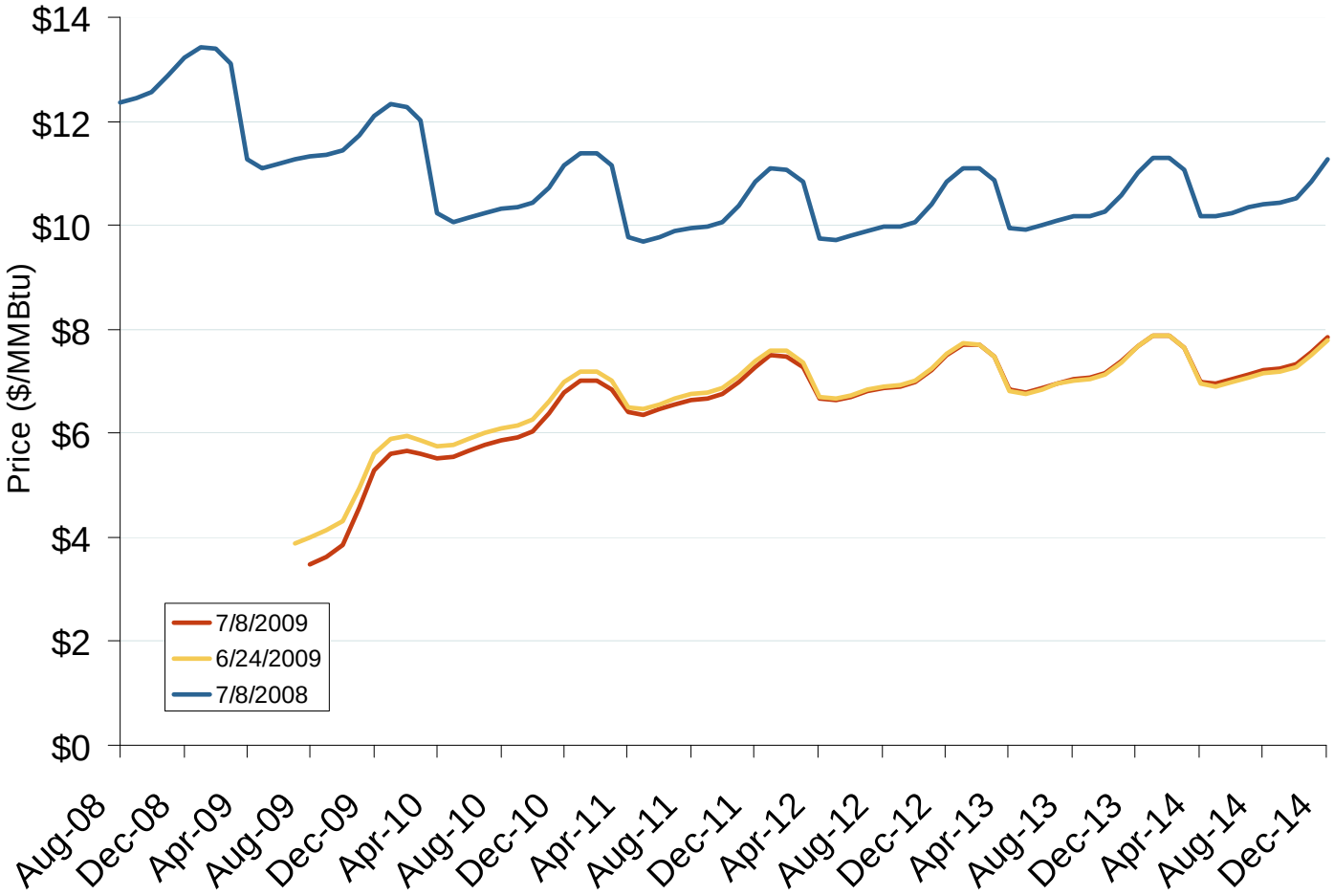
# NYMEX Natural Gas Forward Price Curve




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.

Source: Derived from *NYMEX* data.

