OE ENERGY MARKET SNAPSHOT

Northeast States Version – March 2009 Data

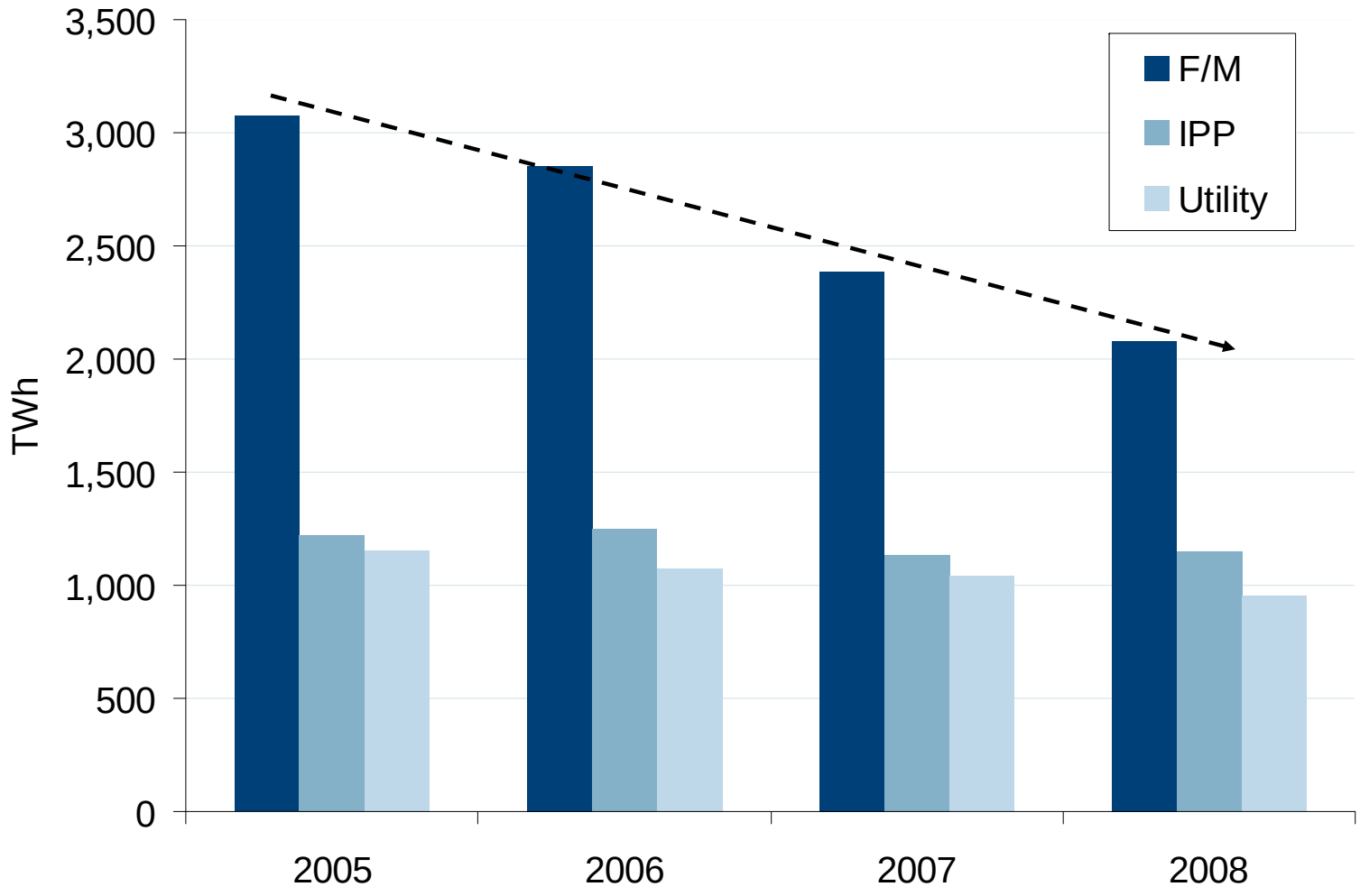
- **Special Report**
- **Natural Gas and Fuel Markets**
- **Electricity Markets**

Office of Enforcement
Federal Energy Regulatory Commission
April 2009

Special Report:

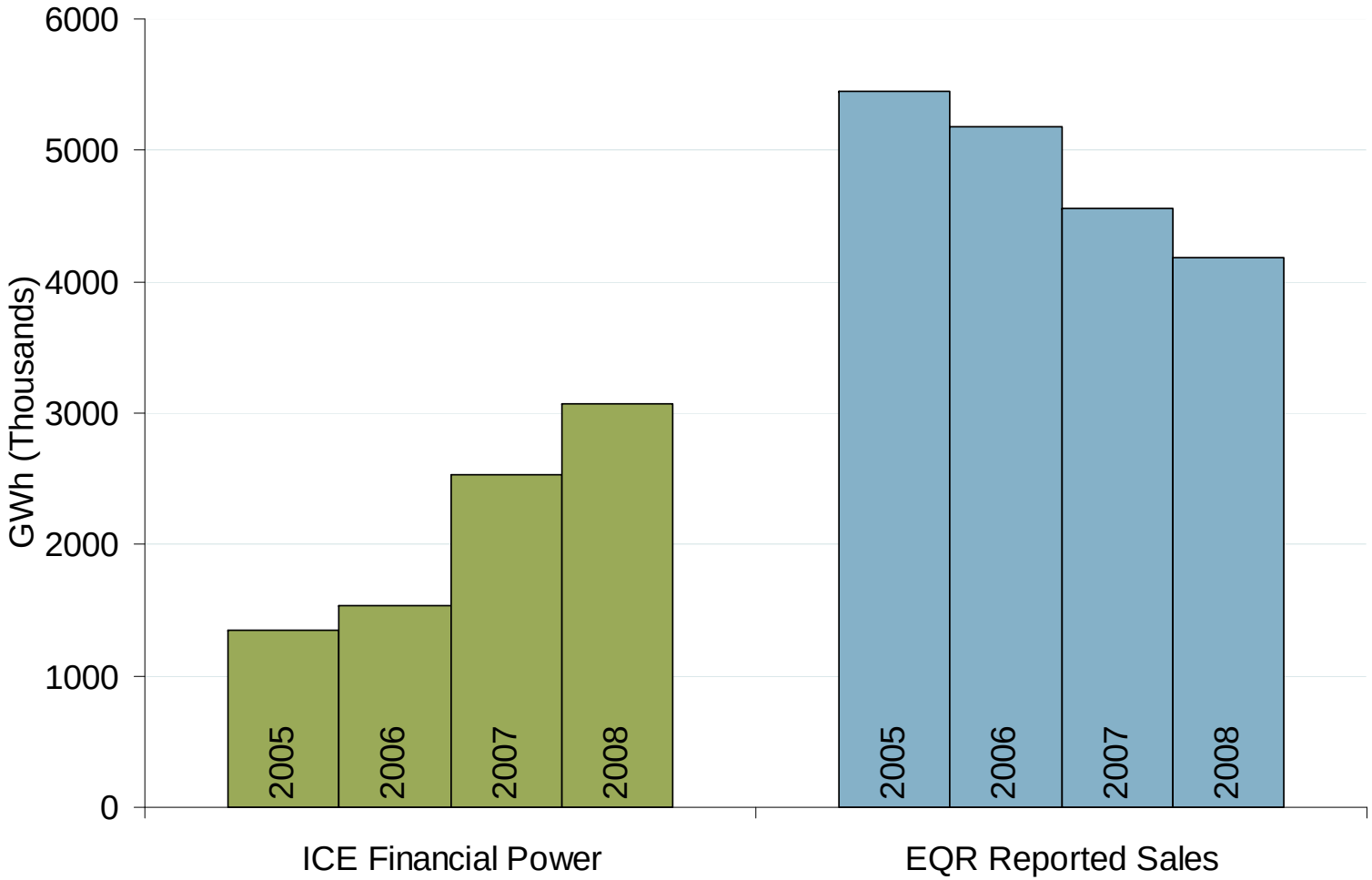
- **ICE and EQR Electric Transaction Volumes**

EQR Volume Declines led by Financial/Marketer Sellers



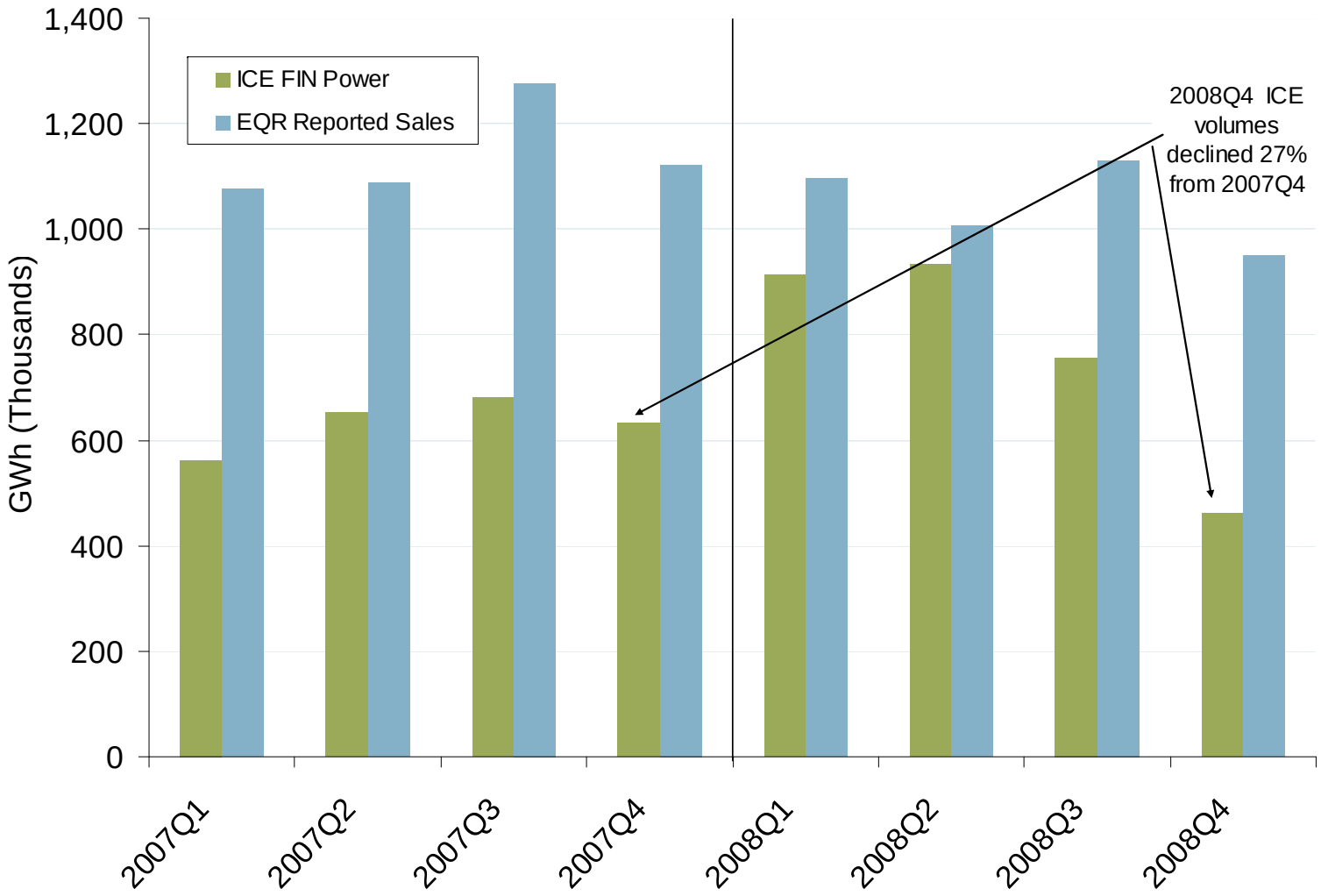
Source: Derived from *EQR* data.

Annual ICE and EQR Volumes: 2005-2008



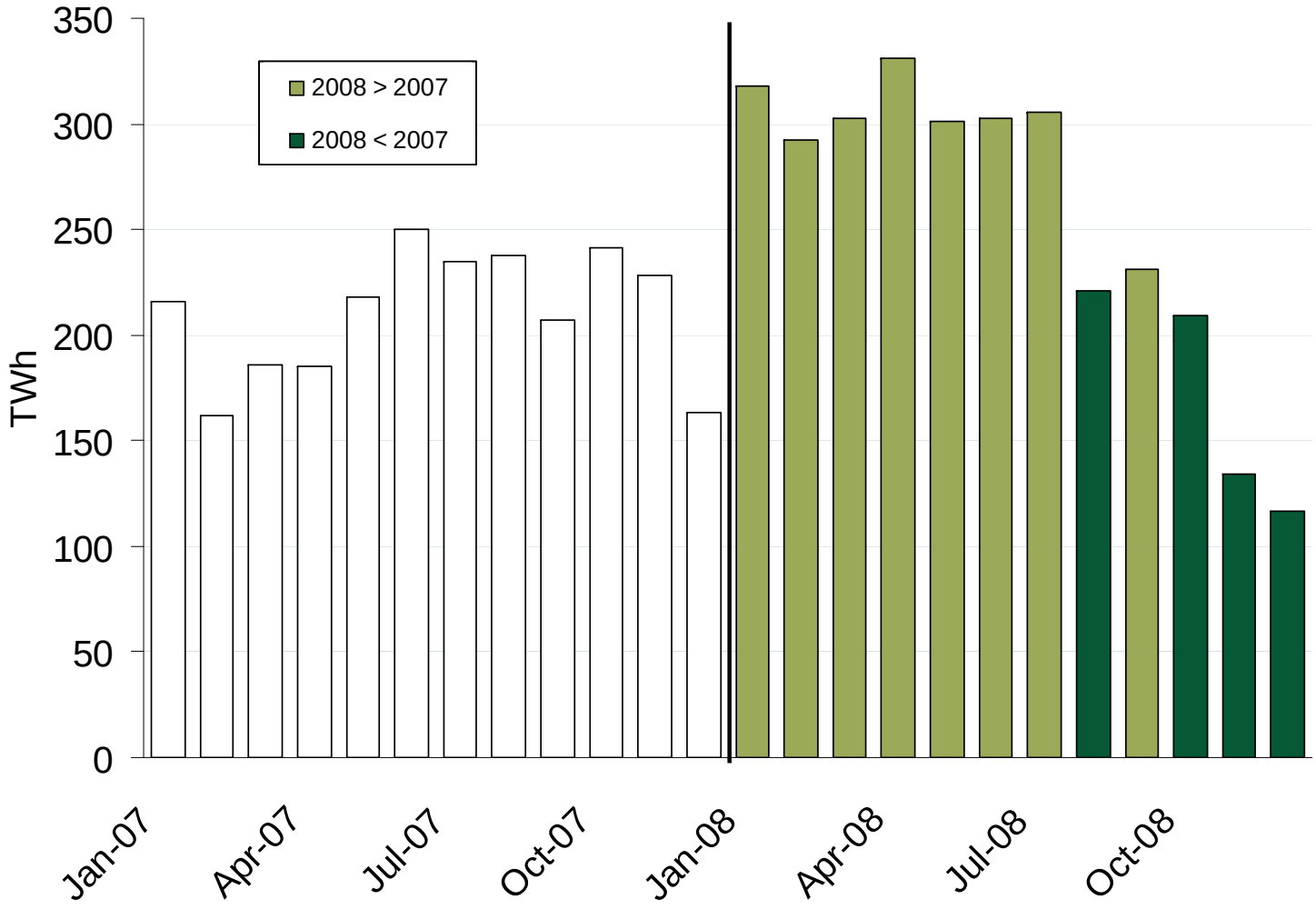
Source: Derived from *EQR and ICE* data.

Quarterly ICE and EQR Volumes: 2007-2008



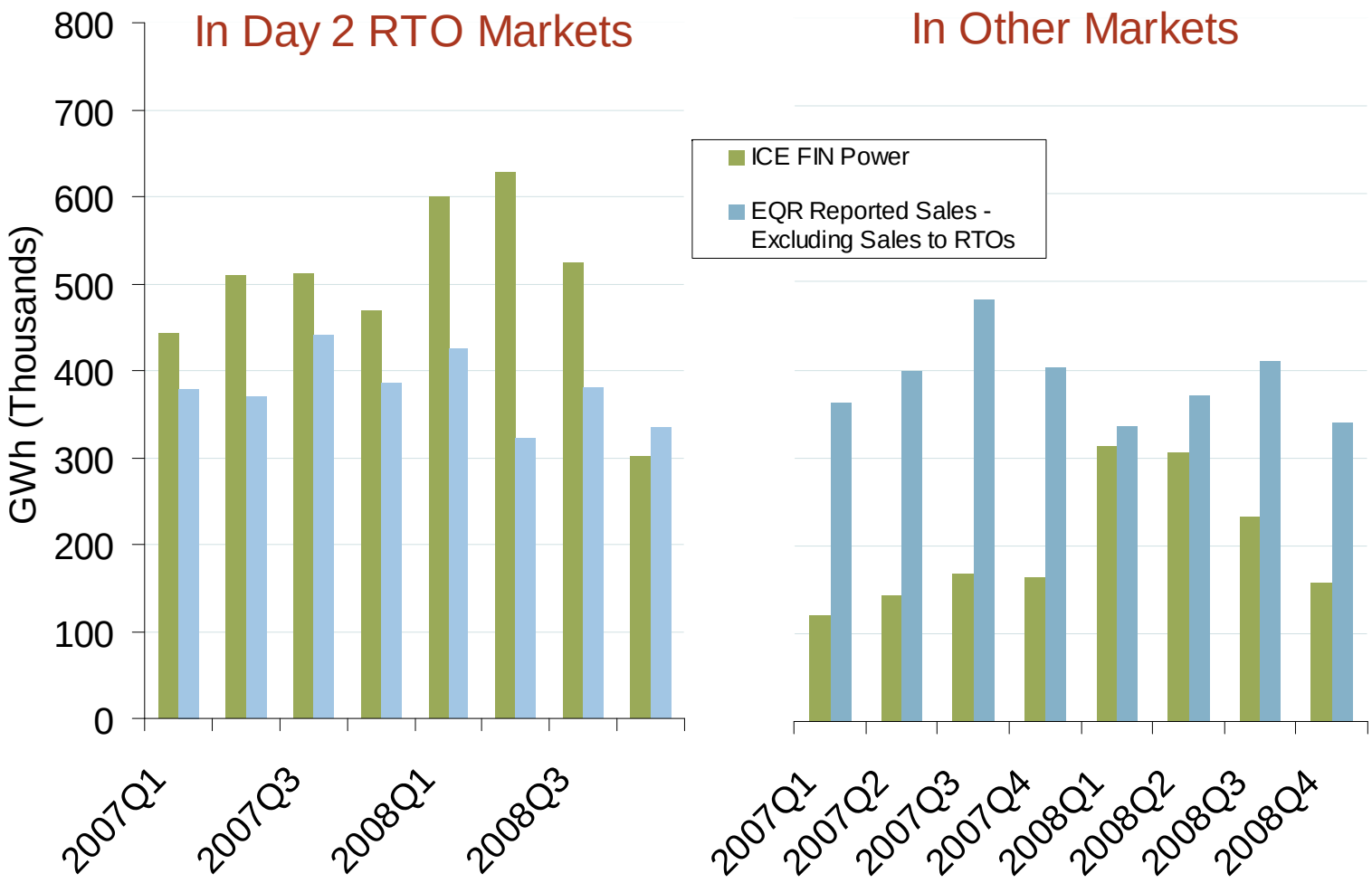
Source: Derived from *EQR and ICE* data.

