OE ENERGY MARKET SNAPSHOT

Western States Version – April 2008 Data

- **Market Fundamentals**
- **Prices and Market Analysis**

Office of Enforcement
Federal Energy Regulatory Commission
May 2008

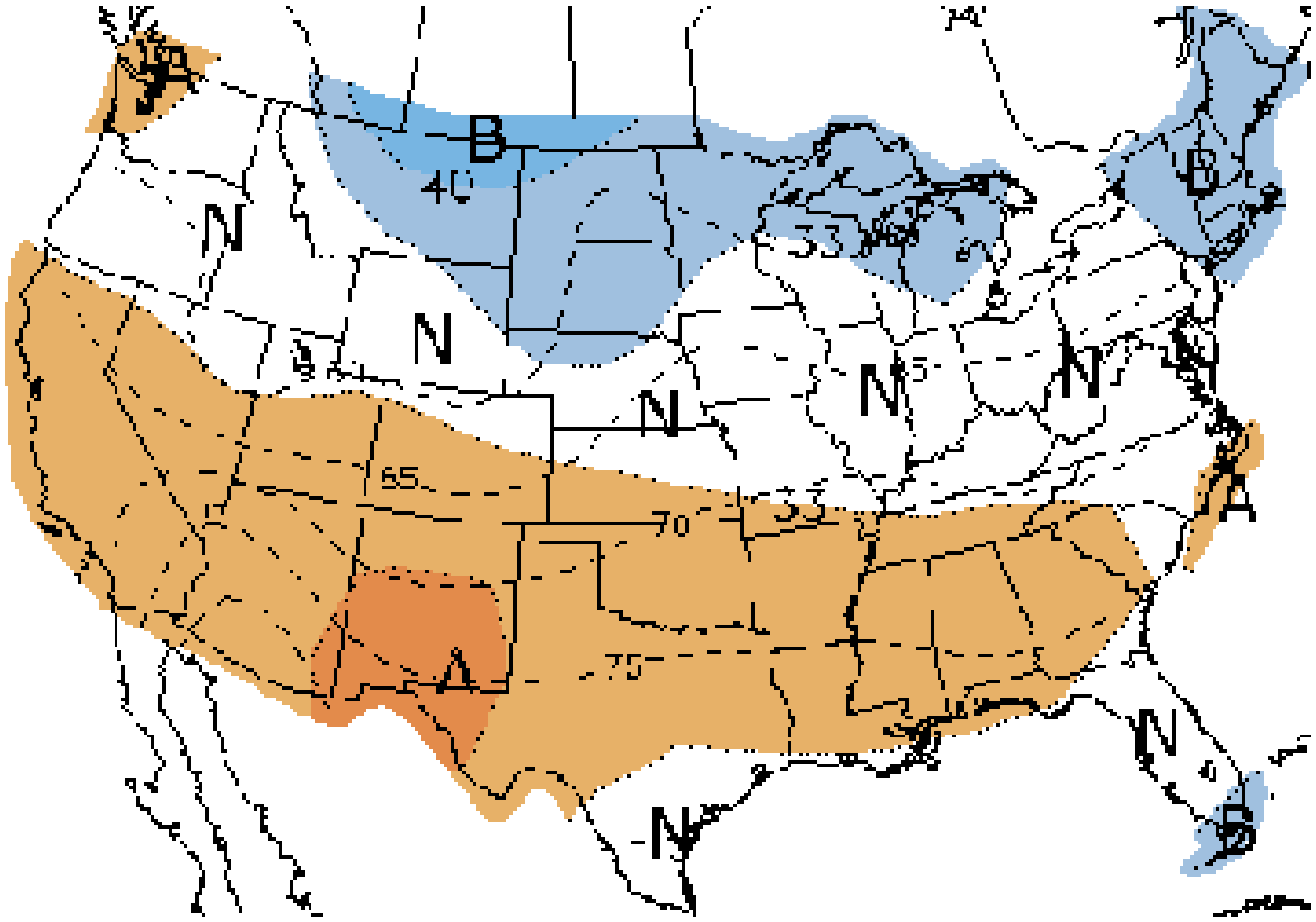
2008 Summer Market and Reliability Assessment

Item No.: A-3

May 15, 2008

Market Fundamentals

NOAA's 8 to 14 Day Temperature Forecast
Made May 18, Valid for May 26 – June 1, 2008



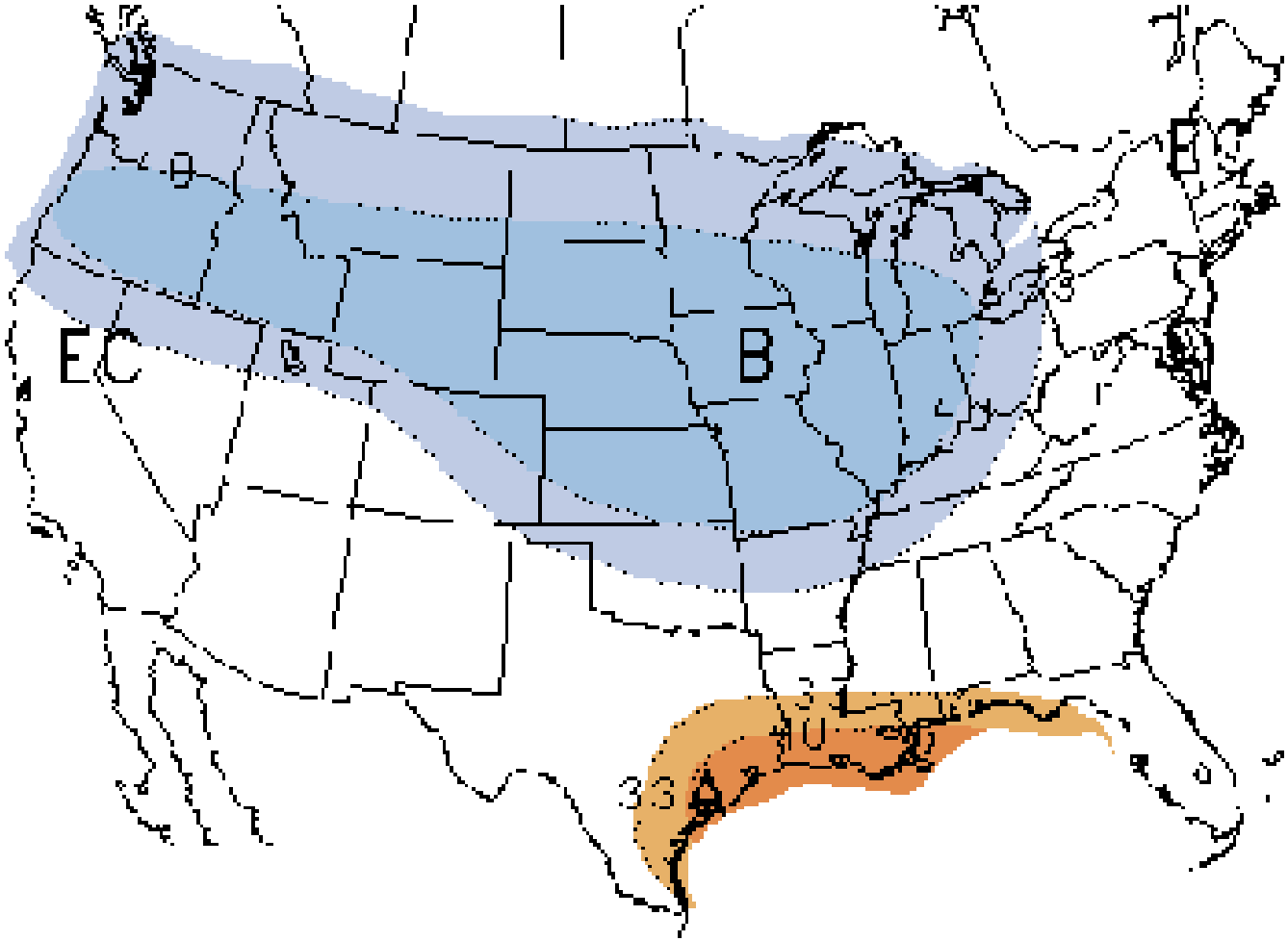
Note: "A" areas are above normal and "B" areas are below normal. Normal is based on the last 30 years of data.

Source: NOAA

Updated May 19, 2008

3012

NOAA's Monthly Temperature Forecast Made April 30, Valid for May 2008



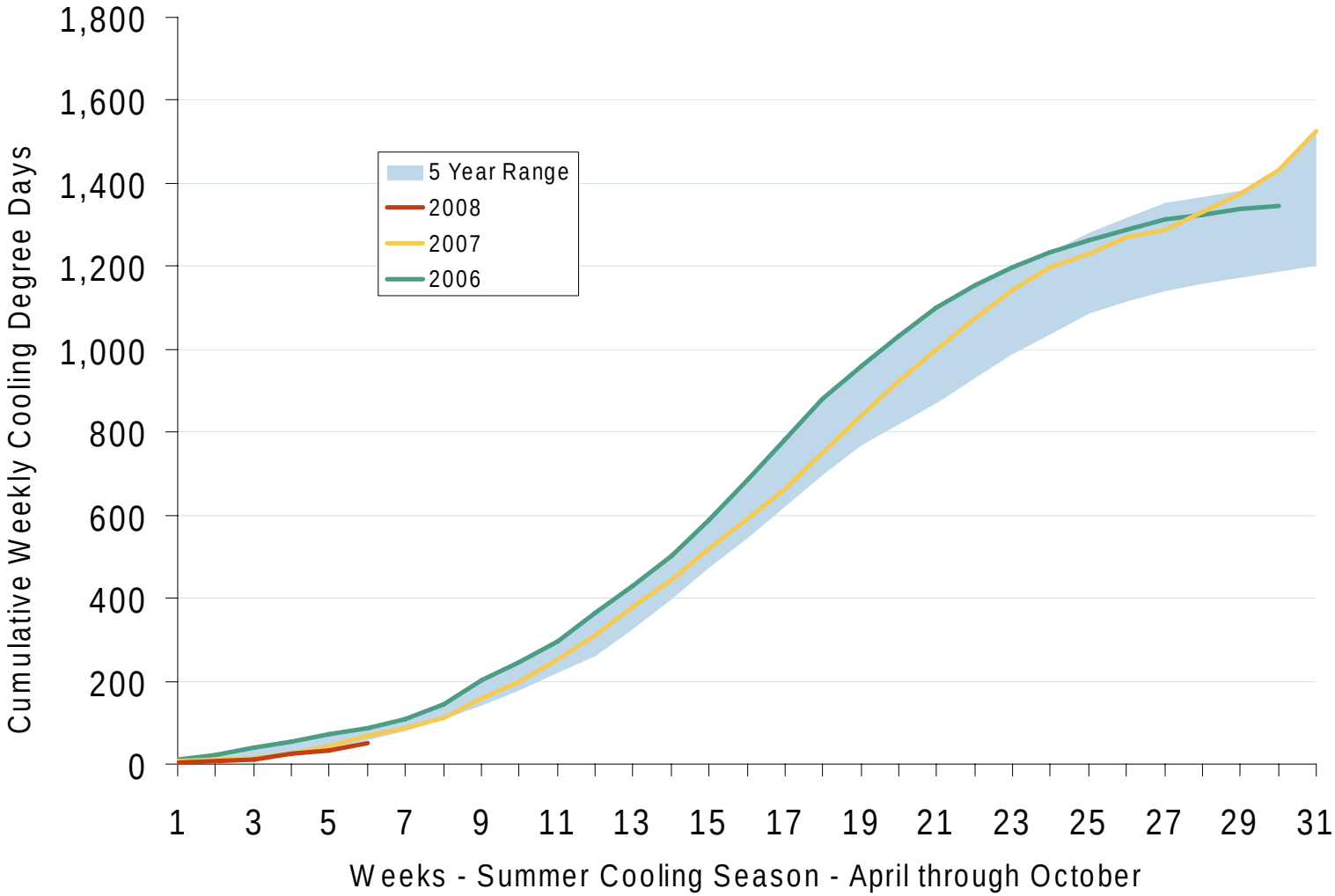
Note: "A" areas are above normal, "B" areas are below normal and "EC" means equal chance. Normal based on the last 30 years of data.

Source: NOAA

Updated May 12, 2008

3012

U. S. Summer Cumulative Cooling Degree Days



Source: Derived from *NOAA* data.