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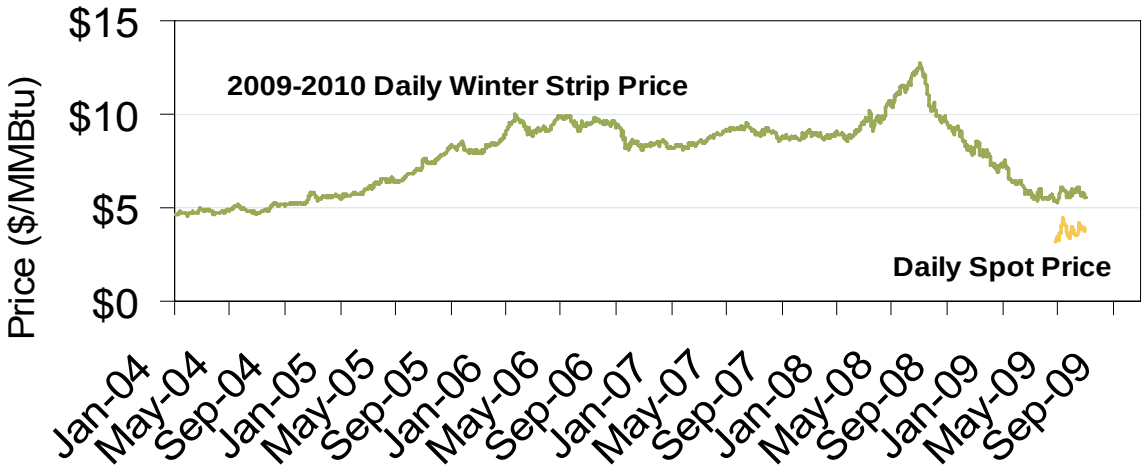
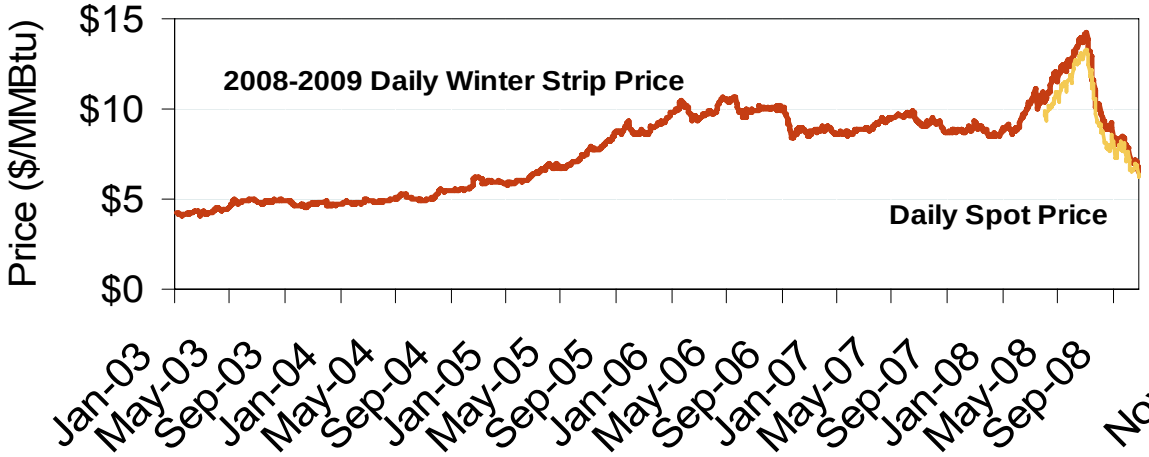
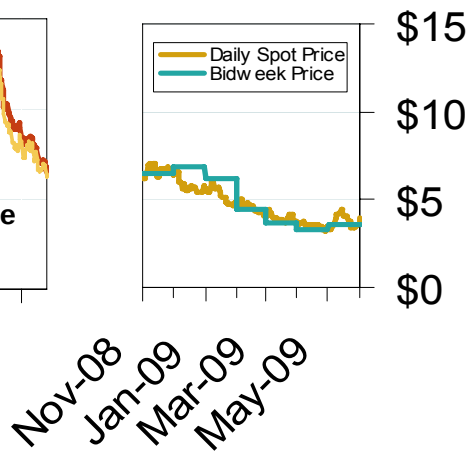
# Natural Gas Winter Futures Strip and Daily Henry Hub Spot and Bidweek Prices




Source: Derived from *Platts* and *Nymex* data.

Updated July 8, 2009

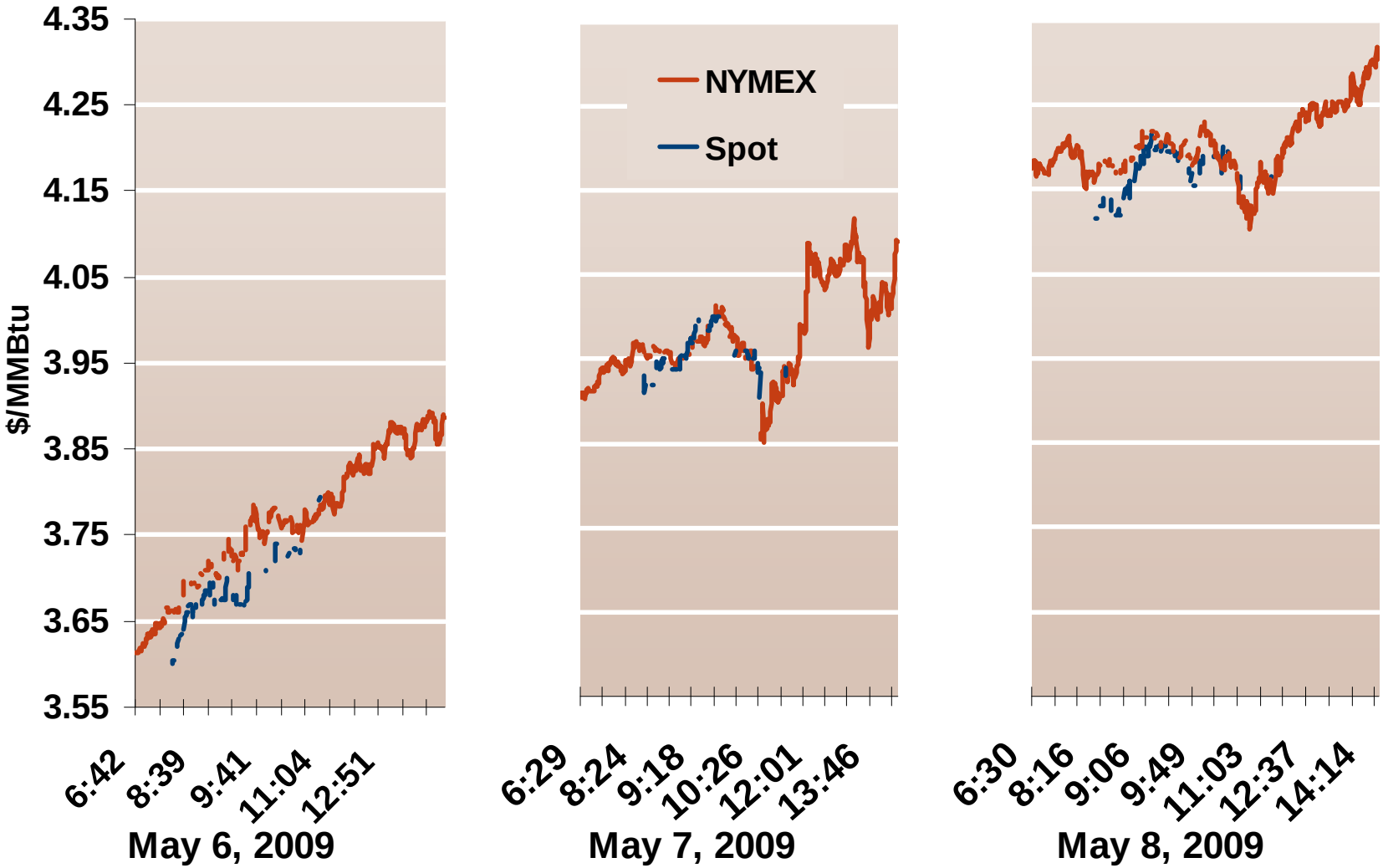
# Two-Thirds of Gas Sales Are Based on Indexes