Monthly ICE Volumes 2007-2008



Source: Derived from *ICE* data.

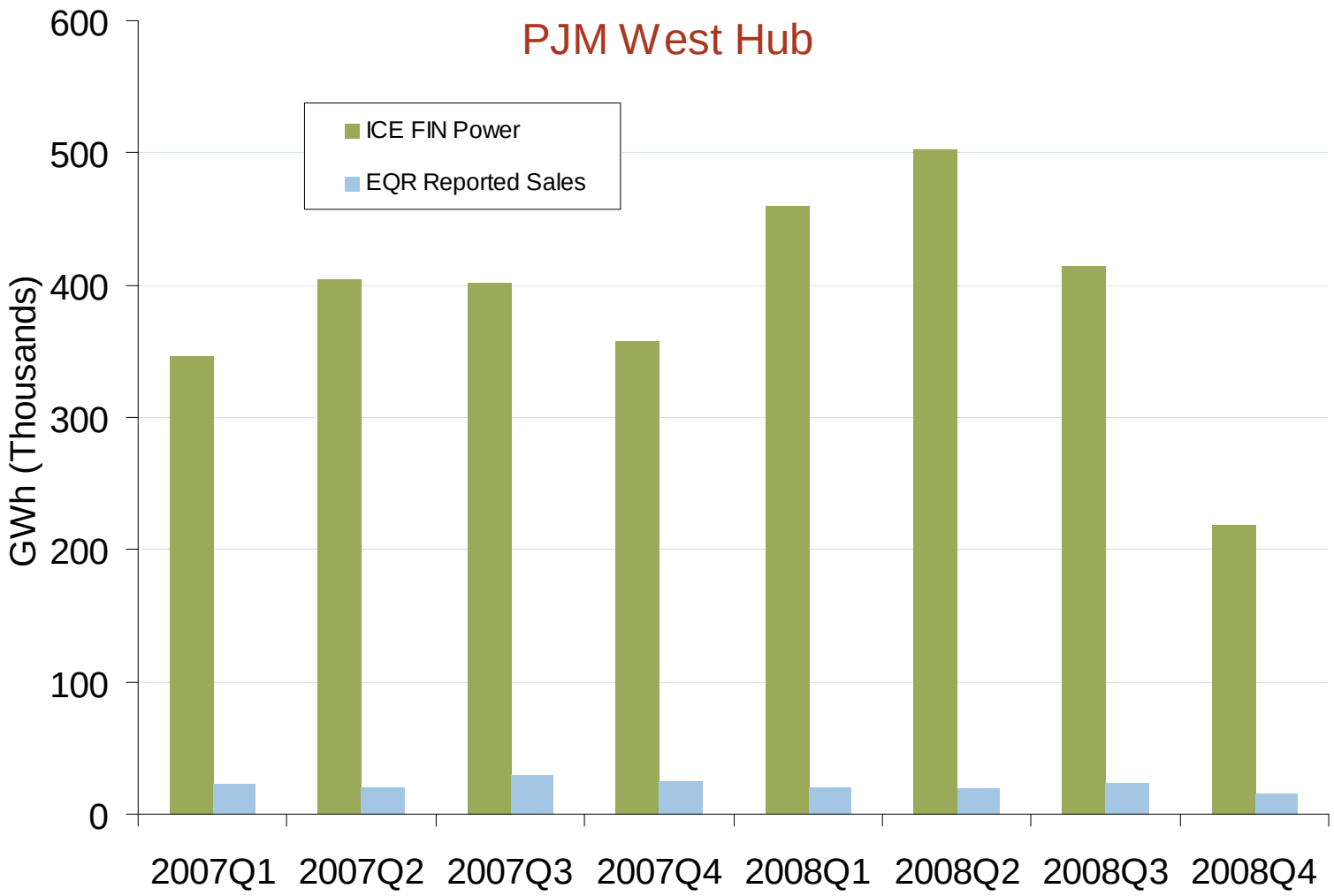
Quarterly ICE and EQR Volumes



ISO-NE, MISO, NYISO, and PJM included in Day 2 RTO Markets. CAISO, SPP and non-RTO areas included in Other Markets.

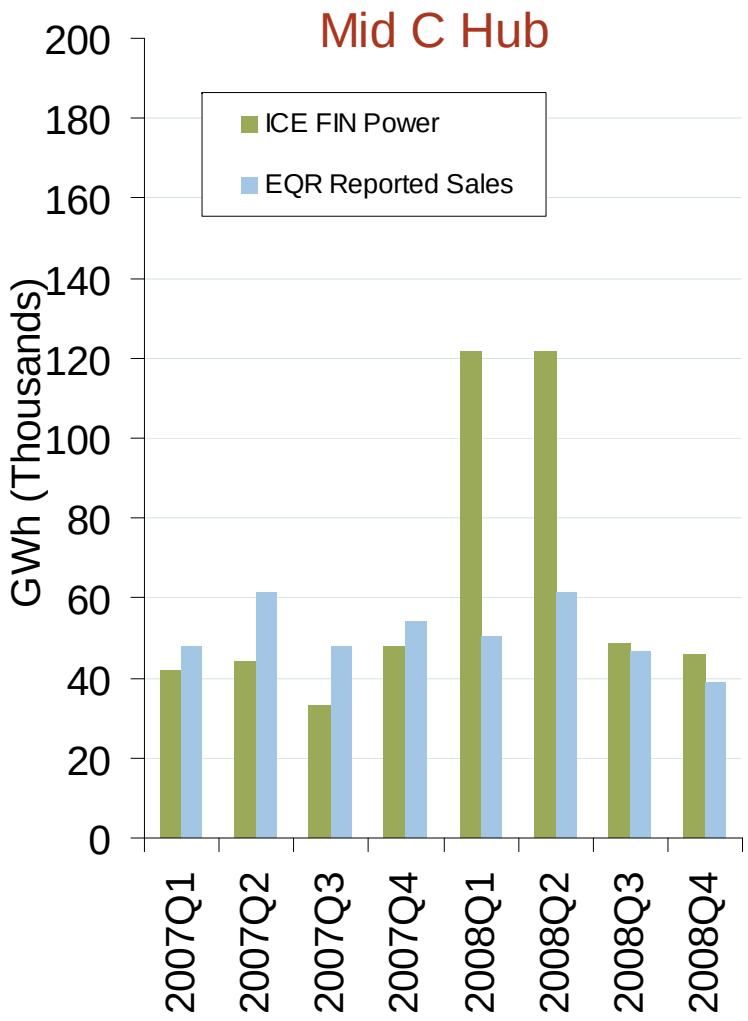
Source: Derived from *EQR and ICE* data.

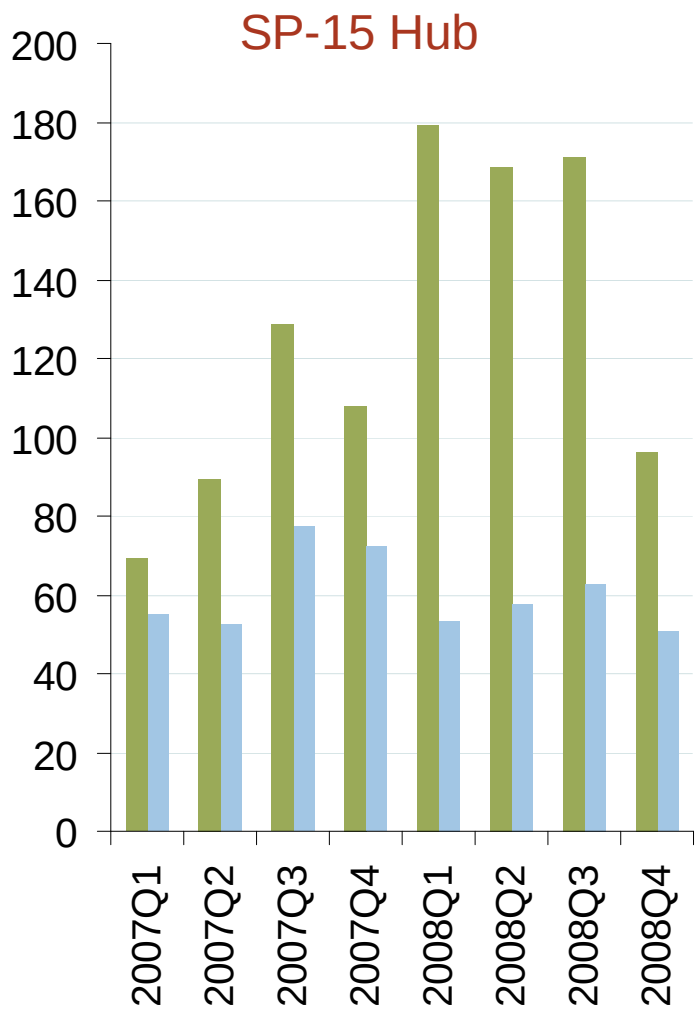
Regional ICE and EQR Volumes



Source: Derived from *EQR and ICE* data.

Regional ICE and EQR Volumes





Source: Derived from *EQR and ICE* data.

Natural Gas and Fuel Markets

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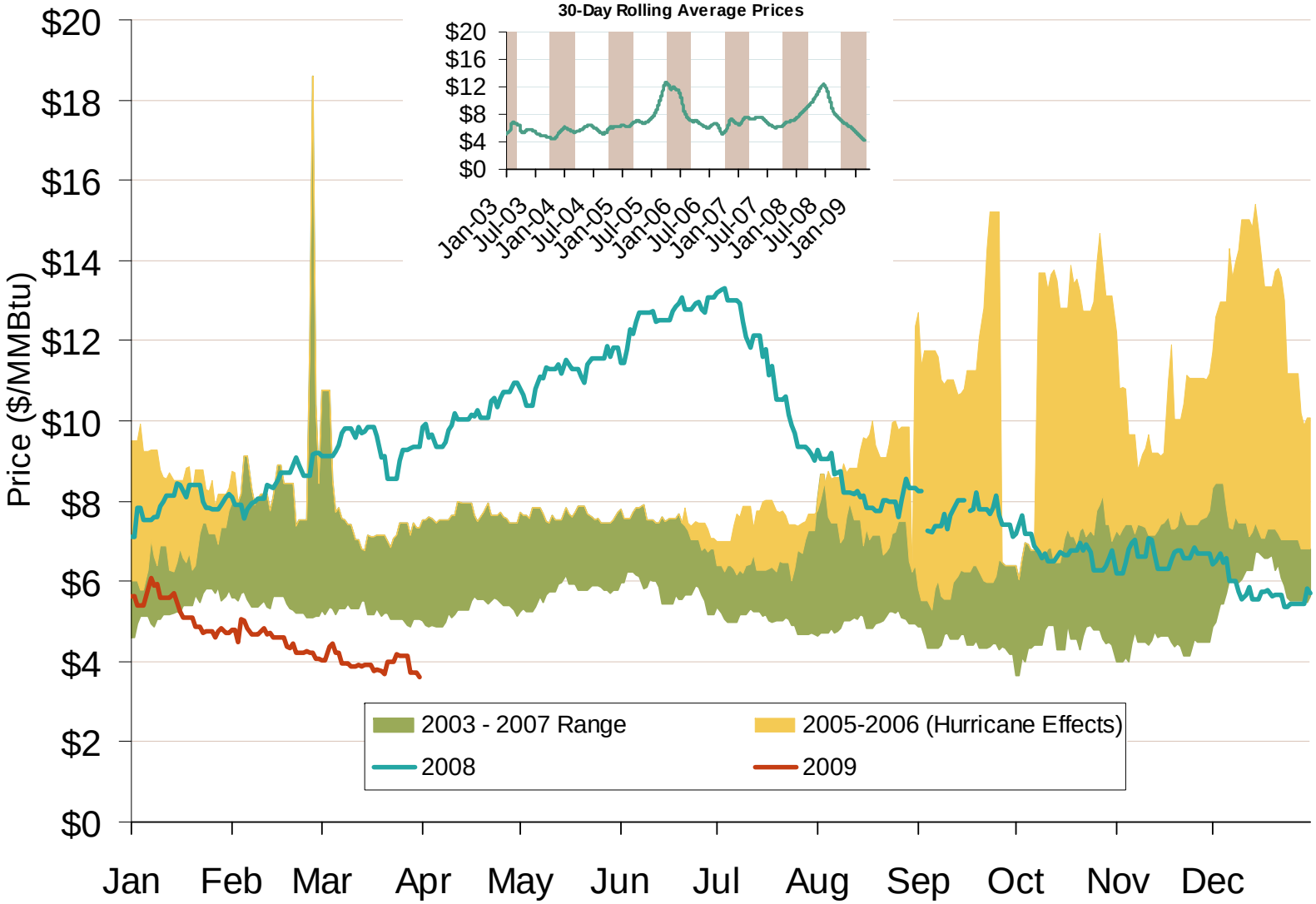
Henry Hub Natural Gas Daily Spot Prices
2008, 2009 and 2003-2007 Year Range



Source: Derived from *Platts* data.

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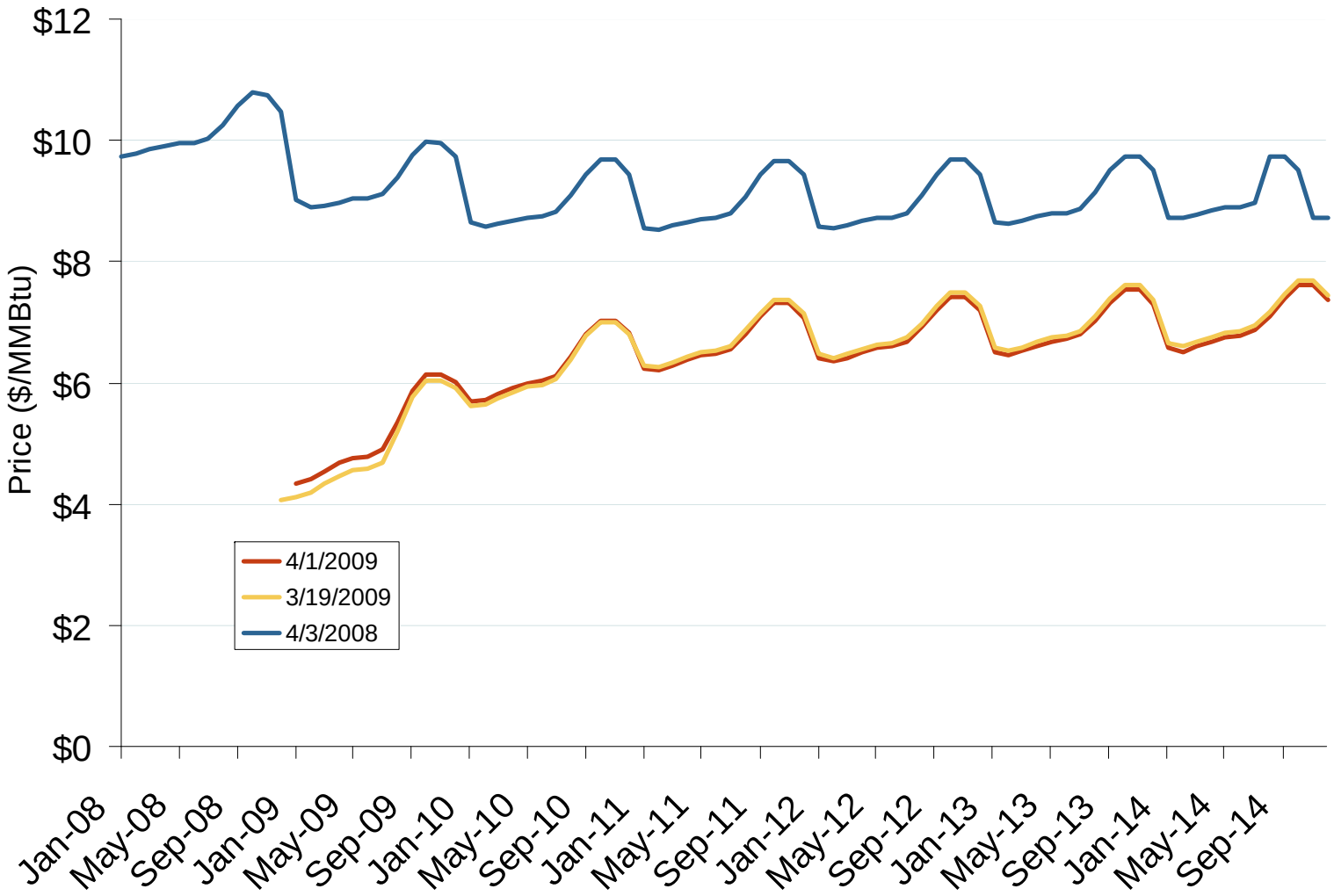
NYMEX Natural Gas Forward Price Curve



Source: Derived from *NYMEX* data.

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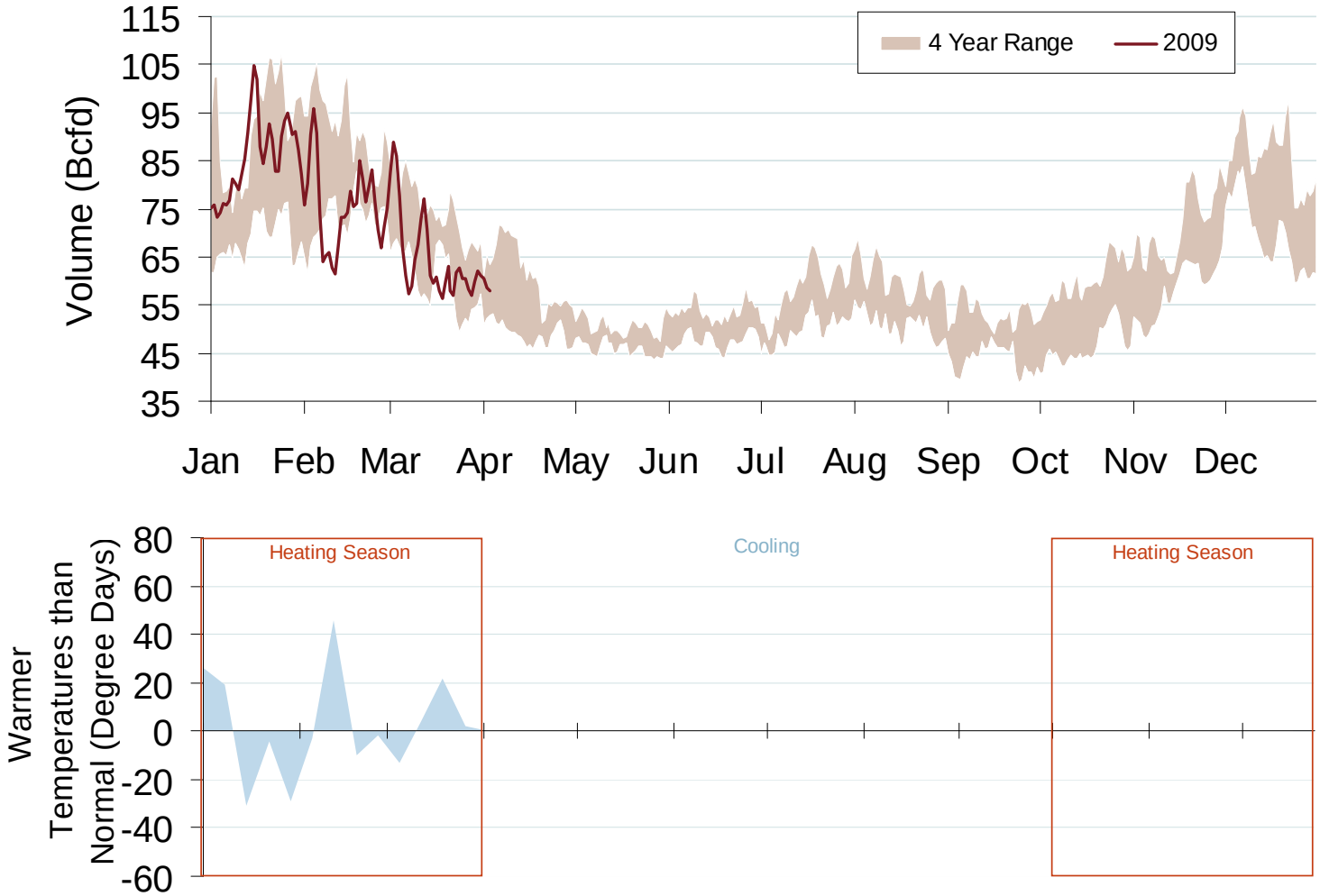
Total U.S. Natural Gas Demand (All Sectors) and Temperatures



Source: Derived from *Bentek Energy* data.