Updated May 6, 2008

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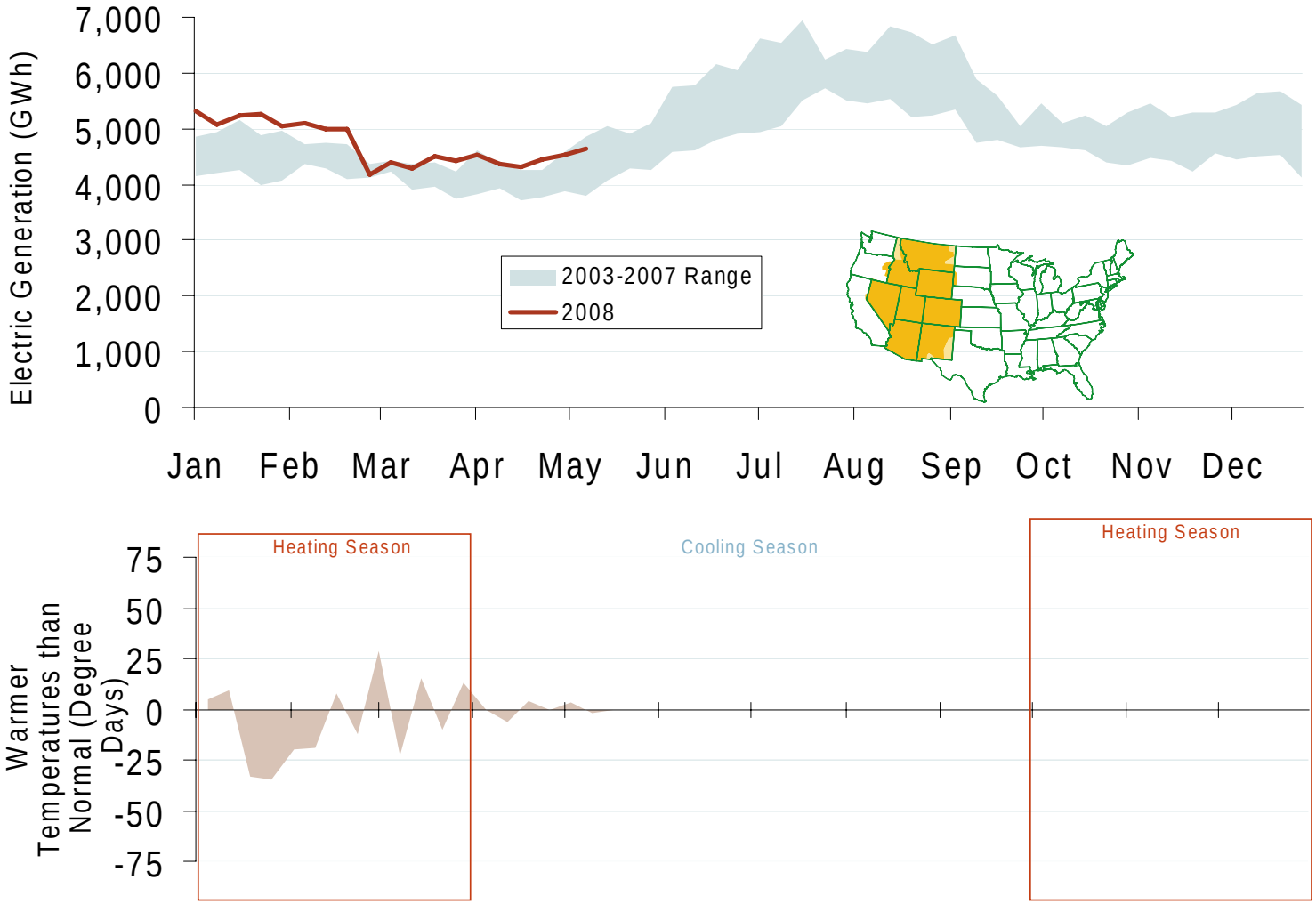
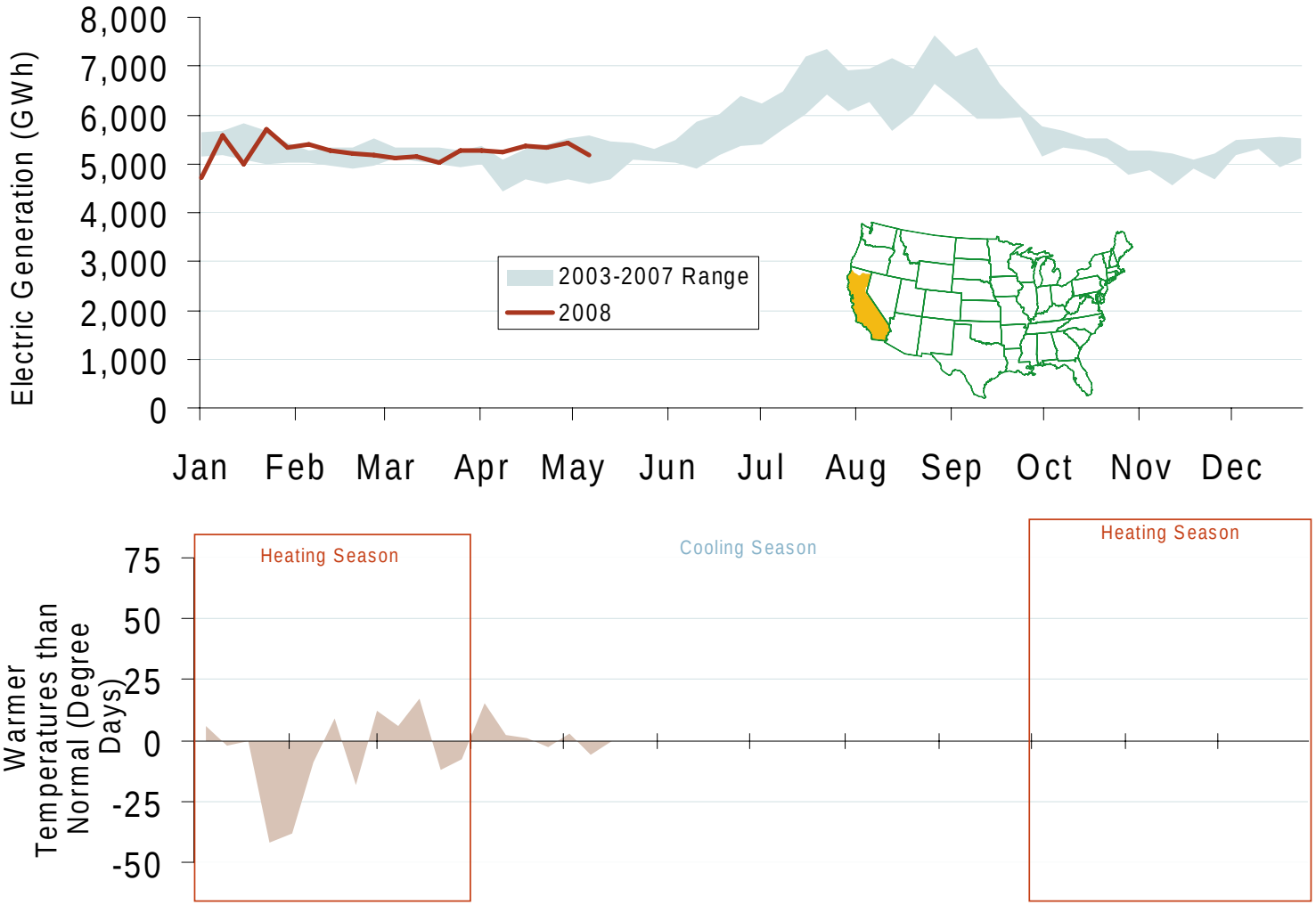
Weekly Electric Generation Output and Temperatures Rocky Mountains Region



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

Updated May 16, 2008

Weekly Electric Generation Output and Temperatures California



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

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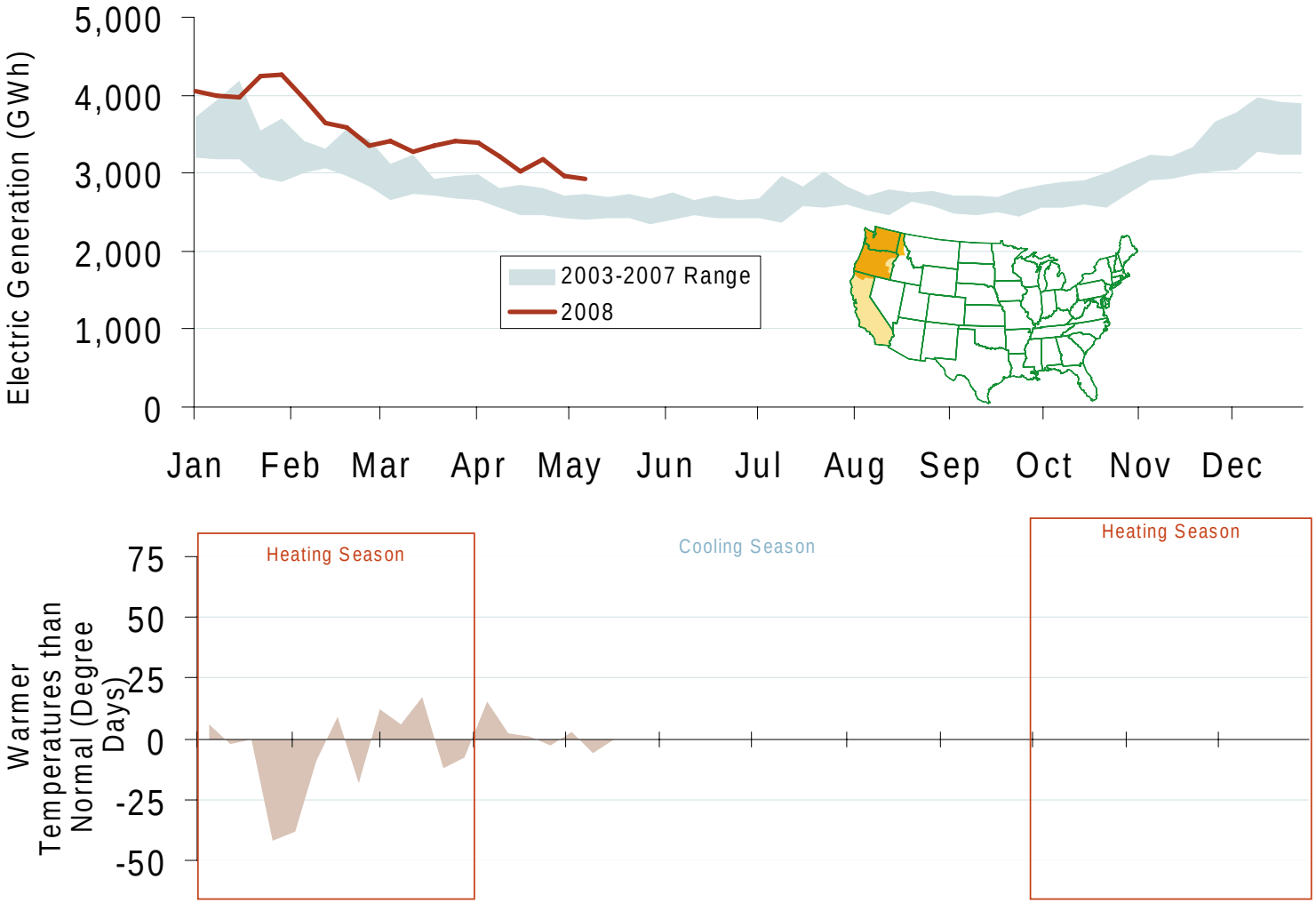
Weekly Electric Generation Output and Temperatures Pacific Northwest Region



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

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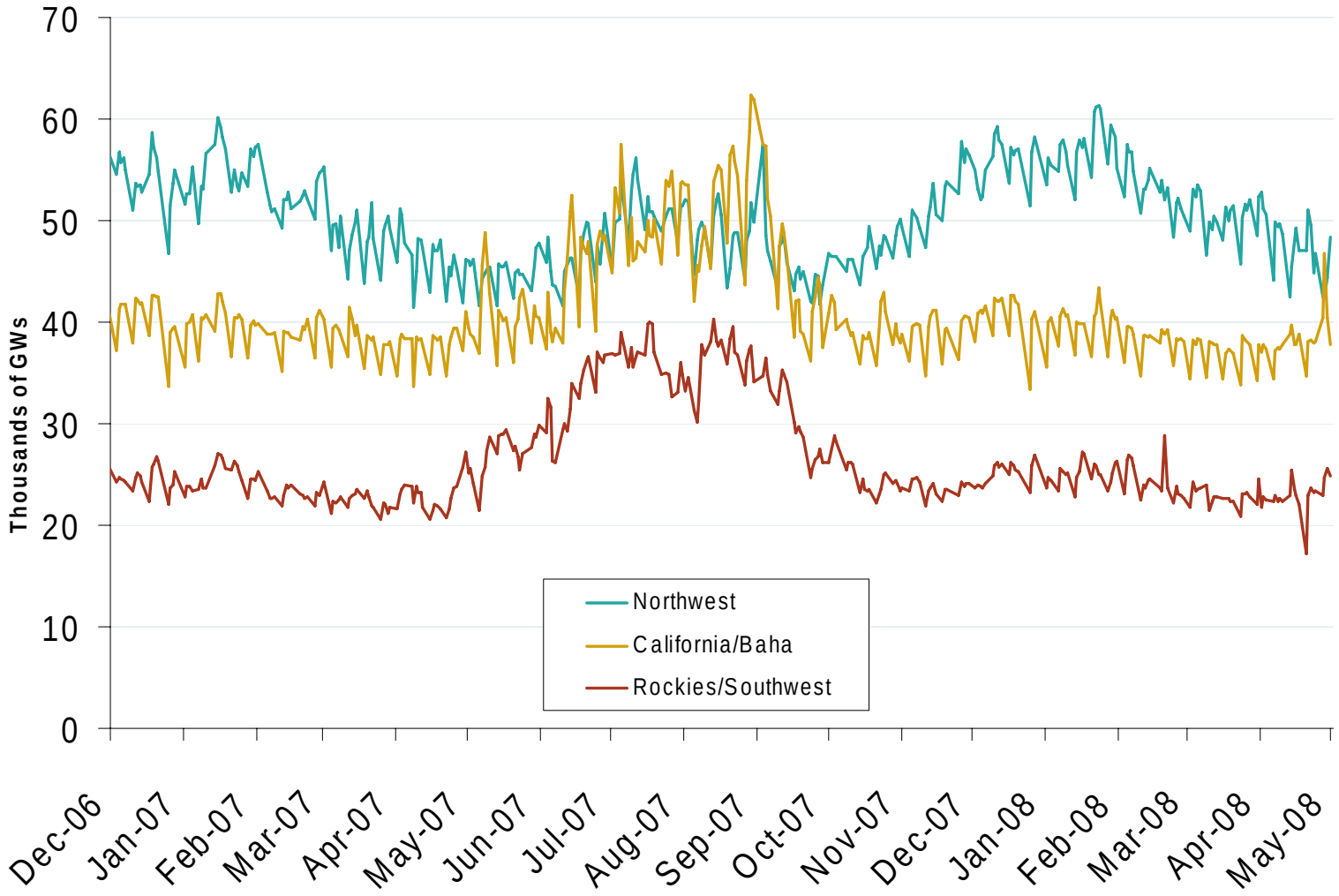
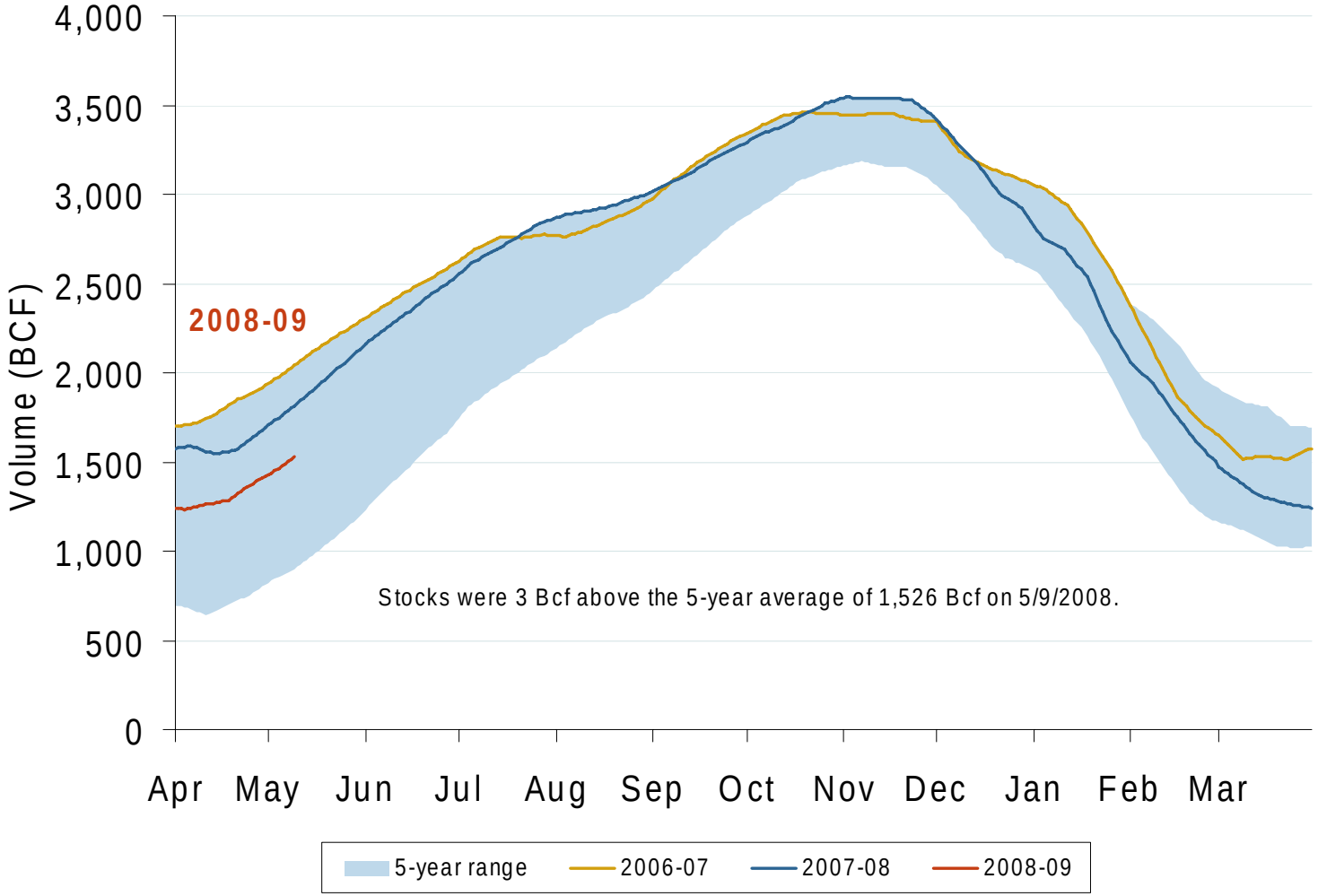
Western Daily Actual Peak Demand



Source: Derived from WECC Daily Report data available at http://wecc.biz. Data shown is generally Sunday through Thursday due to limitations of daily reports.

Updated May 6, 2008

Total U.S. Working Gas in Storage



Source: Derived from *EIA* data.