- 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

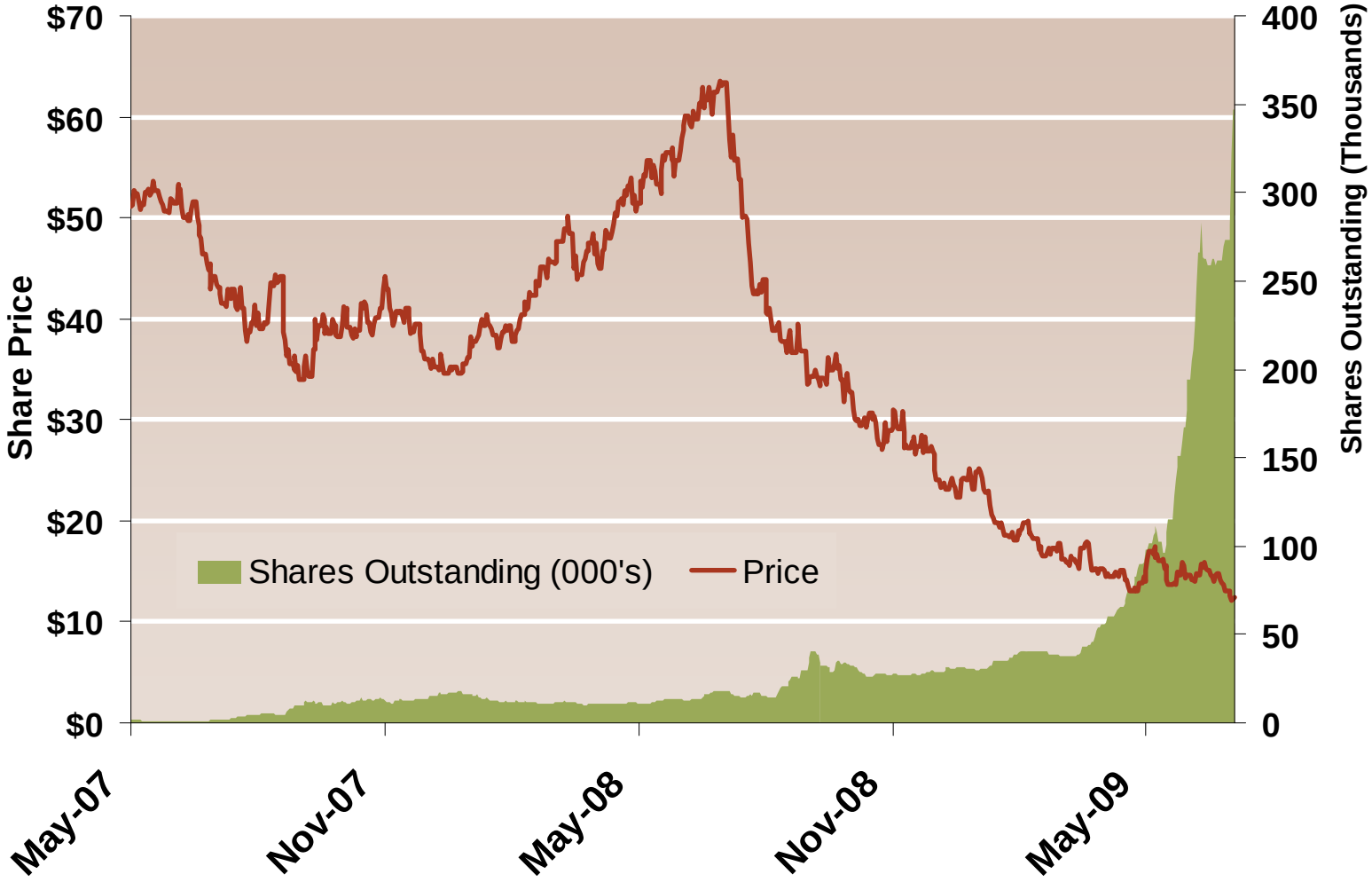
- The top 50 sellers accounted for 78% (43 Bcf) of total sales and the top 5 sold 29% (16 Bcf).
- BP led the way with more than 5.4 Tcf of gas sold, while ConocoPhillips (3.5 Tcf ), Shell (2.5 Tcf ), Constellation (2.3 Tcf ) and Chevron (2.1 Tcf ) finished off the rest of the top 5.
- Nineteen of the 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



