OE ENERGY MARKET SNAPSHOT

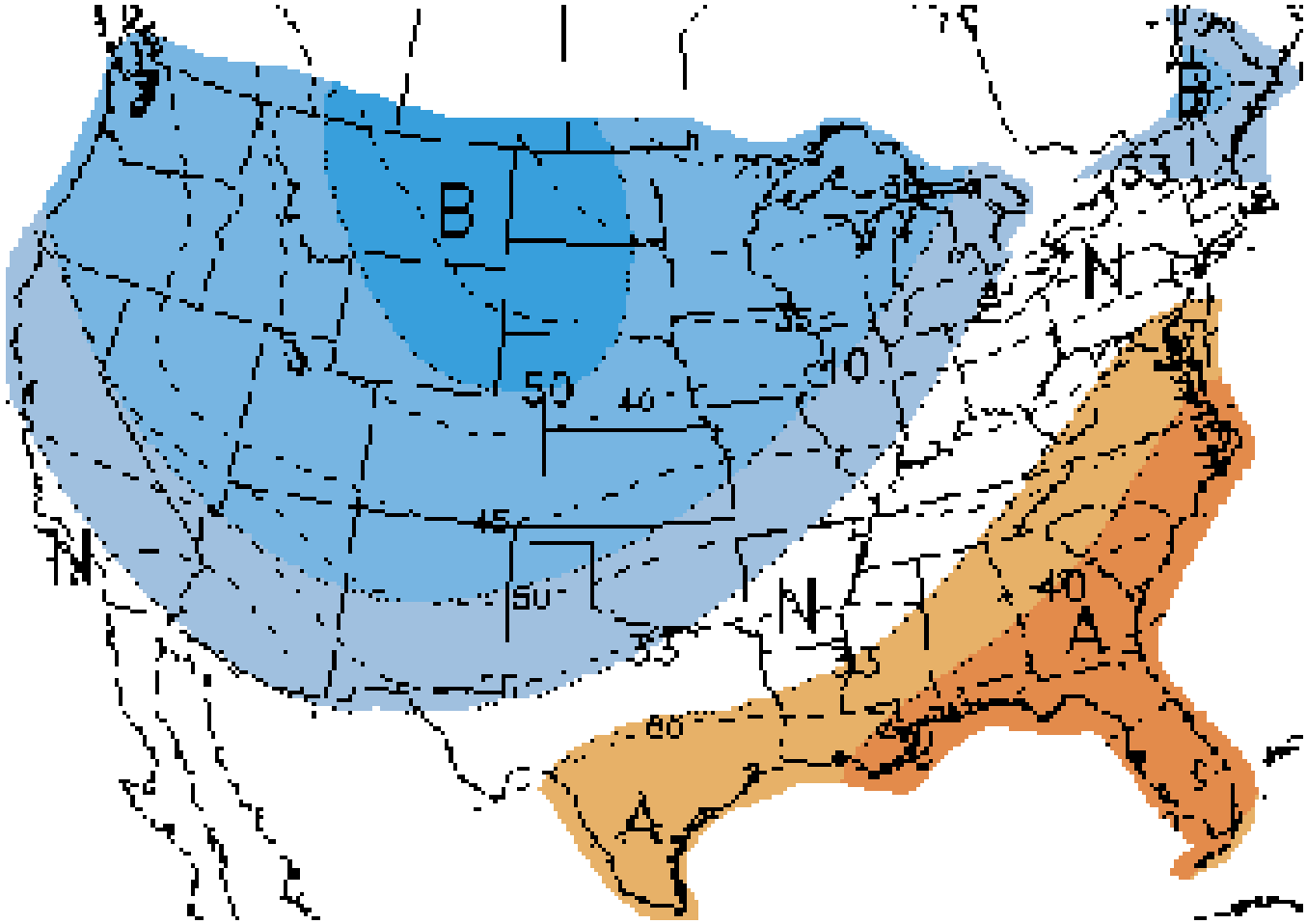
Mid-Atlantic States Version – February 2008 Data

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

Office of Enforcement
Federal Energy Regulatory Commission
March 2008

Market Fundamentals

NOAA's 8 to 14 Day Temperature Forecast Made March 6, Valid for March 14-20, 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 March 7, 2008

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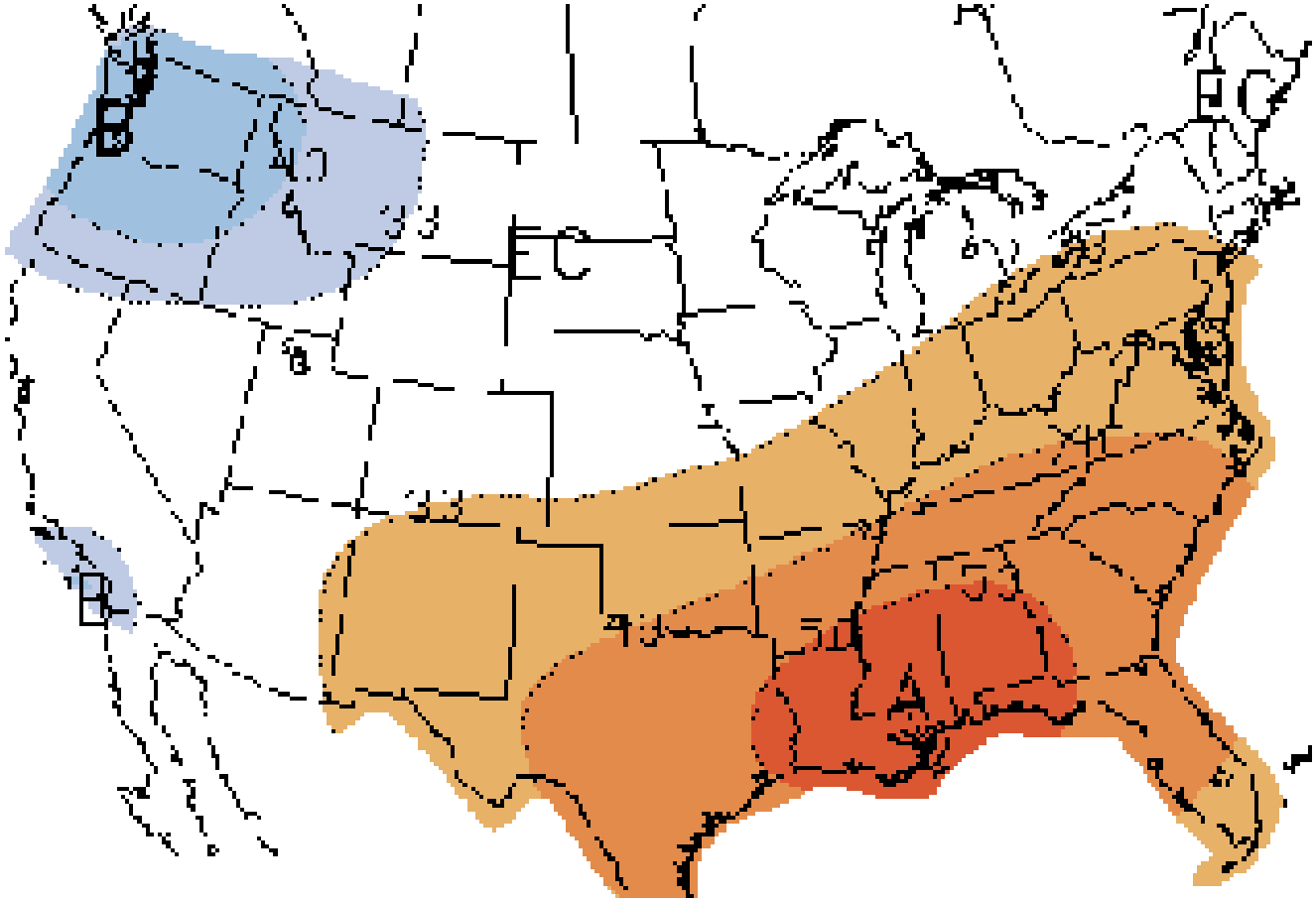
NOAA's Monthly Temperature Forecast Made February 29, Valid for March 2008



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

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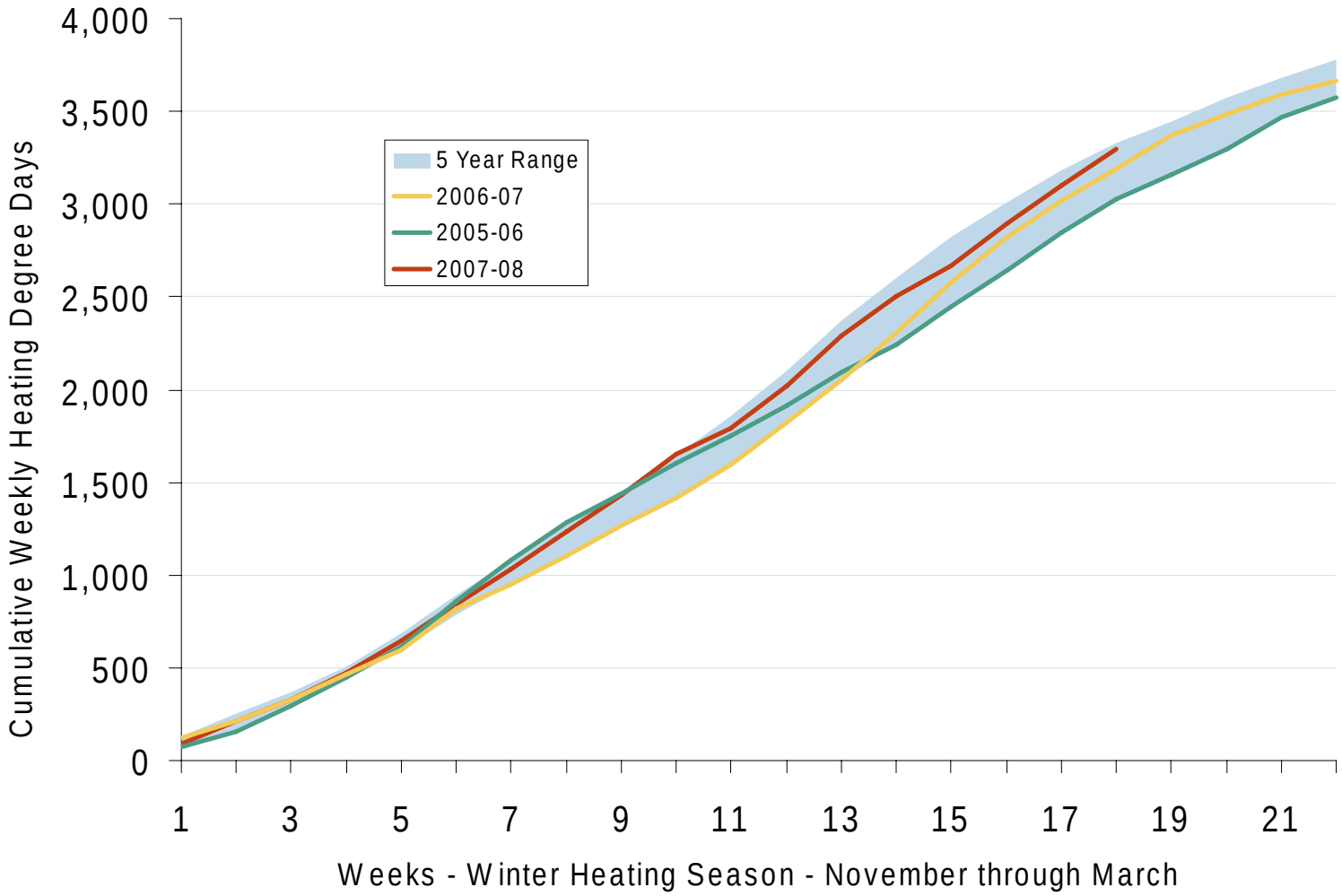
3012

U. S. Winter Cumulative Heating Degree Days



Source: Derived from *NOAA* data.