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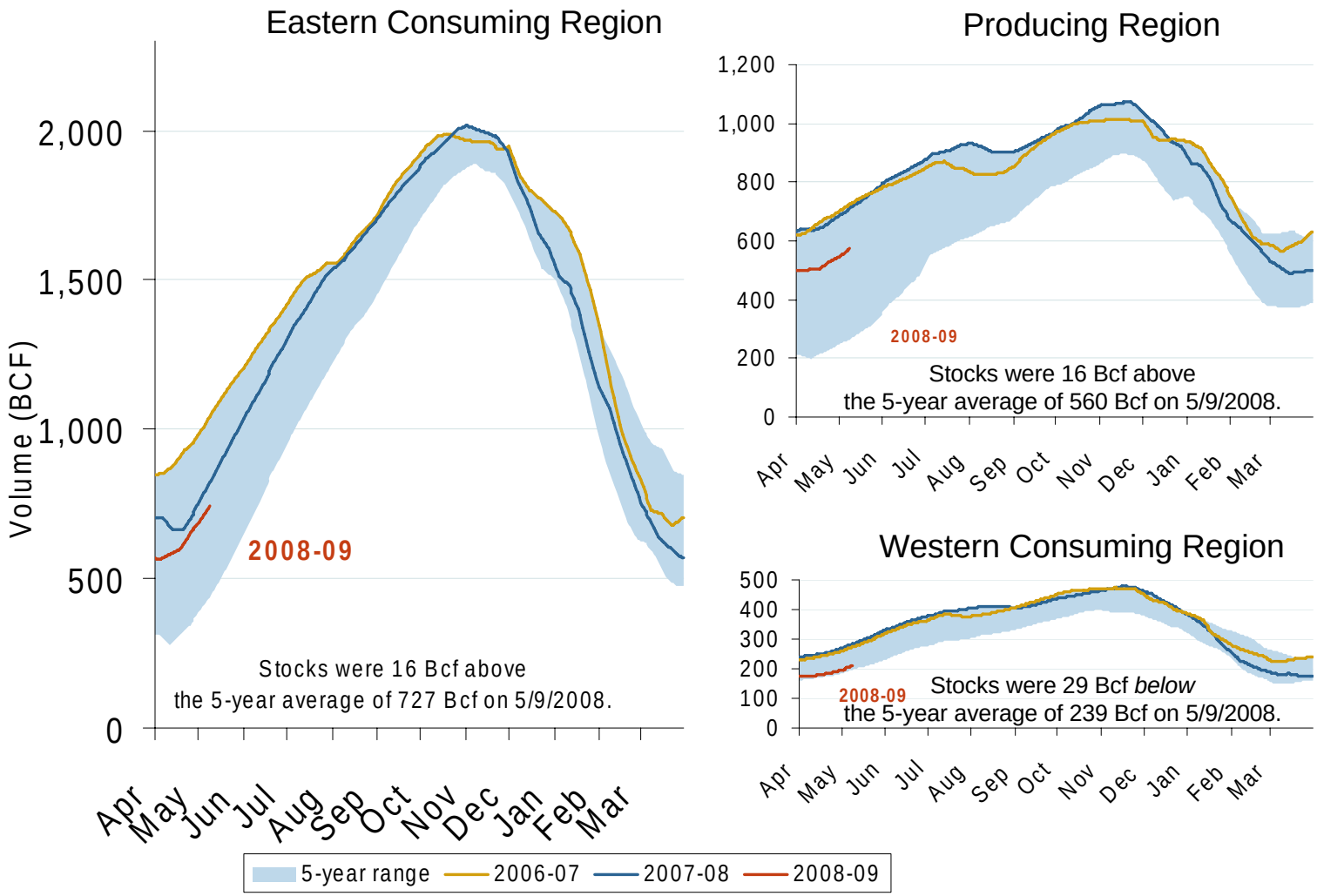
Regional Totals of Working Gas in Storage



Source: Derived from *EIA* data.

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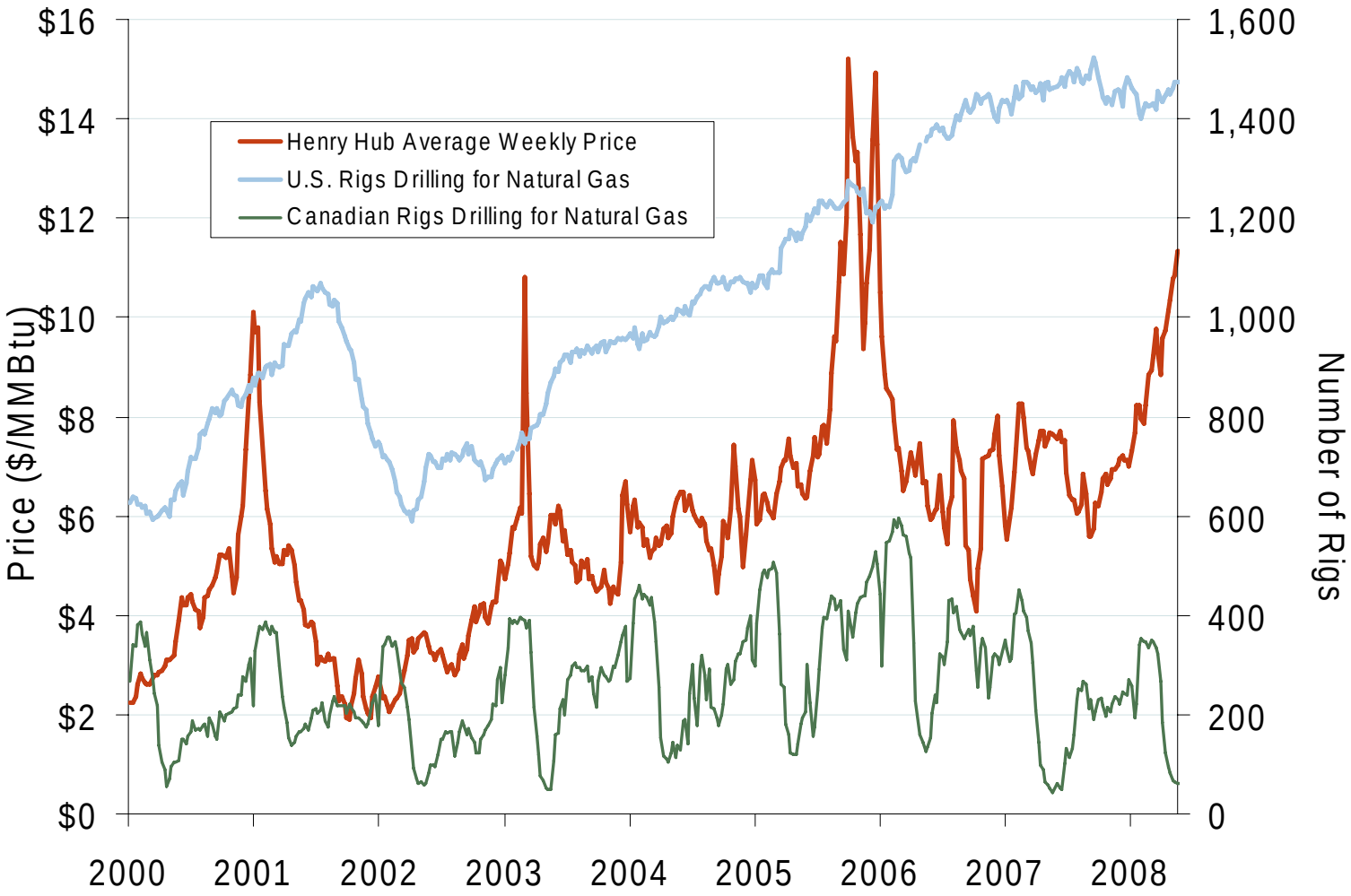
U.S. and Canadian Natural Gas Drilling Rig Count and Daily Spot Prices



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

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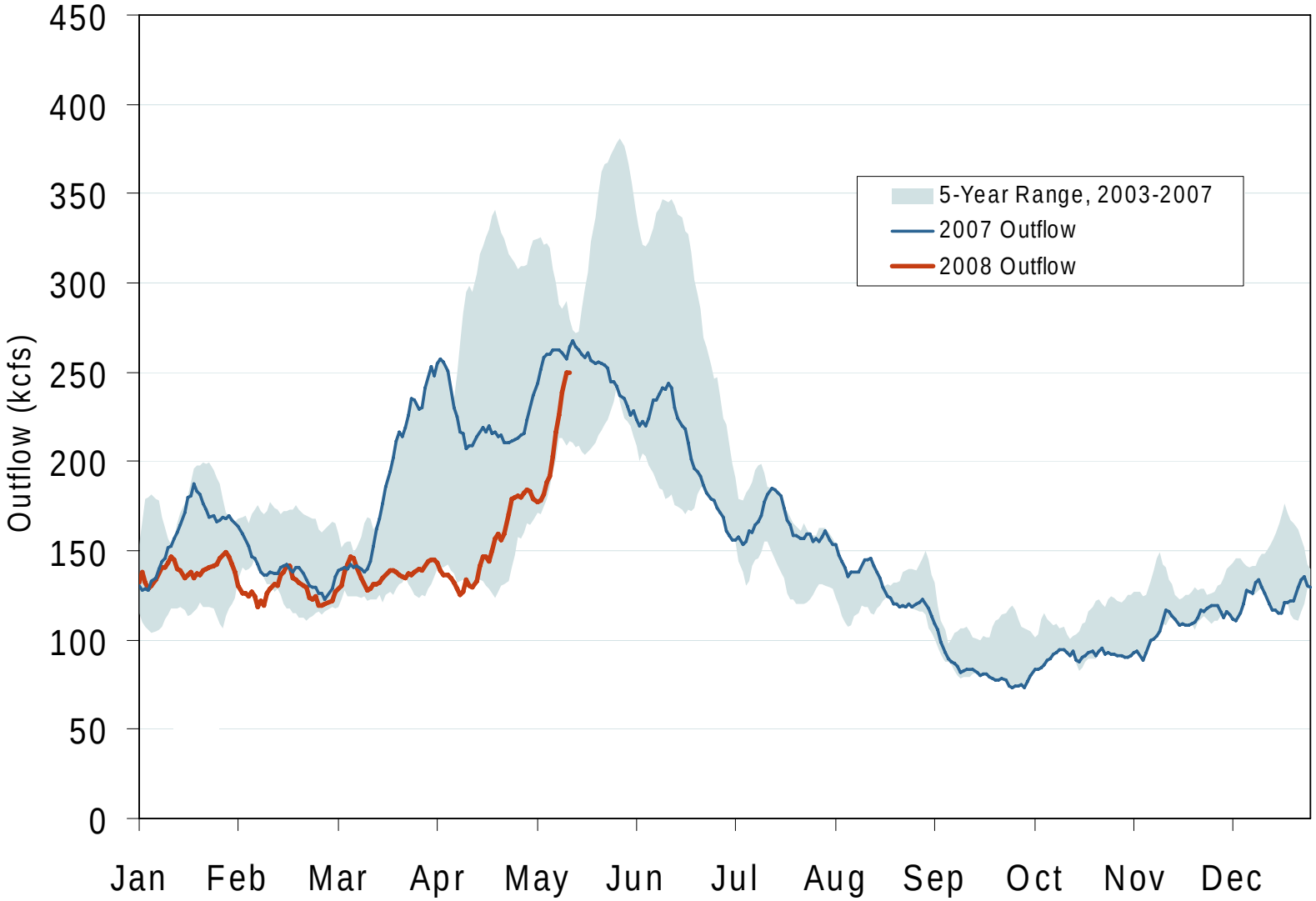
Stream Flow at The Dalles Dam



Source: Derived from *USACE* data.
Trend lines are 7-day moving averages.

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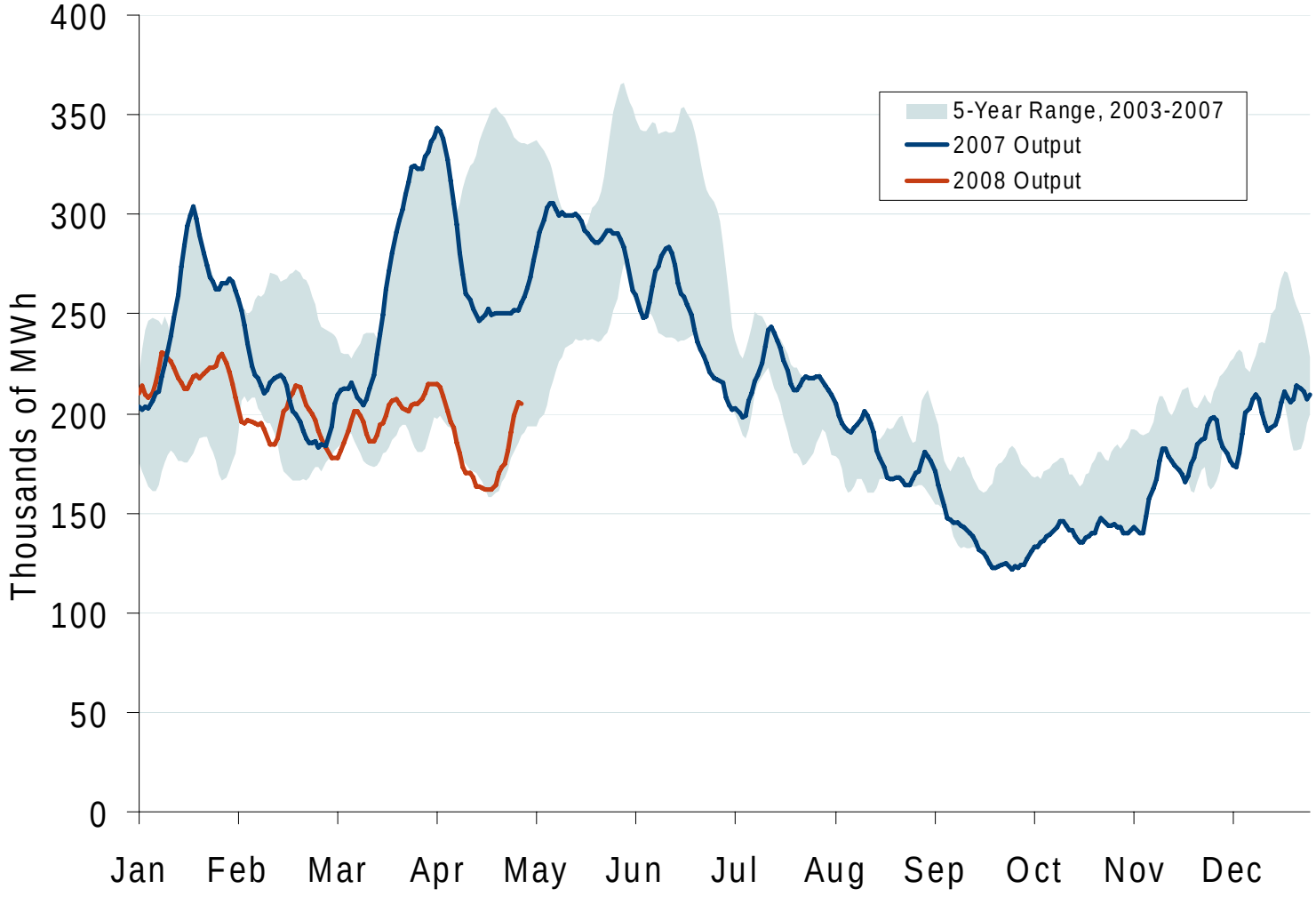
Pacific Northwest Hydroelectric Production



Source: Derived from *USACE* data reflecting the output of the 24 largest facilities.
Trend lines are 7-day moving averages.