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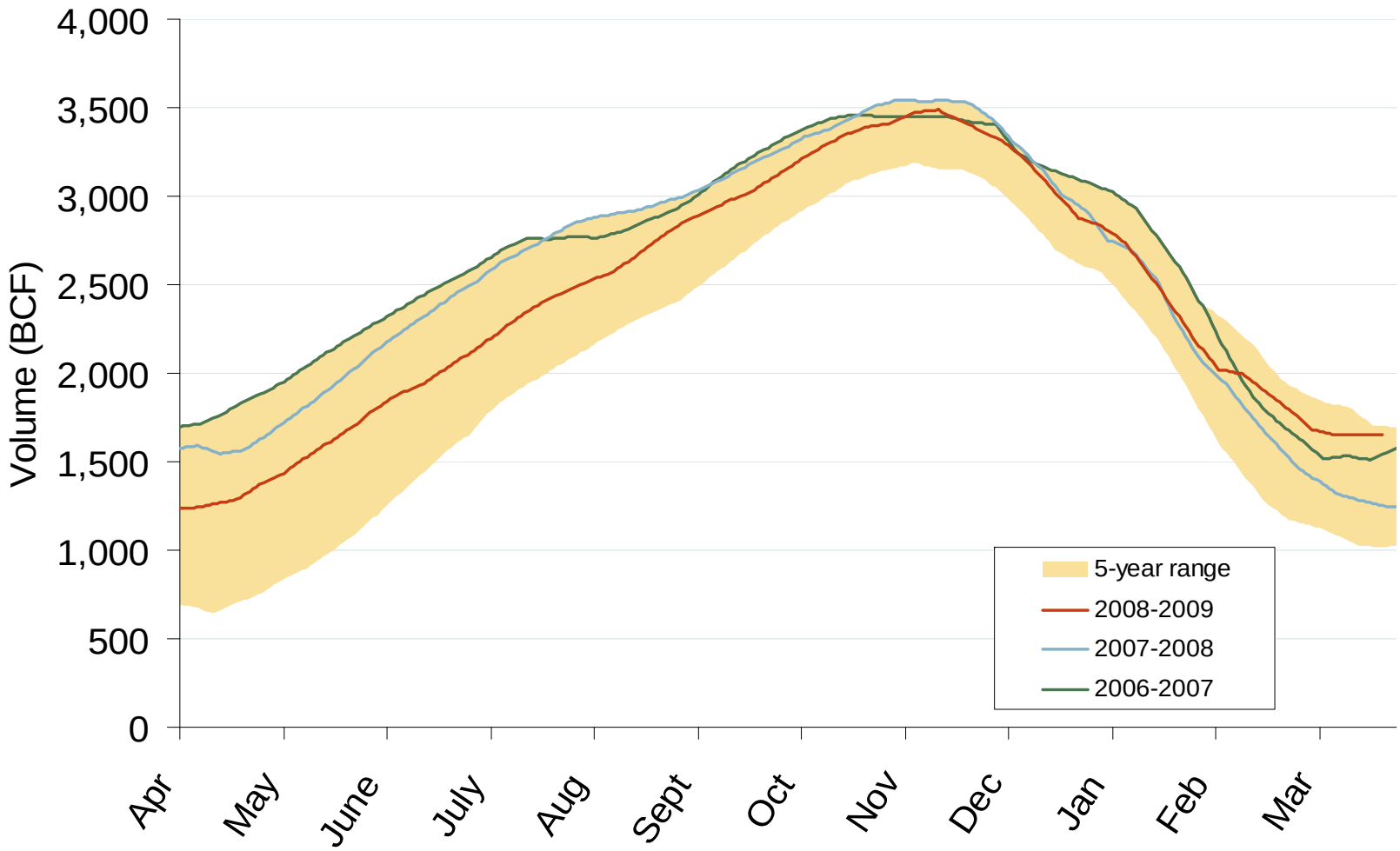
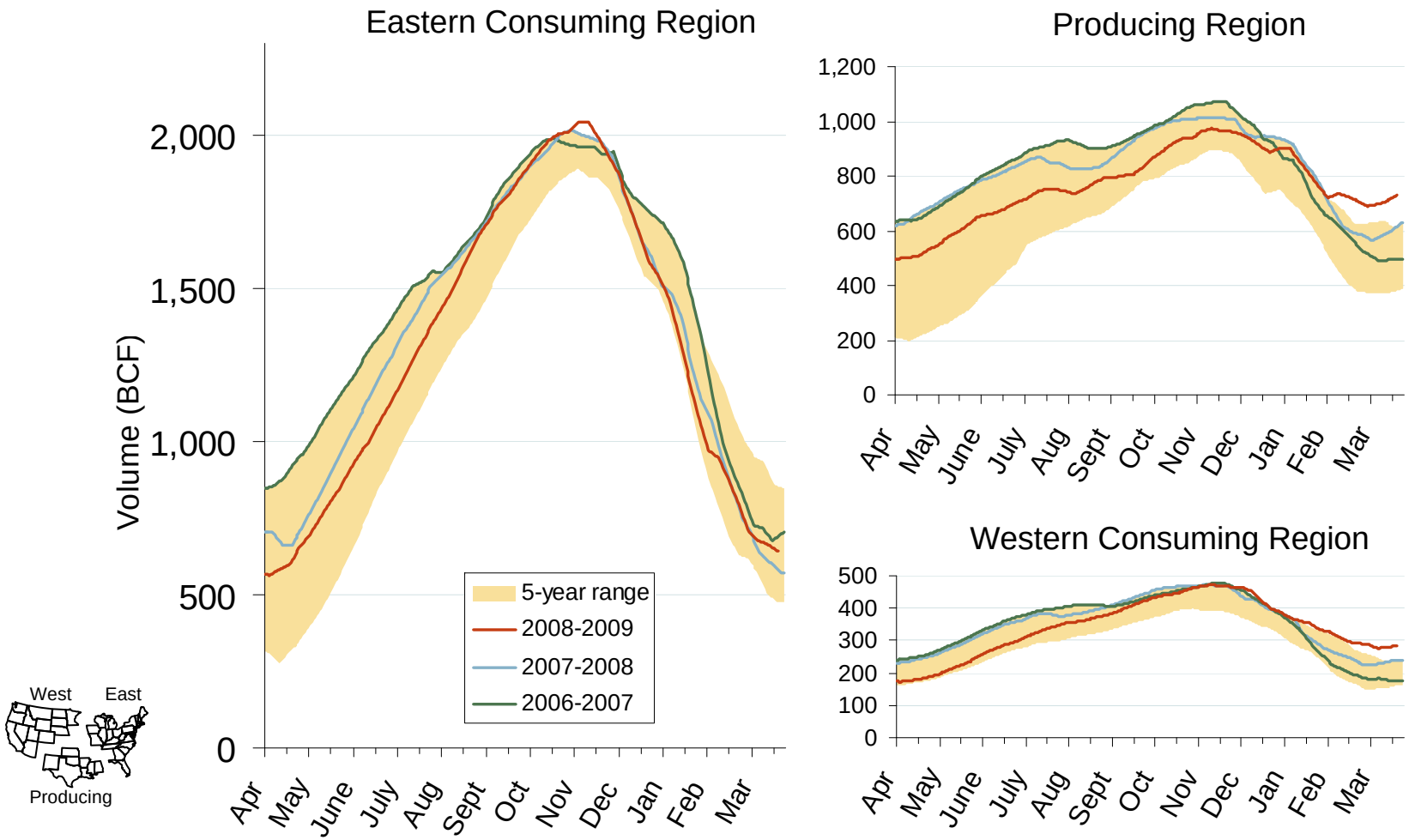
Total U.S. Working Gas in Storage



Source: Derived from *EIA* data.

Updated April 7, 2009

Regional Totals of Working Gas in Storage



Source: Derived from *EIA* data.

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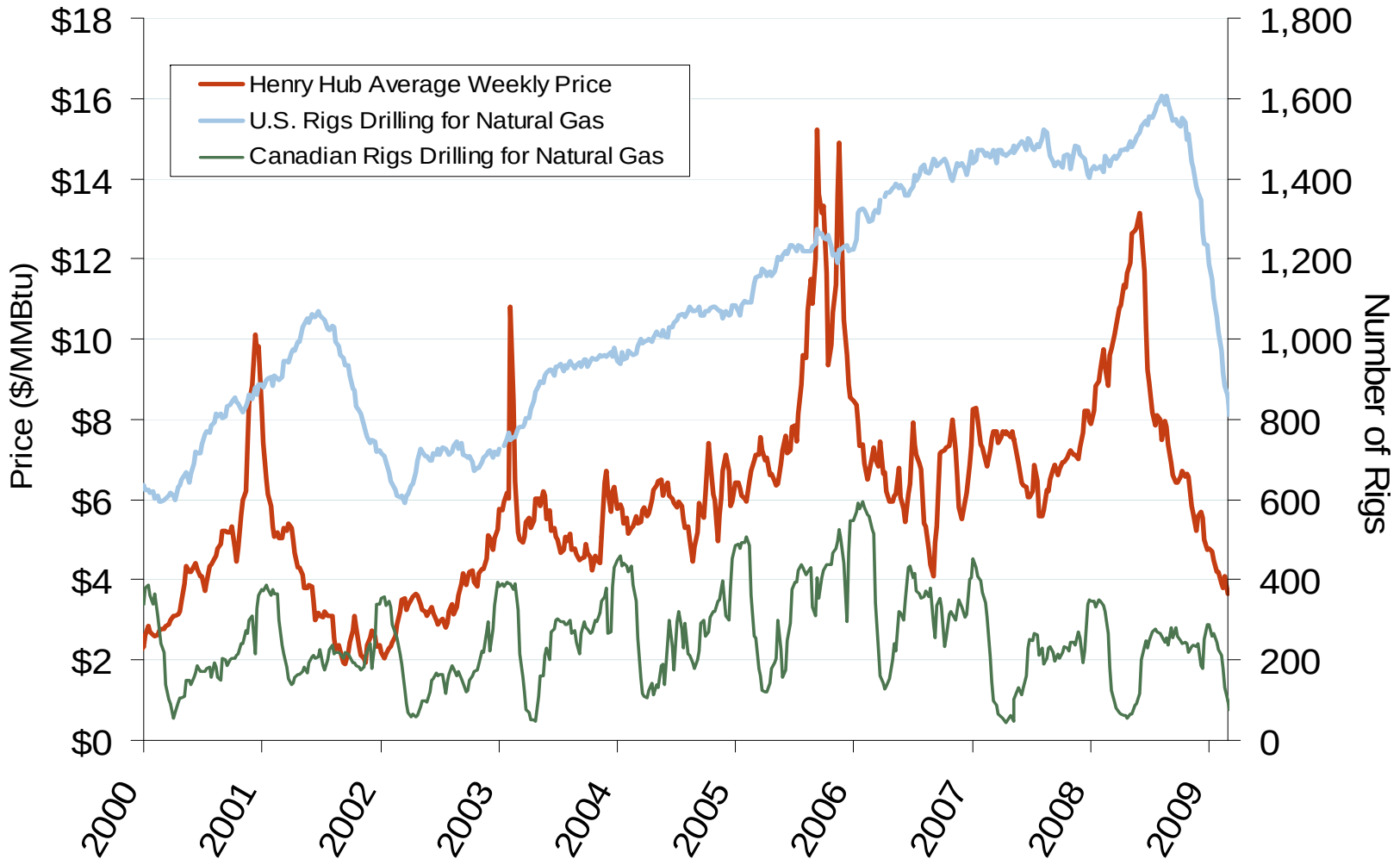
U.S. and Canadian Natural Gas Drilling Rig Count and Daily Spot Prices



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

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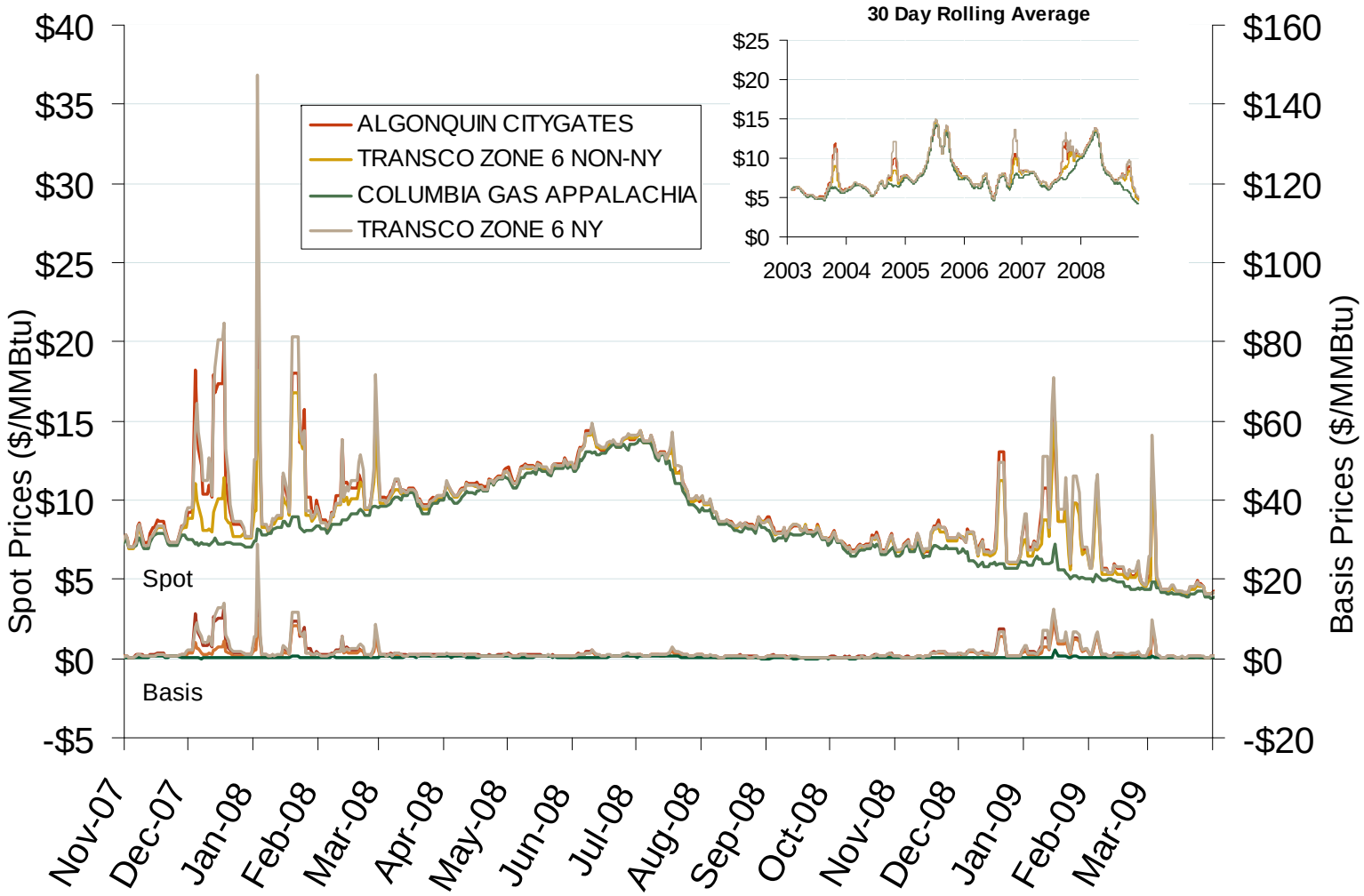
Northeastern Spot Prices and Basis



Source: Derived from *Platts* data.

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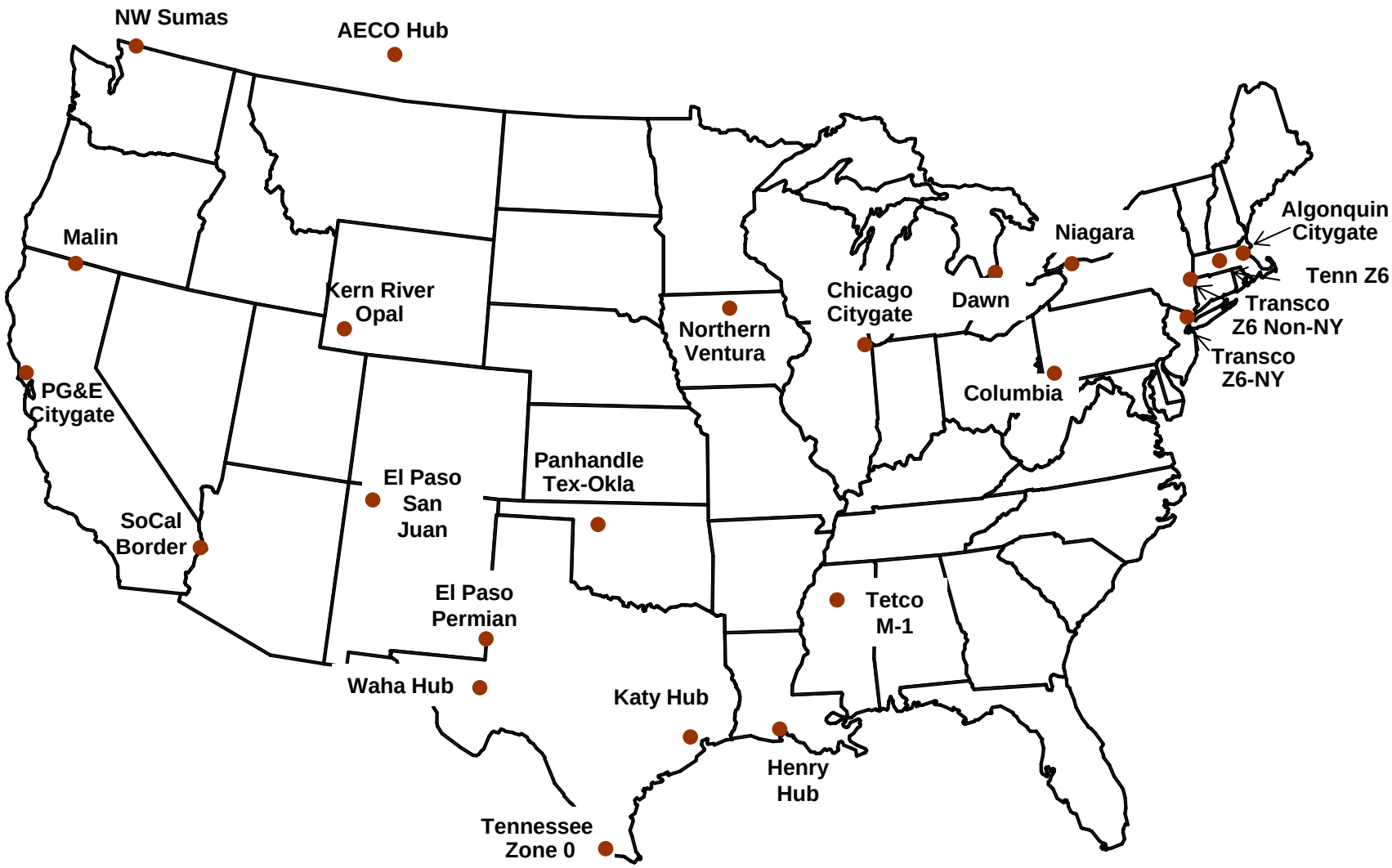
Gas Pricing Points



Note: Price Points reflect general locations.