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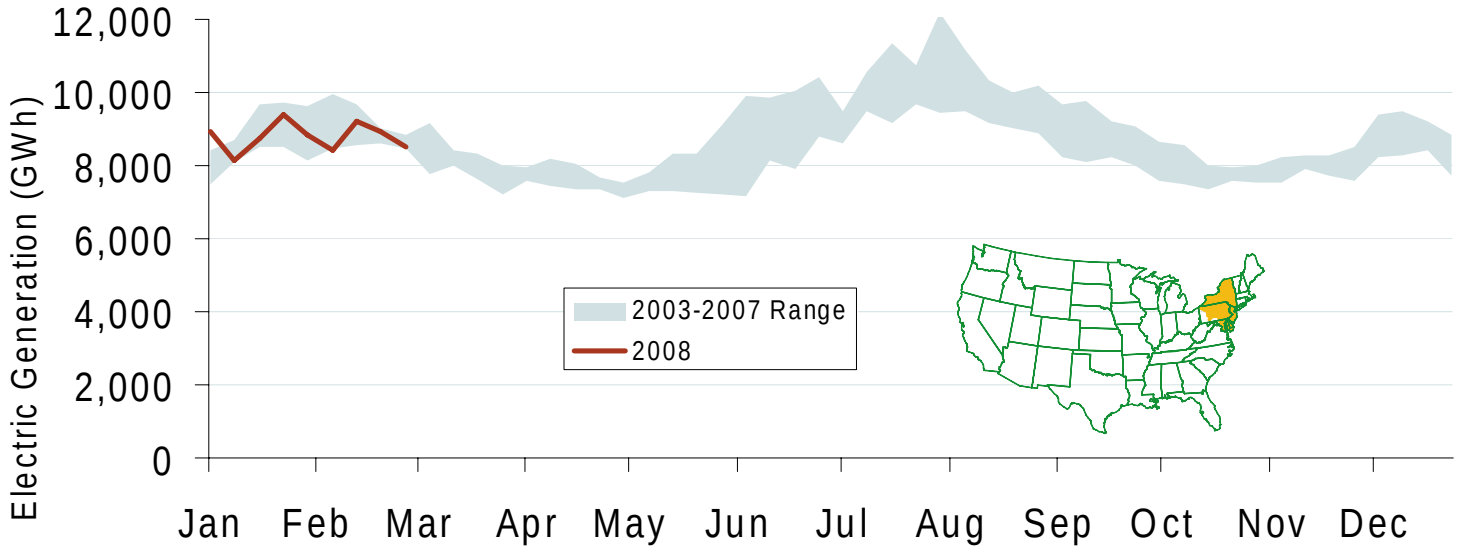
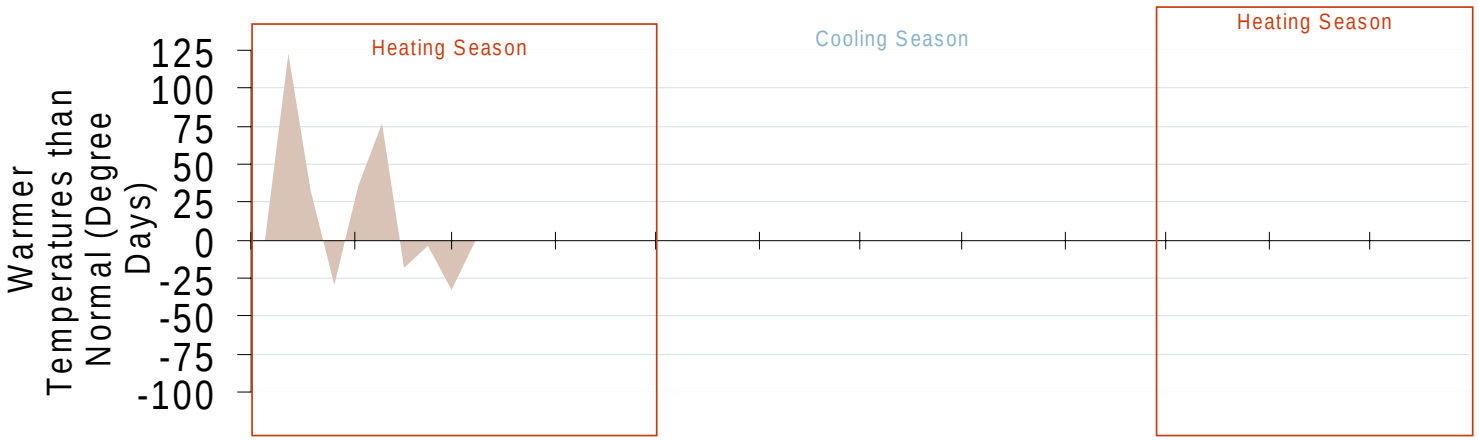
Weekly Electric Generation Output and Temperatures Mid Atlantic Region





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

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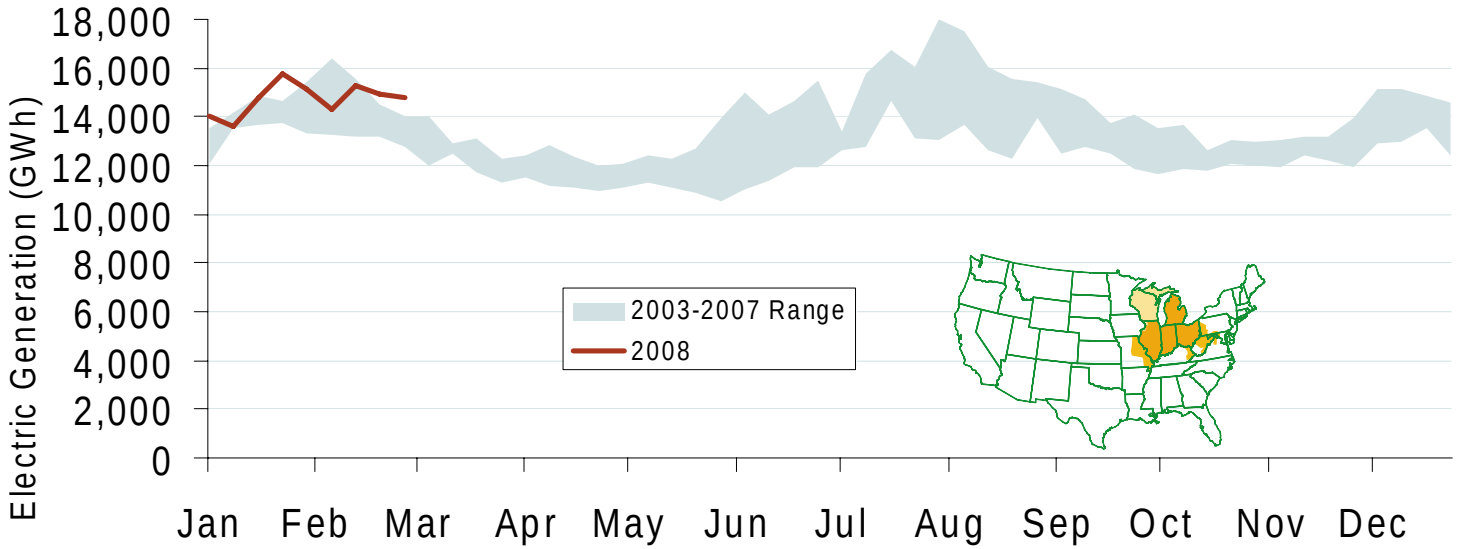
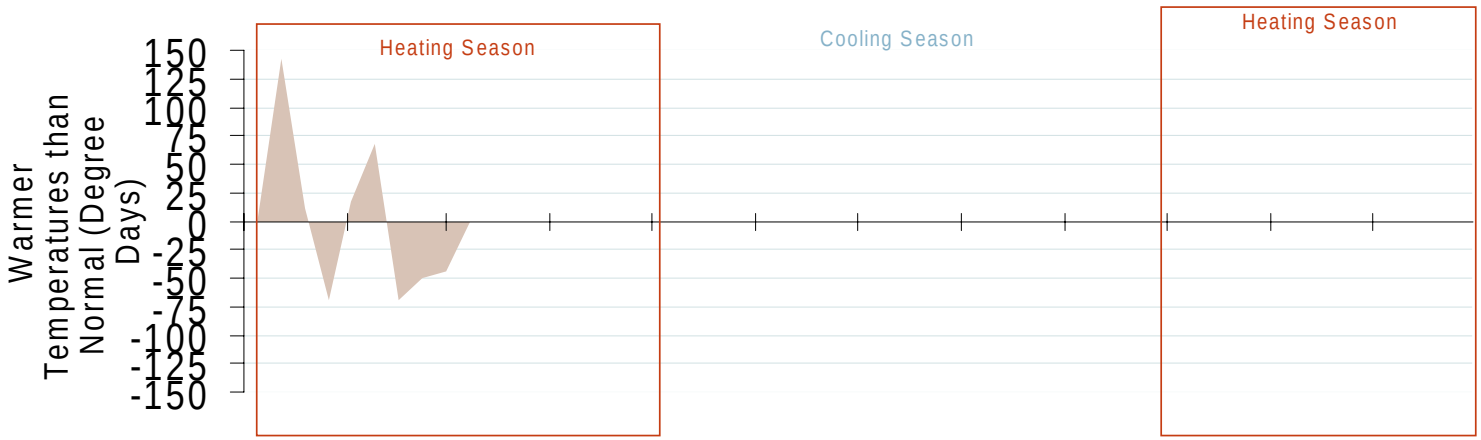
Weekly Electric Generation Output and Temperatures Central Industrial Region





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

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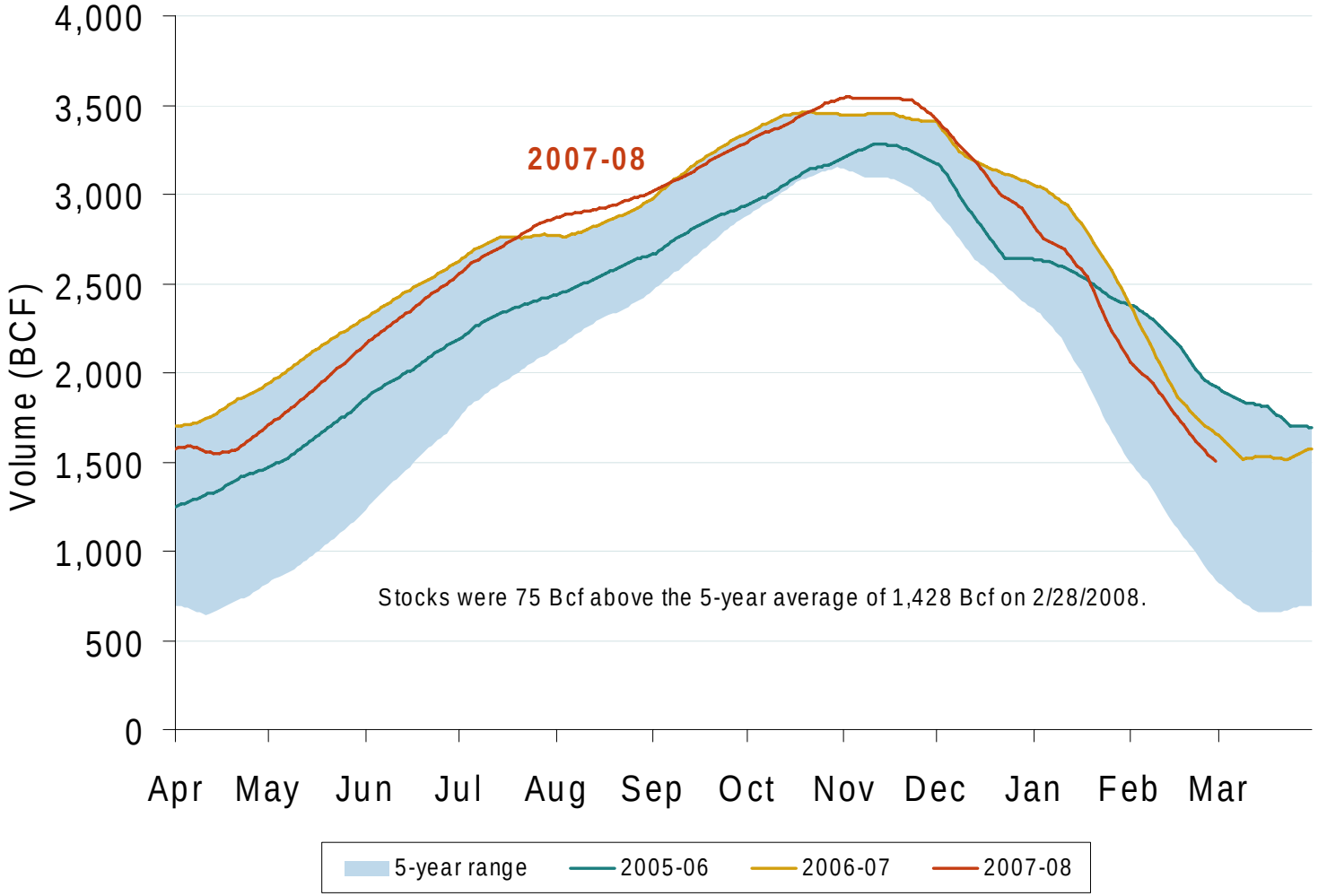
Total U.S. Working Gas in Storage



Source: Derived from *EIA* data.

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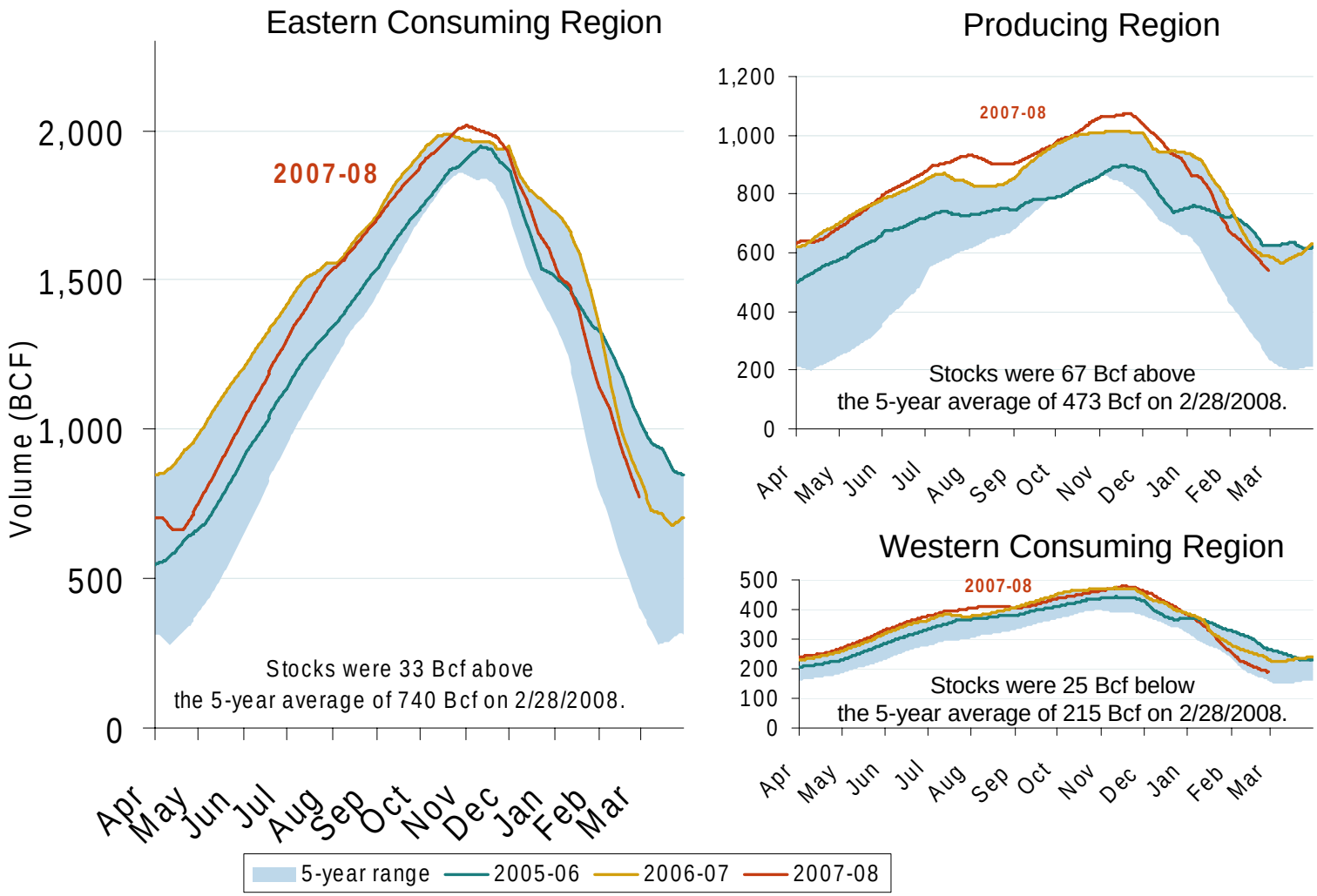
2003

Regional Totals of Working Gas in Storage



Source: Derived from *EIA* data.