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Pacific/Northwest Hydro and Snowpack Levels

	Hydro Generation		Snow Water Equivalent[3]		
	In-State Capacity (MW)[1]	Additional Capacity Created Downstream (MW)[2]	One Year Ago (% of average)	3/31/08 (% of average)	5/5/08 (% of average)
California	10,400	0	30%	98%	74%
British Columbia	10,000	16,200	130%	105%	116%
Idaho	2,700	19,700	40%	106%	122%
Washington	21,500	0	85%	131%	164%
Montana	2,700	16,200	75%	112%	129%
Oregon	9,100	0	55%	159%	177%

1 Net summer capacity in megawatts by state (EIA).

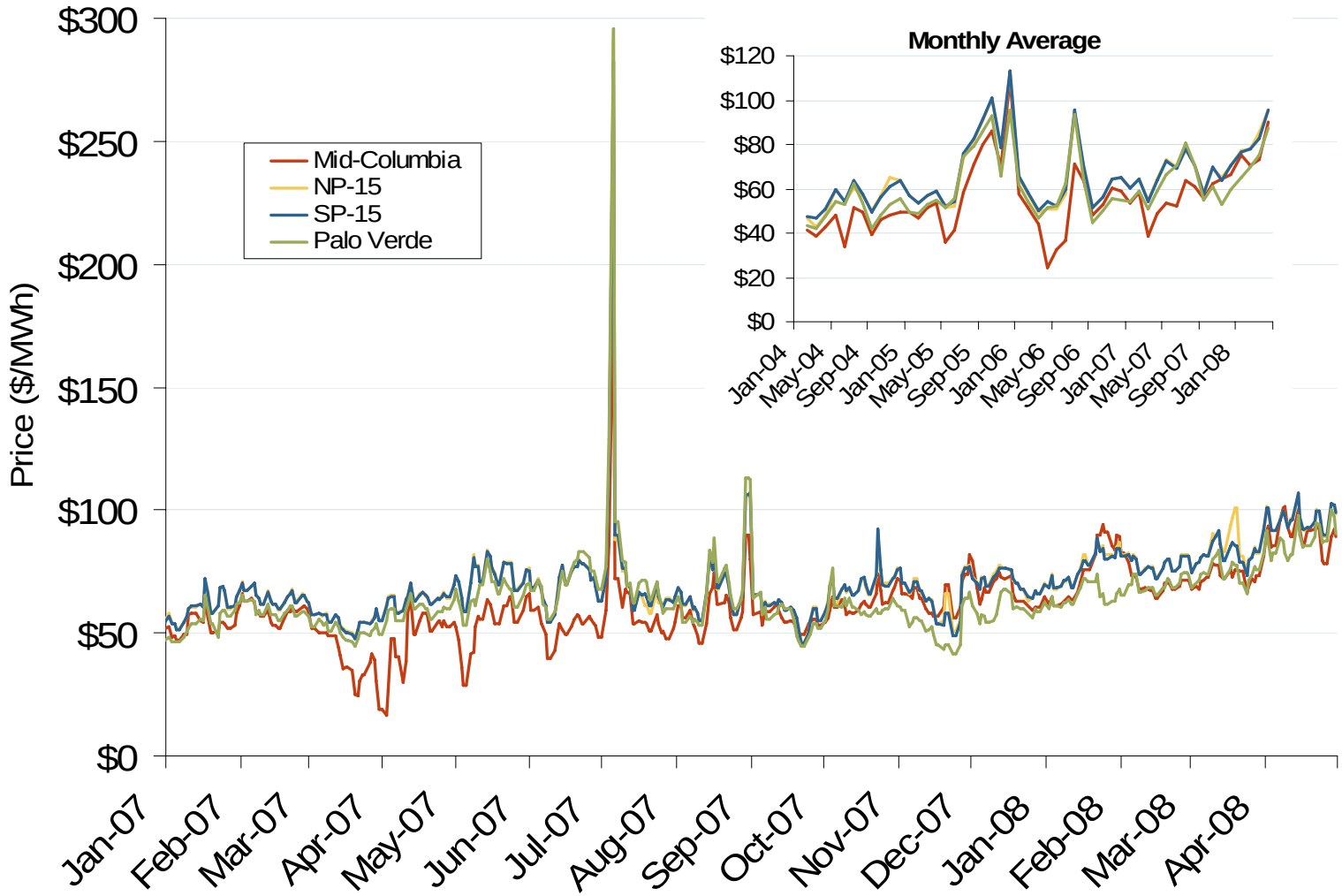
2 Approximate electric capacity created by water flow through the downstream states (EIA and BPA). The capacity estimates reflect the water flow pattern of the series of hydro facilities on the Snake and Columbia Rivers.

3 Snow Water Equivalent, in percent of the historical average for the same date, is the ratio of current snow water daily data (collected by the Natural Resources Conservation Services' Snowtel Telemetry sites) compared to the average snow water for the same day between 1961-1990. Total Hydro Capacity figures by state do not tie precisely to Snow Water Equivalent data due to such factors as snow basin terrain and complex distribution of run-off to neighboring state hydroelectric dams or shared facilities (e.g., Columbia River hydroelectric dams on the border of Washington and Oregon) (Bloomberg).

Updated May 7, 2008

Prices and Market Analysis

Western Daily Bilateral Day-Ahead On-Peak Prices

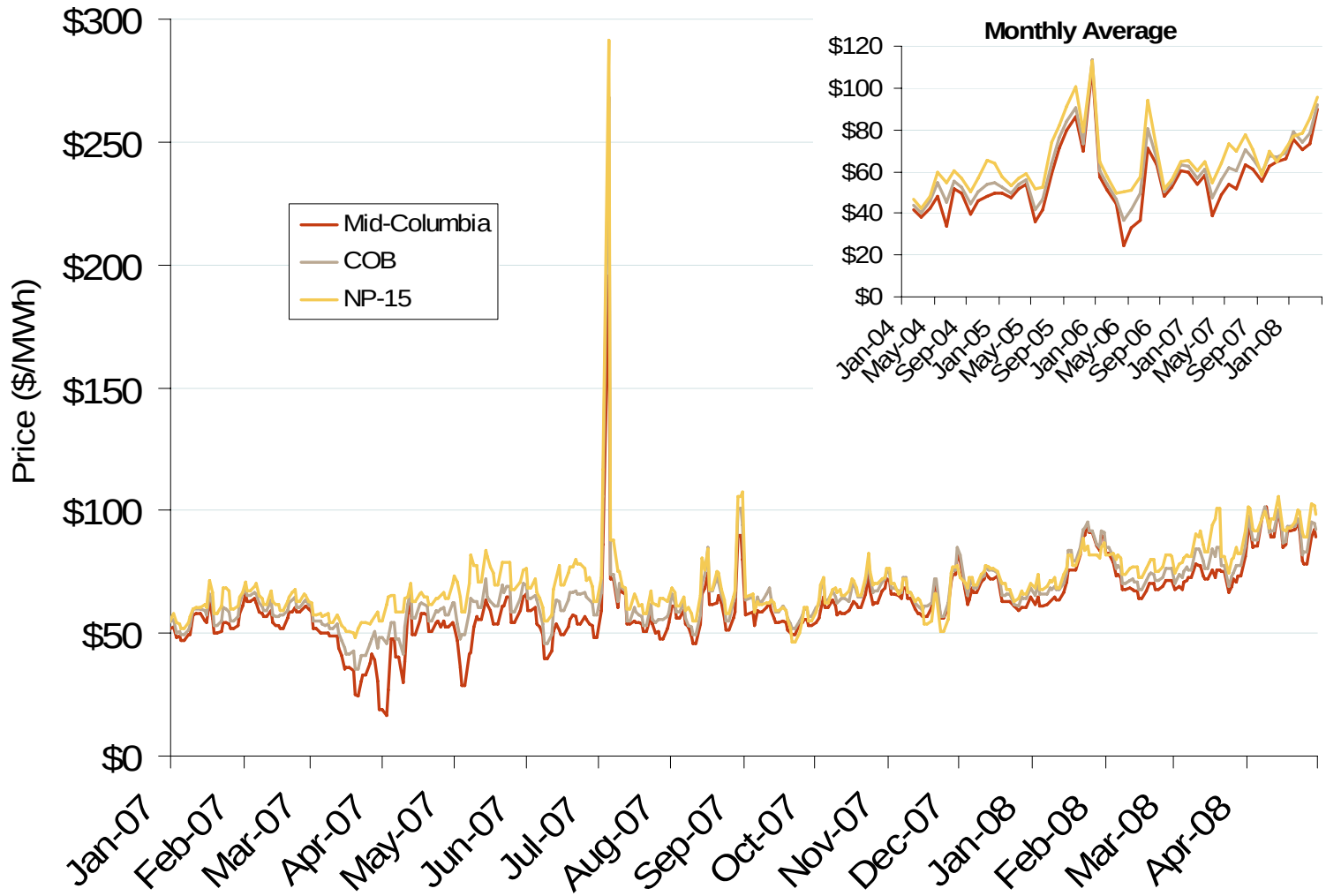


Updated May 6, 2008

Source: Derived from *Platts* data.

1006

Northwestern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.

Updated May 6, 2008

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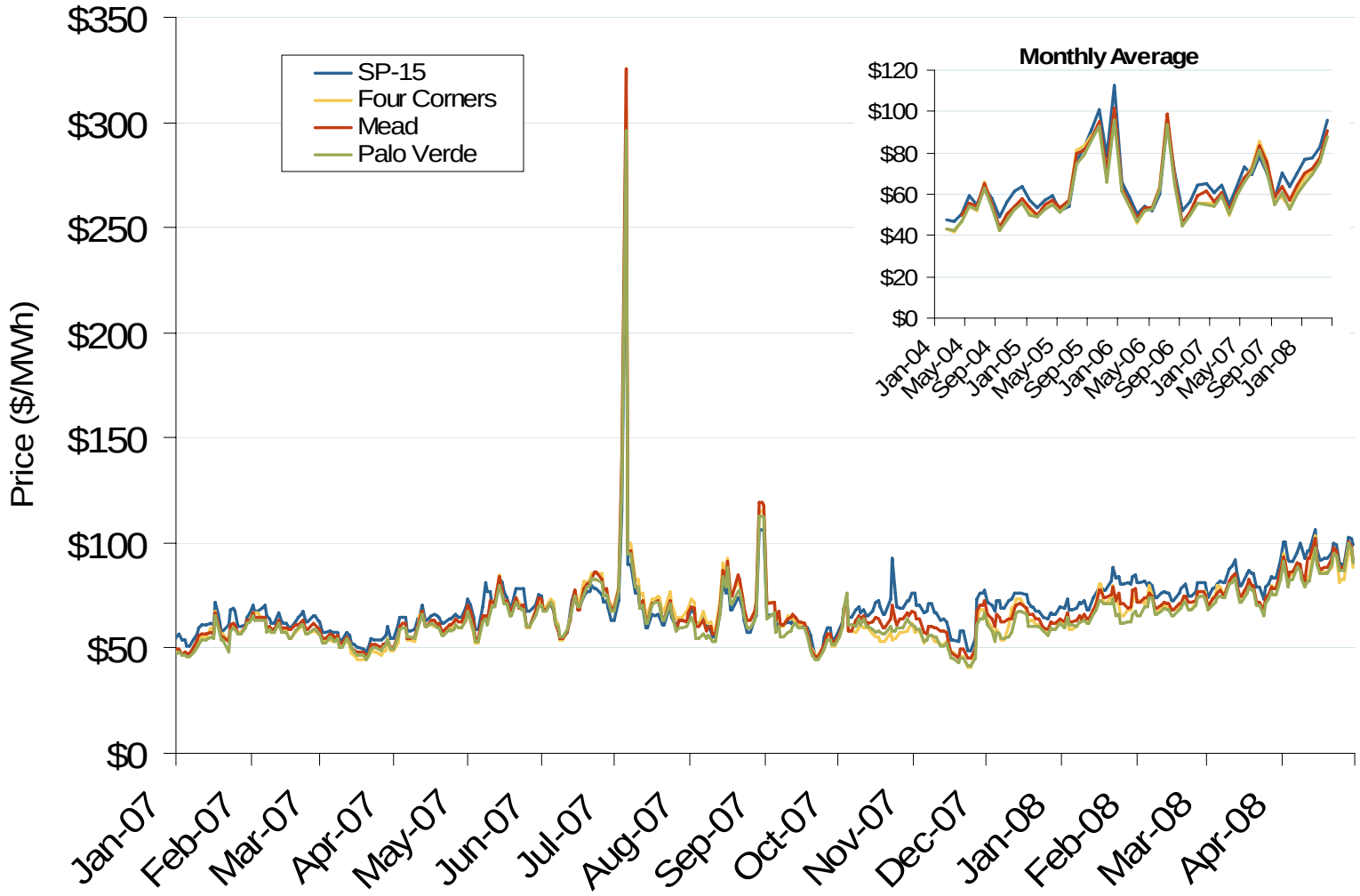
Southwestern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.

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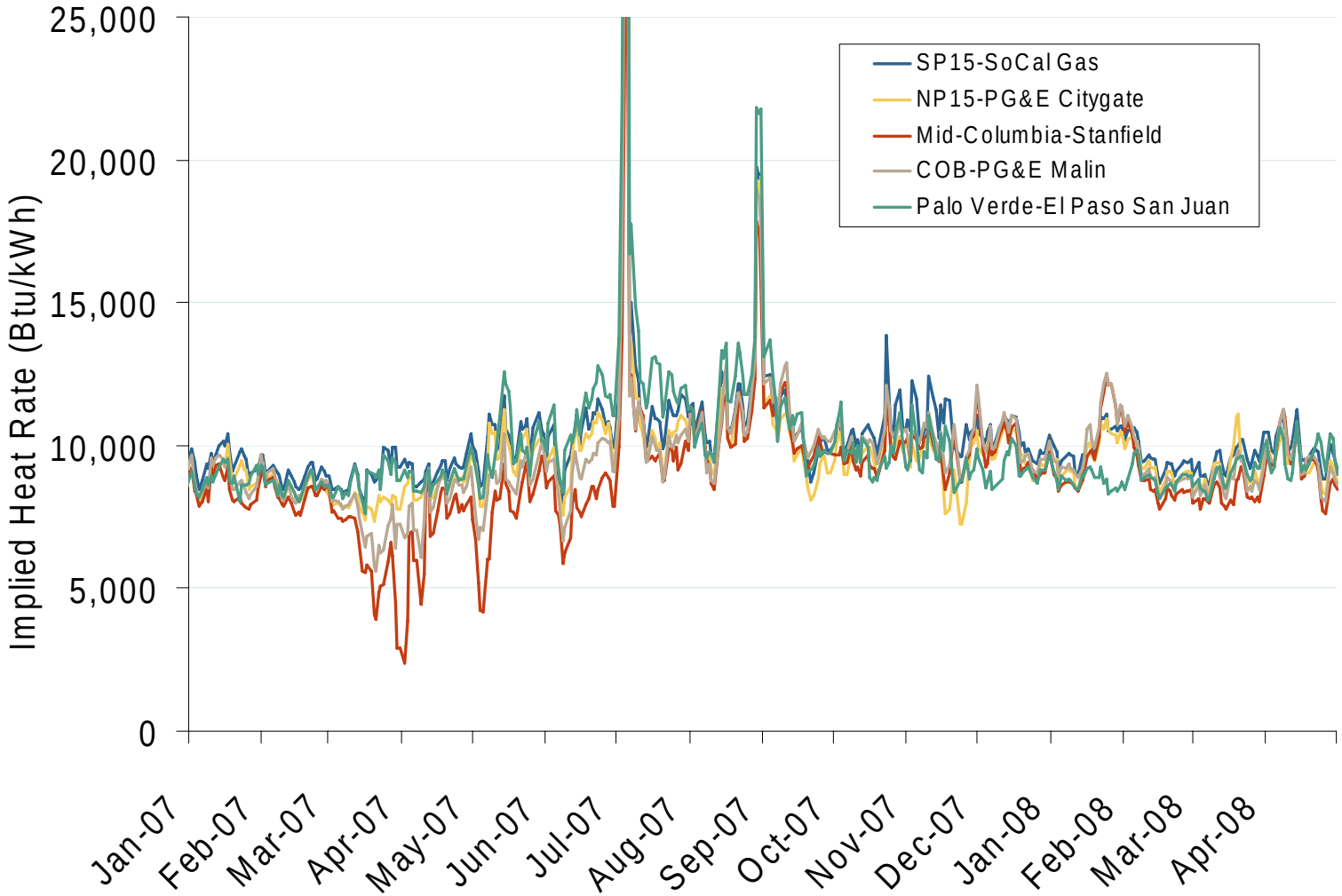
Implied Heat Rates at Western Trading Points