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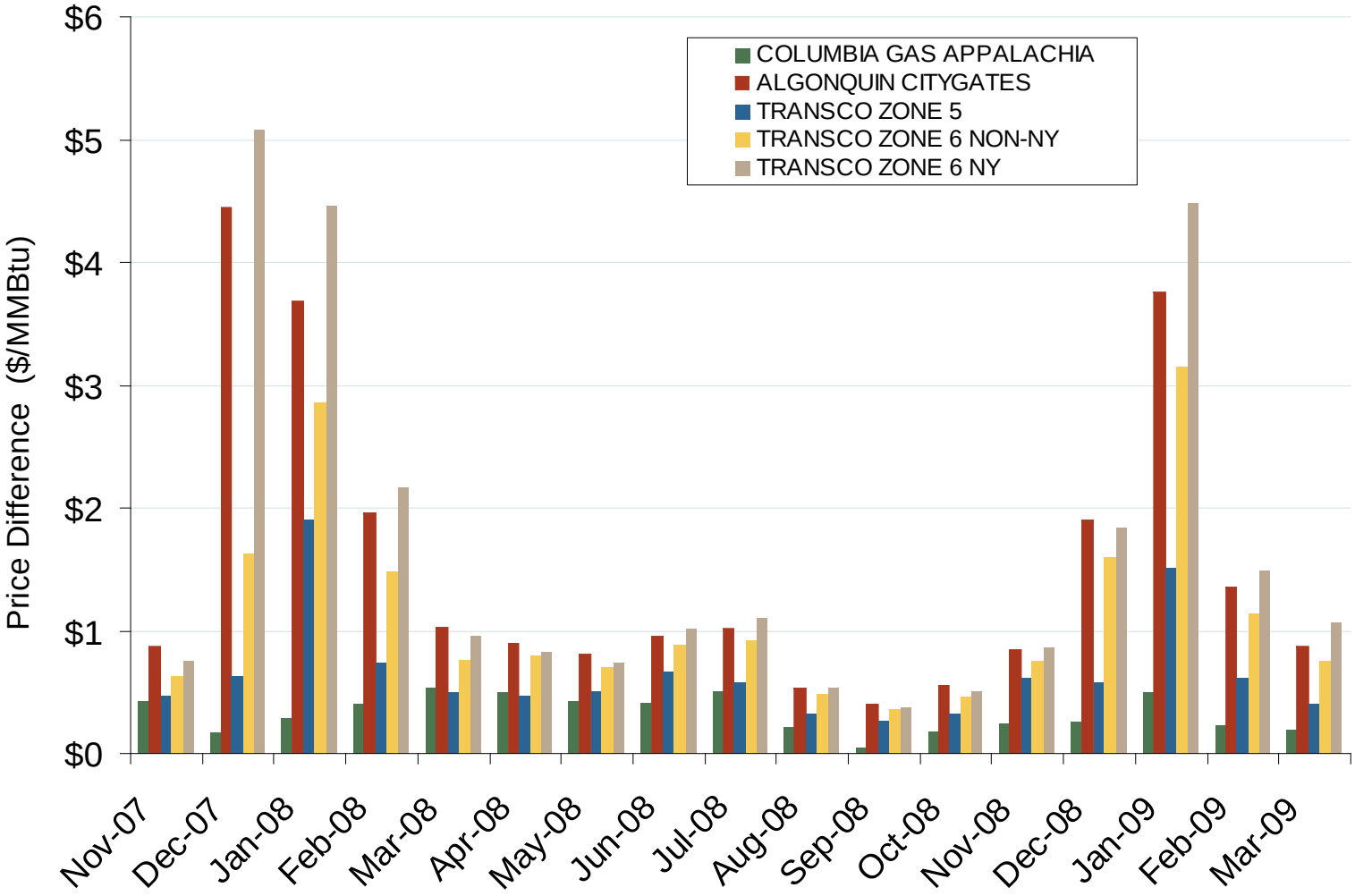
Northeastern Monthly Average Basis Value to Henry Hub



Source: Derived from *Platts* data.

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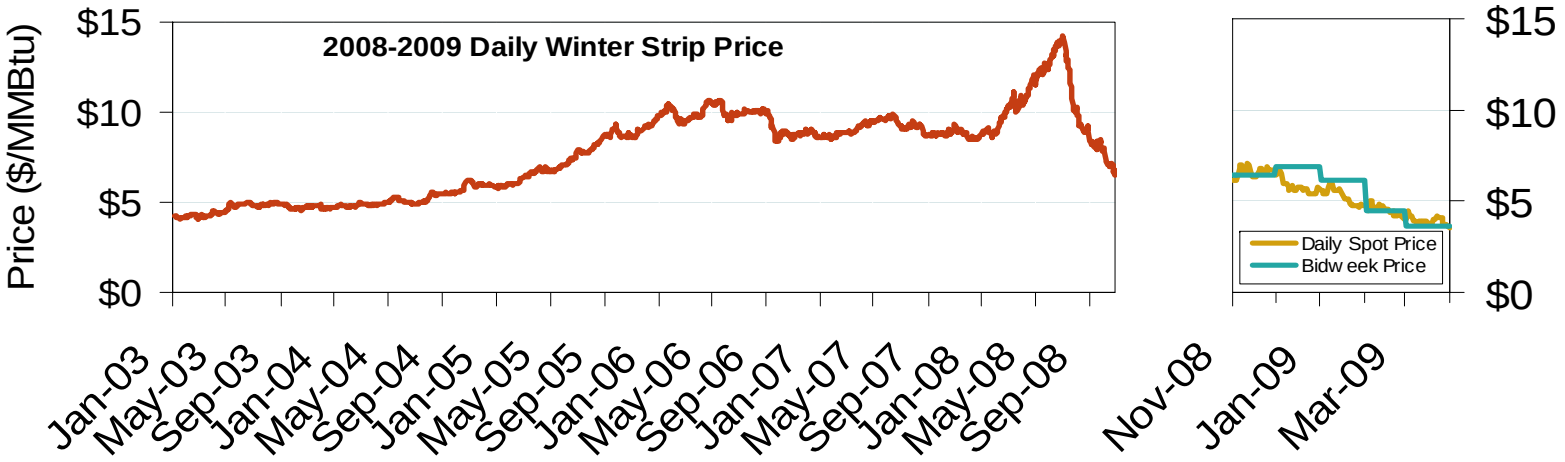
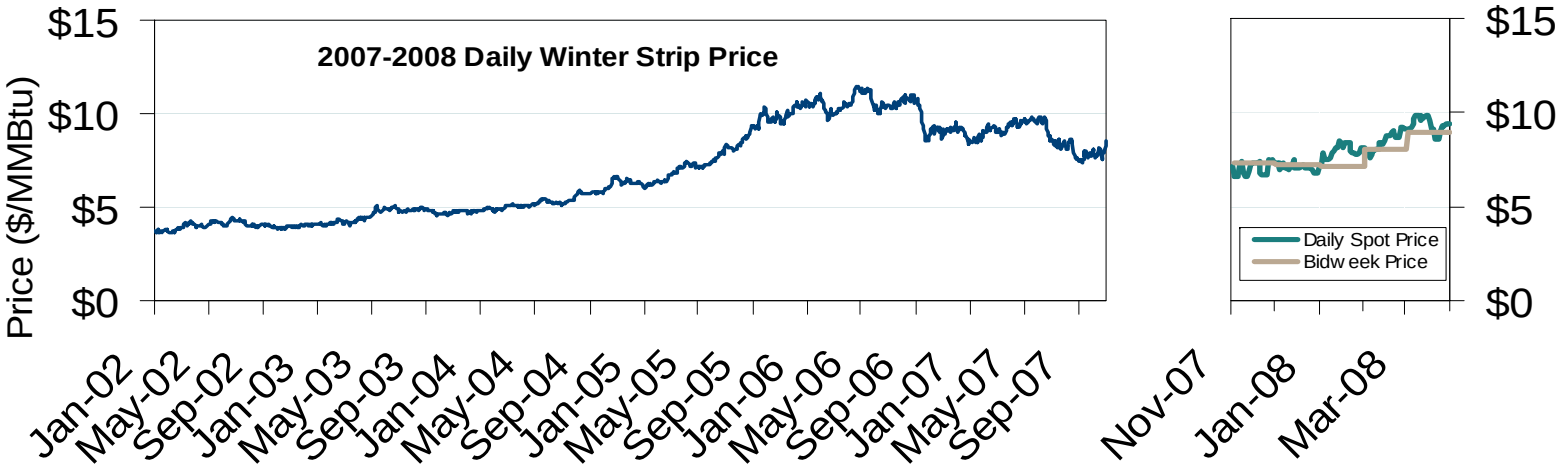
Natural Gas Winter Futures Strip and Daily Henry Hub Spot and Bidweek Prices





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

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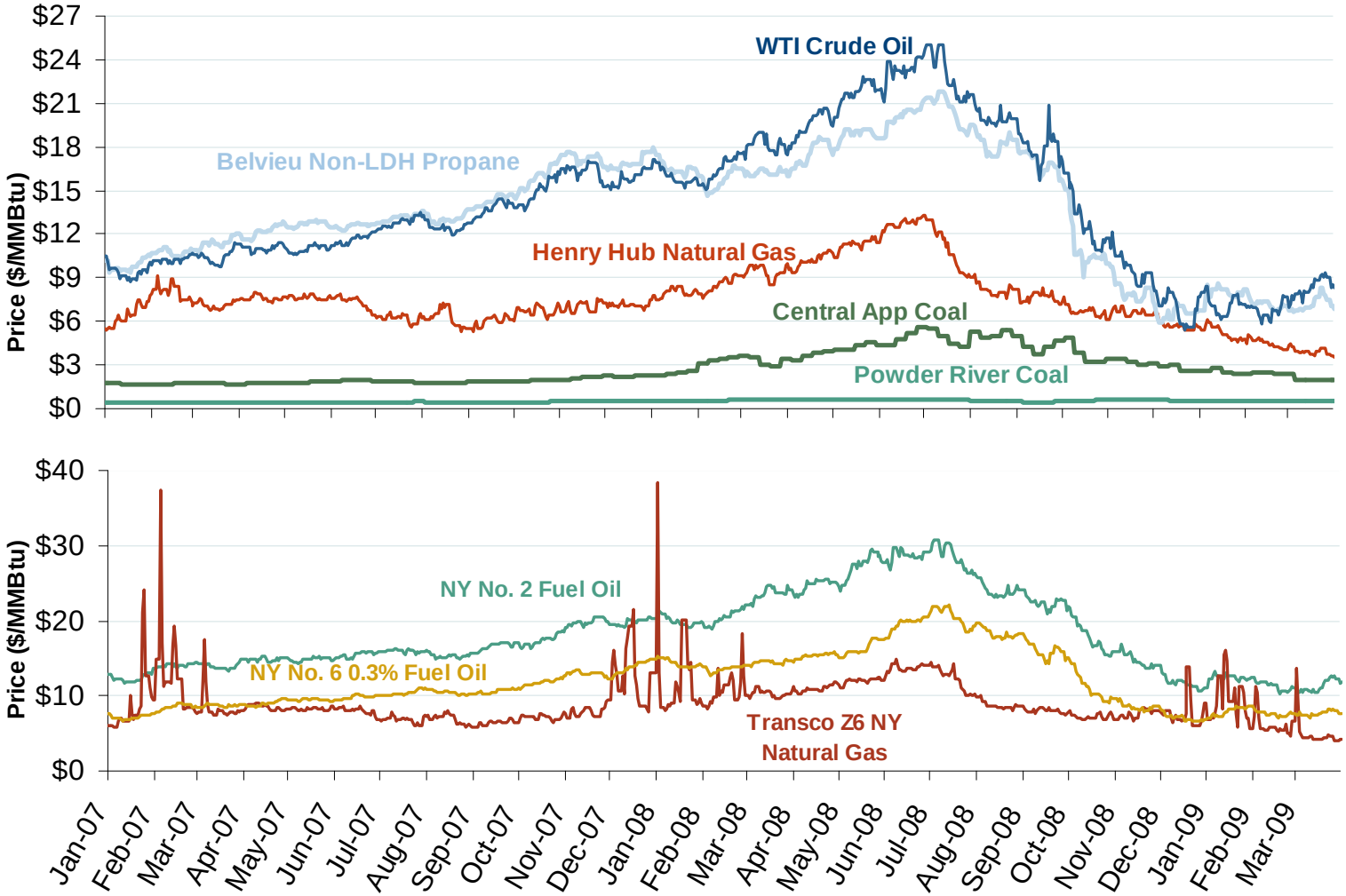
Oil, Coal, Natural Gas and Propane Daily Spot Prices



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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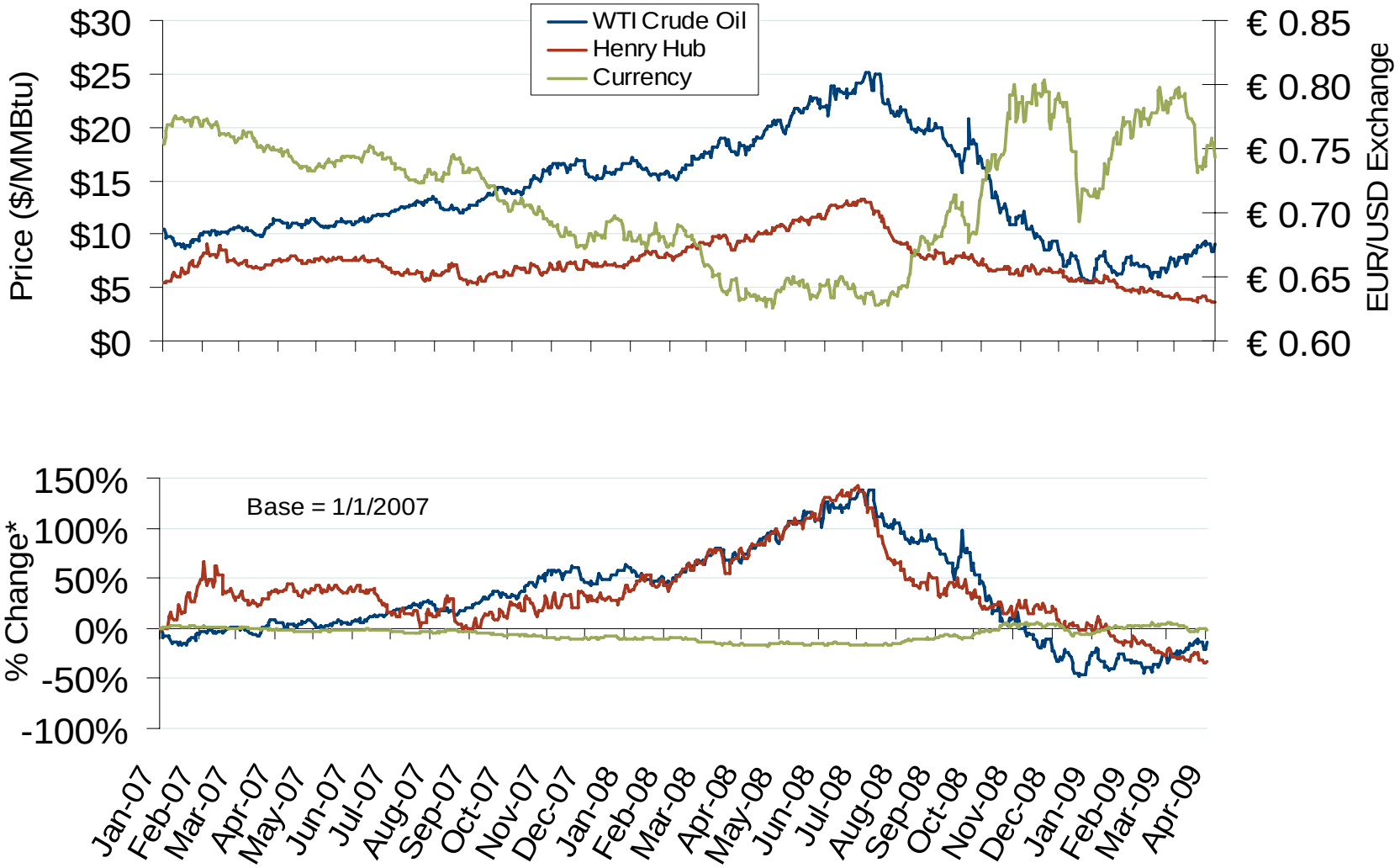
Oil, Natural Gas and Currency Spot Prices



Source: Derived from *Bloomberg* data.