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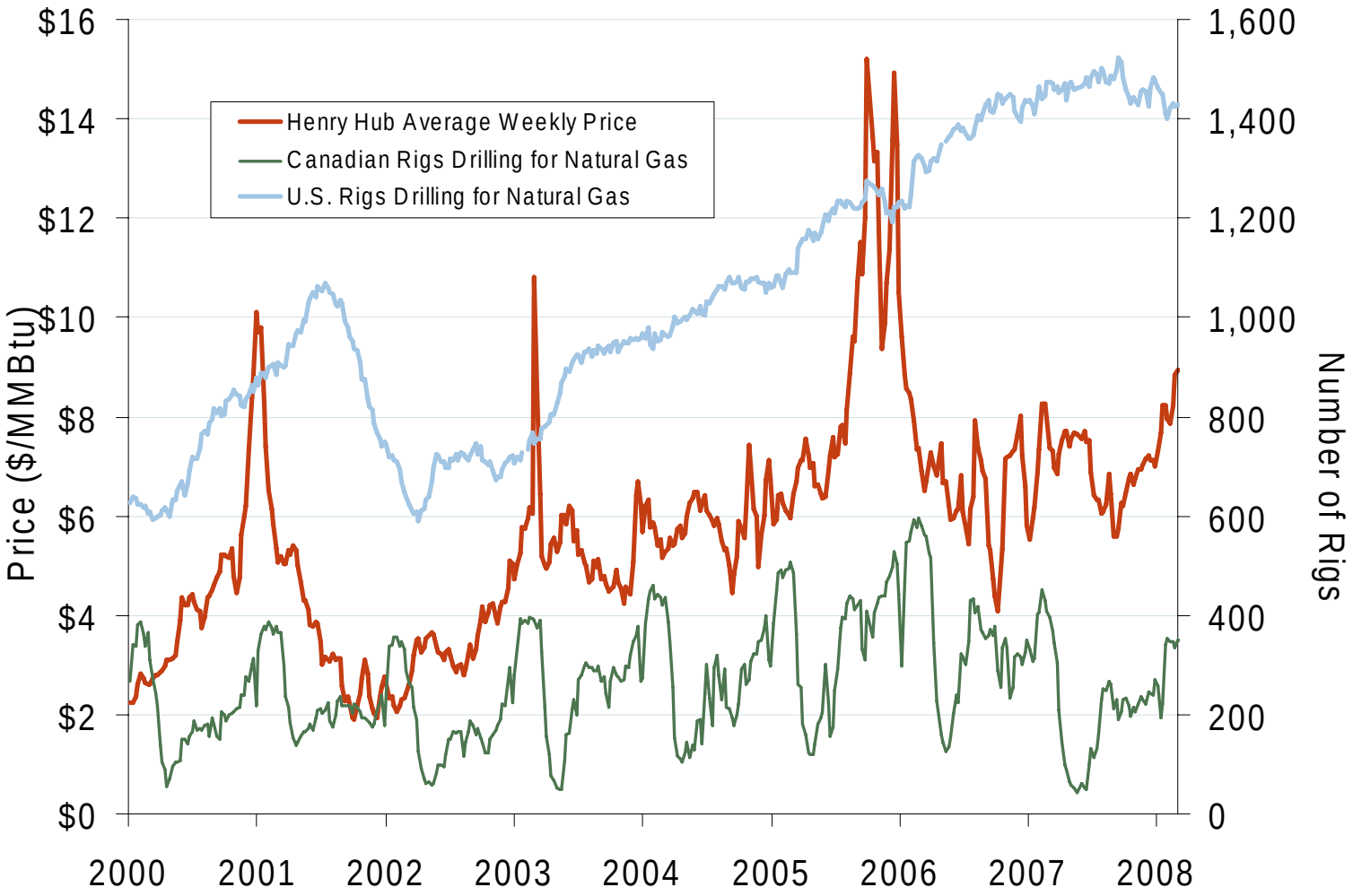
U.S. and Canadian Natural Gas Drilling Rig Count and Daily Spot Prices



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

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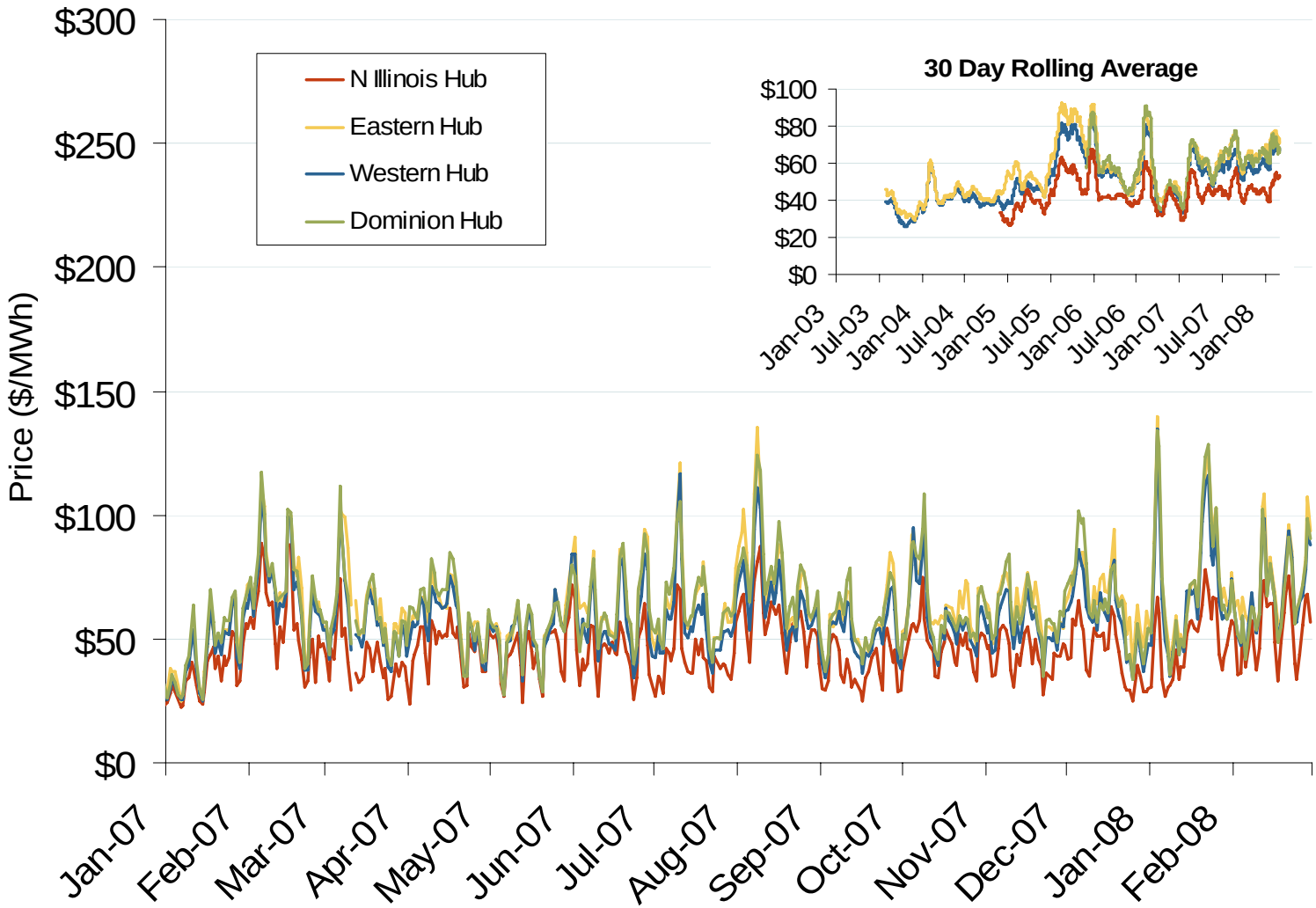
Prices and Market Analysis

Daily Average of PJM Day-Ahead Prices - All Hours



Source: Derived from *PJM* data.

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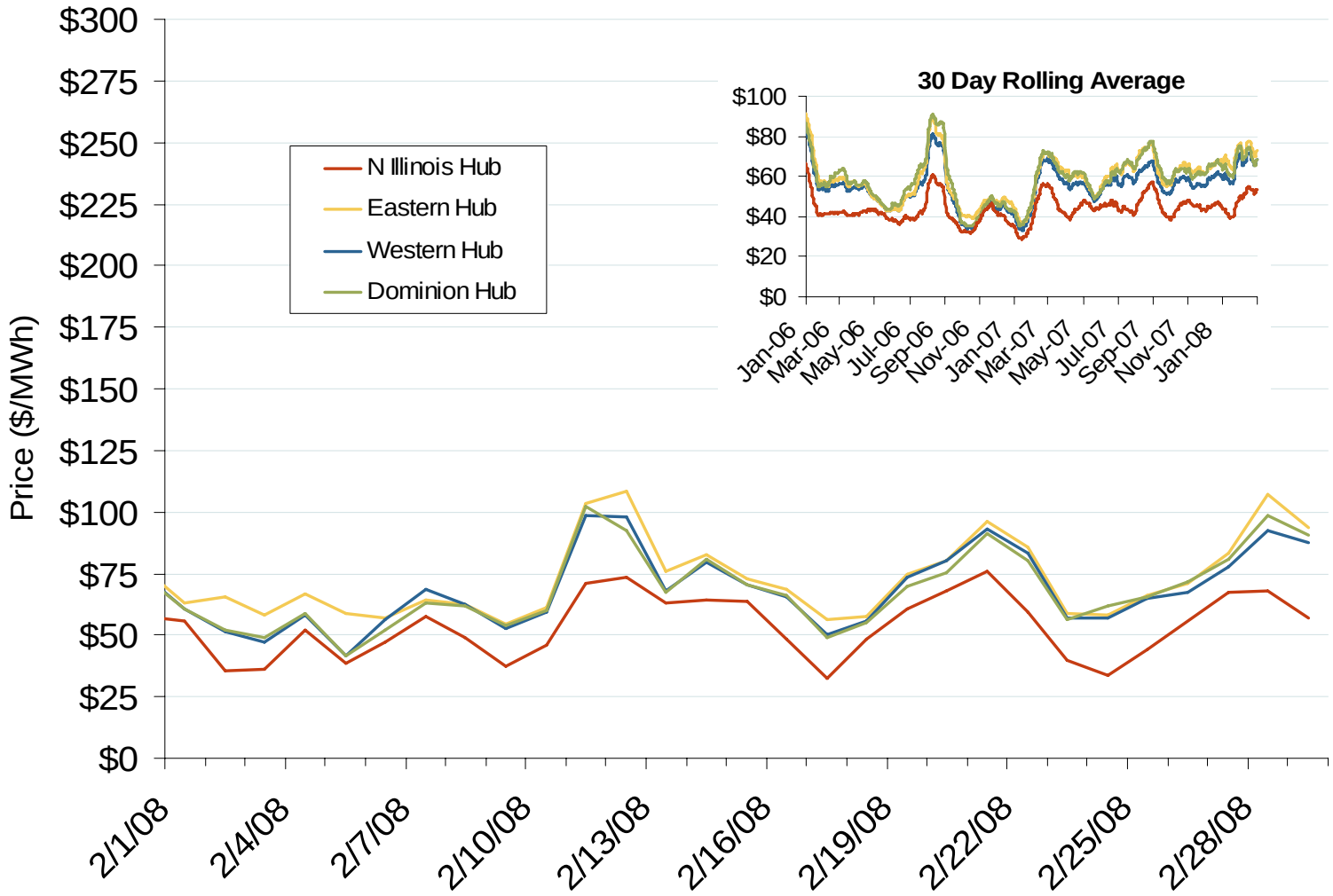
Daily Average of PJM Day-Ahead Prices - All Hours



Source: Derived from *PJM* data.