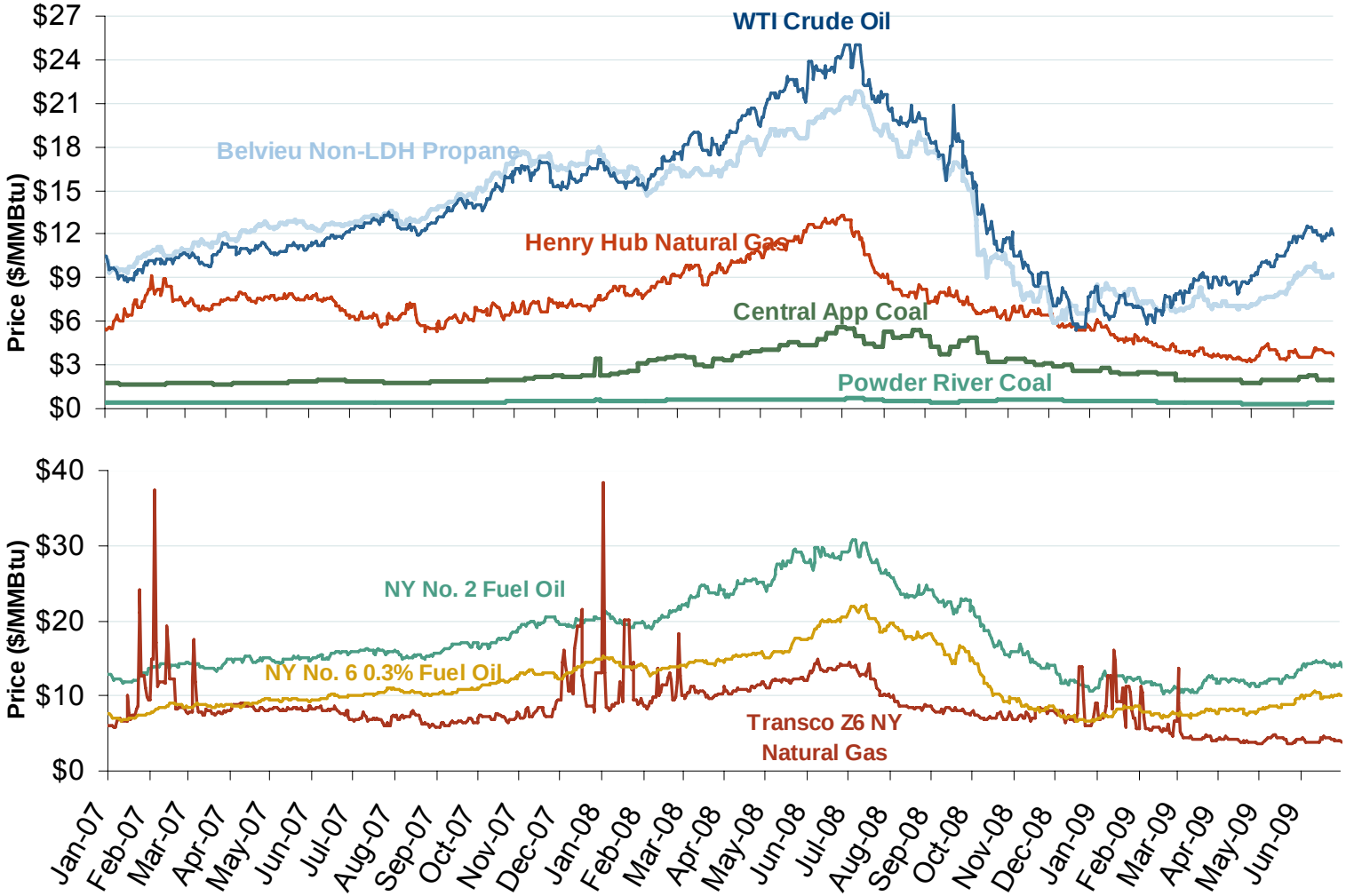

Source: Derived from *Bloomberg* data for Henry Hub Contract.

# Trends in Share Price and Units Outstanding for United States Natural Gas Fund (UNG)




Source: Derived from *Bloomberg* data.