Source: Derived from *Platts* data

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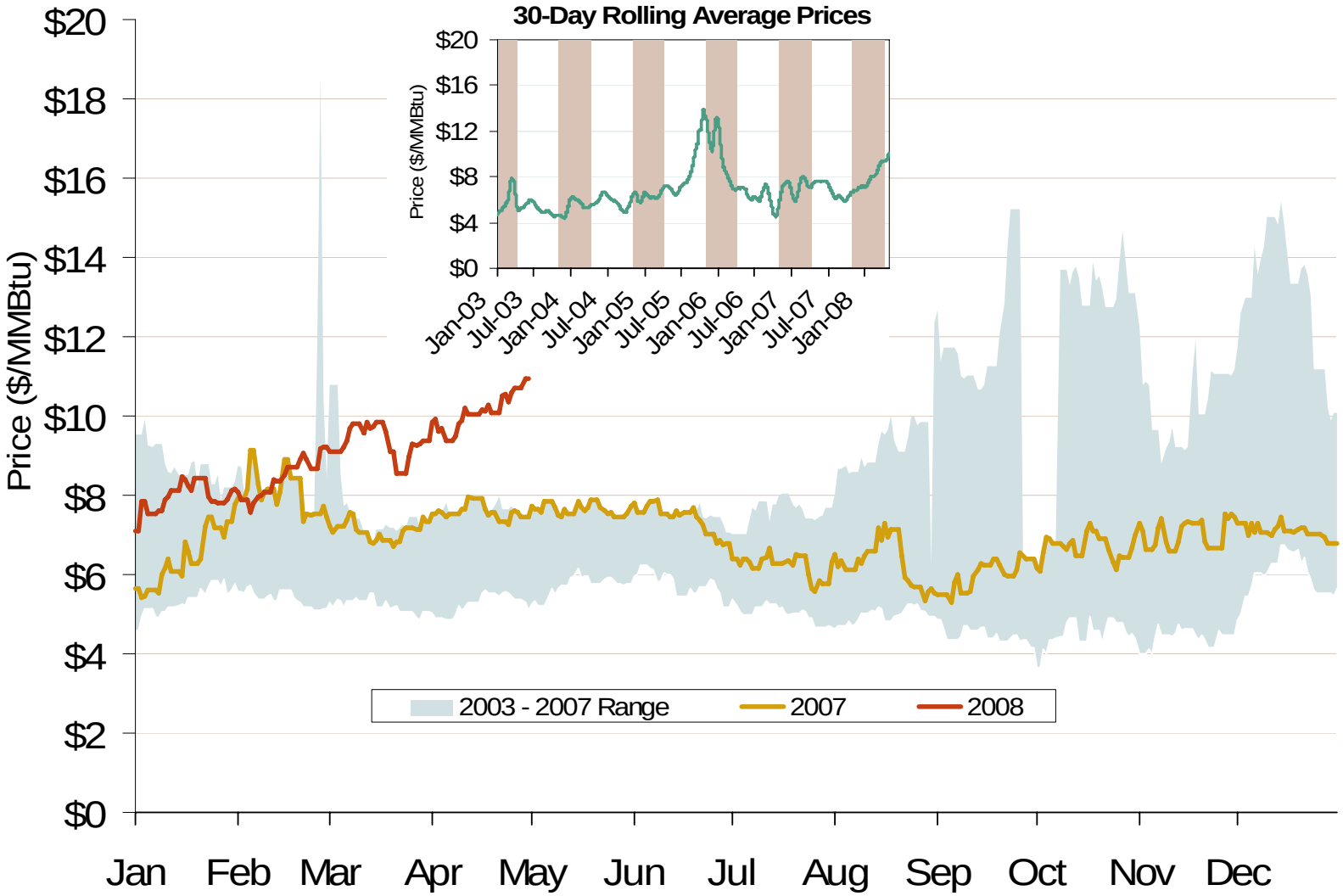
Henry Hub Natural Gas Daily Spot Prices 2007, 2008 and 2003-2007 Year Range



Source: Derived from *Platts* data.

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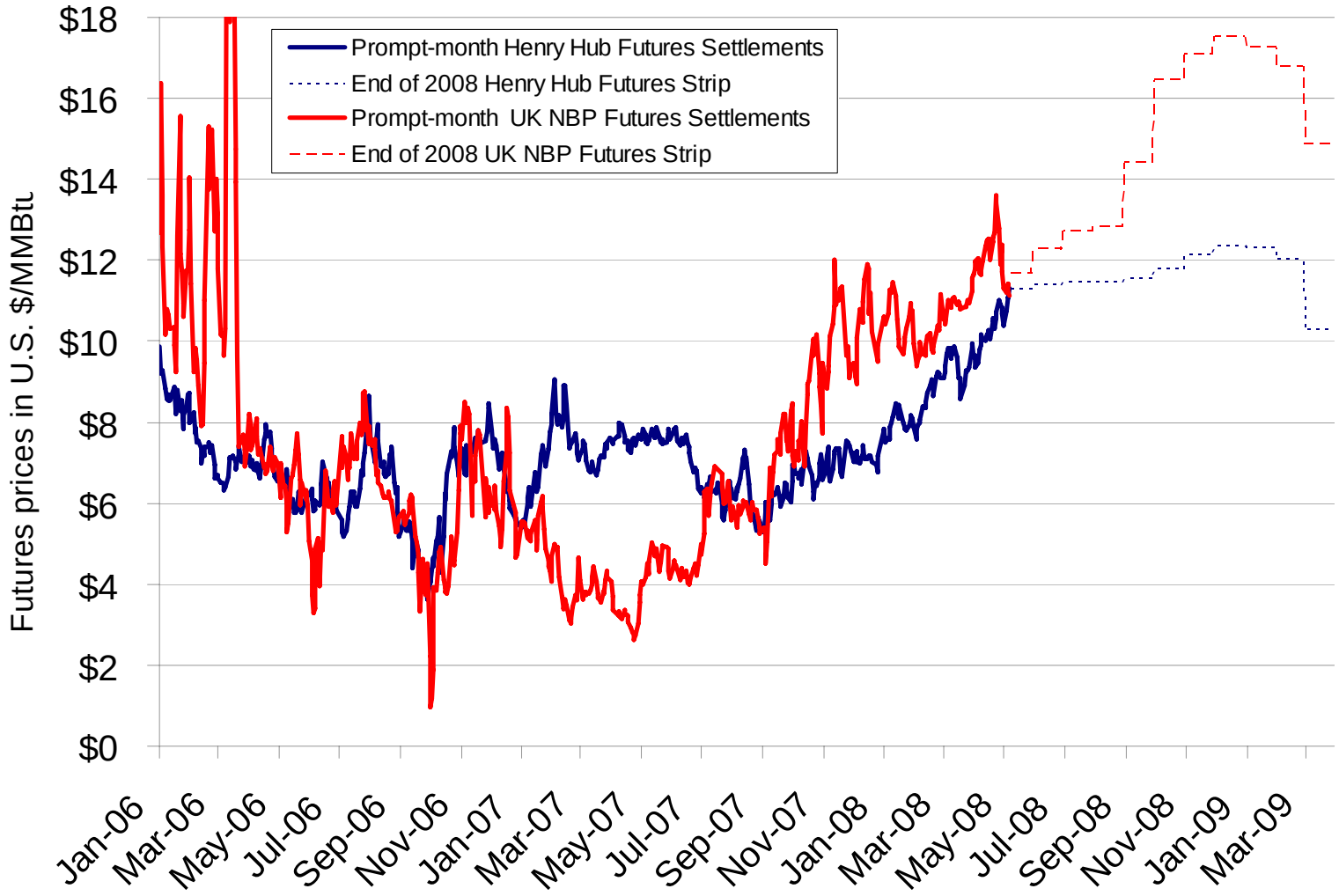
U. S. Gas Futures Prices Rise Above $6-$8 Range



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

Updated May 6, 2008

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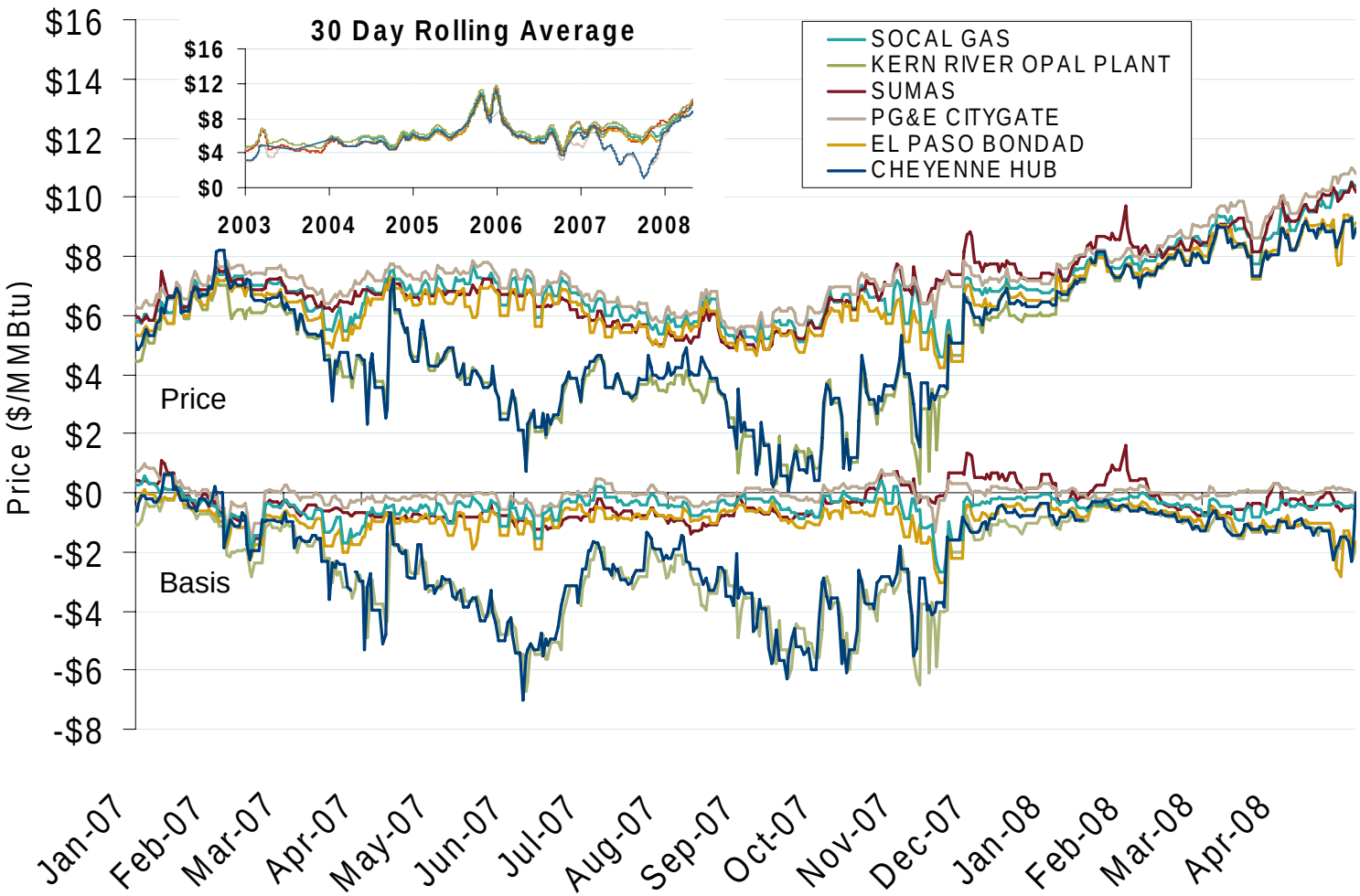
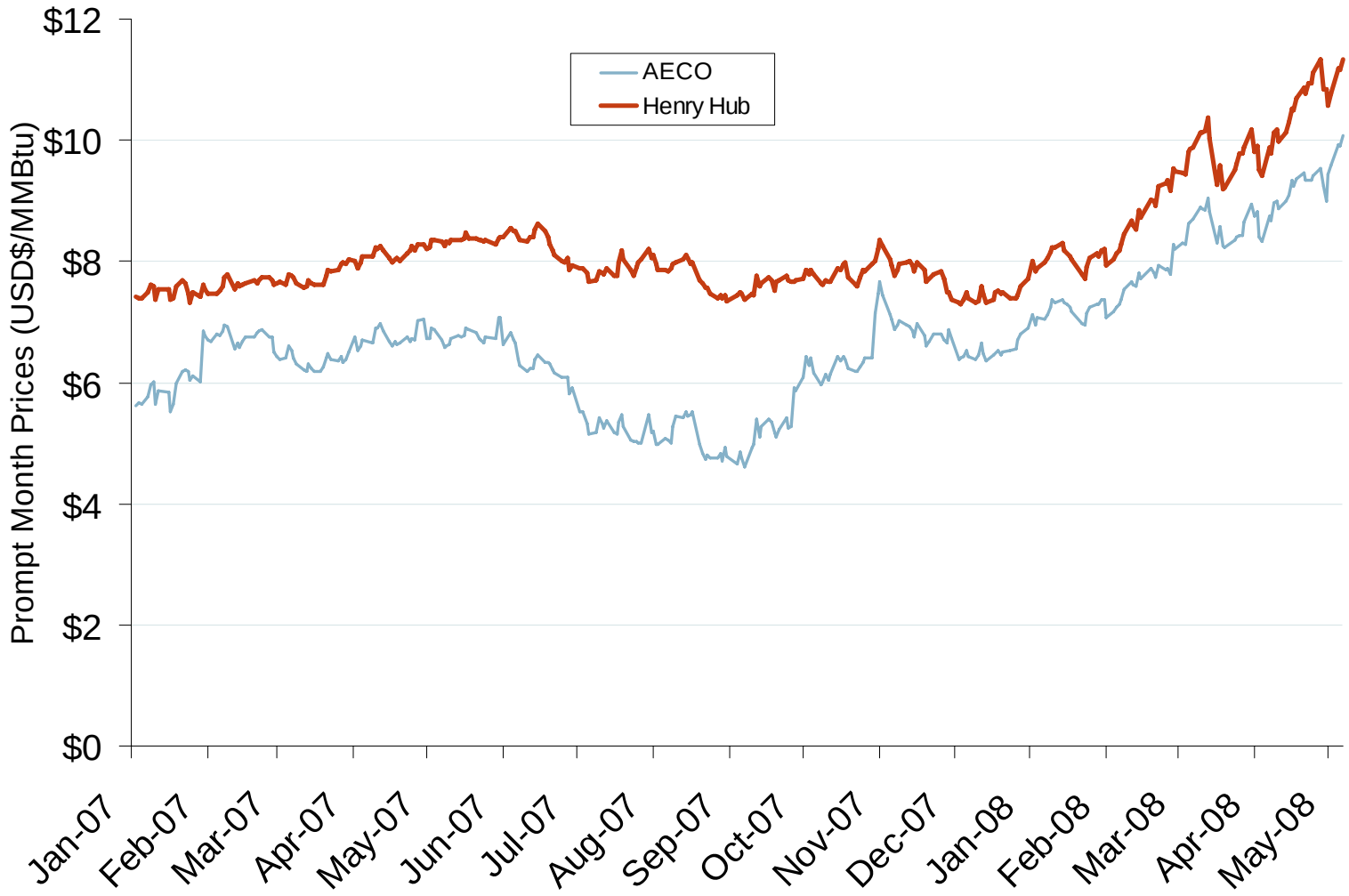
Western Day-Ahead Hub Spot Prices and Basis



Source: Derived from *Platts* data.

Updated May 6, 2008

Henry Hub and AECO Prompt-Month Futures Prices



Source: Derived from *ICE* data.