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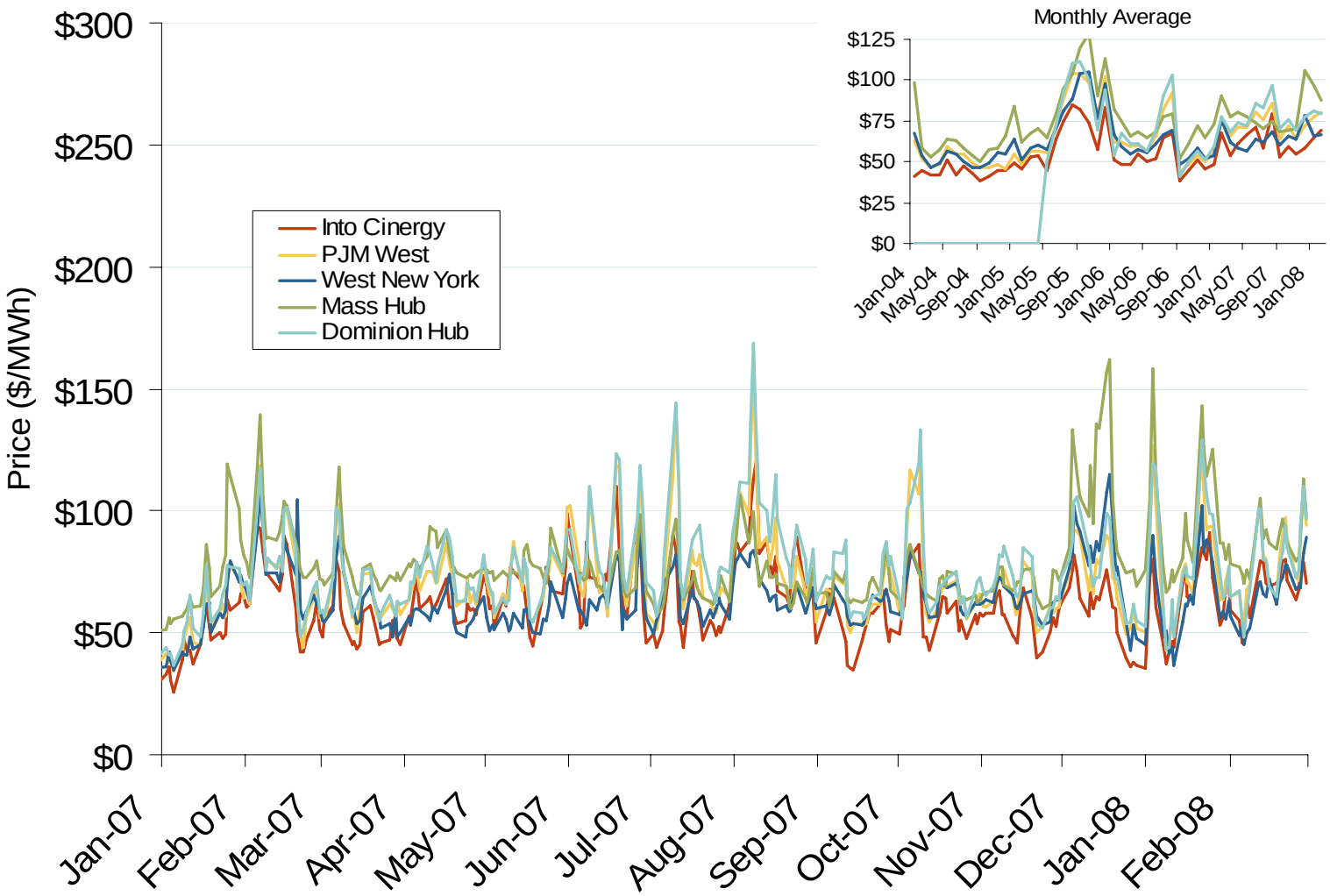
Eastern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.

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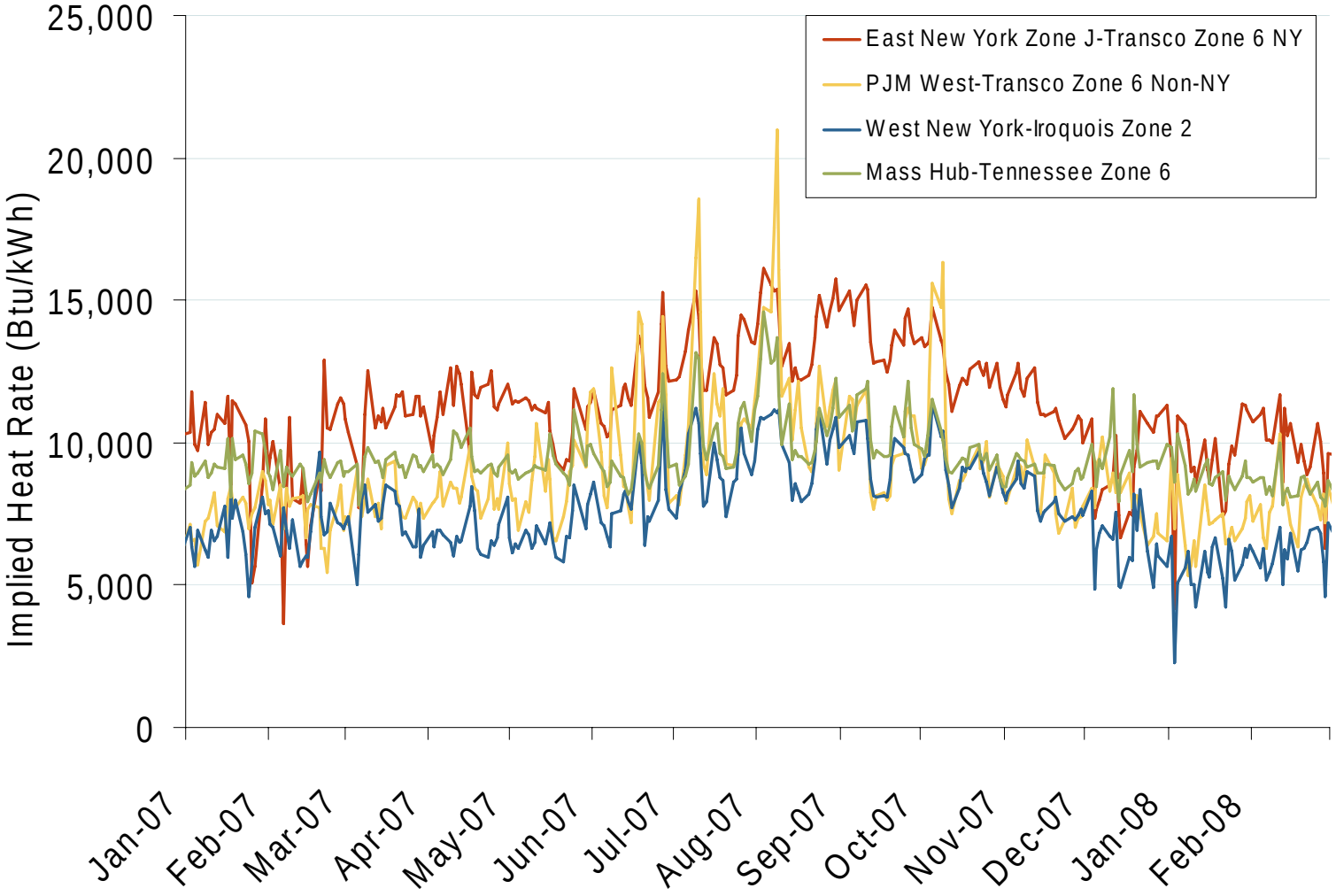
Implied Heat Rates at Eastern Trading Points



Source: Derived from *Platts* data

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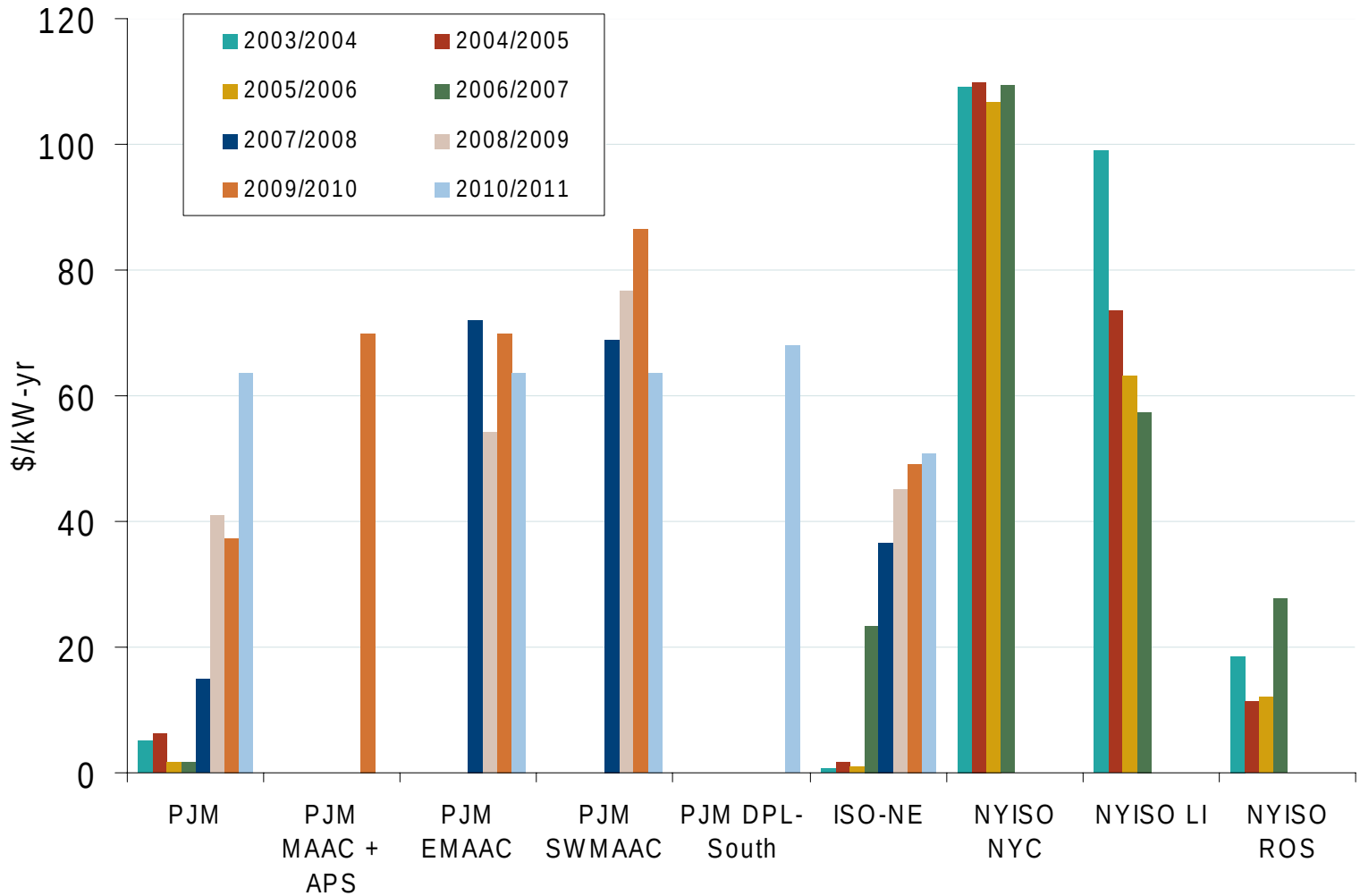
PJM, NYISO and ISO-NE Capacity Prices



Note: PJM values are for Base Residual Auctions only.

ISO-NE results for 2010/2011 are based on preliminary FCM auction before pro-rationing.

Source: Derived from *PJM, NYISO and ISO-NE* data

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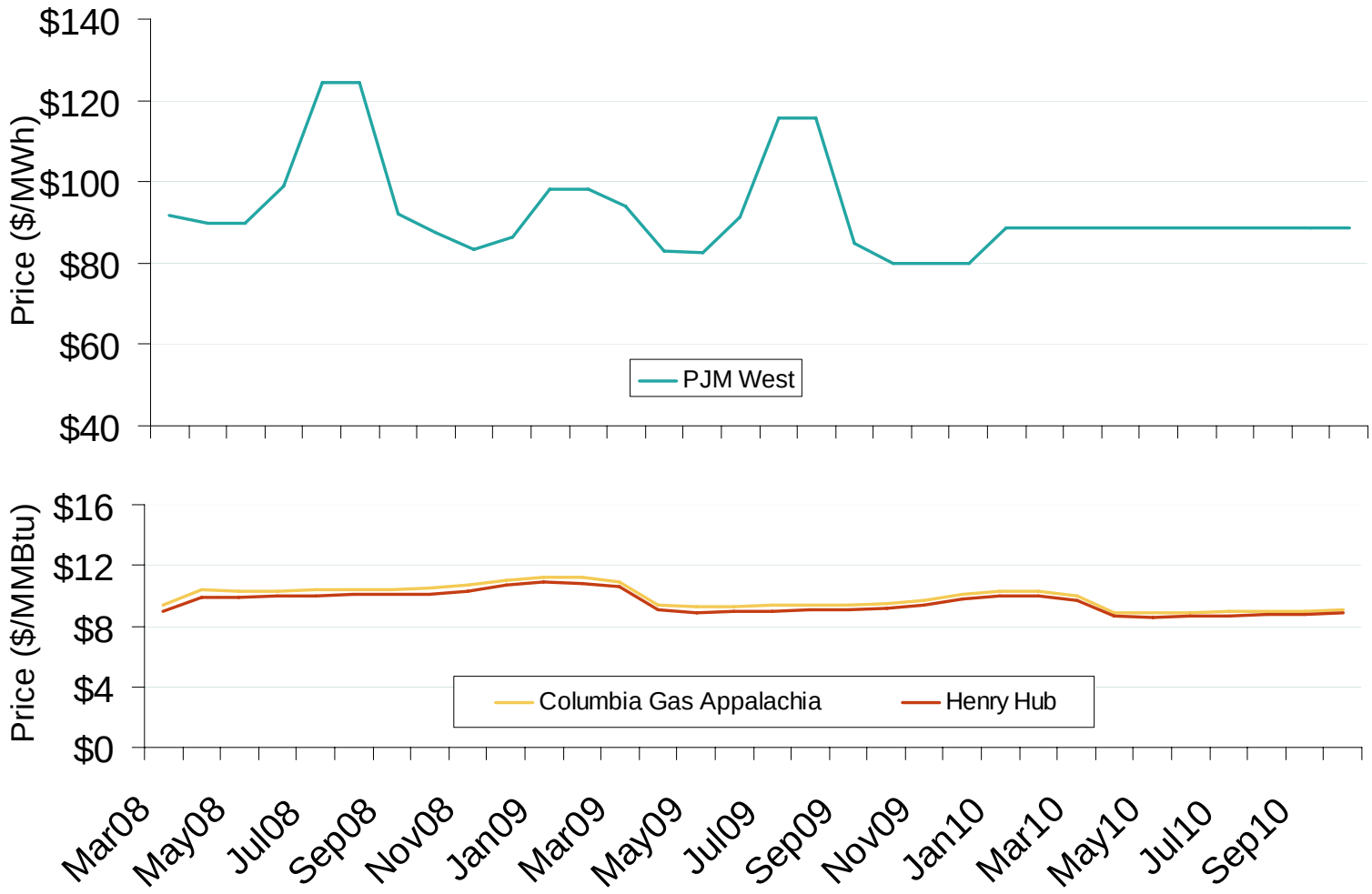
PJM West Electric Forward Price Curve and Selected Natural Gas Forward Curves



Source: Derived from *Nymex* data.