# Oil, Coal, Natural Gas and Propane Daily Spot Prices

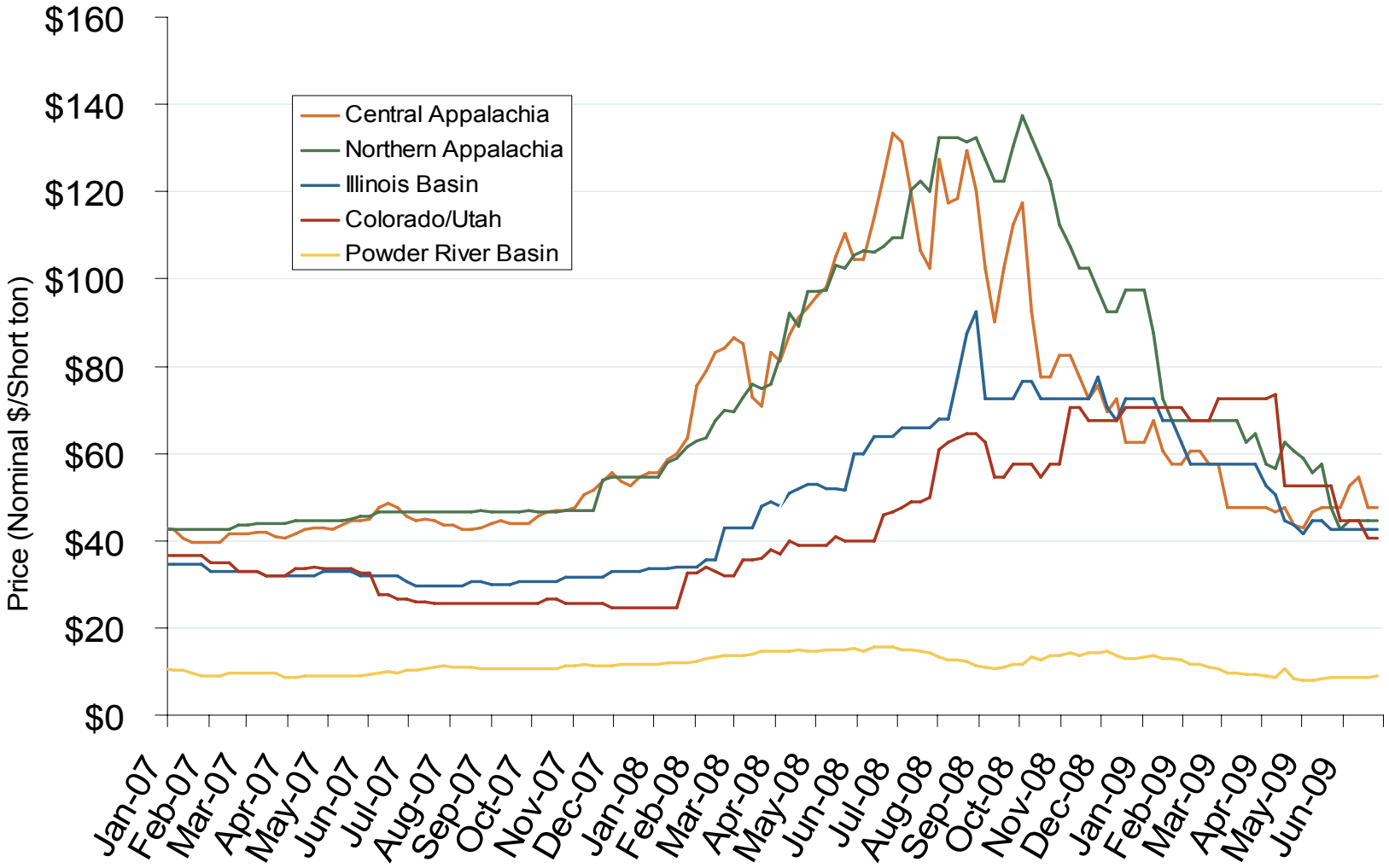



Source: Derived from *ICE* and *Bloomberg* data.

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 July 8, 2009

# Regional Coal Spot Prices

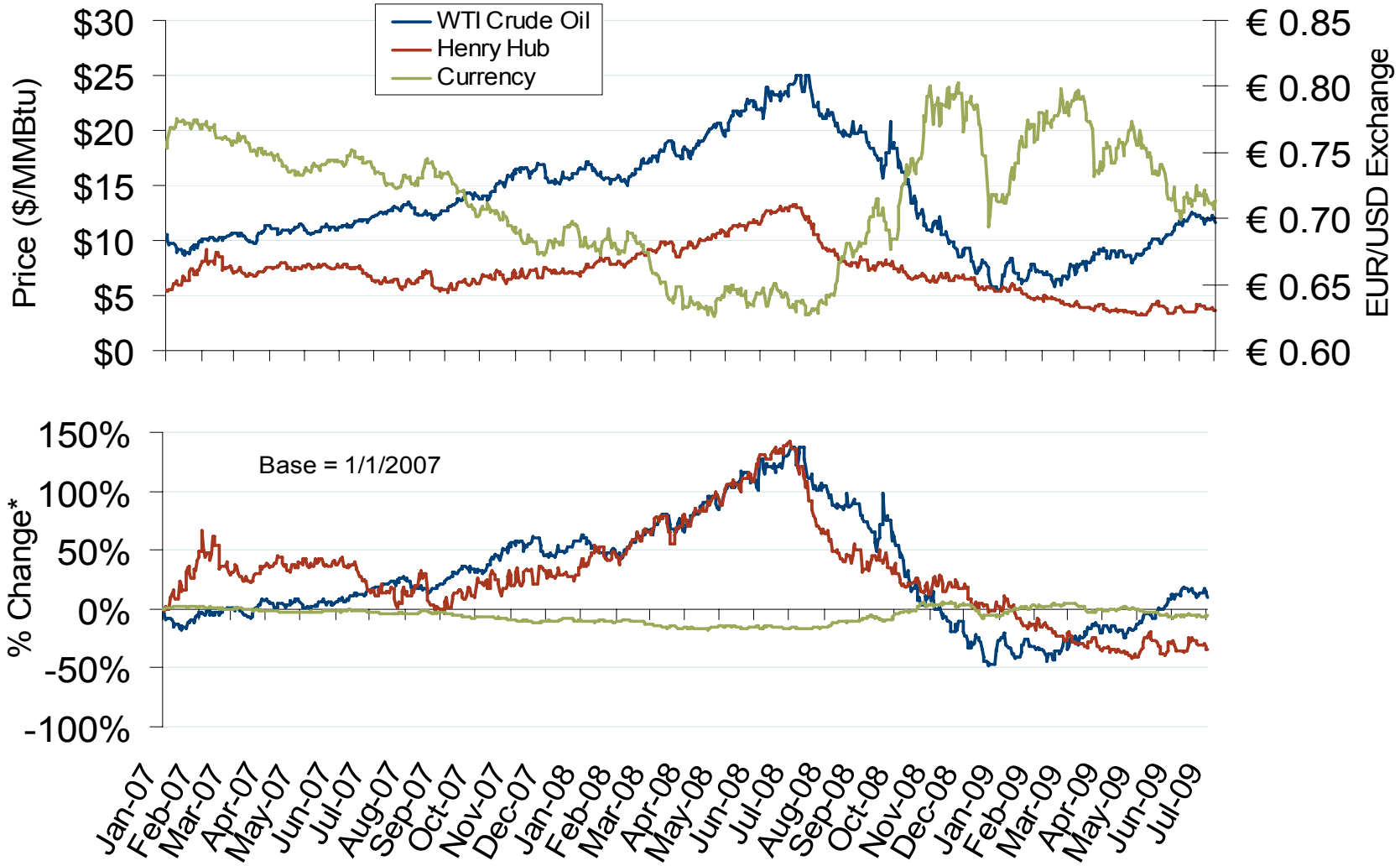



Note: Does not reflect the delivered price of coal; excludes incremental cost of emissions allowances.