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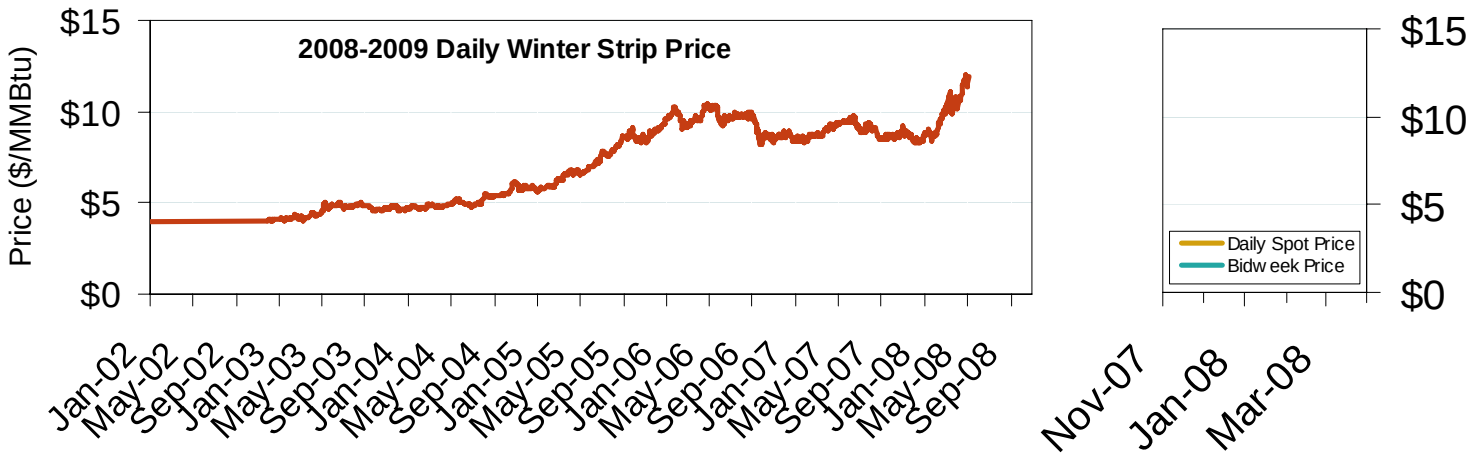
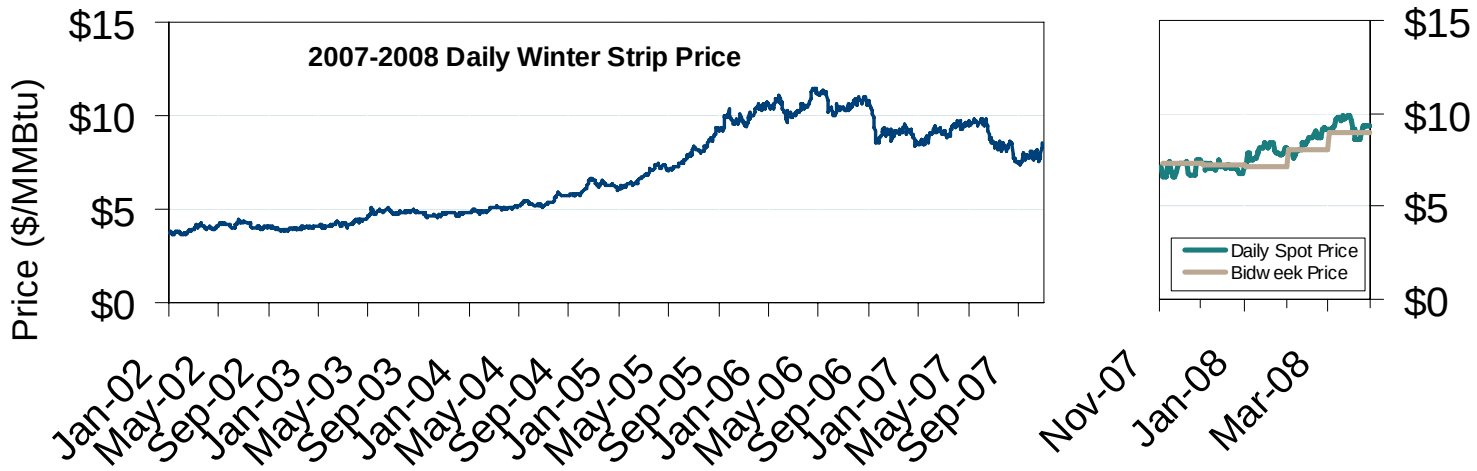
Natural Gas Winter Futures Strip and Daily Henry Hub Spot and Bidweek Prices

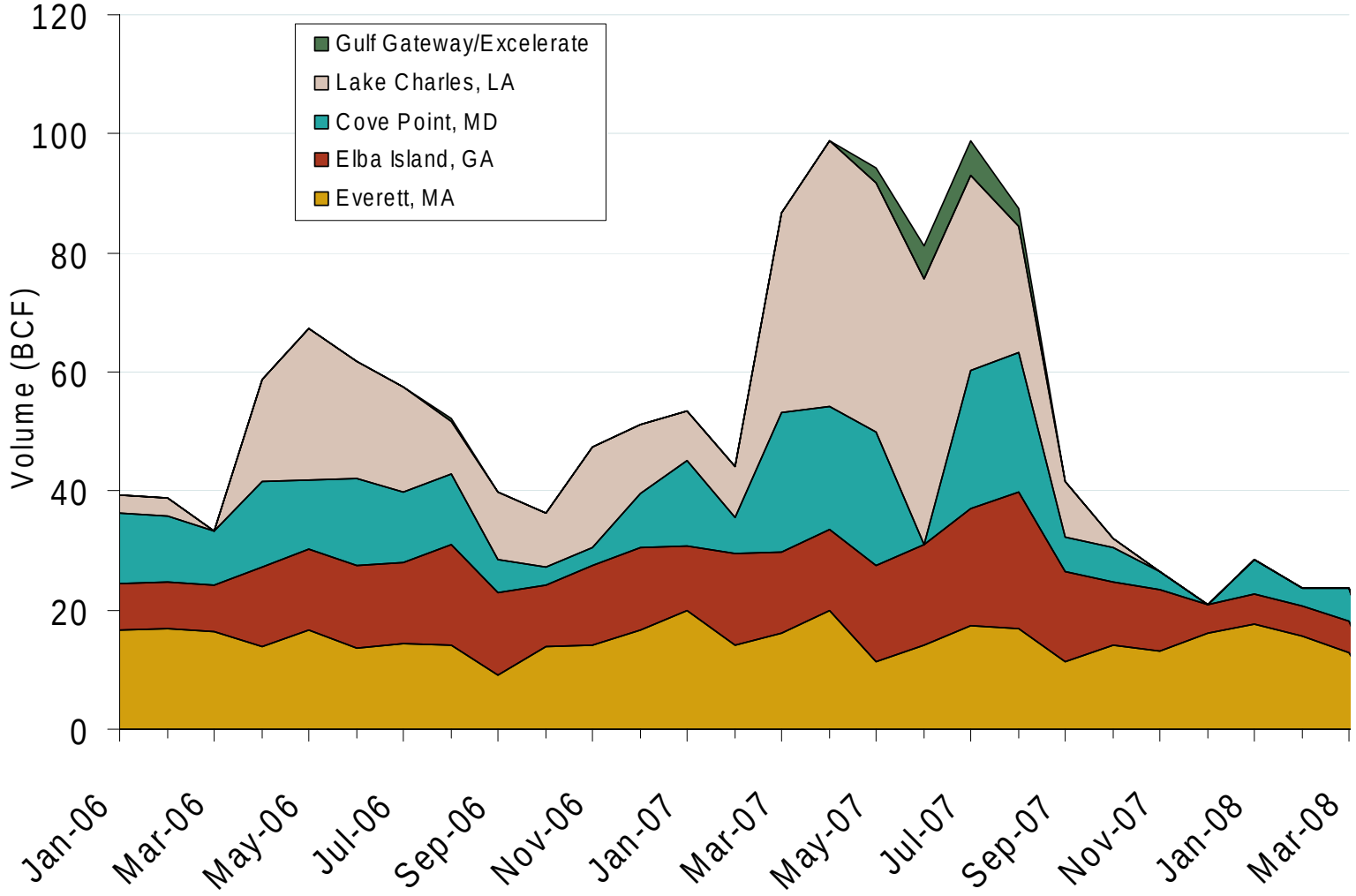




Source: Derived from *Platts* and *Nymex* data.

Updated May 6, 2008

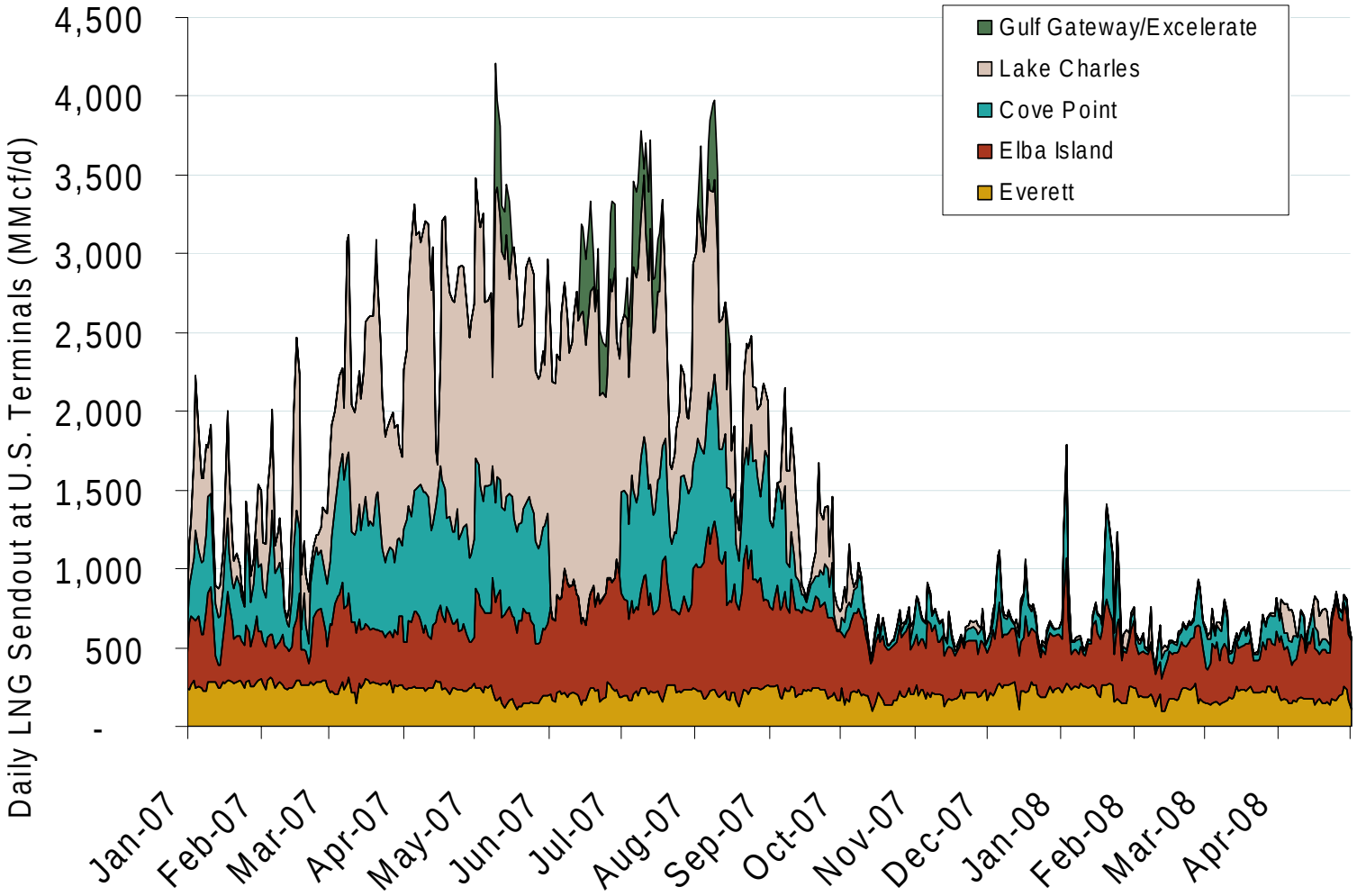
Monthly Gas Imports at Existing U.S. LNG Facilities



Source: Derived from *EIA* data.

Updated May 6, 2008

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.

Updated May 6, 2008

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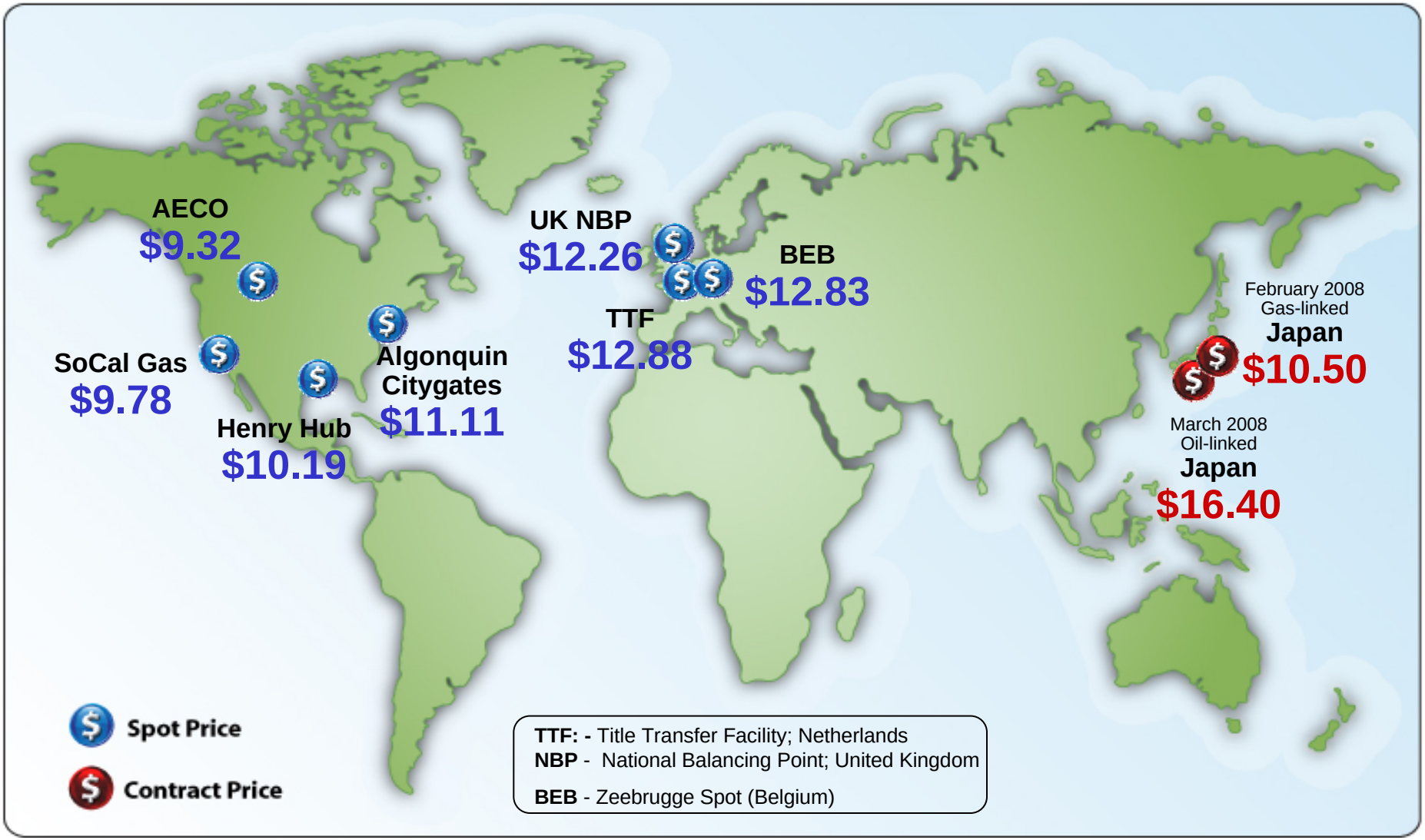
World Natural Gas Prices for April 2008



Source: Derived from *Bloomberg, ICE, ICAP and LNG Japan Corp.* data. Spot Price is a monthly average of daily prices. Contract Price is a monthly price. All prices in $US/MMBtu.