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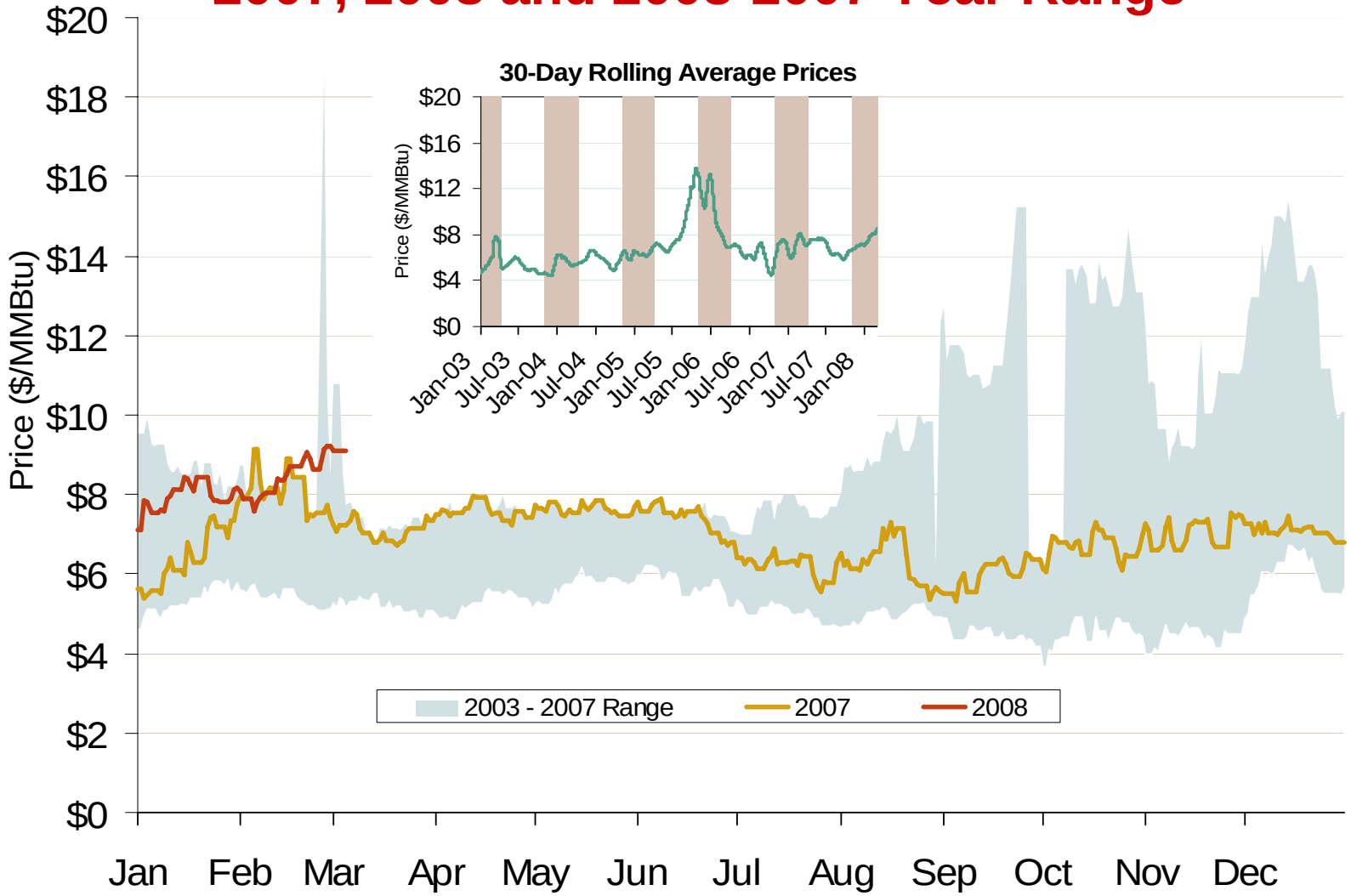
Henry Hub Natural Gas Daily Spot Prices 2007, 2008 and 2003-2007 Year Range



Source: Derived from *Platts* data.

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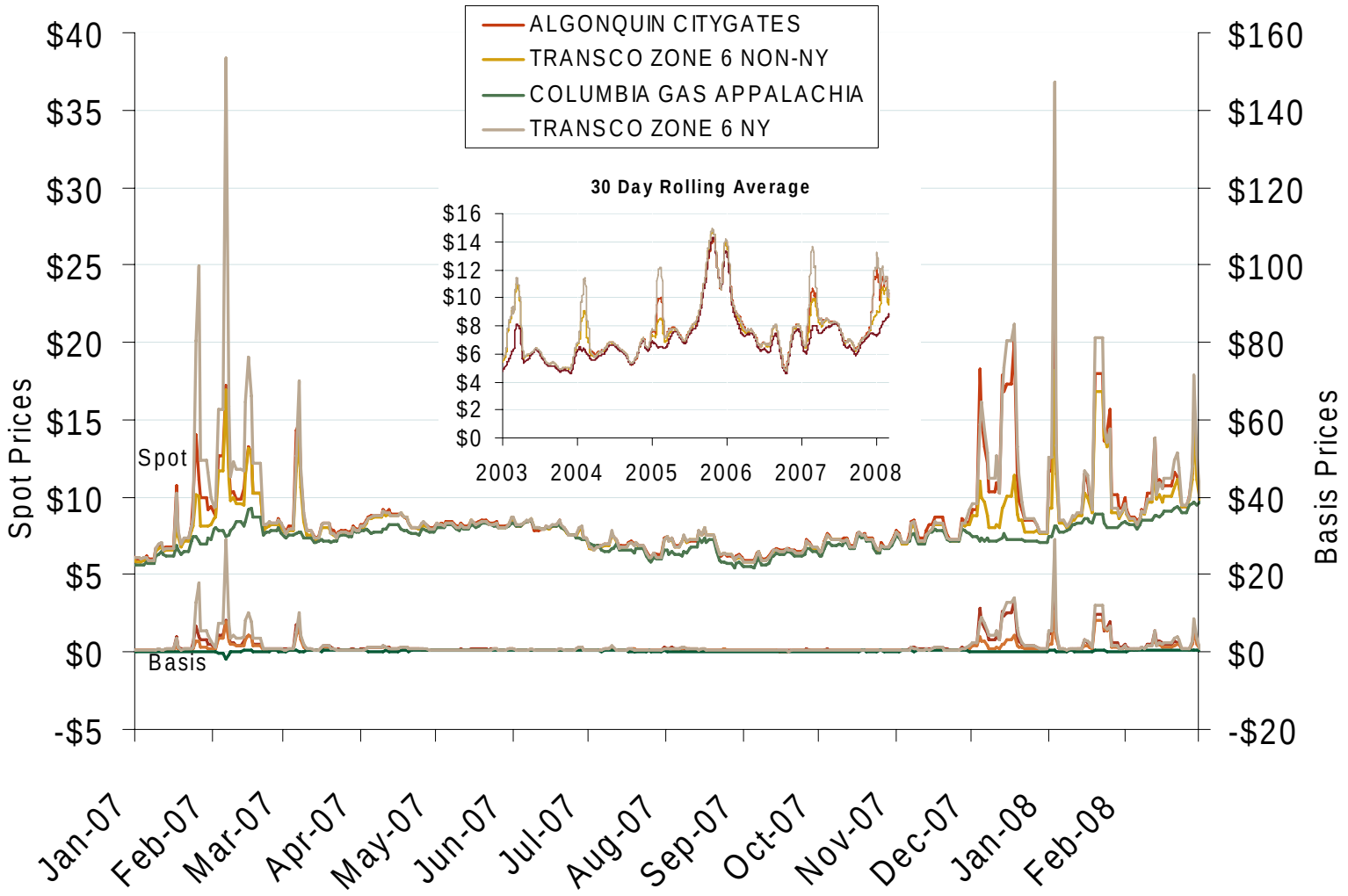
2085

Northeastern Spot Prices and Basis



Source: Derived from *Platts* data.

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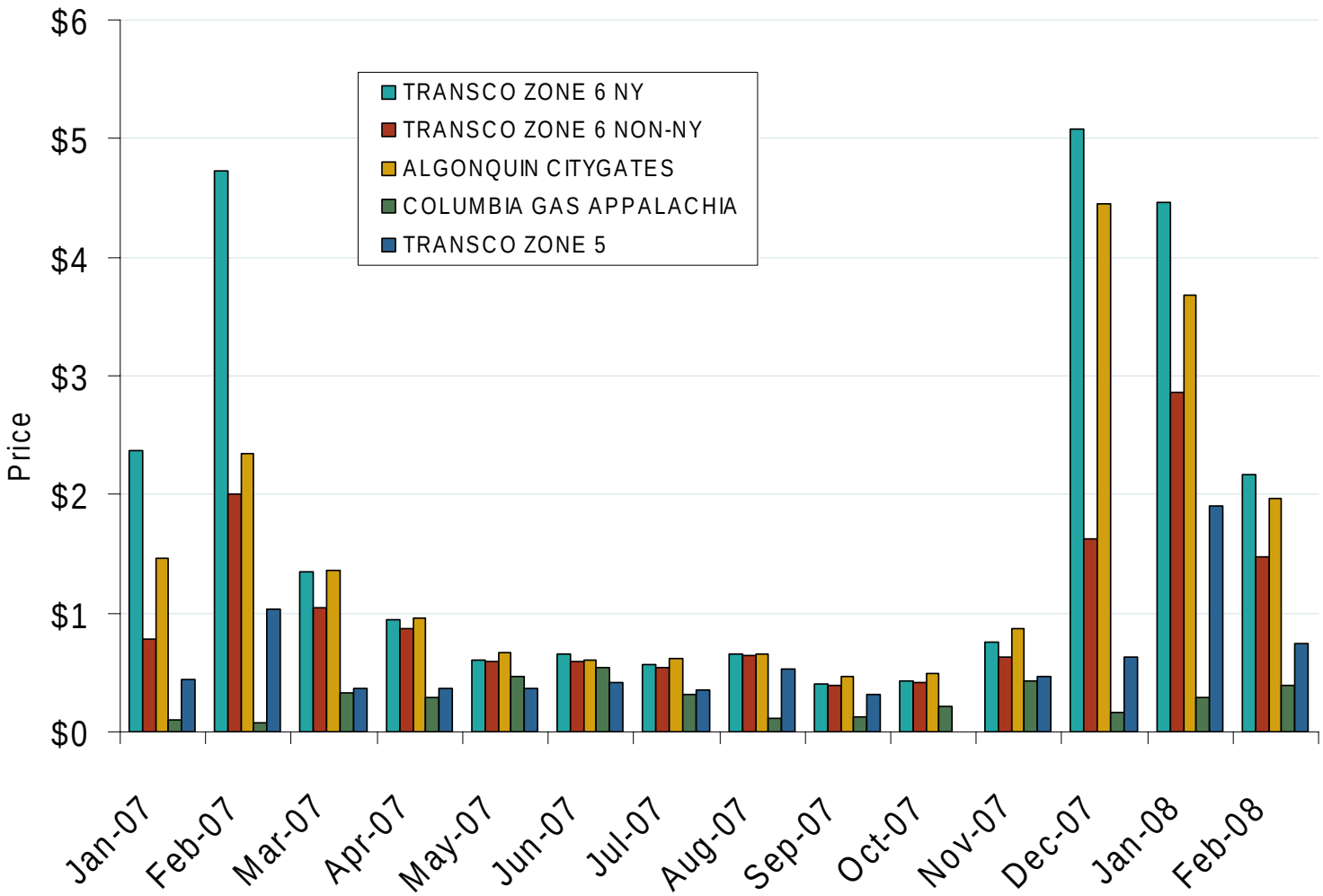
Northeastern Monthly Average Basis Value to Henry Hub



Source: Derived from *Platts* data.