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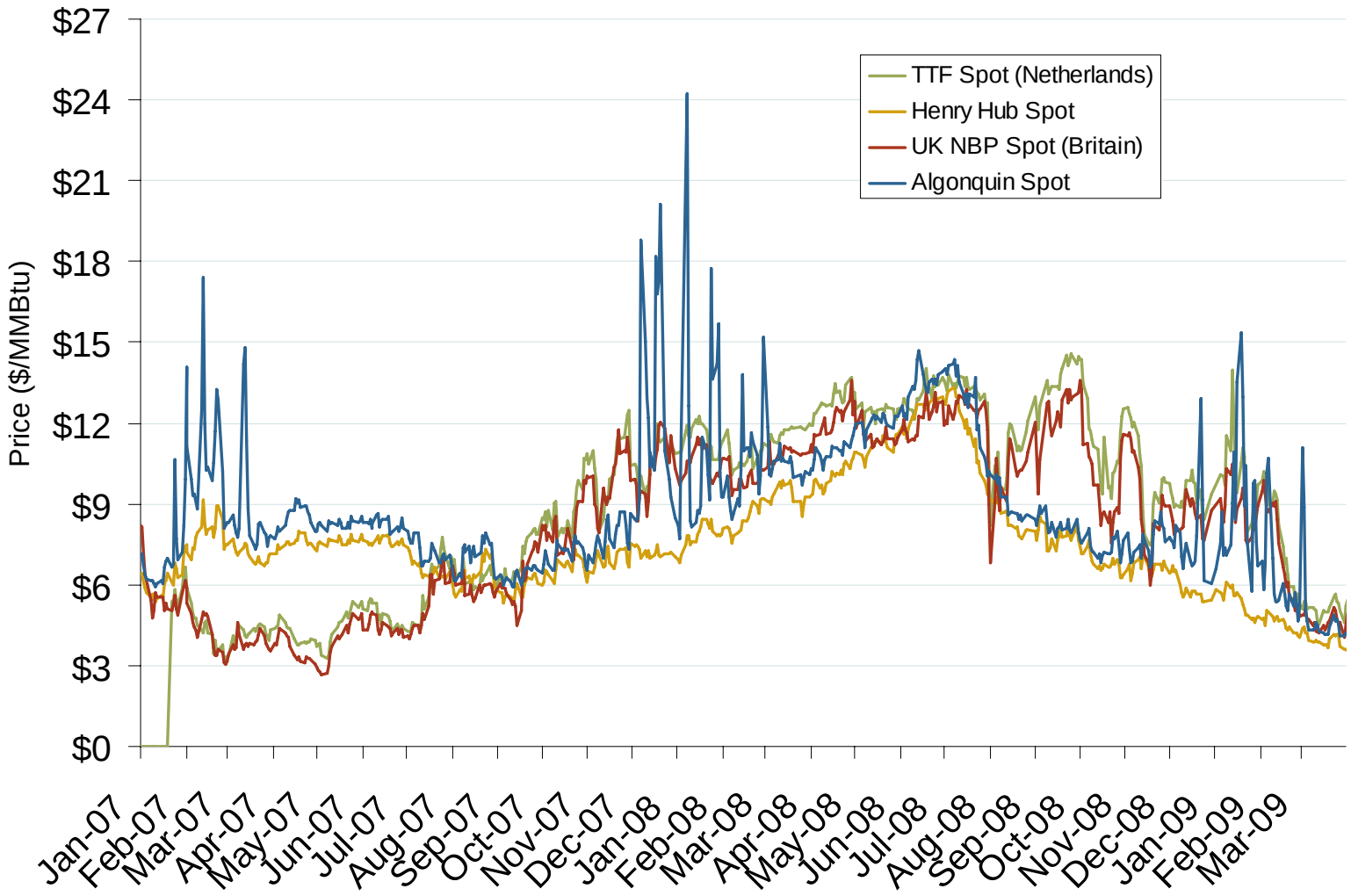
Atlantic Basin European and US Spot Natural Gas Prices



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

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World LNG Estimated April 2009 Landed Prices

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

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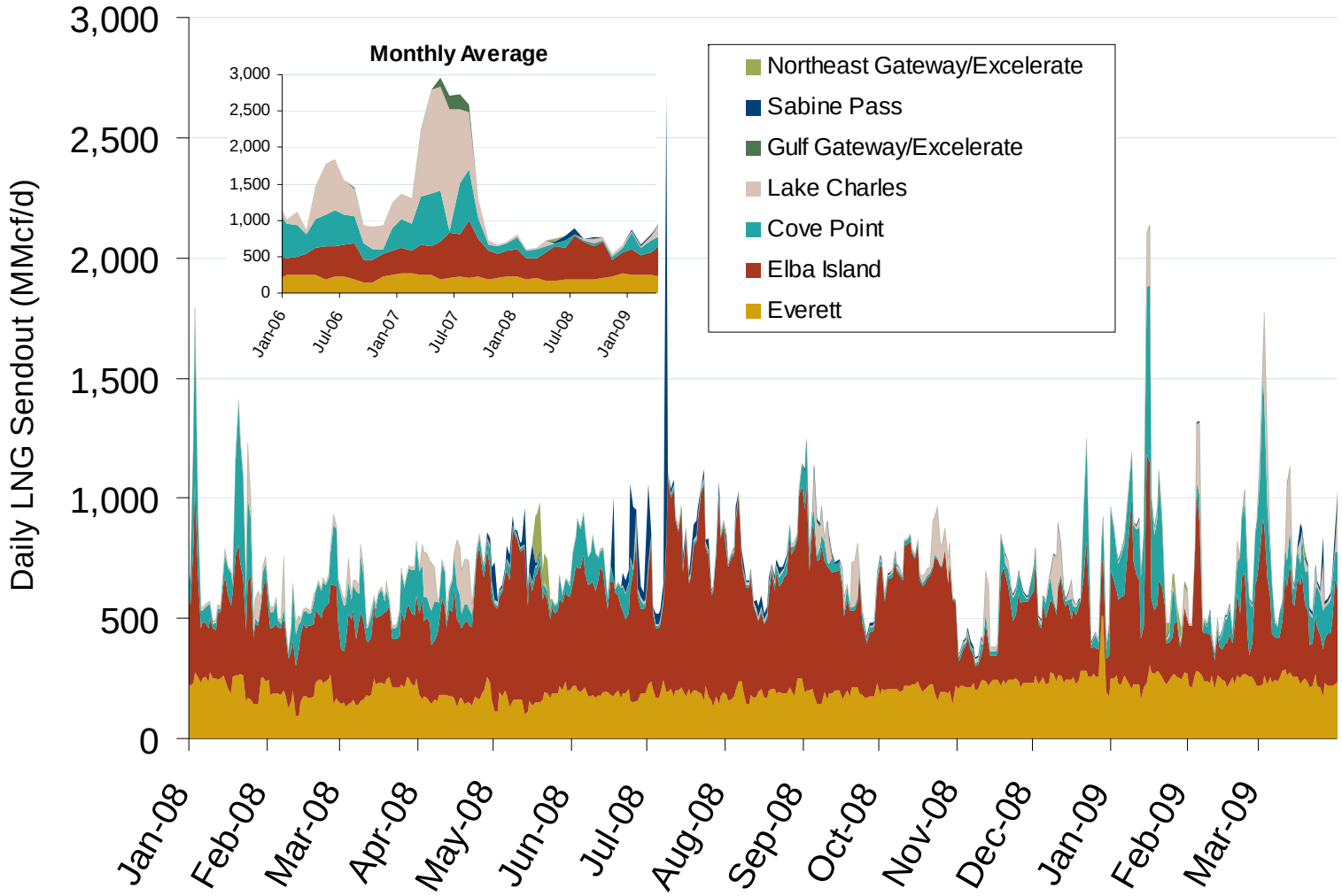
Daily Gas Sendout from Existing U.S. LNG Facilities



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.

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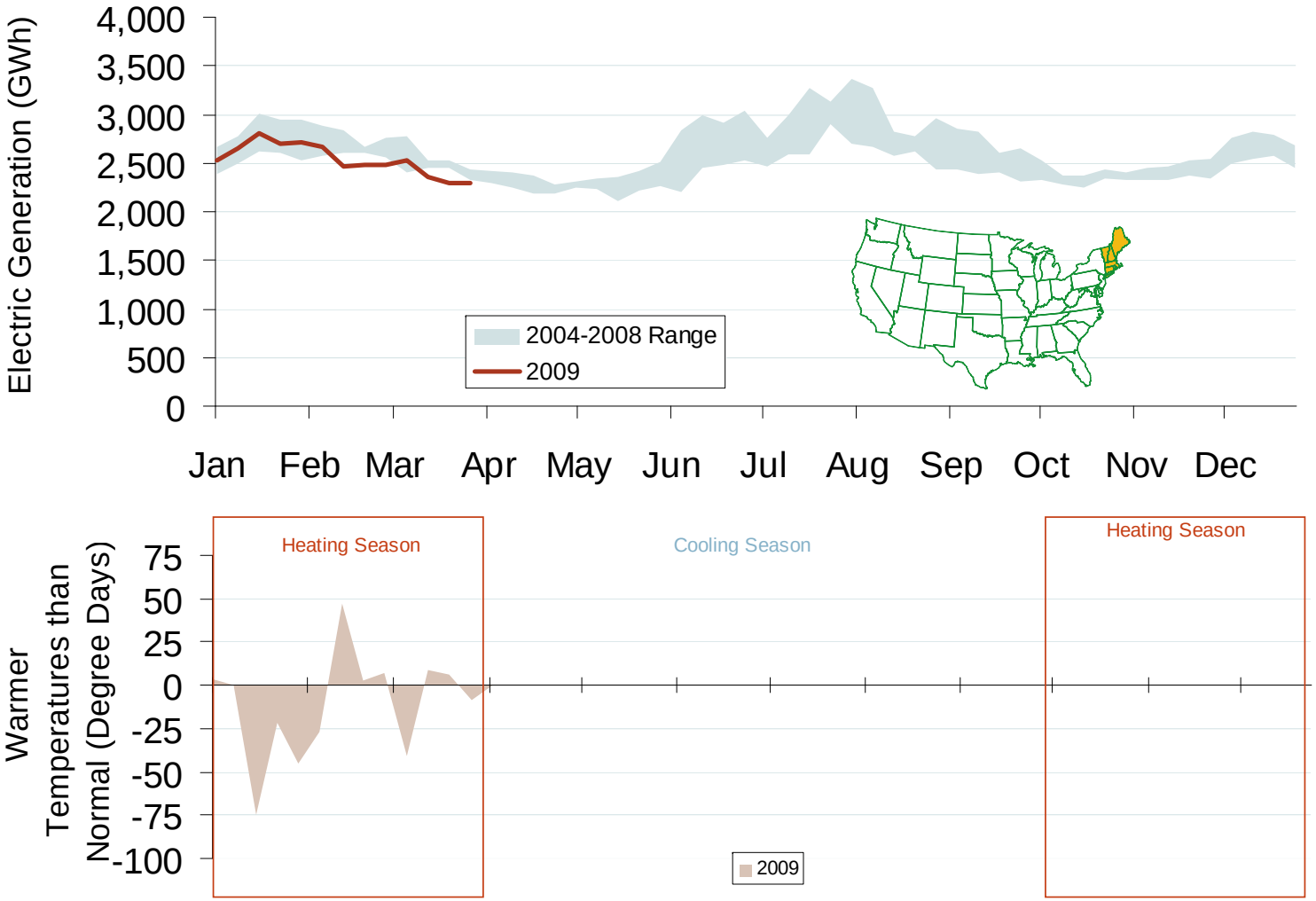
Electricity Markets

Weekly Electric Generation Output and Temperatures New England



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

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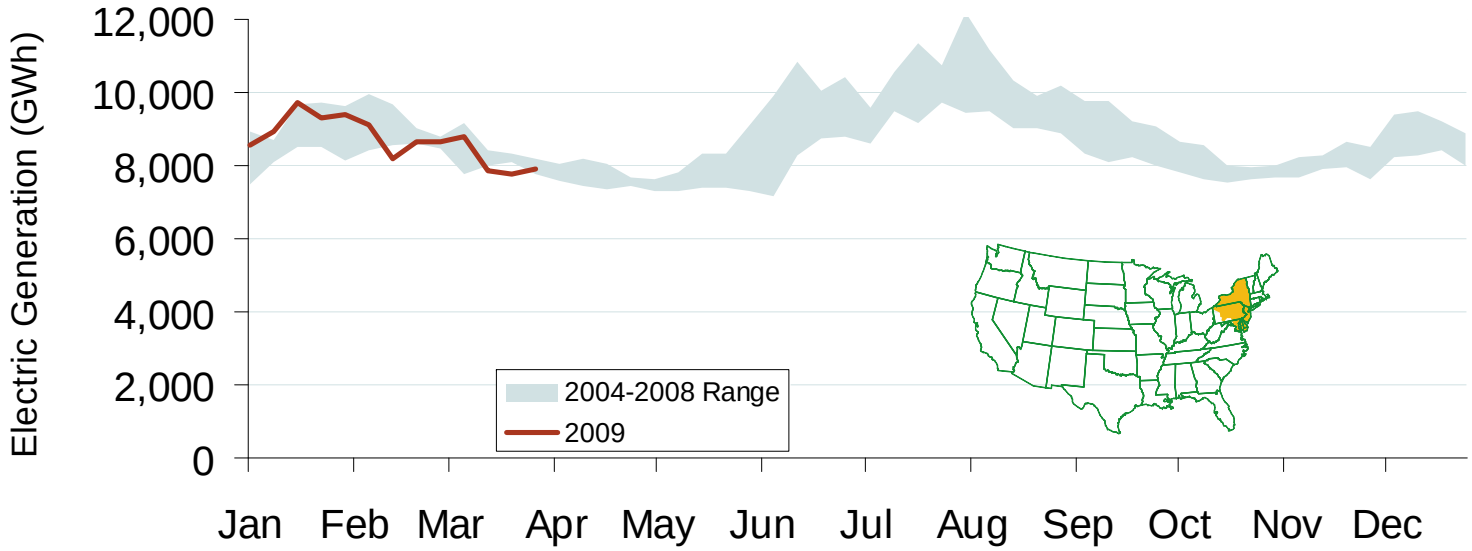
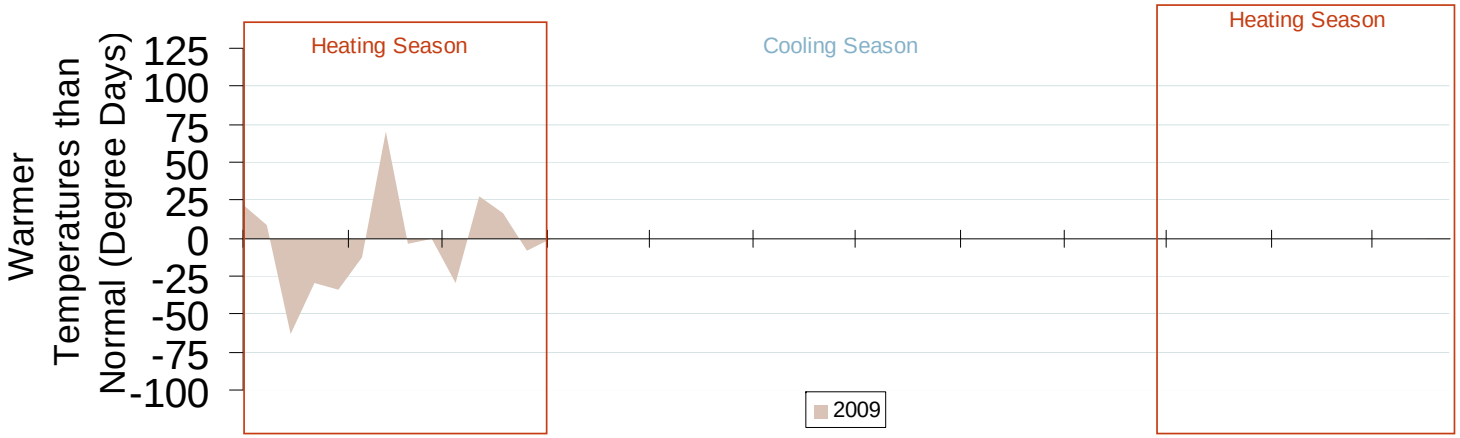
Weekly Electric Generation Output and Temperatures Mid Atlantic Region





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

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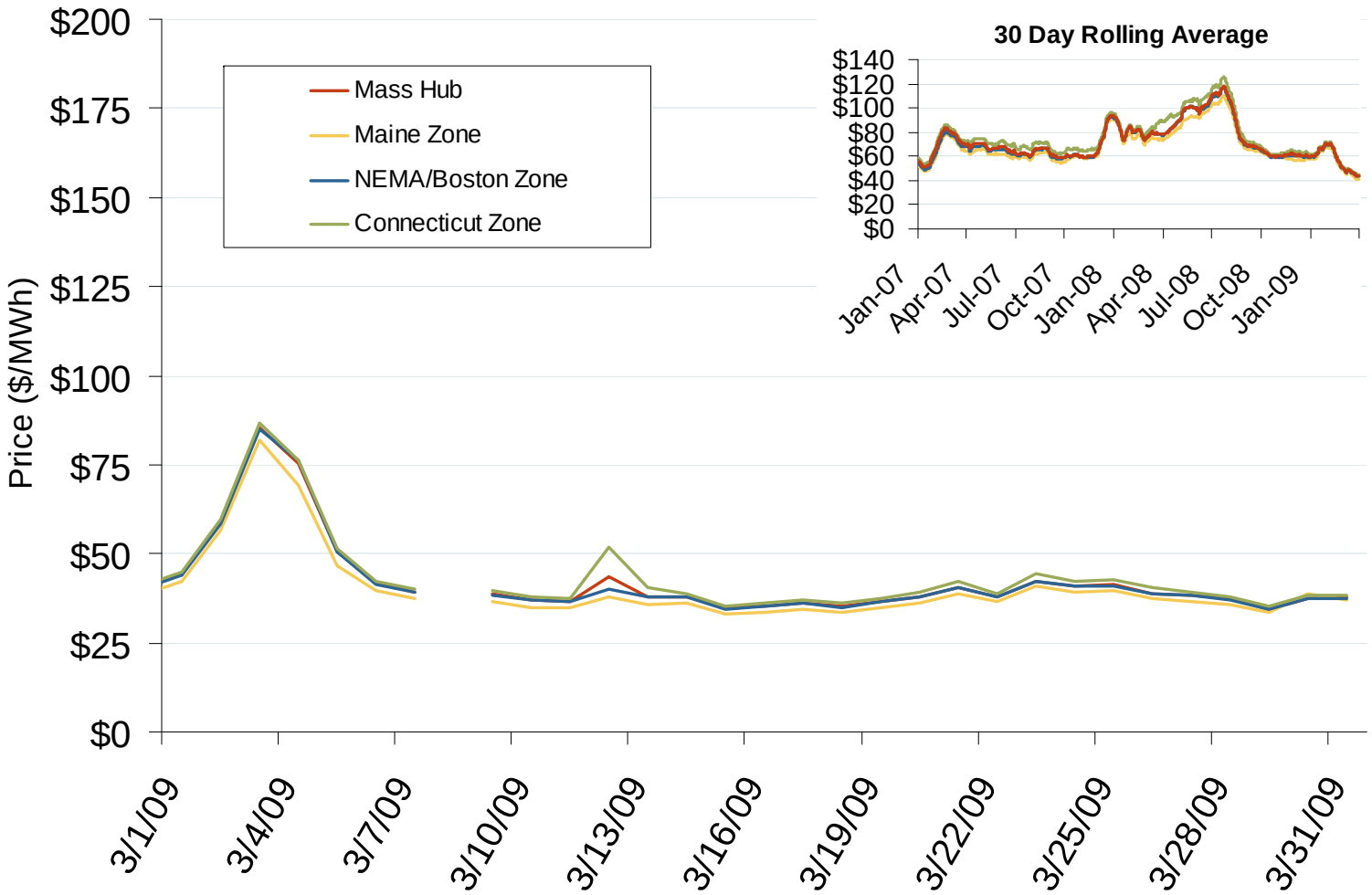
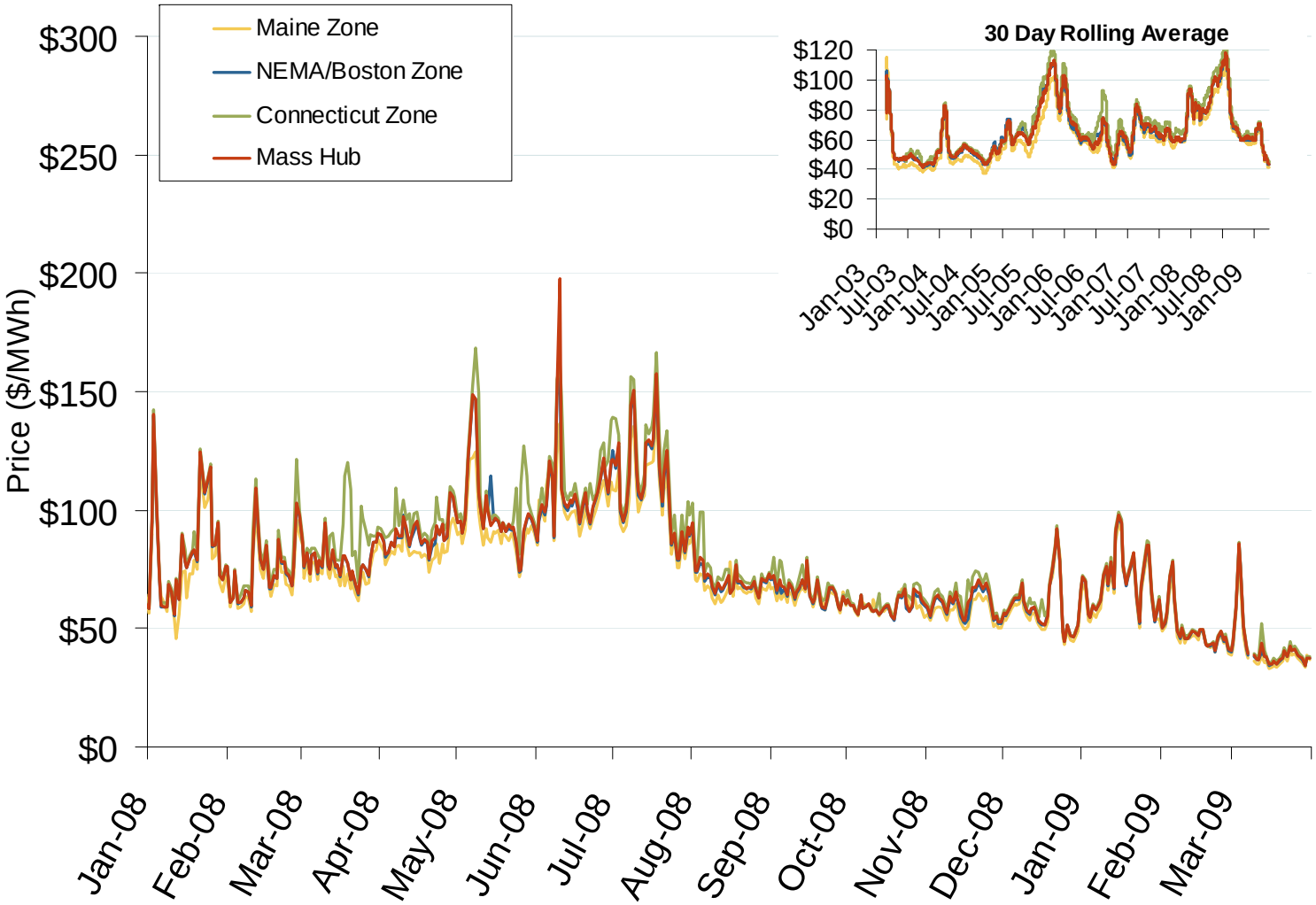
Daily Average of ISO-NE Day-Ahead Prices - All Hours



Source: Derived by *Bloomberg* from *ISO-NE* data as reported by *Bloomberg*.