Source: Derived from *Bloomberg* data.

Updated July 8, 2009

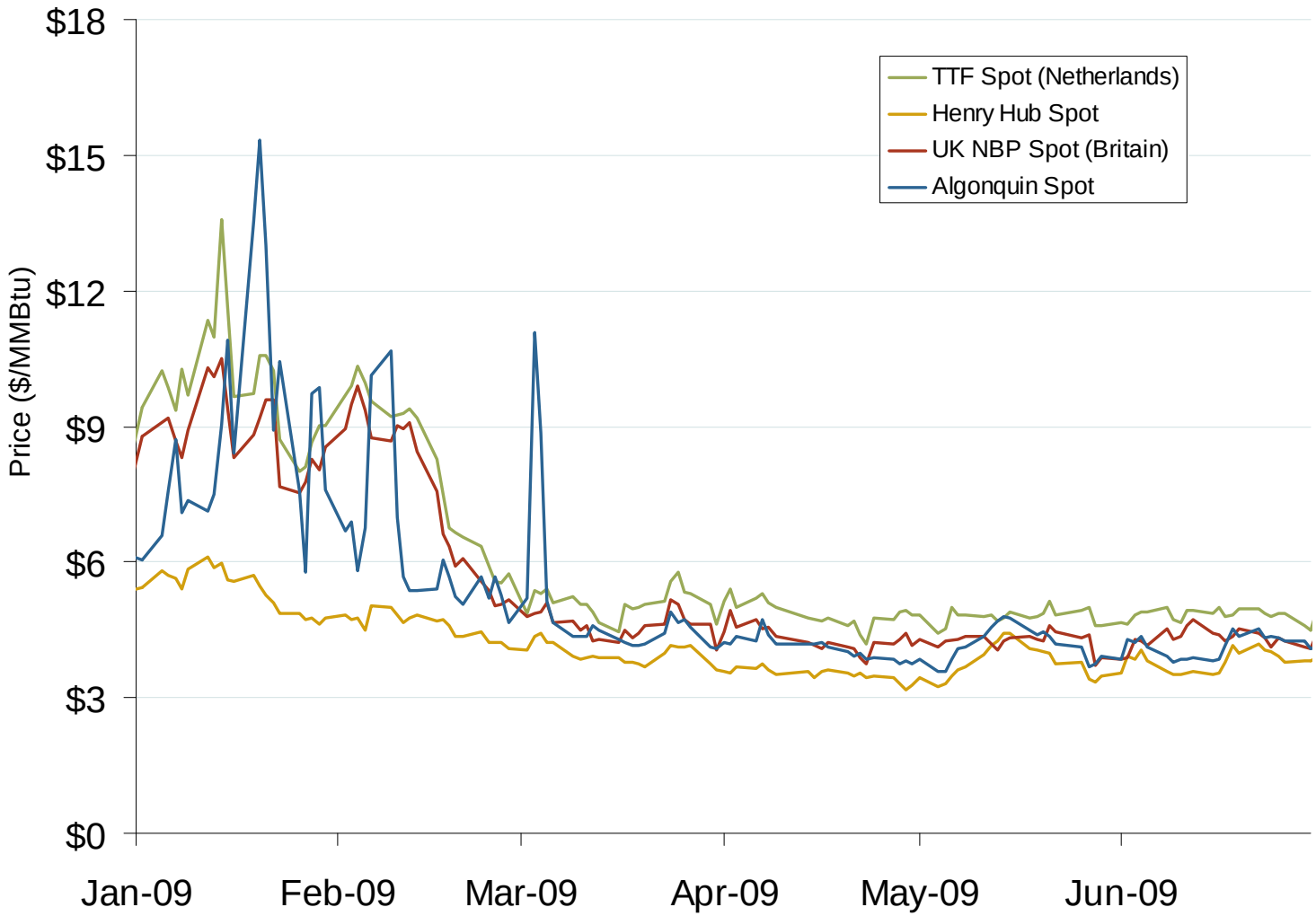
# Oil, Natural Gas and Currency Spot Prices




Source: Derived from *Bloomberg* data.