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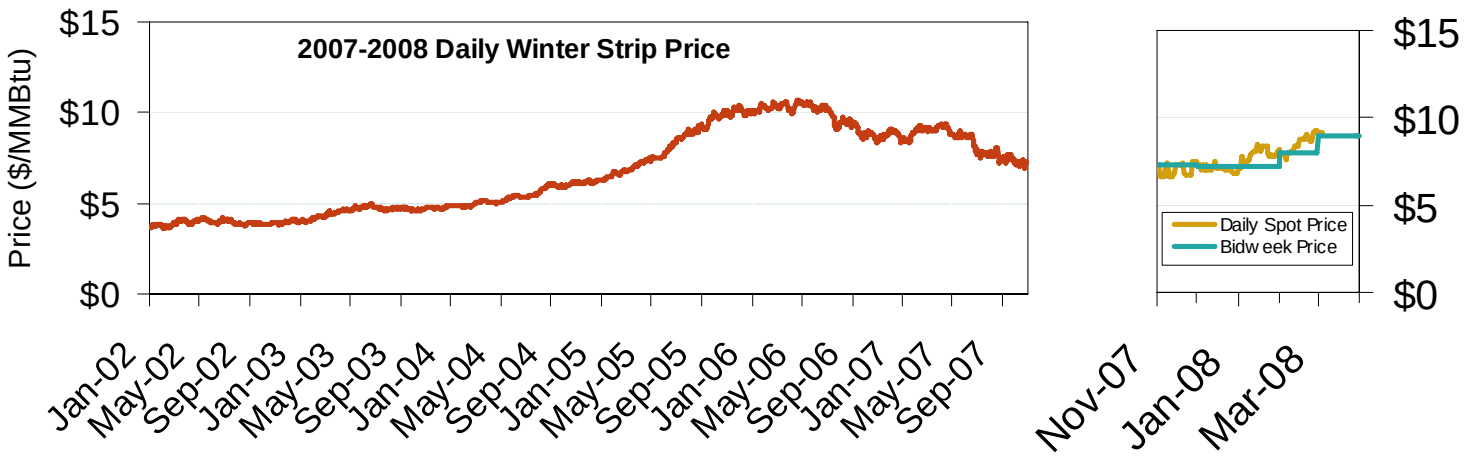
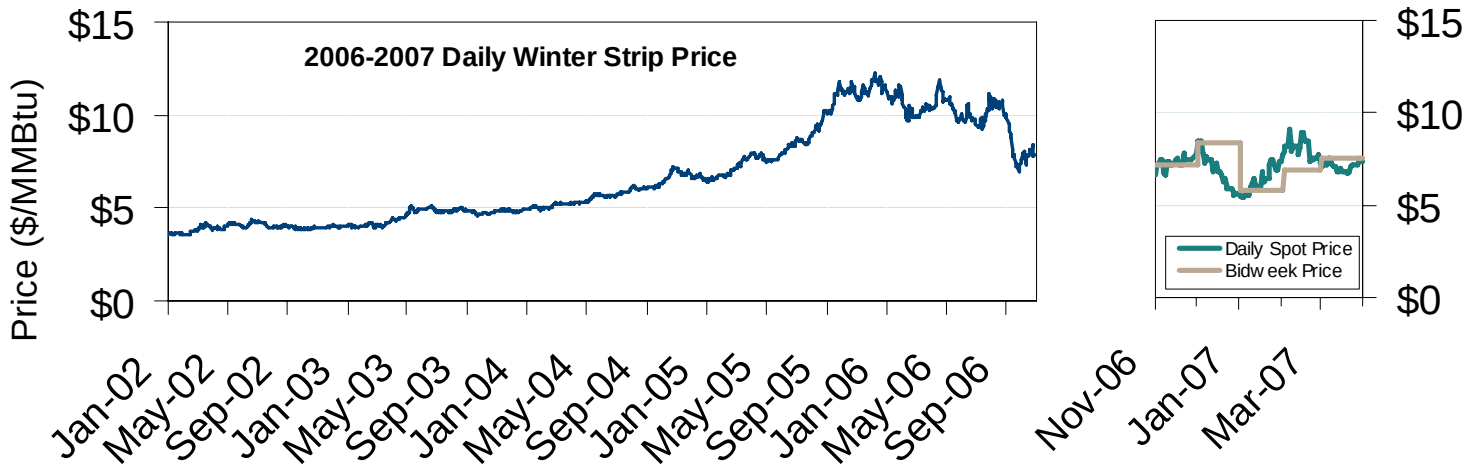
Natural Gas Winter Futures Strip and Daily Henry Hub Spot and Bidweek Prices





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

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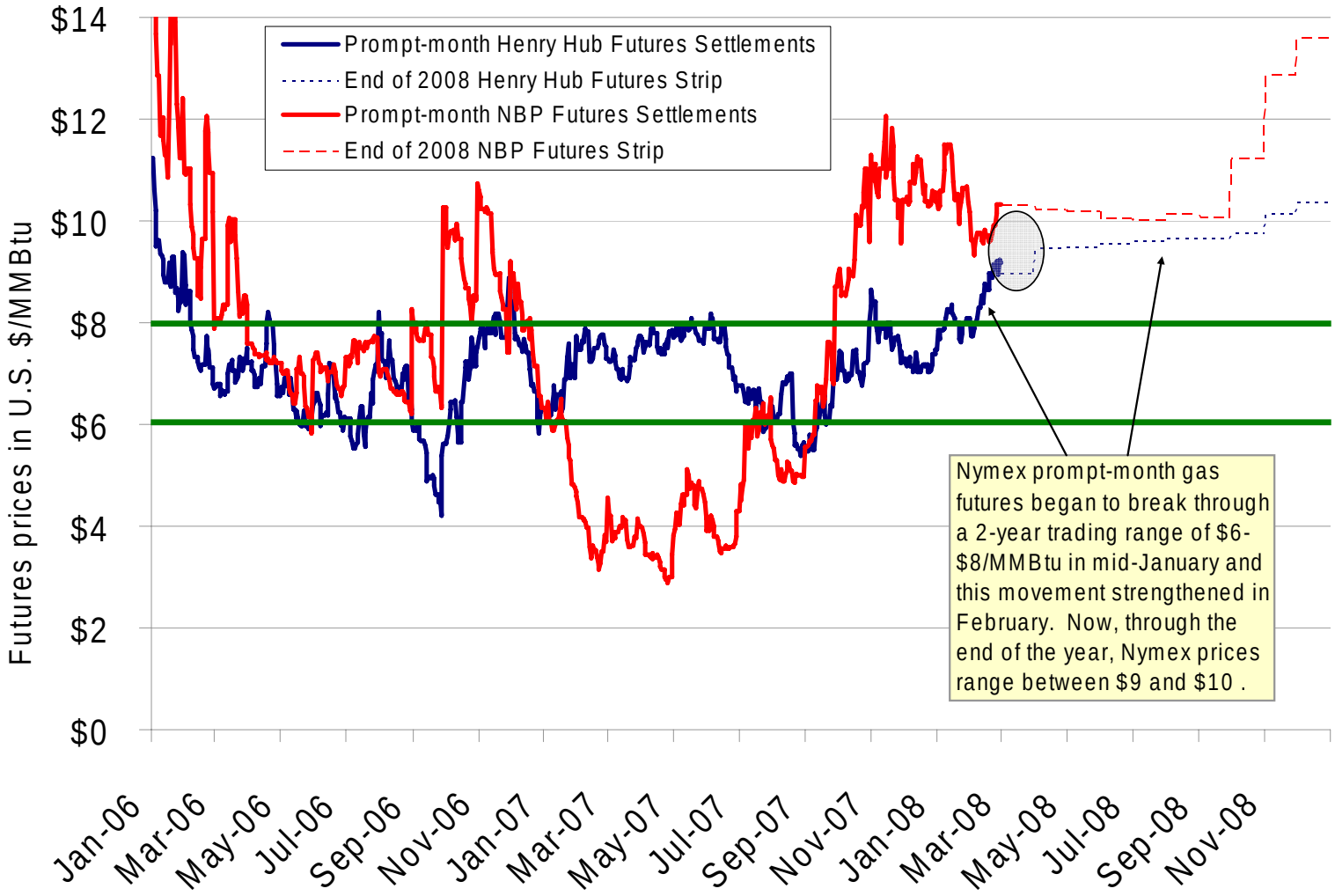
U. S. Gas Futures Prices Rise Above $6-$8 Range



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

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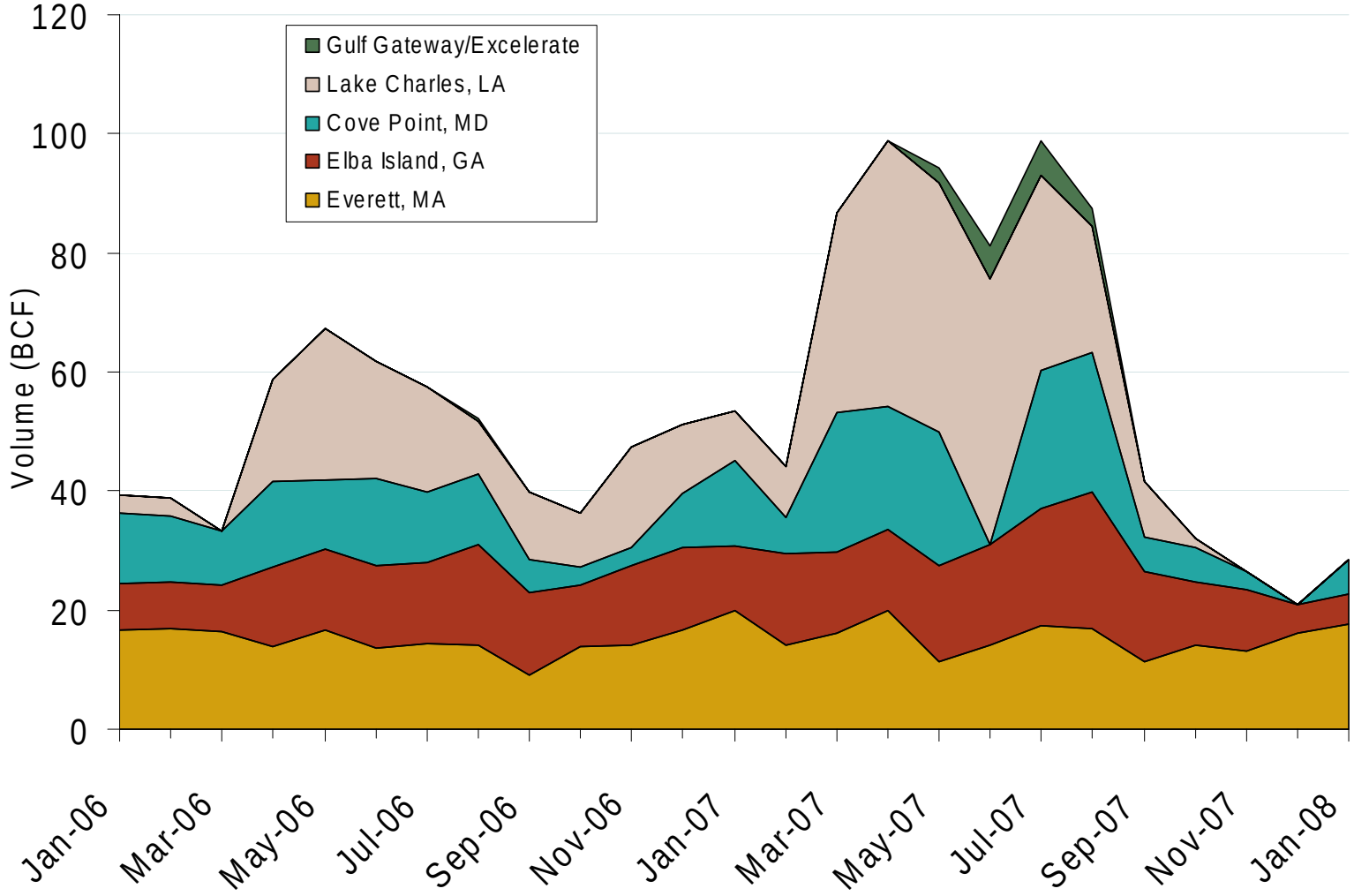
Monthly Gas Imports at Existing U.S. LNG Facilities



Source: Derived from *EIA* data.