Updated May 6, 2008

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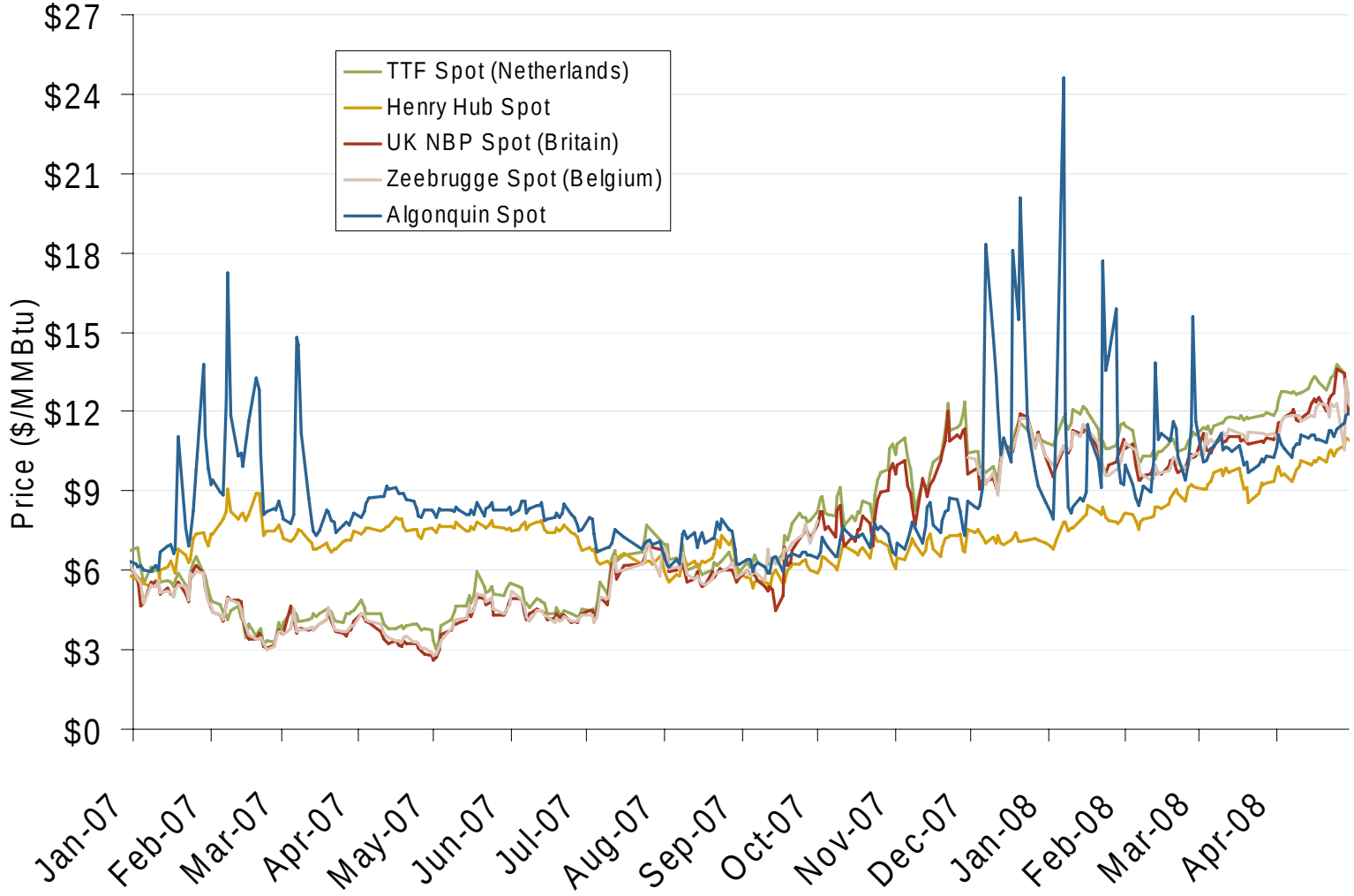
Atlantic Basin European and US Spot Natural Gas Prices

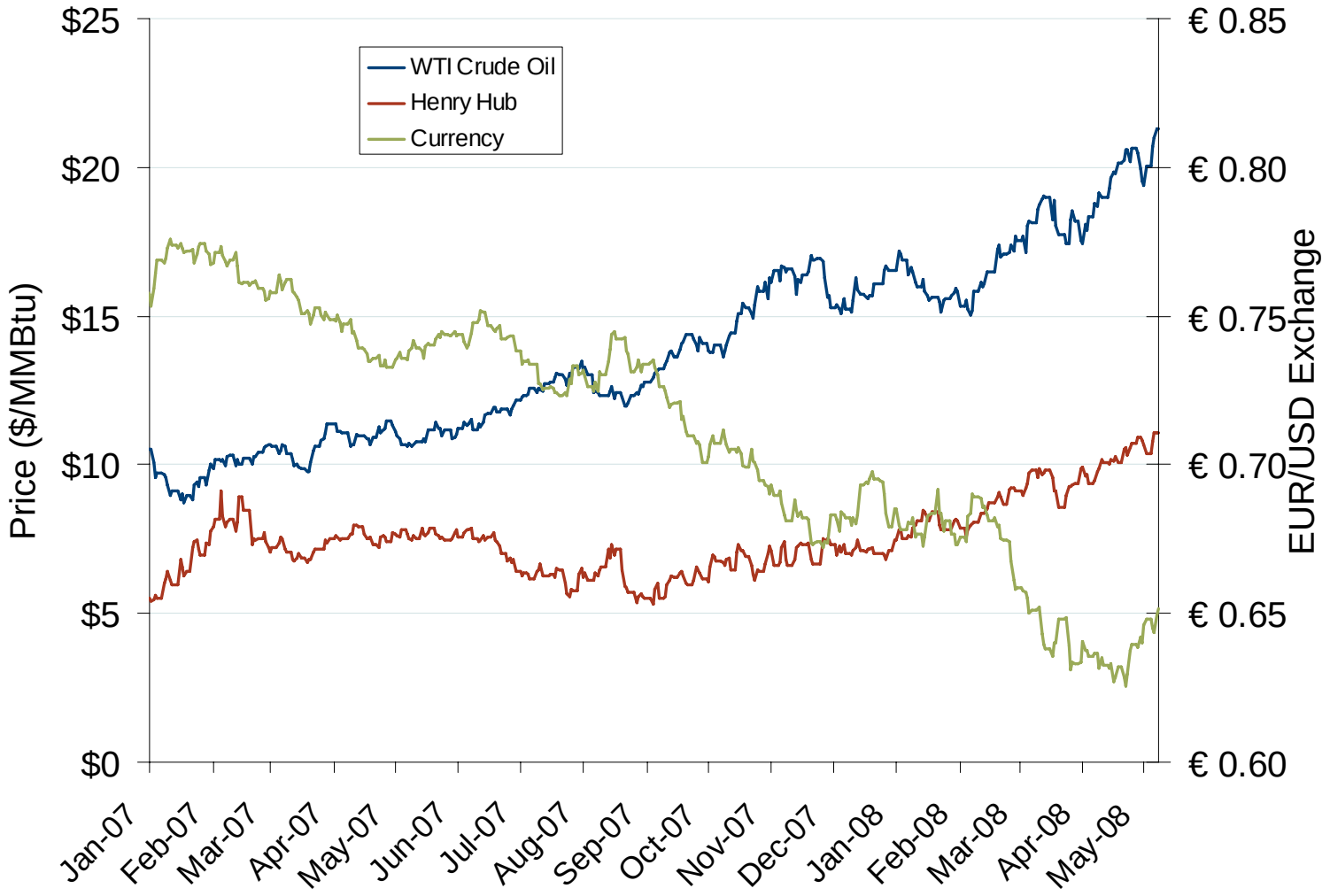


Source: Derived from *Bloomberg* and *ICE* data.

Updated May 6, 2008

3008

Oil, Natural Gas and Currency Spot Prices

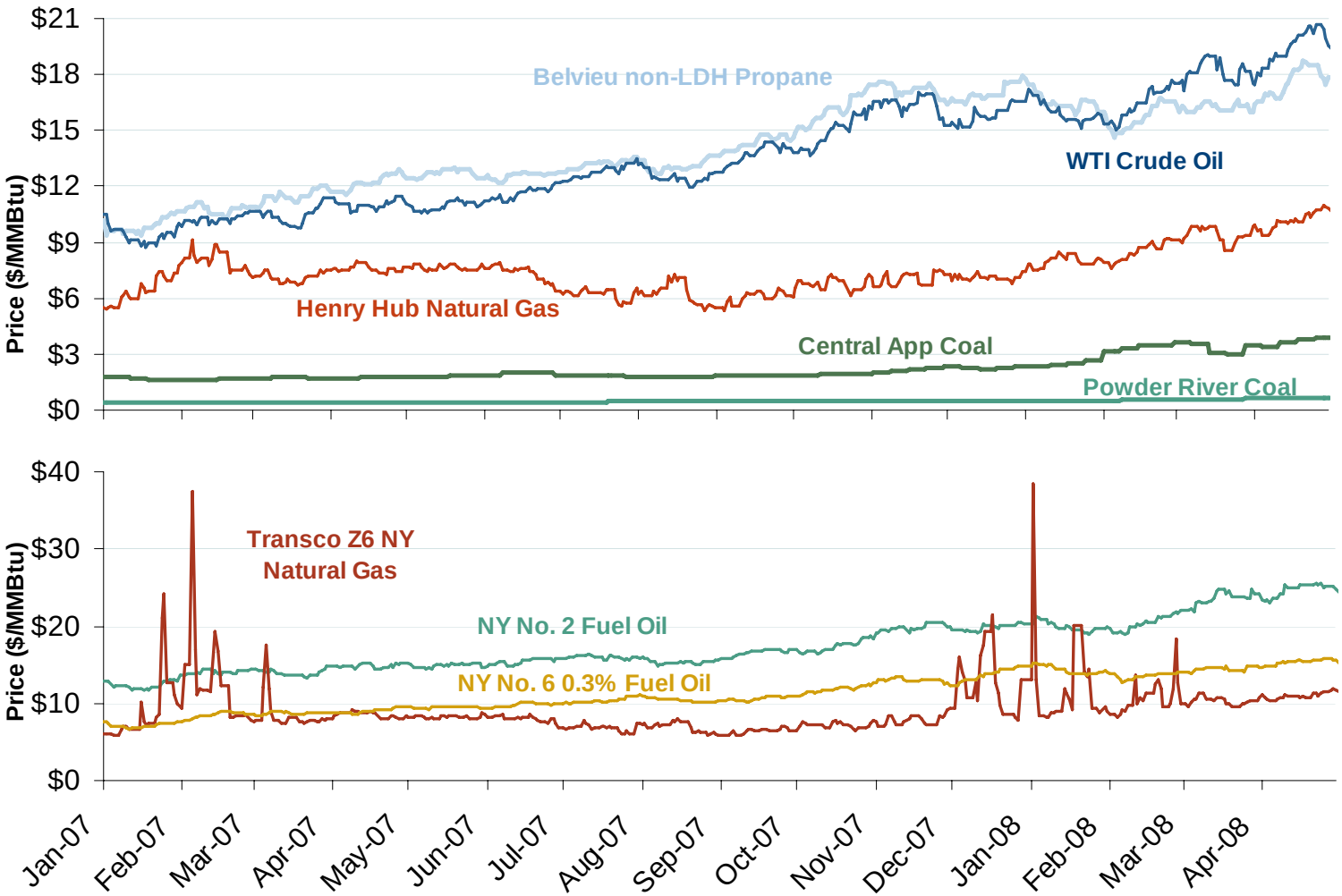


Source: Derived from *Bloomberg* data.

Updated May 6, 2008

3009

Oil, Coal, Natural Gas and Propane Daily Spot Prices



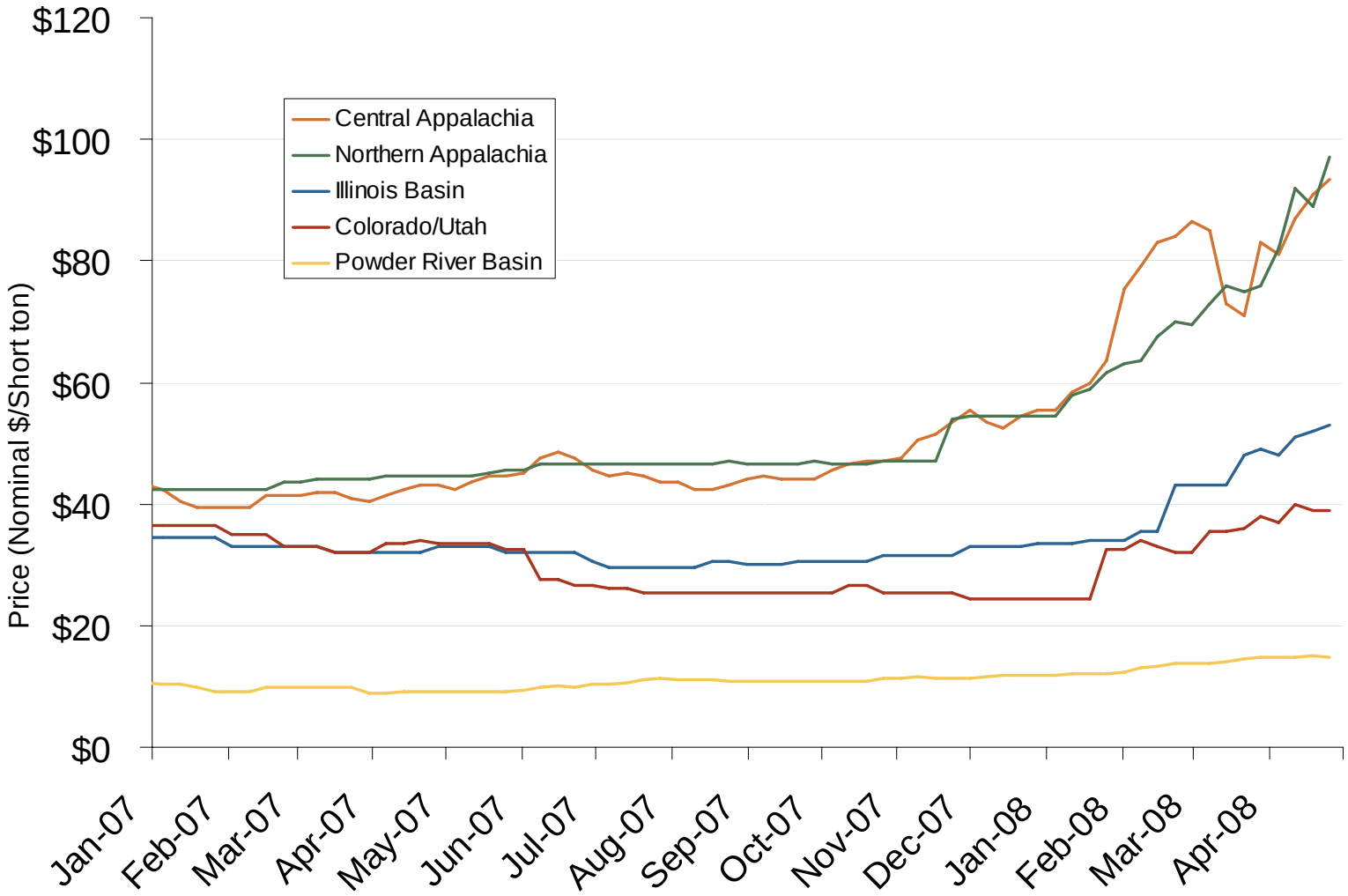
Source: Derived from *ICE* and *Bloomberg* data.