Updated July 8, 2009

# Atlantic Basin European and US Spot Natural Gas Prices




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

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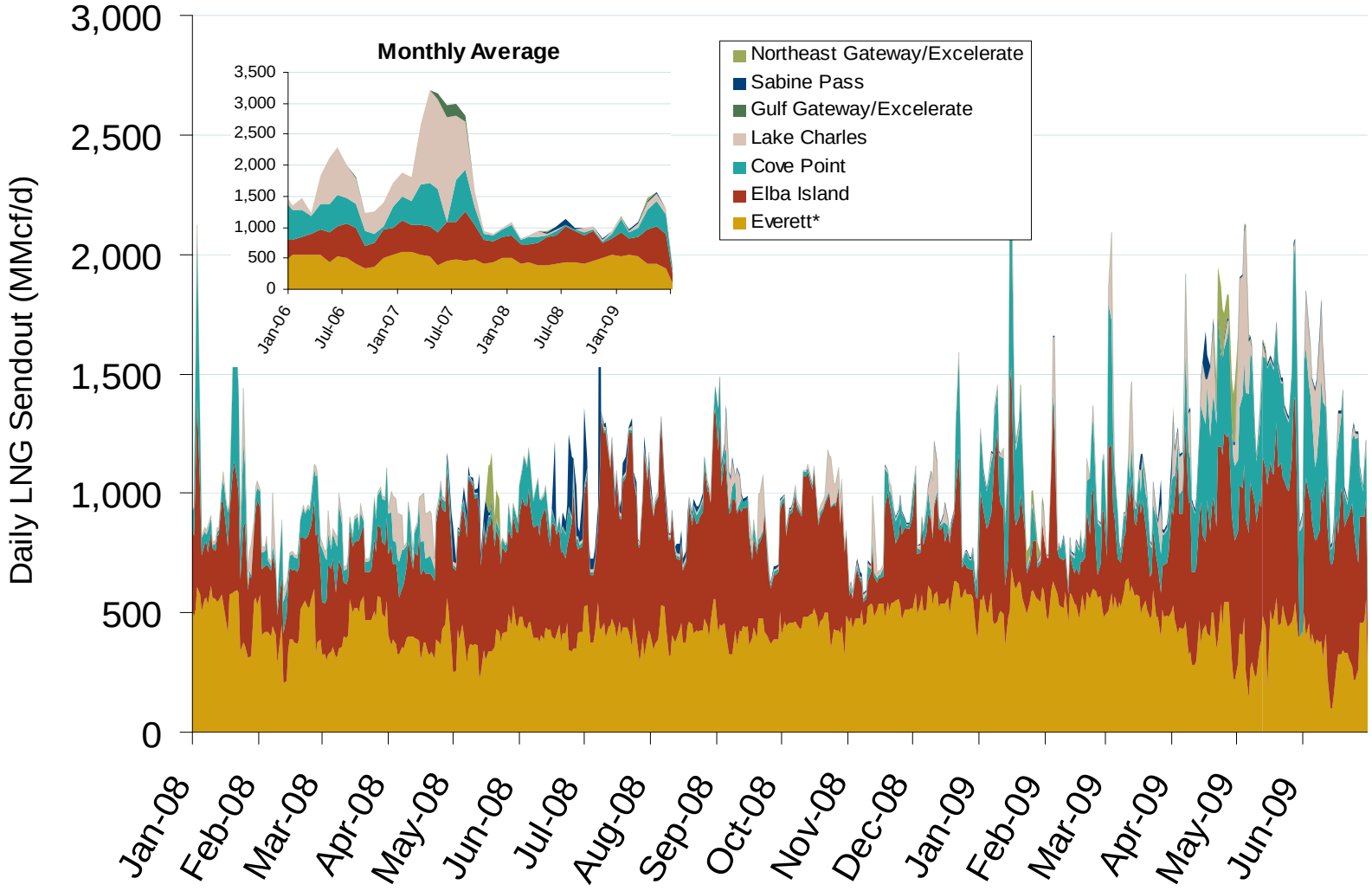
# World LNG Estimated July 2009 Landed Prices

Source: *Waterborne Energy, Inc.* Data in $US/MMBtu.

July 2009 Mid-Atlantic Snapshot Report

Updated July 8, 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.

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## Financial Markets: Comparative Bond Yields

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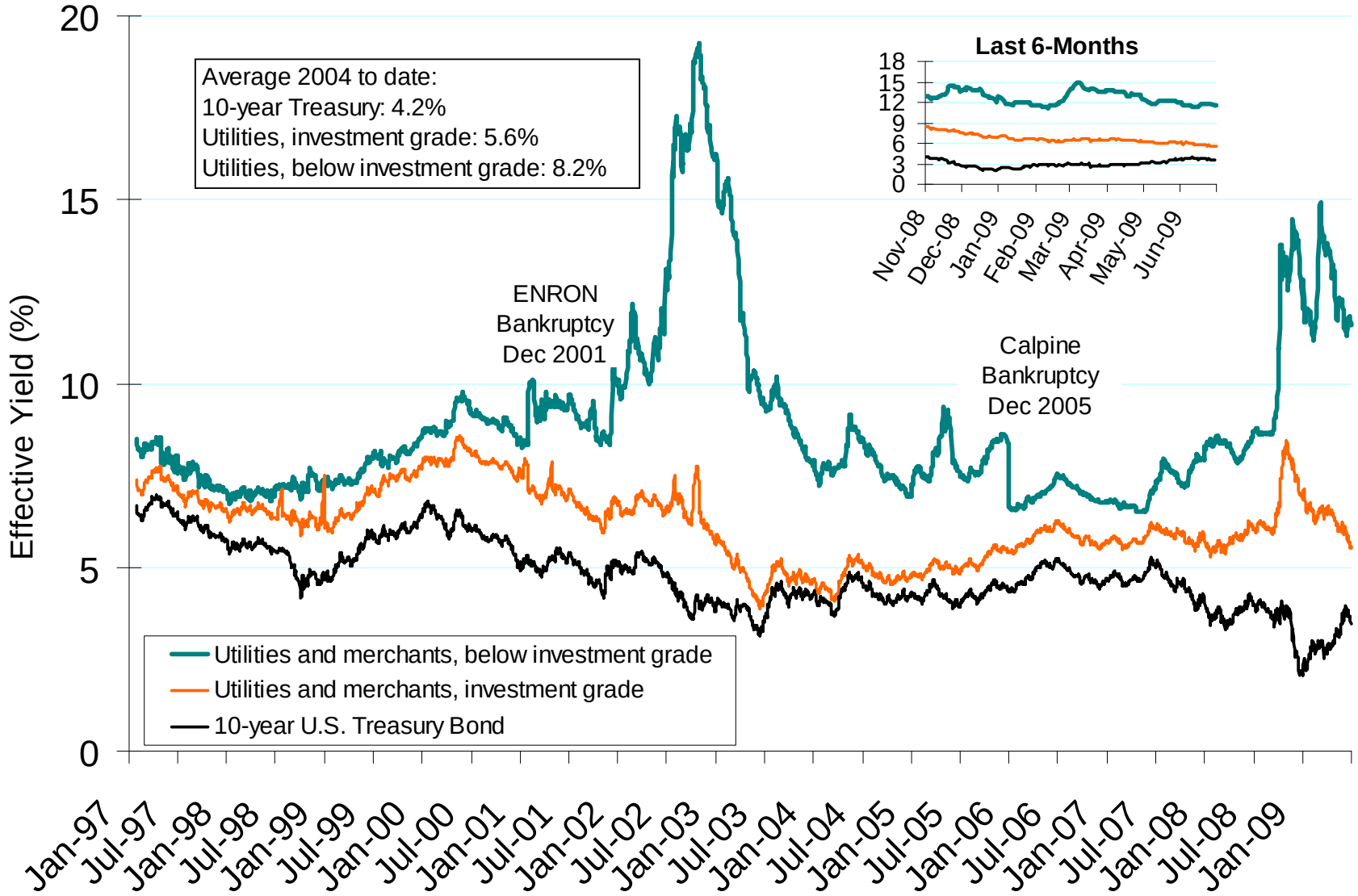
# Yields of Utilities, Merchants and Ten Year Treasury Bonds