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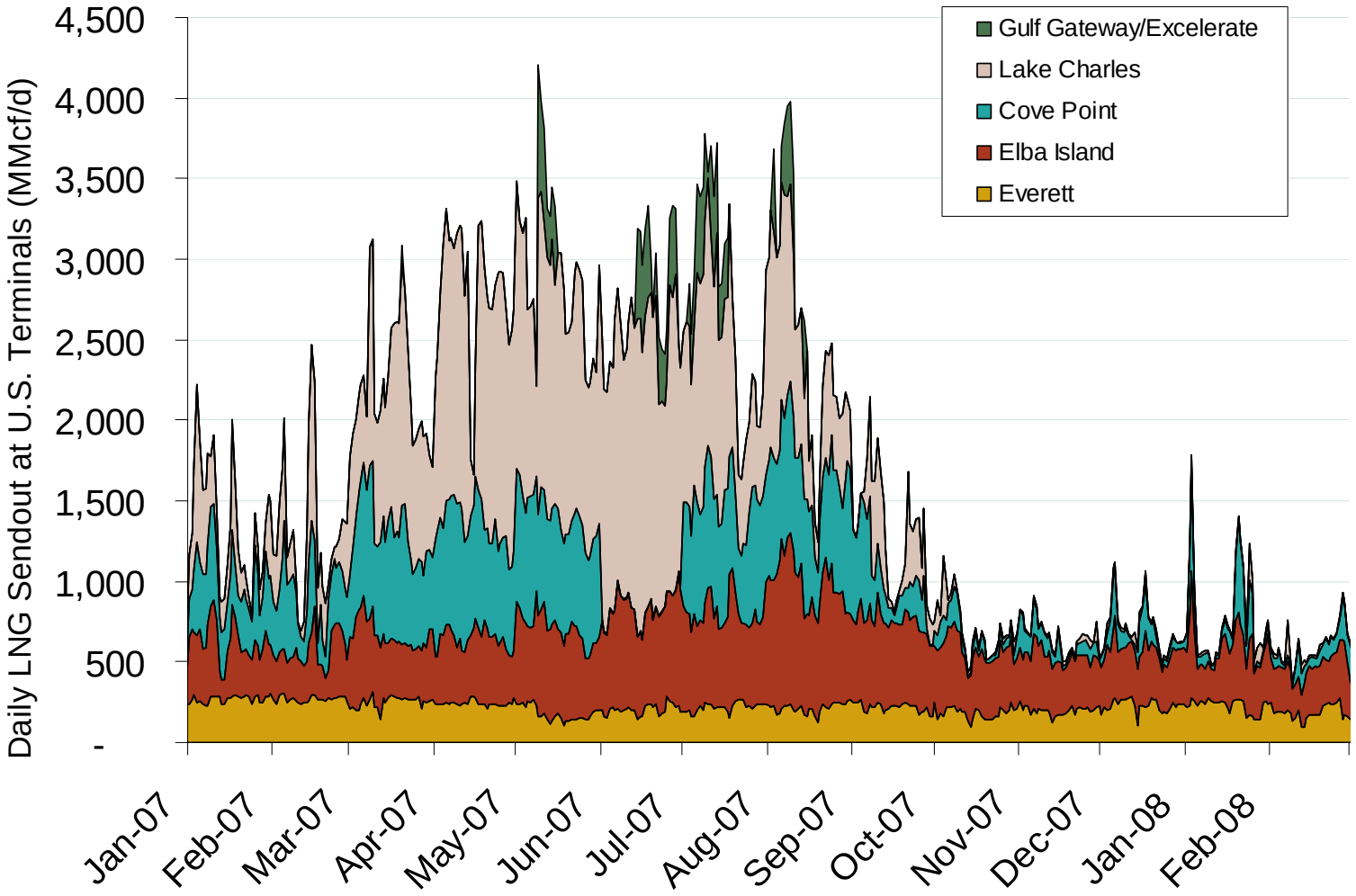
Daily Gas Sendout from Existing U.S. LNG Facilities



Source: Derived from *Bentek* data. Excludes Everett LNG delivered via truck and consumed by the Mystic plant.

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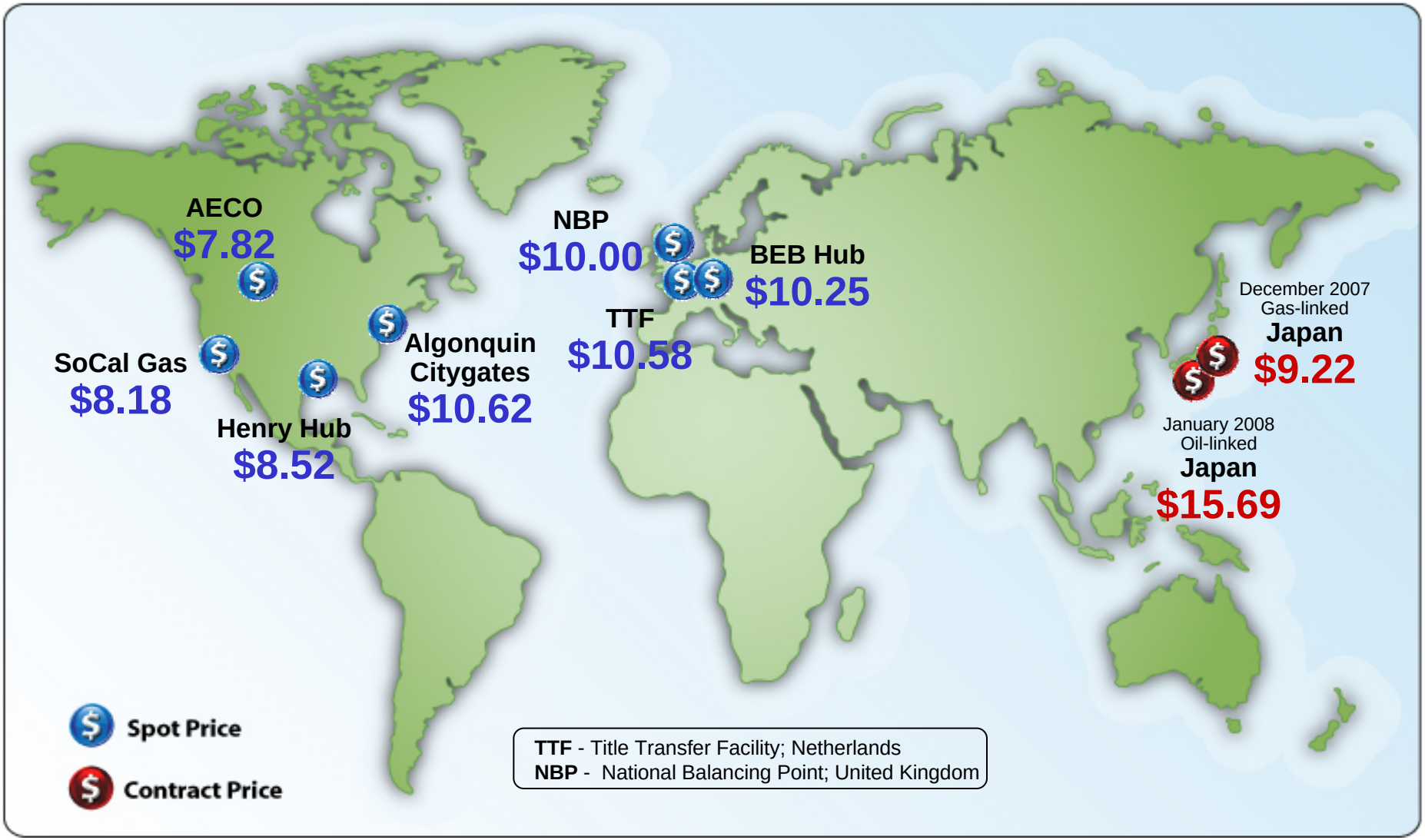
World Natural Gas Prices for February 2008



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.

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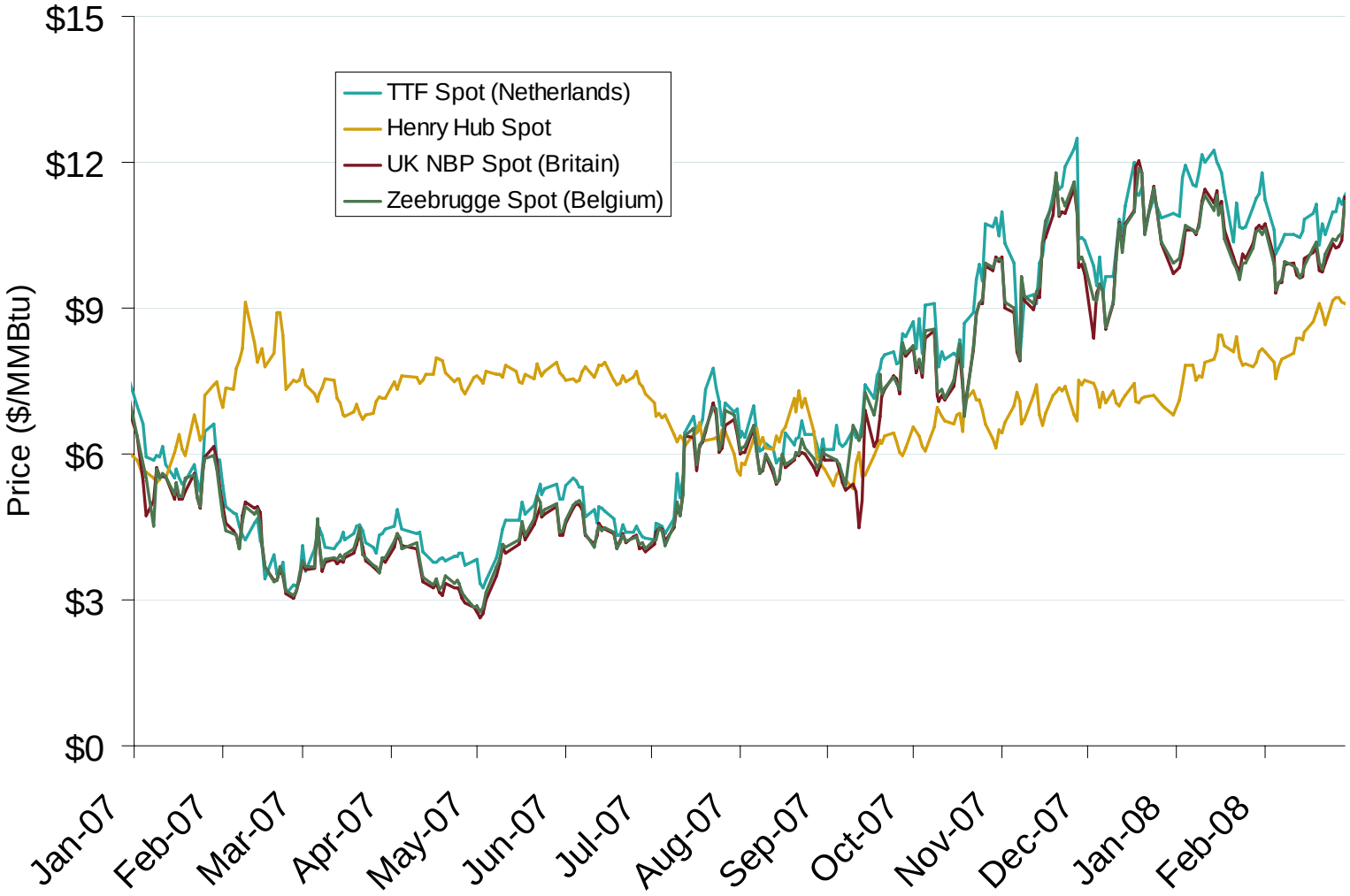
3017

European and U.S. Spot Natural Gas Prices



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

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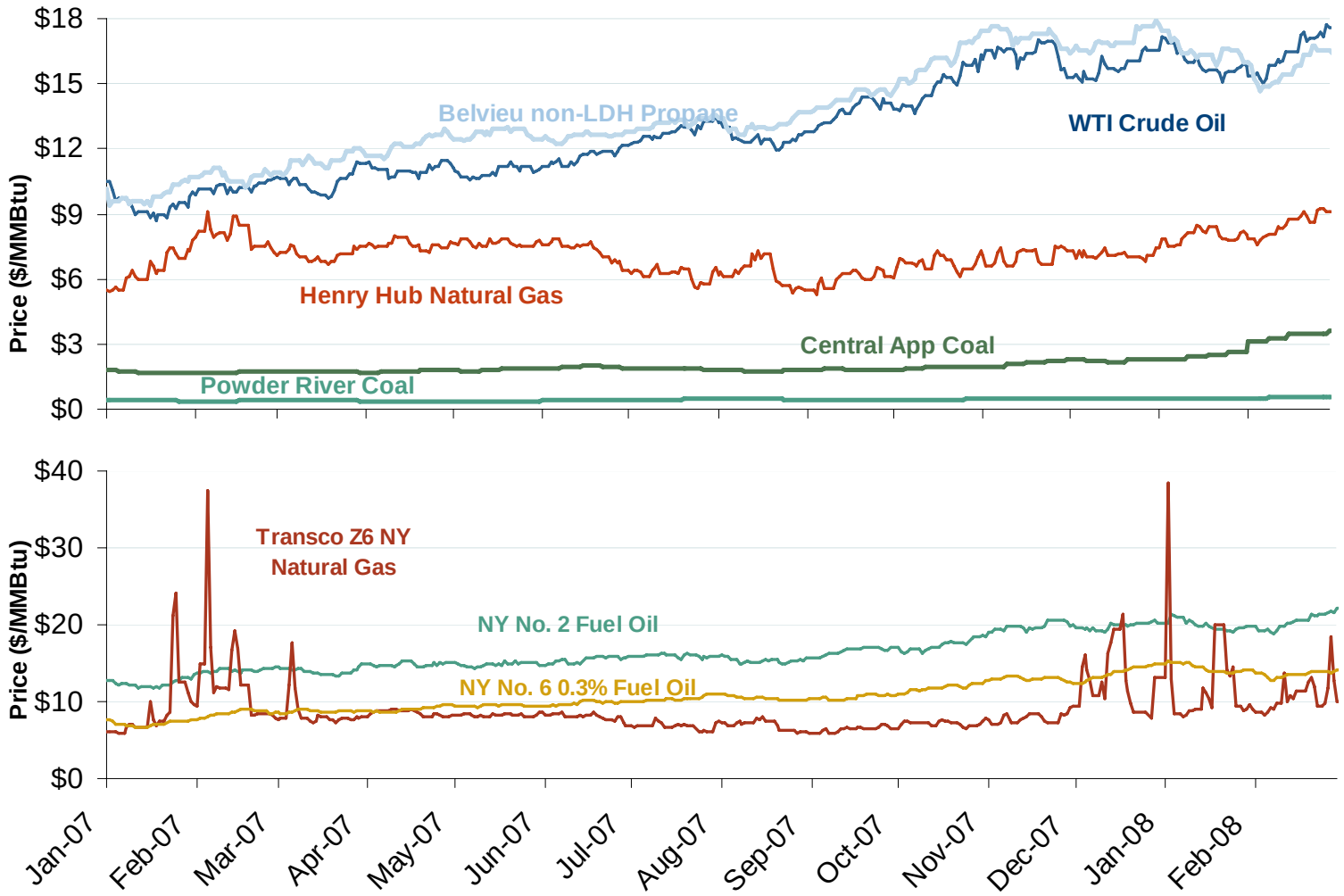
Oil, Coal, Natural Gas and Propane Daily Spot Prices