Updated April 7, 2009

Daily Average of ISO-NE Day-Ahead Prices - All Hours



Source: Derived by *Bloomberg* from *ISO-NE* data as reported by *Bloomberg*.

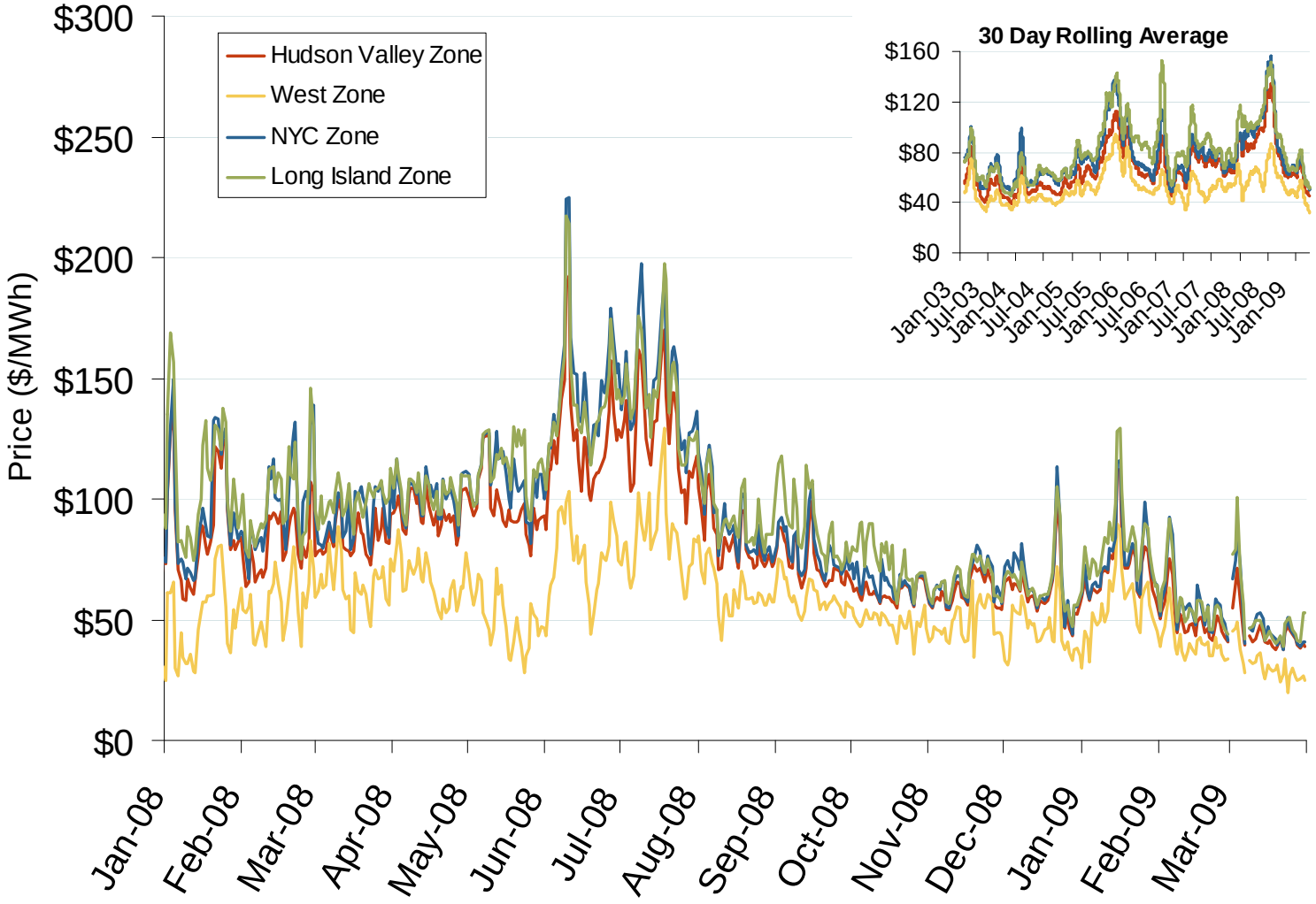
Updated April 7, 2009

Daily Average of NYISO Day-Ahead Prices - All Hours

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

Updated April 7, 2009

Daily Average of NYISO Day-Ahead Prices - All Hours



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

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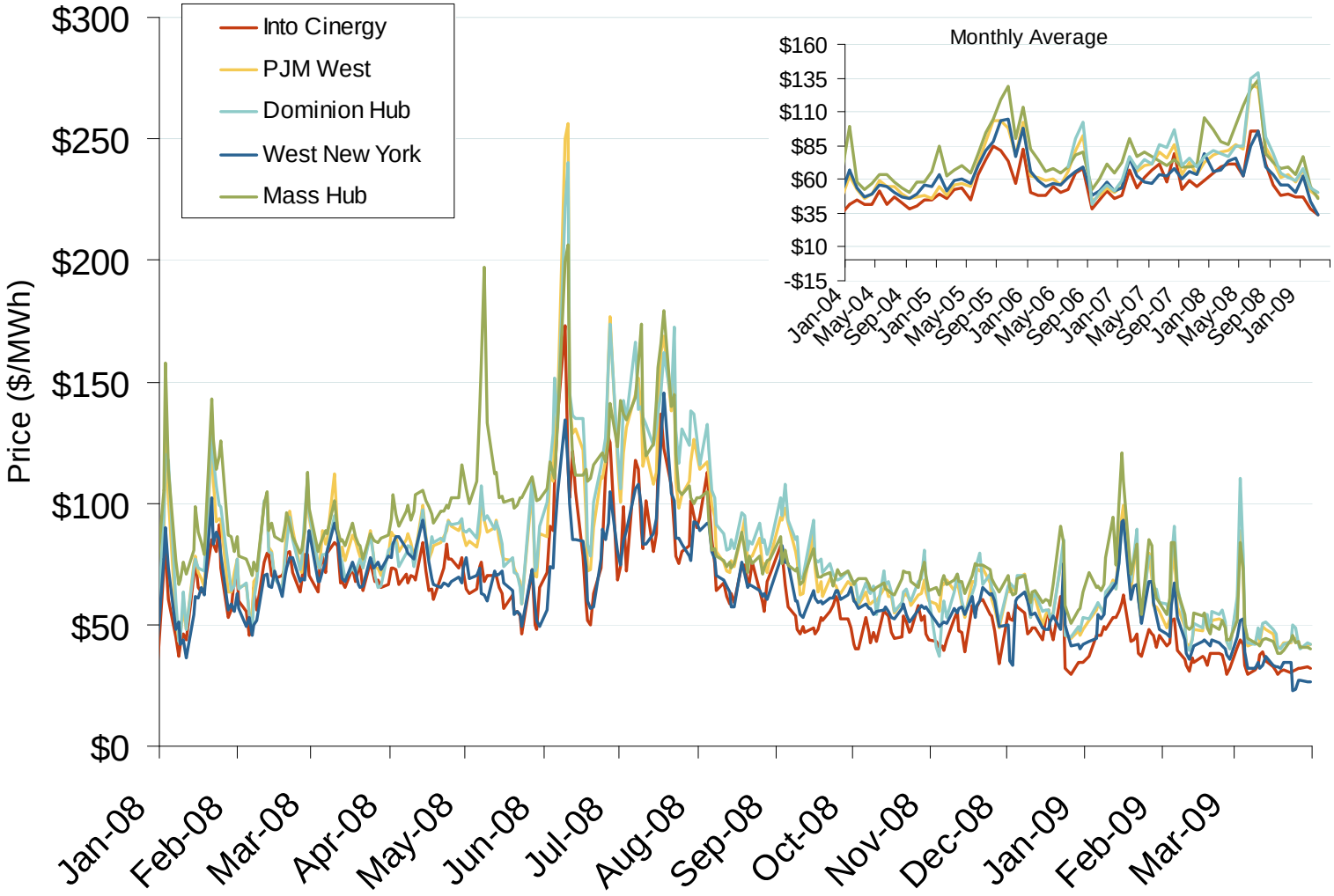
Eastern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.

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Electric Pricing Points

Note: Pricing points reflect general locations. Actual trading regions may not be point specific.

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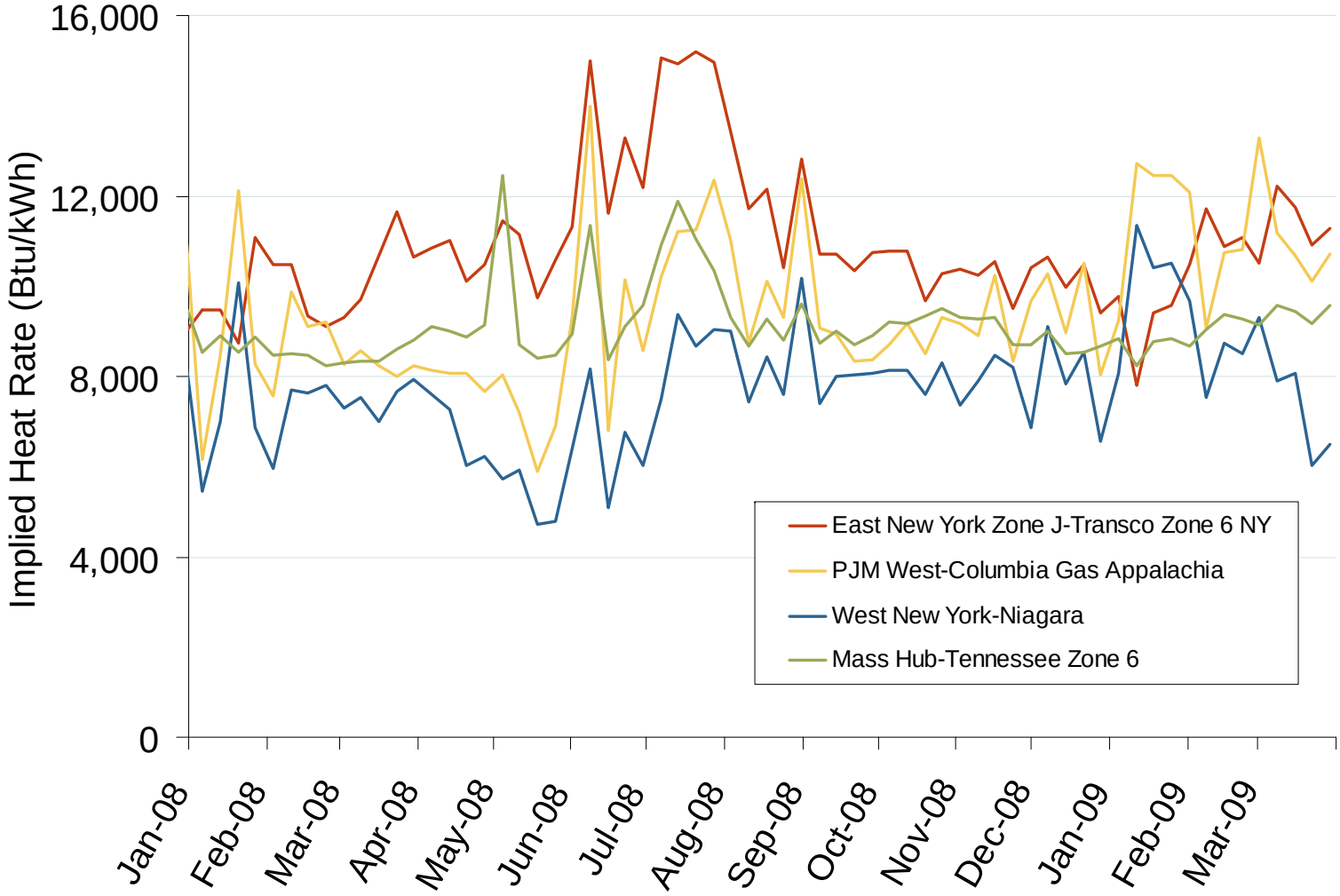
Implied Heat Rates at Eastern Trading Points
Weekly Averages



Source: Derived from *Platts* data

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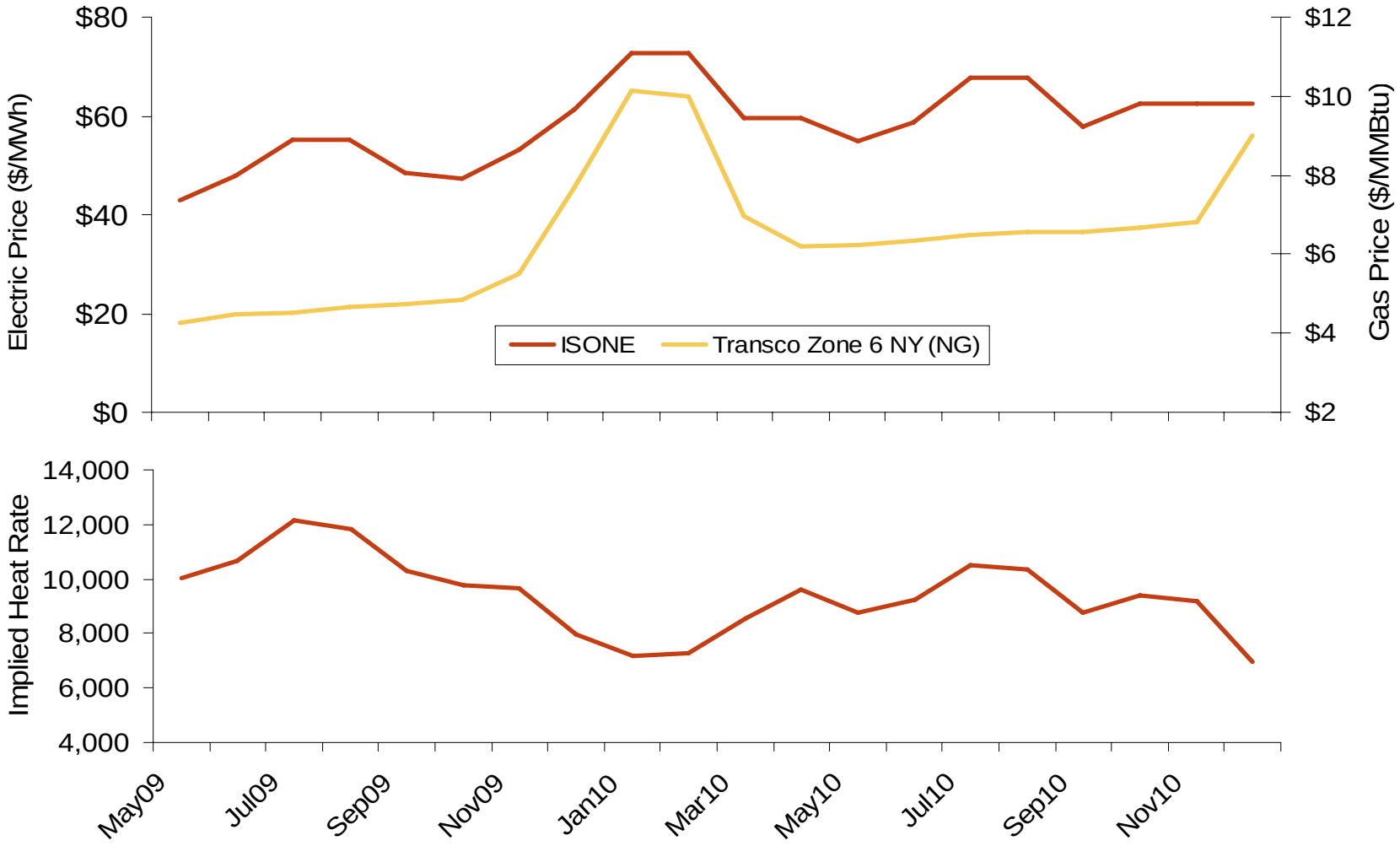
New England Electric Forward Price Curve and Implied Heat Rate



Source: Derived from *Nymex* data.