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 May 6, 2008

3001

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 May 6, 2008

3002

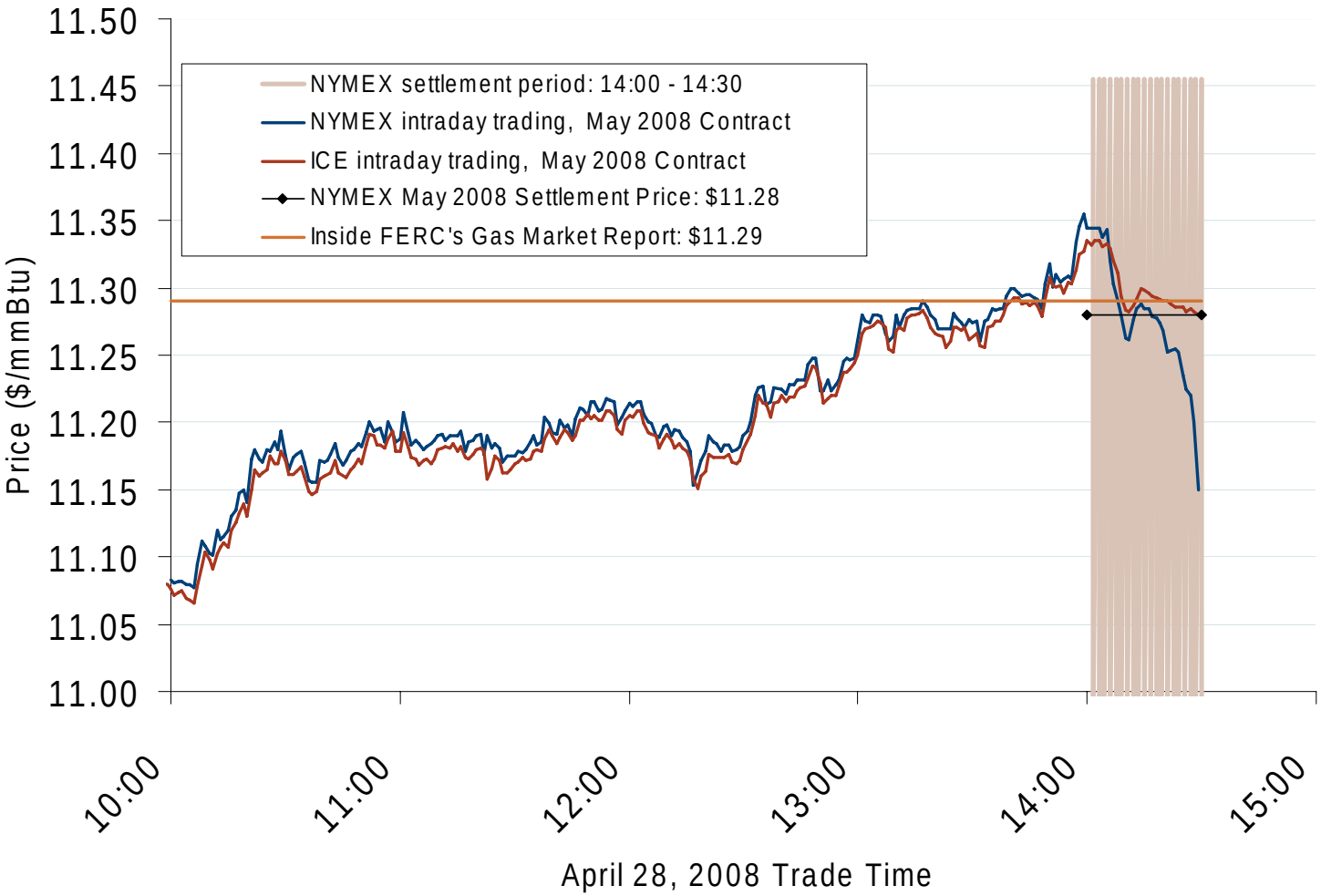
Central Appalachian Coal Futures Prices

Source: Derived from *Nymex* data.

Updated May 6, 2008

3003

May 2008
NYMEX and ICE Contract Final Settlement Day



See 2003-2007 historical monthly final settlement day charts.

Source: Derived from *Nymex and ICE* data.

Updated May 5, 2008

Renewable Energy Portfolio Standards (RPS)

WA: 15% by 2020

OR: 25% by 2025; small utilities 5-10%

CA: 20% by 2010; goal of 33% by 2020

NV: 20% by 2015; solar 5% per year

UT: 20% by 2025

CO: 20% by 2020; co-ops & munis 10% includes 4% solar

AZ: 15% by 2025; includes 30% DG

NM: 20% by 2020 co-ops 10%

HI: 20% by 2020, *and* goal of 70% RE by 2030

OK: Studying an RPS

TX: 5,880 MW by 2015

MT: 15% by 2015

ND: 10% by 2015

KS: 20% wind by 2020

MN: 25% by 2025 Xcel 30% by 2020

IA: 1,105 MW by 2011*

MO:11% by 2020; ballot initiative for mandate

MI: 10% by 2015

WI: 10% by 2015

IL: 25% by 2025

IN: 10% by 2018

OH: 12.5% by 2025, including 0.5% solar

ME: 40% by 2017

NH: 23.8% BY 2025

VT: 25% by 2025

MA: 4% by 2009

RI: 16% by 2019

CT:23% Class I/II by 2020 4% Class III by 2010

NY: 24% by 2013

PA: 8% Tier I, 10% Tier II by 2020; solar set-aside

NJ: 22.5% by 2020 includes 2% solar

MD: 20% by 2022; includes 2% solar

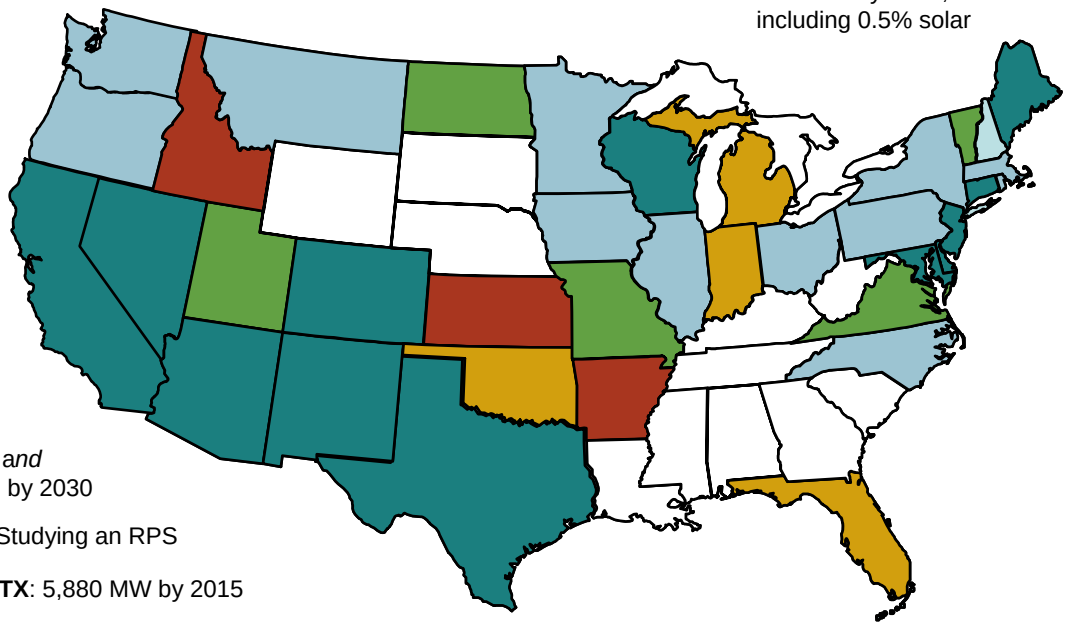
DC: 11% by 2022

DE: 20% by 2019, includes 2% solar

VA: 12% by 2022

NC: 12.5% by 2021 co-ops & munis: 10% by '18

FL: law directs PSC to write RPS regulations



- RPS
- Strengthened/ amended RPS
- Voluntary standards or goals
- Proposed RPS or studying RPS
- Other renewable energy goal

Notes: Alaska has no RPS; DG is distributed generation; * Iowa has a goal of 1,000 MW of wind by 2010
Sources: Derived from data in: EEI, EIA, LBNL, PUCs, State legislative tracking services, Database of State Incentives for Renewables and Efficiency, and the Union of Concerned Scientists.

Updated May 15, 2008

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Renewable Energy Portfolio Standards

- A Renewable Portfolio Standard (RPS) requires a percent of energy sales or installed capacity to come from renewable resources.
- **27** states and D.C. have renewable energy standards.
  - **Ohio's** energy bill created an advanced energy requirement of 25% by 2025. At least half of the requirement should be met with renewable energy, with at least half of that cited in Ohio. There is a solar requirement which peaks at one-half percent in 2025.
  - **Florida's** Energy Act directs the Public Service Commission to adopt rules for an RPS, including provision for renewable energy credits and trading. The rules are due to the legislature by February 2009 to be ratified. The law did not specify a target percent or an ending year.
  - **New Jersey** issued its draft Energy Master Plan for public comment. Among the action items to strengthen its RPS and increase its use of renewables are: transitioning the solar program to a fiscally responsible market; developing offshore (1,000 MW) and onshore (200 MW) wind; increasing use of biofuels and biomass; and extending its 22.5% RPS goal to 2025.
- **Five** states have enacted renewable goals without financial penalties.
- Thirteen states include energy efficiency in their RPS or renewable goals; more are considering energy efficiency additions or companion bills.
- Twenty-one generation and transmission co-operatives formed a National Renewable Cooperative Organization (NRCO) to aggregate the needs of co-ops to buy and build renewable energy. Many co-ops have obligations to meet RPS targets in their states, but are also in the midst of renewable-rich areas that cannot get those resources to urban load centers. Its Board called on Congress to do more to make it possible to build (renewable) transmission lines.
- The Western Governor's Association, which covers 19 states, launched a project to identify common transmission needs and potential transmission costs to spur regional renewable energy resource development with Western Renewable Energy Zones (WREZ). Similar renewable transmission zones have been identified in Texas to bring renewable generation from remote areas to load centers.

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Energy Efficiency Resource Standards (EERS)

ID: evaluating DR, EE, and RE as priority resources

MT: state agency reduction initiative: save 20% by 2010

MN: reduce fossil fuel use 15% by 2015 through EE, RE

IA: utilities must establish EE goals by end of 2008

WI: RPS requires utility EE

MI: incremental savings beginning in 2009, increasing to 2012

IL: use cost-effective EE, DR to reduce energy 2% by 2015

OH: reduce peak-demand 8% by 2018; effect energy savings of 22% by 2025

ME: 10% new EE by 2017; in RPS goal as 2nd priority

VT EE & RE to meet 2007-12 growth; new EE fund

MA: pending bill - acquire all cost-effective resources

NY: goal - reduce 15% of forecast energy use by 2015

CT: 4% savings by 2010, and a Tier III RPS resource

PA: pending bills -- EE savings of 2.5% by '13; new EE fund

NJ: reduce energy consumption 20% by 2020 using EE, DR, CHP; reduce peak 5,700 MW by 2020

MD: reduce peak-demand and per cap electricity use 15% by 2015

DE: promote EE and conservation by a Sustainable Energy Utility

VA: reduce 10% of 2006 sales by 2022 with EE, DR

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

TVA: encourages customers to save 1200 MW per day 2008-2012

FL: Law directs PSC to adopt goals to reduce electric consumption and peak demand by EE and DR

WA: must pursue all cost-effective conservation

CA: IOUs reduce MW 10%, peak demand (MWh) 12% by 2013; munis 10% by 2017

NV: use EE for up to 25% of RPS by 2015

UT: EE incentives in RPS goal

CO: save 40 MW and 100 GWh annually to 2013

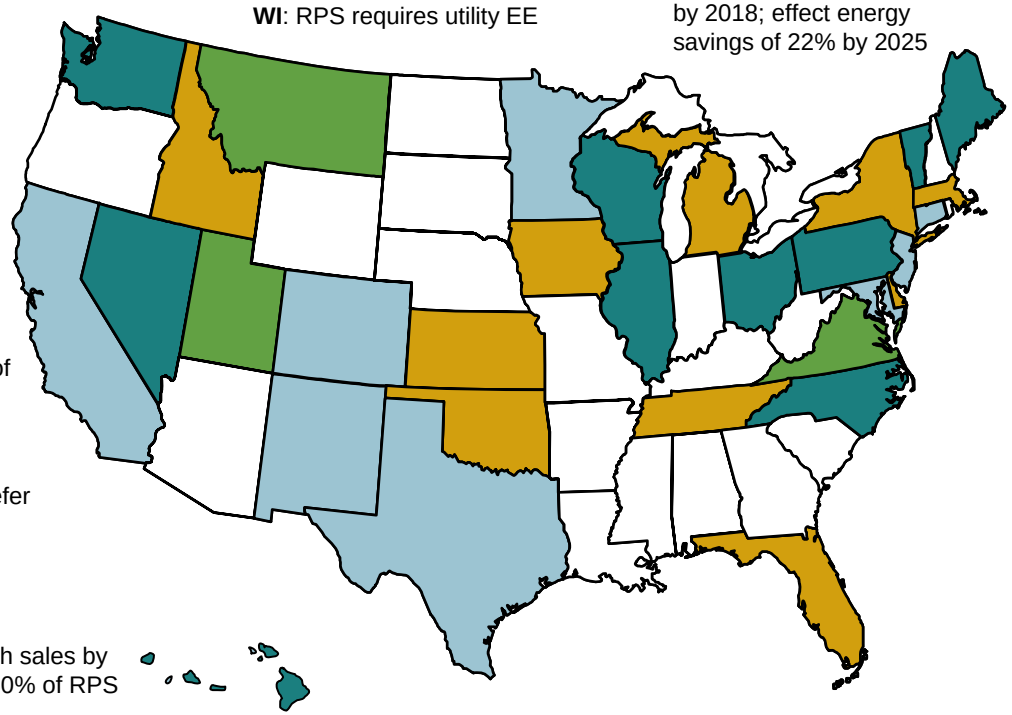
NM: use EE and DR to save 10% of '05 retail electric sales by 2020

KS: studying for E&G utilities

OK: implement DSM and EE to defer or avoid new plant construction

TX: 10% of load growth, beyond 2004, based on prior 5 years

HI: 20% of MWh sales by 2020; up to 50% of RPS



- EERS by regulation or law (separate from RPS)
- Energy efficiency part of an RPS rule or goal
- Voluntary standards (in or out of RPS)
- Energy efficiency goal proposed / being studied

Abbreviations: CHP – Combined heat & power; DR - demand response; DSM - demand side management; EE - energy efficiency; E&G: electric and gas utilities; RPS: Renewable Portfolio Standard

Sources: ACEEE, EPA, Regulatory Assistance Project, Union of Concerned Scientists, State legislative sites, trade press

Updated May 15, 2008

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Energy Efficiency Resource Standards (EERS)

- An energy efficiency resource - or portfolio - standard (EERS) aims to reduce or flatten electric load growth through energy efficiency measures.
- Goals may specify reductions in energy (MWh), demand (MW), or both.
- Twenty states have energy efficiency standards or goals; thirteen include energy efficiency as part of a renewable portfolio standard or goal.
  - Five states added an EERS in 2007: Minnesota, Virginia, North Carolina, Connecticut, and Illinois.
  - States that enacted significant energy efficiency legislation (standards or goals) in 2008 include: New Mexico, Vermont, Maryland, Utah, Ohio, Florida, and New Jersey.
- At least fourteen states include demand response as a means to reduce consumption or peak load, including: CA, FL, ID, IL, ME, MD, NJ, NM, OH, OK, PA, UT, VA, and VT.
- A dozen states have successfully used decoupling mechanisms for to encourage energy efficiency, mostly for gas distribution utilities. Ohio's law includes decoupling for electric utilities; Maryland approved decoupling in BG&E's rate filing.
- Iowa's Energy Efficiency law (SF 2386) establishes a commission on EE standards and practices. It also directs utilities to establish cost-effective EE goals. They must report these by Jan. 1, 2009.
- Ohio enacted energy efficiency standards as part of its hybrid restructuring bill, SB 221:
  - It set an overall energy reduction goal of at least 22% by the end of 2025
  - It set a 7.75% peak demand reduction requirement for electric distribution utilities by the end of 2018.
  - It advocates revenue decoupling for electric and gas utilities to promote energy efficiency.
- Florida's omnibus energy bill includes multiple measures to promote energy efficiency:
  - the PSC must set goals to increase the efficiency of energy consumption, to reduce growth rates of electric consumption, and to reduce growth of weather-sensitive peak demand.
  - It should also promote cost-effective demand- and supply-side efficiency and conservation programs.
  - It may allow efficiency investments in generation, transmission, and distribution, as well as in customer efficiencies.
  - It may allow IOUs to earn additional return on equity for exceeding EE and conservation goals.

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