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

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## Financial Markets: GSCI Closing Price

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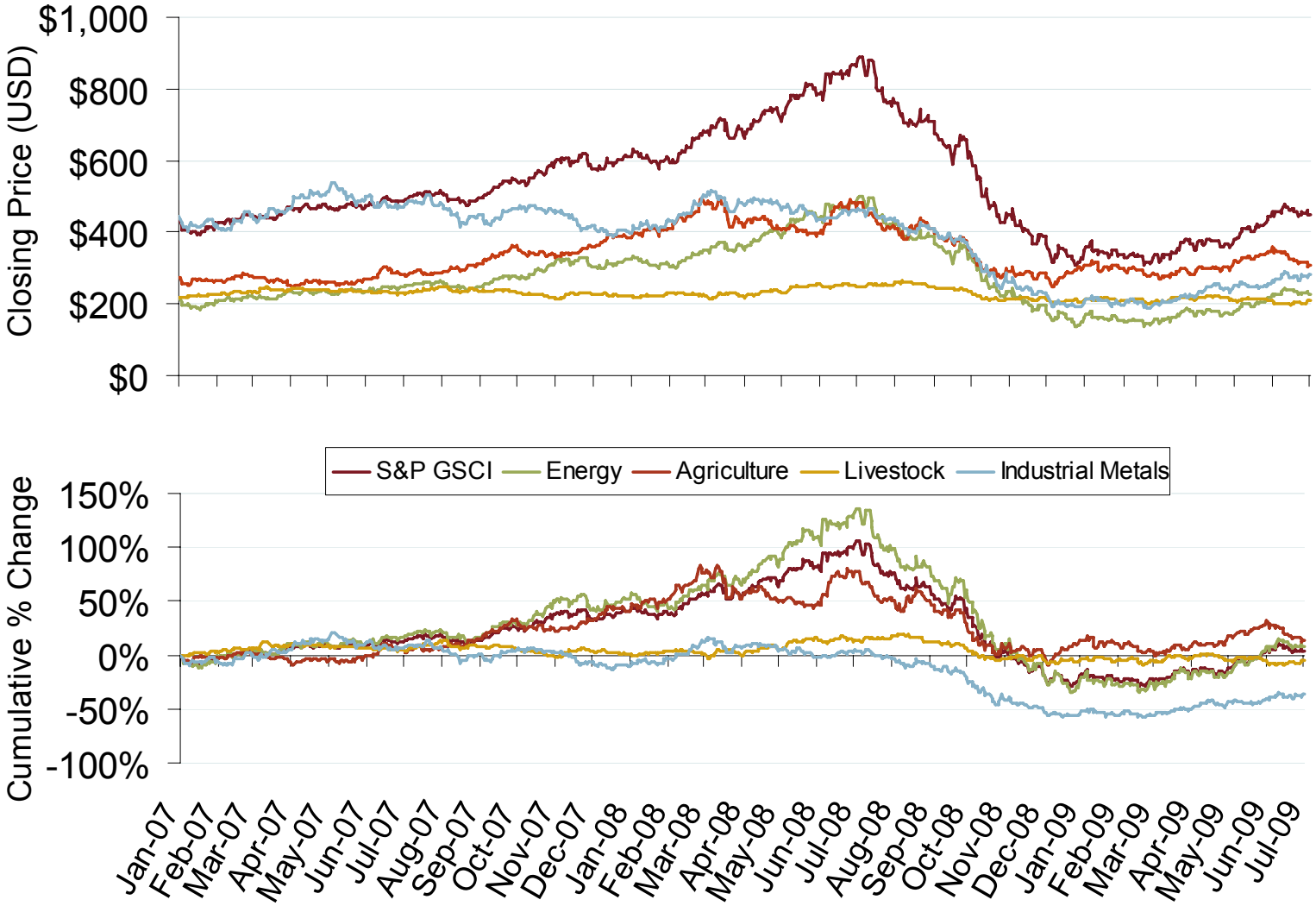
# S&P Goldman Sachs Commodity Index Official Closing Price




Source: Bloomberg Data

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