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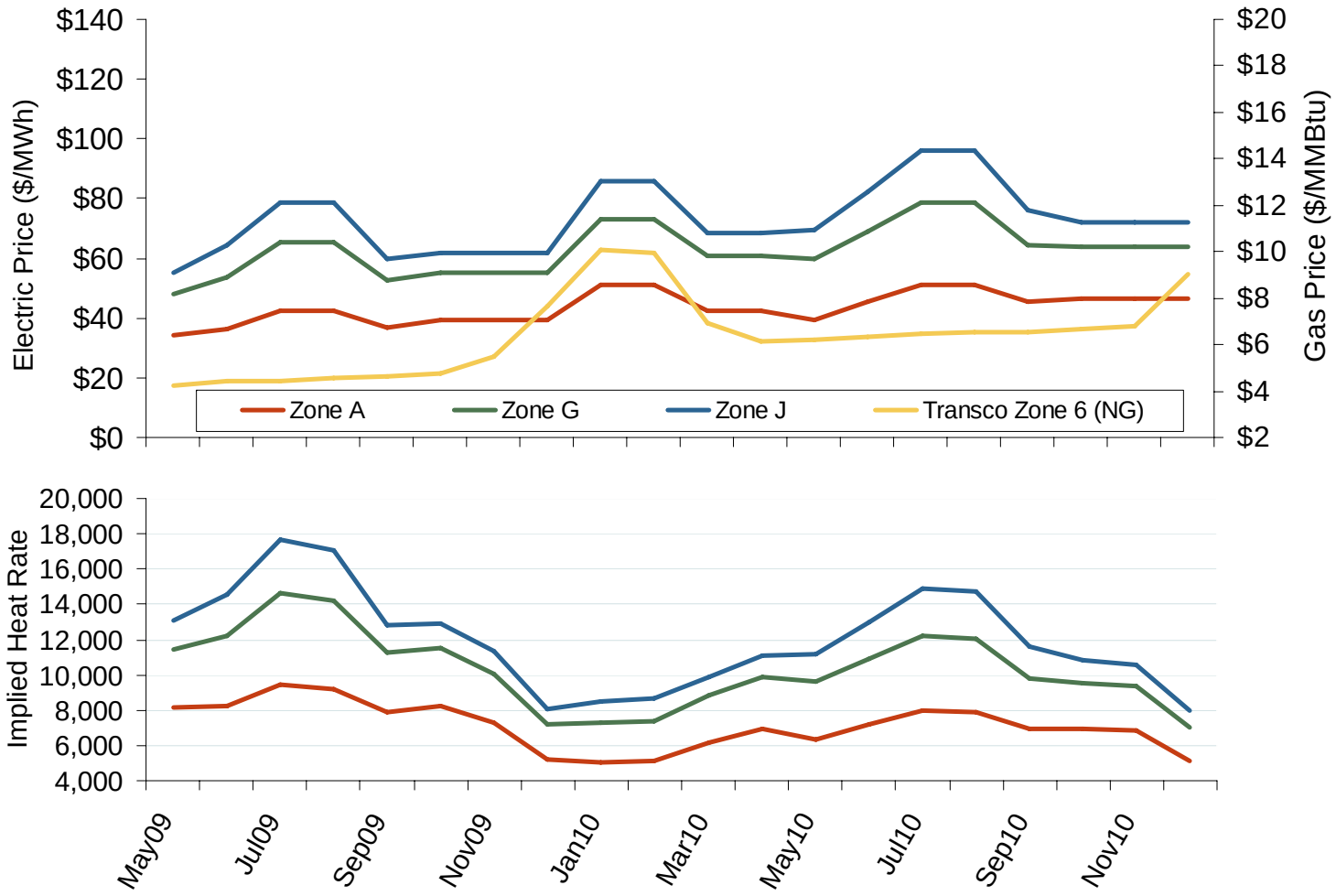
New York Electric Forward Price Curves and Implied Heat Rates



Source: Derived from *Nymex* 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):

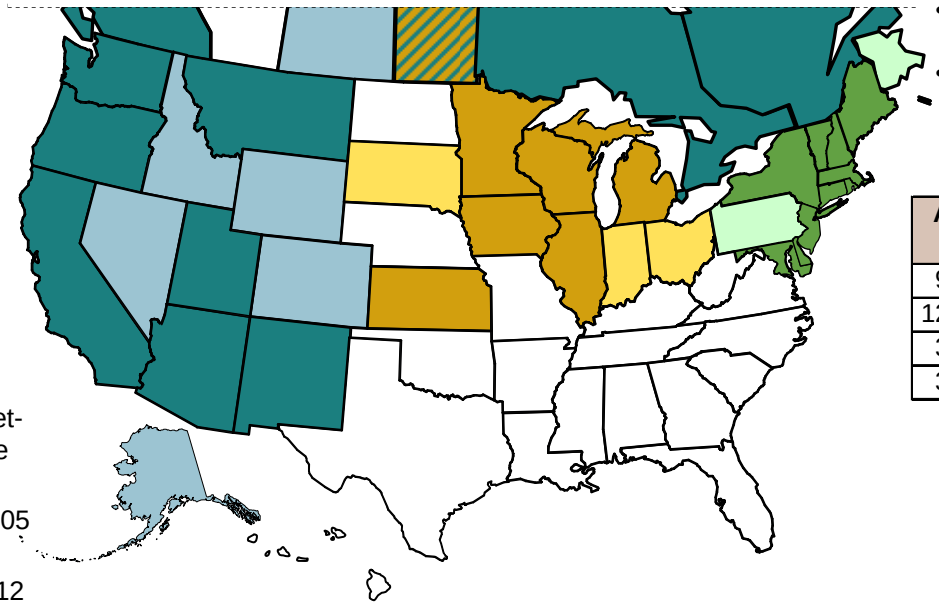
- Created February 2007
- Partners: 7 states, 4 provinces; Observers: 5 states, 1 province
- Announced its design for a market-based, *multi-sector* cap-and-trade program, Sept 2008:
  - 15% CO_2 reduction below 2005 levels by 2020
  - Phase I to take effect Jan 2012

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

- 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

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Collaborative Greenhouse Gas Programs

National Energy and Environment Update:

- President Obama's proposed budget includes cap-and-trade revenue beginning in 2012.
- Congressmen Waxman and Markey released a draft Energy and Emissions bill March 31, which includes:
  - a GHG cap-and-trade plan to reduce emissions 20% below 2005 levels by 2020 through a multi-sector emissions trading program beginning in 2012
  - limits on the carbon content of motor fuel

RGGI's Auction 3 held on March 18, 2009:

- RGGI states auctioned 2009 vintage allowances and the first 2012 control-period allowances, raising $117 million for energy efficiency, renewable energy, and other consumer-benefit programs in participating states.
- Participant states are: CT, DE, ME, MD, MA, NH, NJ, NY, RI, VT.
- Demand outstripped supply for both vintages. 50 entities bid 2.5 times the offered 31.5 million 2009 allowances, and 20 entities bid 2.3 times the available 2.2 million 2012 allowances.
- Compliance entities or affiliates (generators) were awarded the bulk of allowances:
  - 78% of 42 winners for 2009 allowances
  - 93% of 12 winners for 2012 allowances
- 2009 allowances cleared at $3.51 per allowance, 13¢ higher than Auction 2. Analysts posited that the expectation that RGGI allowances might have grandfathered value in a national cap-and-trade system may underpin the increased prices in each auction for 2009 allowances.
- 2012 allowances cleared at $3.05 per allowance. The 2.2 million allowances are 1.5% of the 2012 cap.
- The 4th and 5th RGGI auctions are scheduled for June 17th and September 9th.

Midwest Greenhouse Gas Regional Accord:

- Signed at Midwestern Governors Association Energy Summit to establish GHG reduction targets, Nov 2007:
  - Participants: IA,IL, KS, Manitoba, MI, MN, WI
  - Observers: IN, OH, Ontario, SD
- Preliminary Design Recommendations issued Dec 2008
  - Target reductions from 2005 levels: 15% - 25% reductions by 2020; 60% - 80% by 2050
  - Cap-and-trade should cover multiple sectors
  - Each jurisdiction to control allowance distribution methods
  - Final design pending results of further ICF modeling
- Model Rule anticipated by August 2009

Western Climate Initiative (WCI):

- Launched at Western Governors' Association meeting to reduce regional GHG collectively, Feb 2007:
  - Partners: AZ, British Columbia, CA, Manitoba, MT, NM, Ontario, OR, Quebec, UT, WA
  - Observers: AK, CO, ID, KS, NV, Saskatewan, WY
- Initial design released for a market-based, *multi-sector* cap-and-trade program (Sept 2008):
  - Phase I to take effect Jan 2012
  - Phase II to begin 2015; will cover 90% of regional emissions
- Released its **2009 - 2010 Work Plan**, Feb 2009. Key WCI Committee tasks include:
  - develop emissions reporting database & allowance tracking system
  - develop rules for robust and transparent allowance and offset credit trading market
  - examine role of RECs in GHG accounting and treatment of voluntary renewable energy
  - update policy modeling; revise energy efficiency assumptions

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18 States have Energy Efficiency Resource Standards

NE: Energy Plan stresses multi-sector EE improvements

KS: Advocates voluntary utility programs, not mandate

OK: PSC approved quick-start DR programs, including EE

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

IA: utilities to submit EE goals to achieve 1.5% annual savings; awaiting approval

MI: 1% annual savings from prior year's sales to 2012

WI: EE in RPS

IL: reduce energy 2% by 2015 (EE) and 0.1% from prior year (DR)

OH: reduce peak 8% by 2018; 22% energy savings by '25, starting 2009

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

ME: 10% EE by 2017 – new since 2005; DR & EE as SOS priority resources

VT: 2009 – 2011 goals of 2% annual savings; administered by Efficiency VT

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

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

CT: 1.5% annual savings 2009-19, from 2007, using all cost-effective EE

RI: reduce 10% of 2006 sales by 2022

NJ: BPU proceeding on EERS to reduce consumption, peak demand

DE: creating a Sustainable Energy Utility; EE, RE, DG, DR as SOS priorities

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

MD: reduce per cap electricity use & peak 15% by 2015 from 2007

VA: reduce 10% of 2006 sales by 2022

NC: EE to meet up to 25% of RPS to 2011; later to 40%

TVA: reduce peak demand 1,400 MW by 2012 with EE, DR *

FL: PSC to adopt new goals to reduce electric consumption, peak demand

WA: must pursue all cost-effective conservation

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

CA: 1% annual energy savings 2004 – 2013 ~23,183 GWh, 4,885 peak MW by 2013

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

MT: Governor's initiative – 20% state agencies energy savings by 2010

NV: EE up to 25% of RPS by 2015

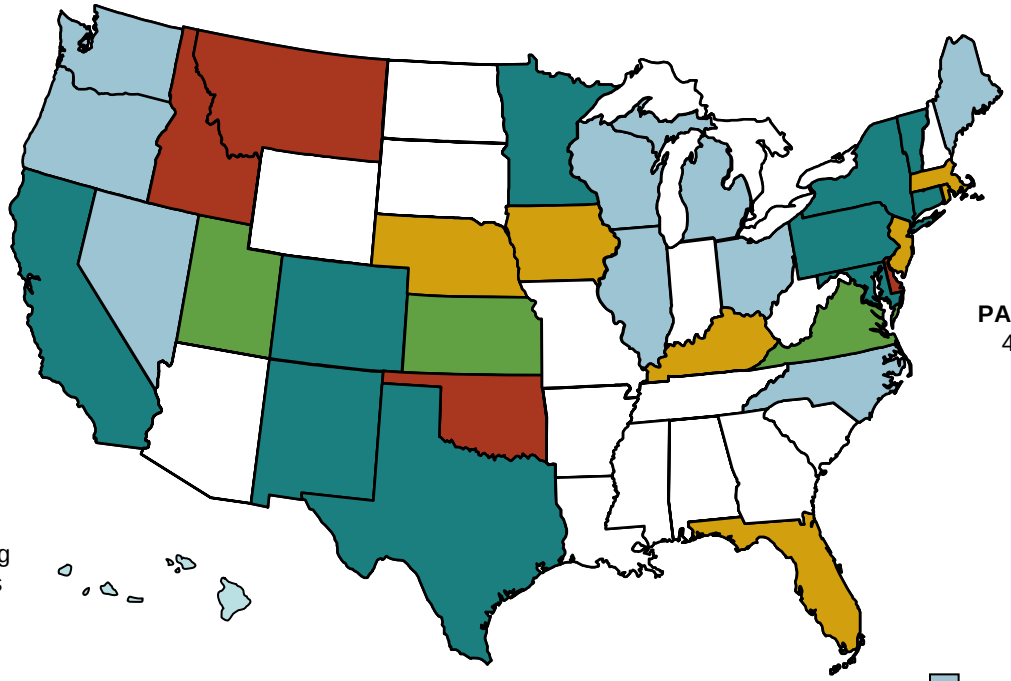
UT: EE incentives in RPS goal

CO: 11.5% energy savings 2009 – 2020 ~ 3,669 GWh

NM: use EE and DR to save 10% of 2005 retail electric sales by 2020

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

HI: 20% savings of net electric sales by 2020; up to 50% of RPS



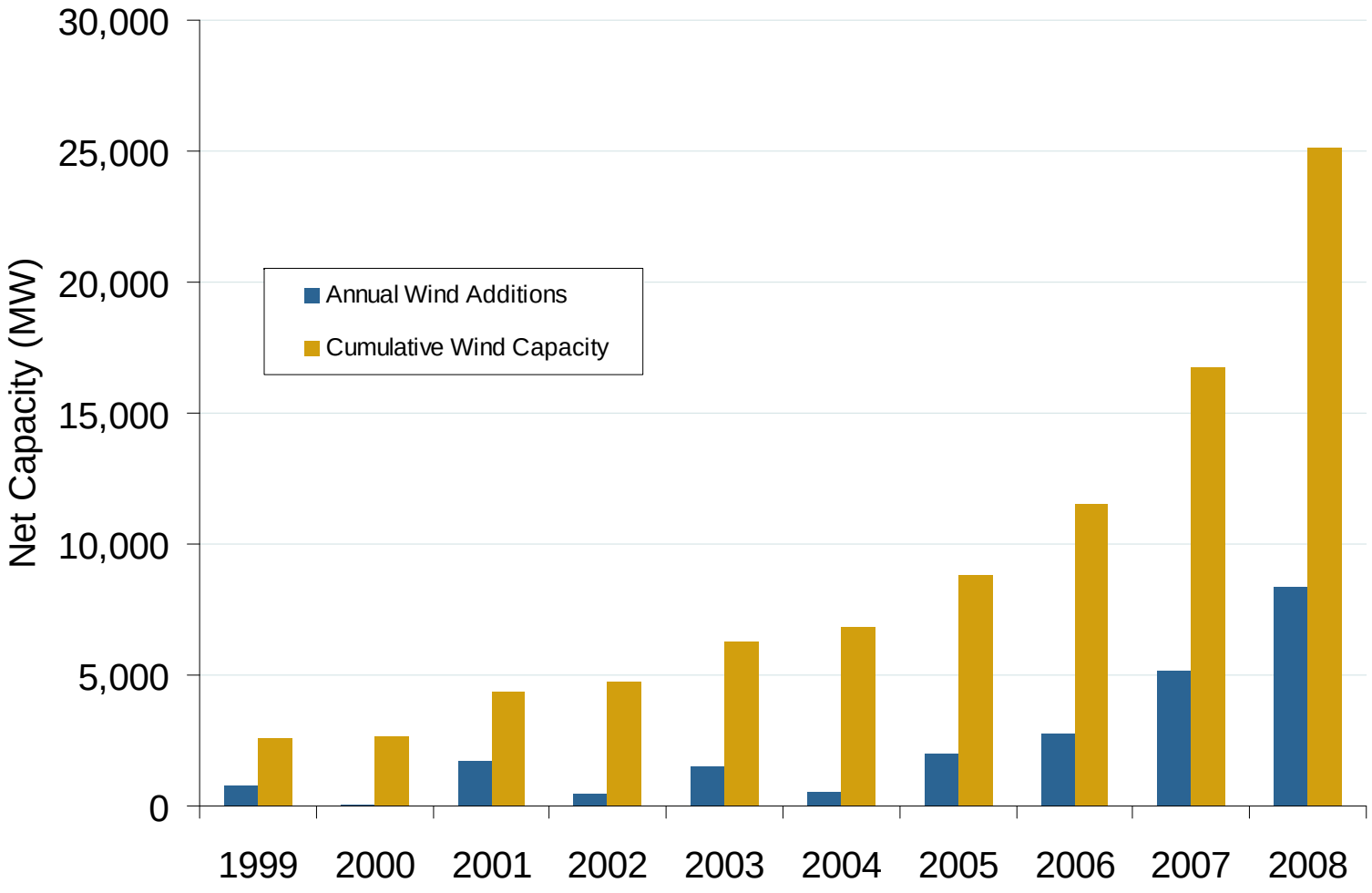
- EE as part of an RPS law, rule, or goal
- EERS by regulation or law (stand-alone)
- Voluntary standards (in or out of RPS)
- EERS pending regulations, proposed, or studied
- Other energy efficiency entity, rule, or goal

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

***** TVA's "EE and DR Plan" is from the Public Power Authority, and is not a state policy.
Abbreviations: DG – distributed generation; DR - demand response; DSR – demand-side resources; EE - energy efficiency; E&G: electric and gas utilities; IRP – integrated resource plan; RPS: Renewable Portfolio Standard; SOS: Standard Offer Service
Sources: ACEEE, EPA, Regulatory Assistance Project, Union of Concerned Scientists, State regulatory and legislative sites; State Efficiency Agency reports; trade press

Updated April 3, 2009

U.S. Wind Capacity Growth, 1999 – 2008



Source: Energy Velocity Generating Unit Capacity Dataset

Updated April 7, 2009

2008 Review of Wind Capacity and Generation

- Installed wind capacity grew 8,358 MW to 25,170 MW in 2008 from 16,818 MW in 2007, a 50% increase. Wind power was 43% of new U.S. new electric capacity in 2008, surpassing gas-fired generation.
- Installed capacity grew at a compound annual growth rate (CAGR) of 39% from 2004-08, compared to 28% for 2003-07

National wind policy and developments included:

- Congress extended the production tax credit (PTC) through Dec 2009. Indexed to inflation, it is now worth 2.1¢ per kWh for the first ten years a project operates.
- In Feb. 2009, Congress extended the credit through 2012, its longest renewal ever. This extension provides developers and equipment companies better long-term assurance to invest in projects and manufacturing facilities. The three times the PTC lapsed this decade were followed by declines in new capacity in subsequent years: 2000, 2002, and 2004 (see next chart, "Growth in Installed U.S. Capacity").
- Foreign turbine, tower, and component manufacturers have opened U.S. facilities with the PTC's steady renewal, lowering equipment transportation costs. In 2008, 30 facilities were announced, 10 opened, and 18 existing facilities expanded; 9 came online and 11 were announced in 2007.
- The economic turndown has led to some facility cutbacks, employee layoffs, project delays, and equipment order postponements.

State policies encouraged wind's growth:

- 16 of the top 25 states by cumulative MW had an RPS (14 in 2007), 3 had renewable goals (3 in 2007) while 6 had neither.
- 34% of 2008 capacity additions – 7,454 MW – were in the 20 states with the highest wind potential; 86% of total U.S. wind capacity – 21,741 MW – is in those states.

State policies (continued):

- 80% of total U.S. wind is in the top ten states. The top 5 states by installed capacity (new 2008 MW) are:
  - Texas: 7,116 MW (2,670)
  - Iowa: 2,790 MW (1,519)
  - California: 2,517 MW (78)
  - Minnesota: 1,752 MW (454)
  - Washington: 1,375 MW (212)
- Texas kept its lead as the state with the most wind capacity; Iowa passed California for 2nd place. Oregon and Colorado each have more than 1,000 MW installed.

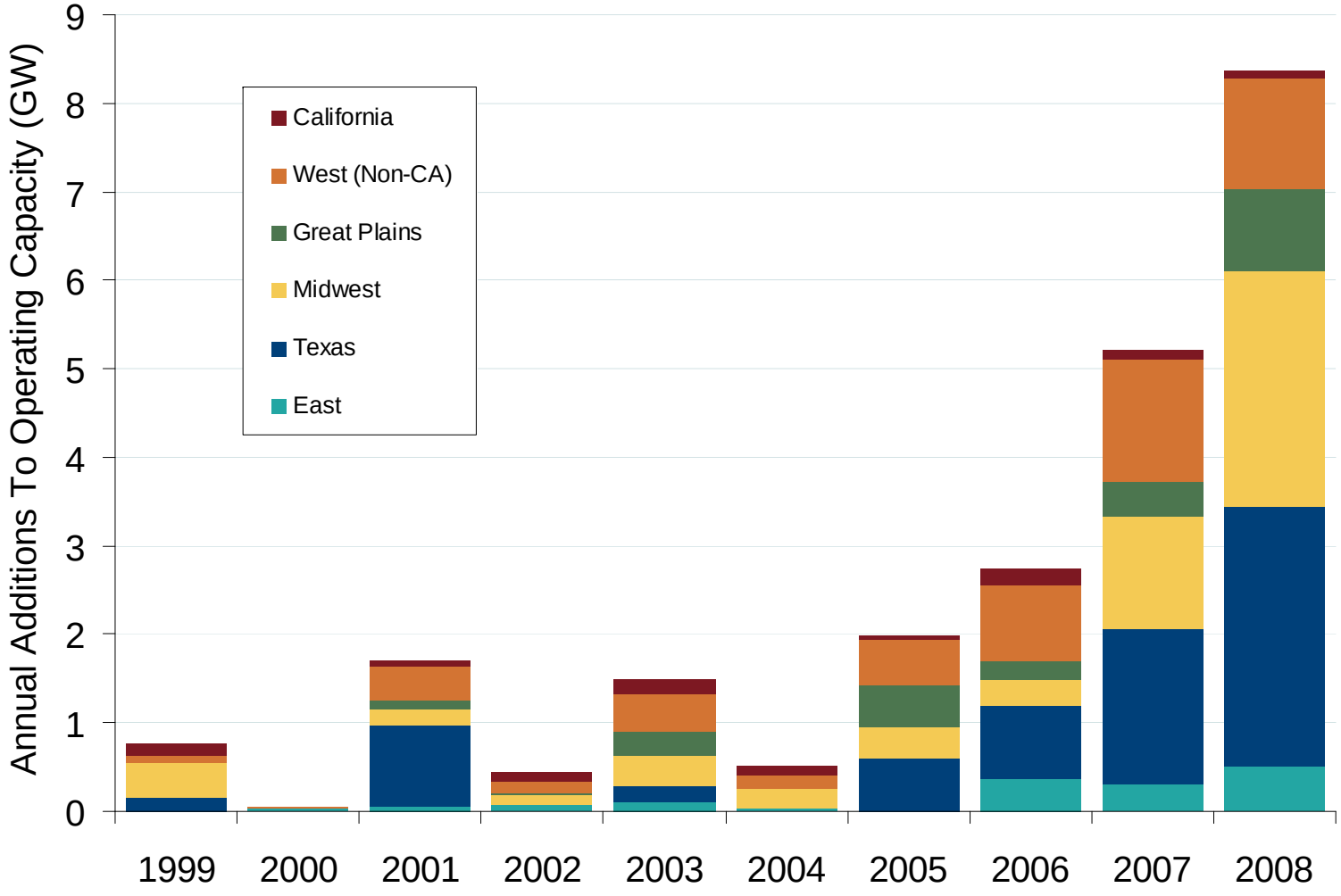
The Commission acted to improve wind interconnection:

- Wind's rapid capacity growth created a backlog in many interconnection queues. FERC held a technical conference in December 2007 (AD08-2) to re-examine its Large Generator Interconnection Rule (Order 2003). ISOs and RTOs reported that queuing procedures specified in the Order impeded their timely interconnection of wind resources.
- In March 2008, FERC directed RTOs and ISOs to report on the status of their efforts to improve the processing of projects in their queues; it offered guidance on reforms including increased staffing, more efficient modeling, or clustering requests.** Queue reform Orders were subsequently approved for the Midwest ISO (2008), California (2008), and ISO-New England (2009).
- FERC accepted the tariff provisions NYISO proposed, which allowed it to implement a centralized program to incorporate wind output into its day-ahead and real-time energy markets. Ongoing costs are recovered from wind plant operators.***

* CAGR is a better indicator of growth rates over time than a straight percent.
** *Interconnection Queuing Practices,* 122 FERC ¶ 61,252 (2008)
*** *New York Independent System Operator, 123 FERC* ¶ 61,267 (2008)
Source: OE analysis, derived from data in Commission filings; American Wind Energy Association (AWEA); DOE, *Annual Report on U.S. Wind Power*; Energy Velocity; Lawrence Berkeley National Laboratory; and trade press.

Updated April 7, 2009

Regional Wind Capacity Growth



West w/o CA: CO, HI, ID, MT, NM, OR, UT, WA, WY
Great Plains: KS, NE, ND, OK, SD
Midwest: IL, IN, IA, MI, MN, MO, OH, WI
East: ME, MA, NH, NJ, NY, PA, RI, TN, VT
Source: Energy Velocity Generating Unit Capacity Dataset

Updated April 7, 2009

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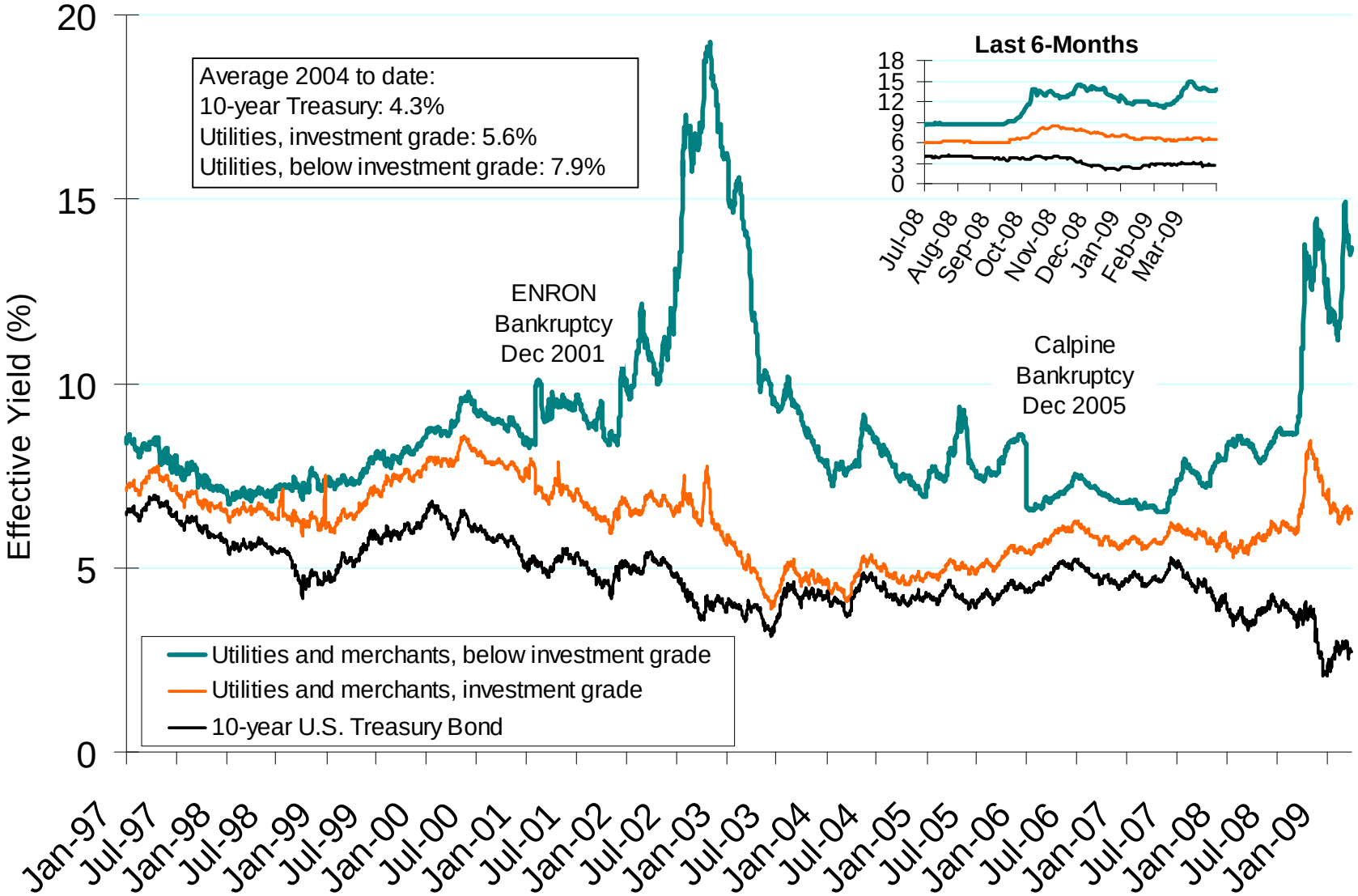
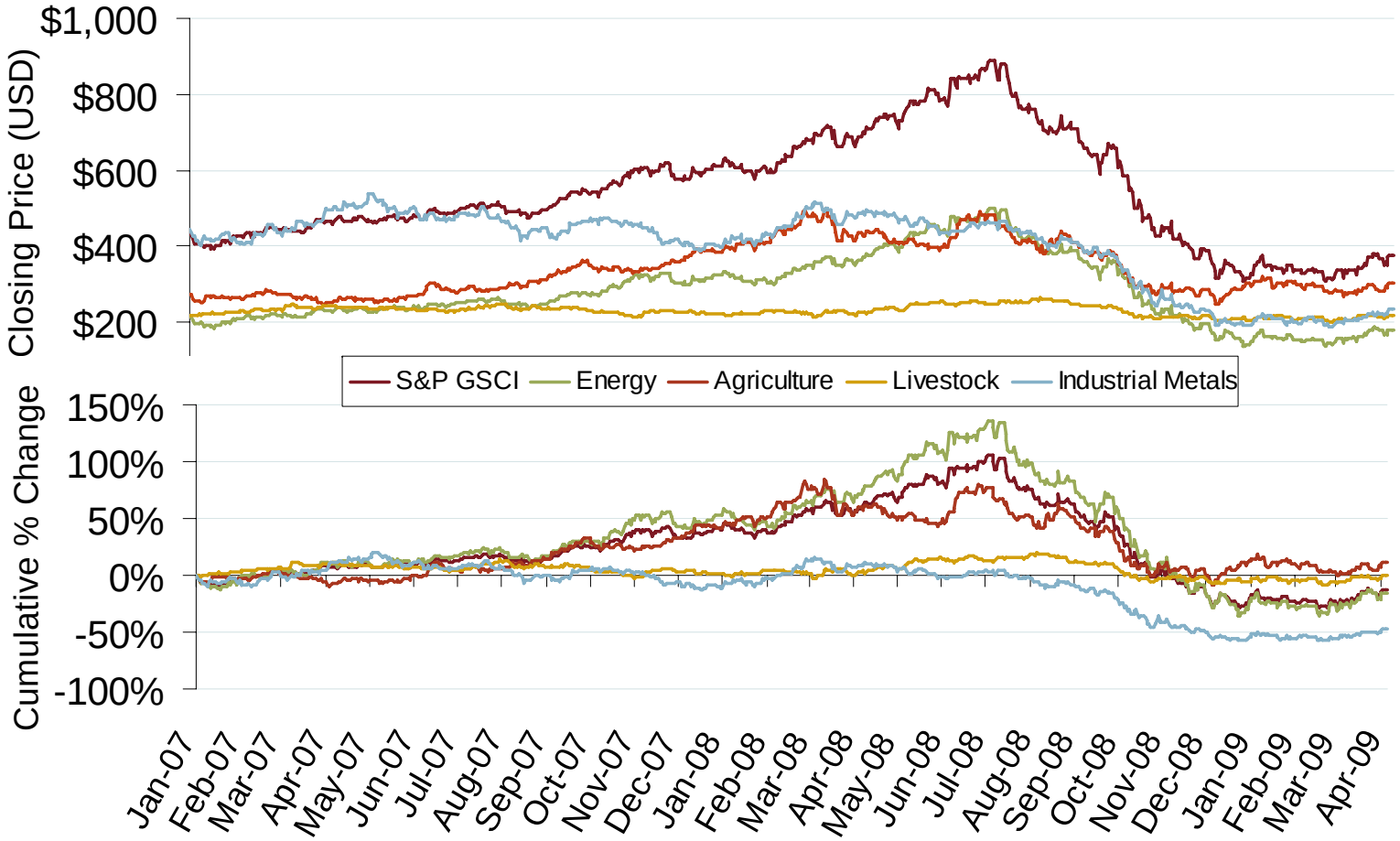
Yields of Utilities, Merchants and Ten Year Treasury Bonds



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

Updated April 7, 2009

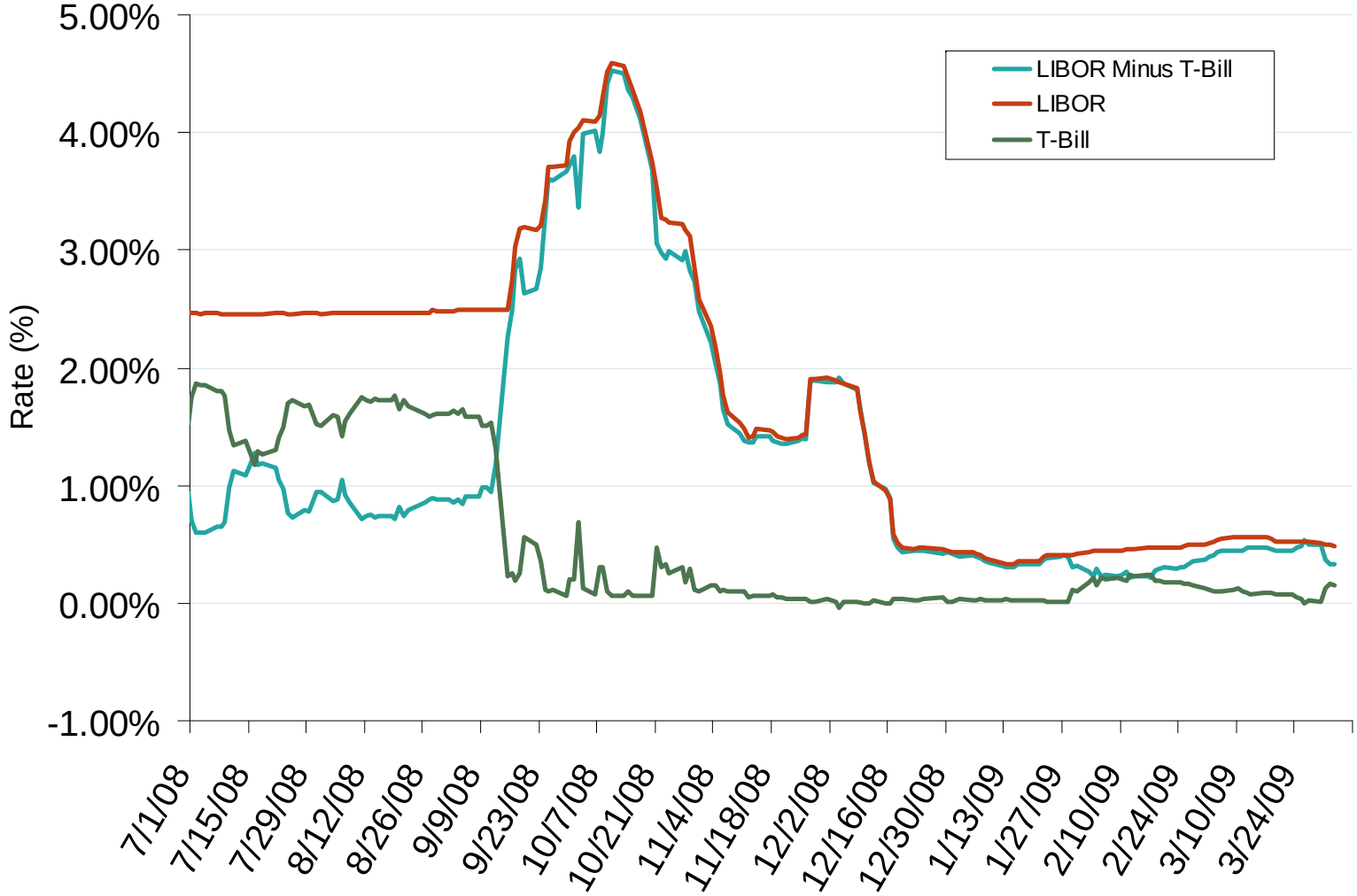
S&P Goldman Sachs Commodity Index Official Closing Price



Source: Bloomberg Data

Updated April 7, 2009

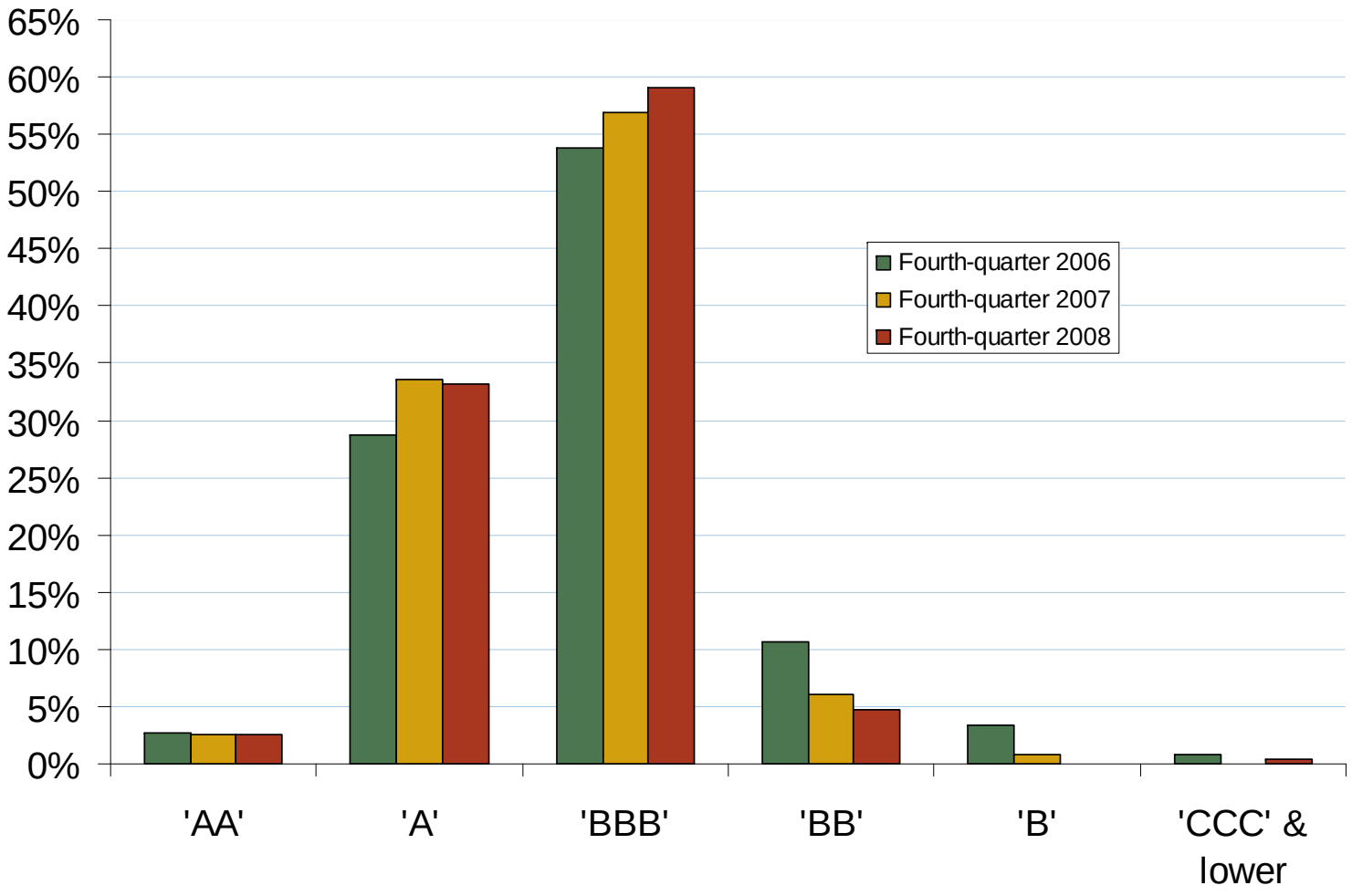
One Month LIBOR and One Month US Treasury Bill Rates



Source: Derived from Bloomberg data.

Updated April 7, 2009

U.S. Electric and Gas Utility Ratings Distribution



Source: Derived from Standard and Poors data.

Updated March 9, 2009