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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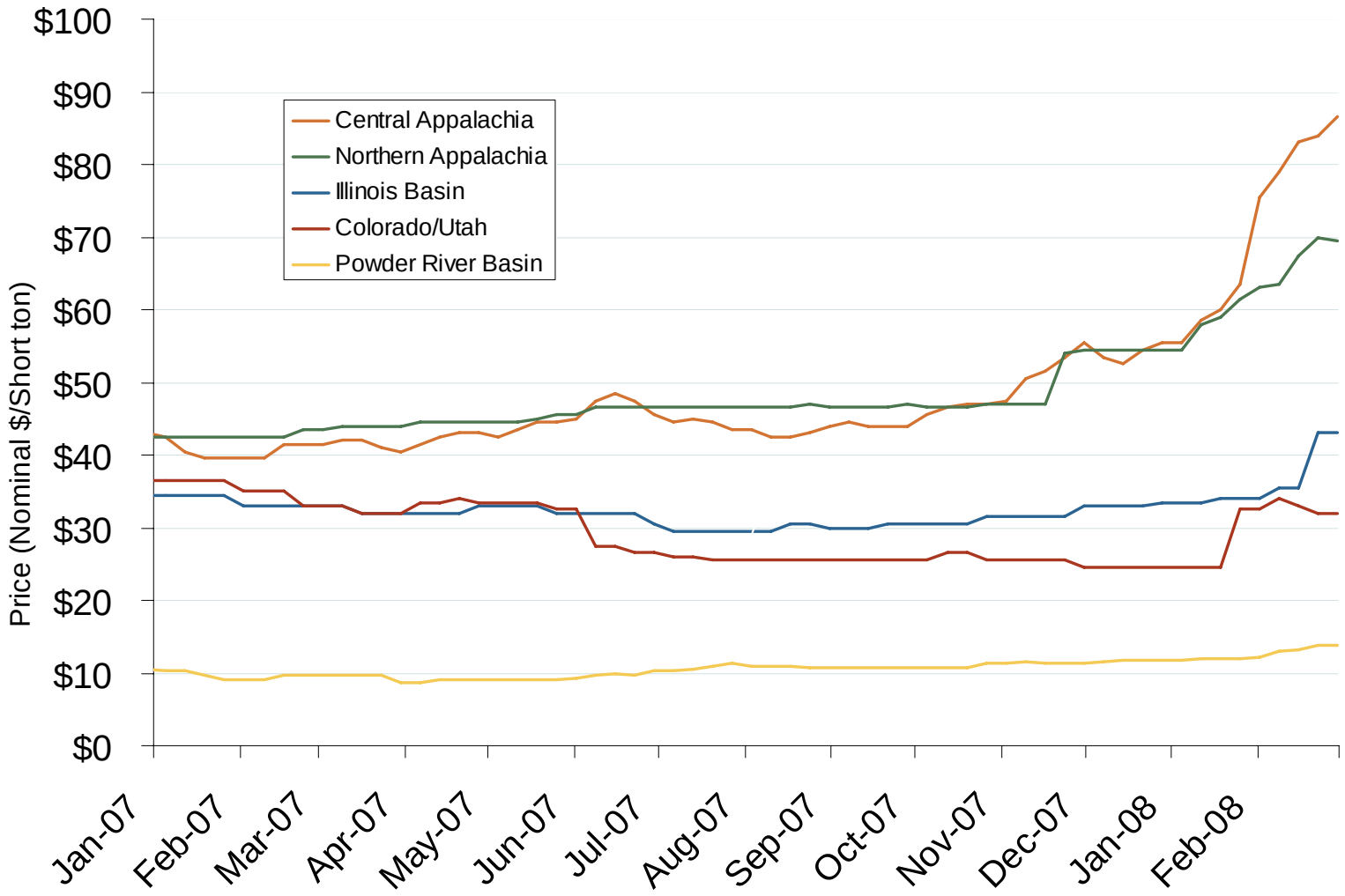
3001

Regional Coal Spot Prices



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

Source: Derived from *Bloomberg* data.

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3002

Central Appalachian Coal Futures Prices

Source: Derived from *Nymex* data.

Updated March 7, 2008

3003

SO_2 and NO_x Allowance Spot Prices

Source: Derived from *Cantor Fitzgerald* data.

See notes on following pages.

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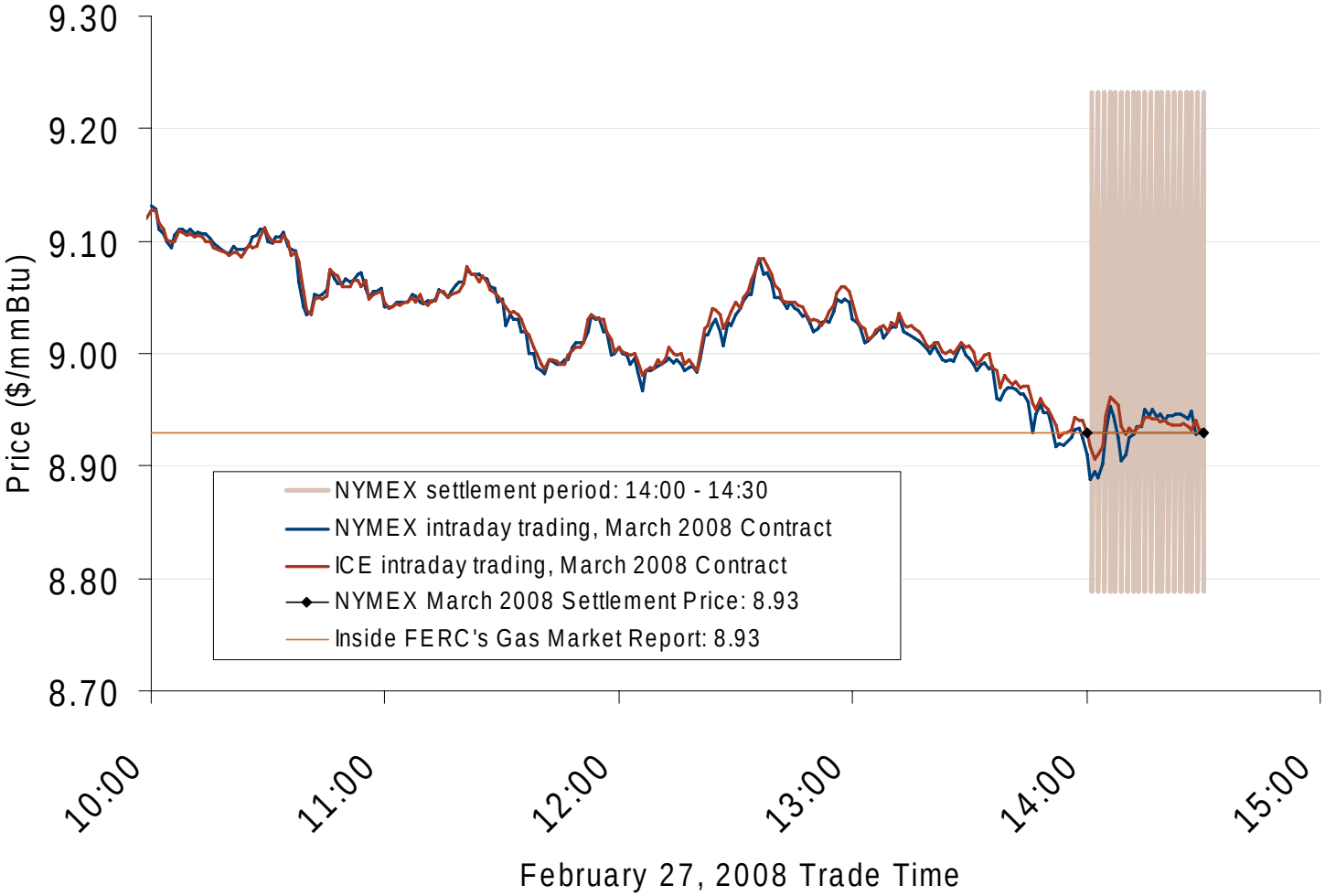
March 2008
NYMEX and ICE Contract Final Settlement Day



See 2003-2007 historical monthly final settlement day charts.

Source: Derived from *Nymex and ICE* data.

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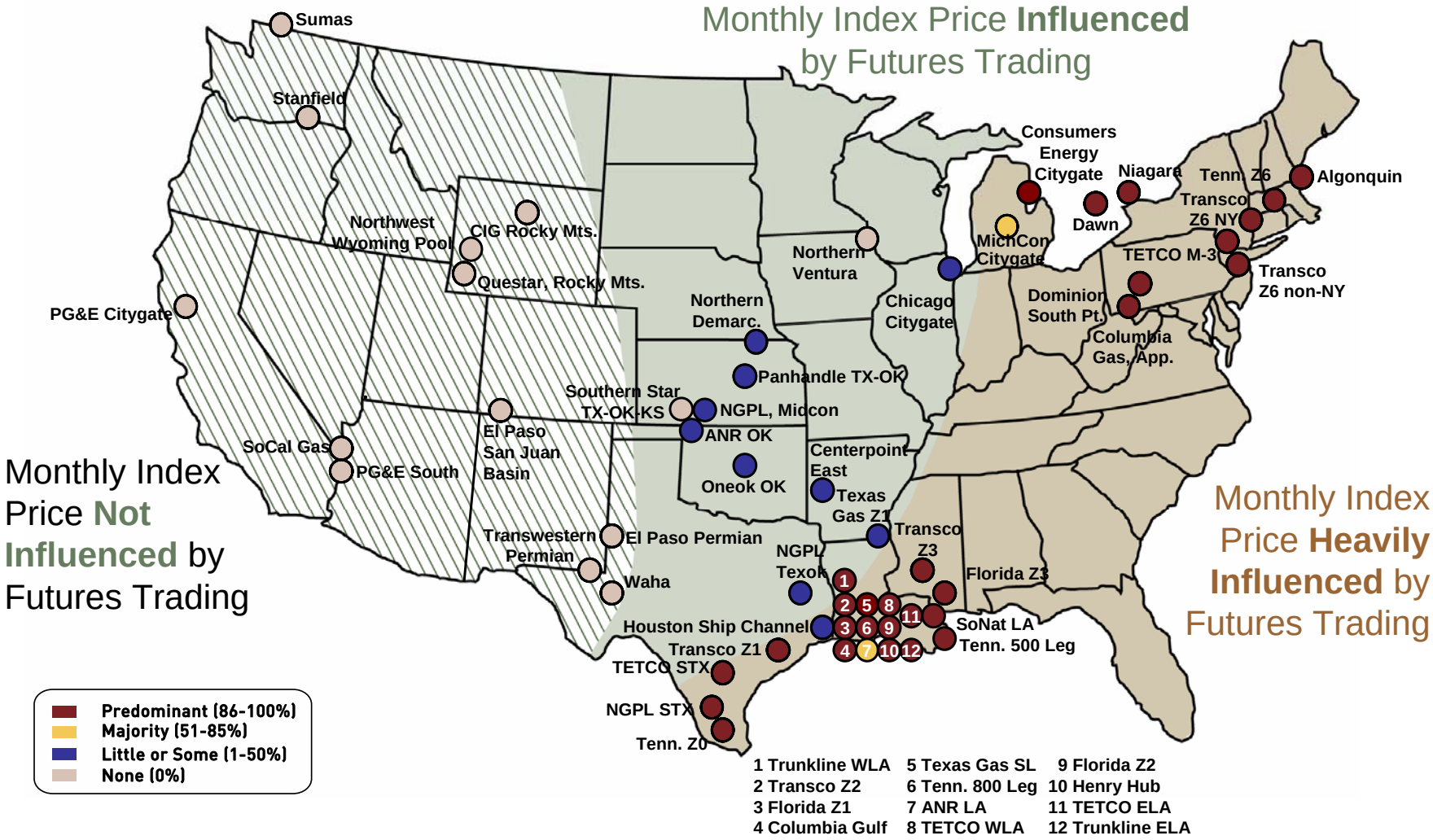
Use of Physical Basis in Natural Gas Price Indices at Major Trading Points, 2007



Source: Derived from *Platts* data for January through October 2007 indices.

Updated October 11, 2007

2167

Renewable Energy Portfolio Standards (RPS)

WA: 15% by 2020

OR: 25% by 2025; small utilities 10%

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

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

UT: proposed goal: 20% by 2025

CO: 20% by 2020; 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

MT: 15% by 2015

ND: 10% by 2015

KS: Goal: 20% wind by 2020

MN: 25% by 2025; (Xcel 30% by 2020)

IA: 1,105 MW by 2011*

MO:11% by 2020

MI: 10% by 2015

WI: 10% by 2015

IL: 25% by 2025

IN: 10% by 2018

OH: 25% from advanced energy by 2025

ME: 30% by 2000; *and* 10% *new* by 2017

NH: 23.8% in 2025

VT: load growth to 10%, 2007-12; *proposed* goal of 25% by 2025

MA: 4% by 2009, then 1% annual increase

RI: 16% by 2019

CT:27% by 2020

NY: 24% by 2013

PA: 18% by 2020

NJ: 22.5% by 2020; includes 2% solar

MD: 9.5% in 2022; includes 2% solar

DC: 11% by 2022

DE: 20% by 2019, includes 2% solar

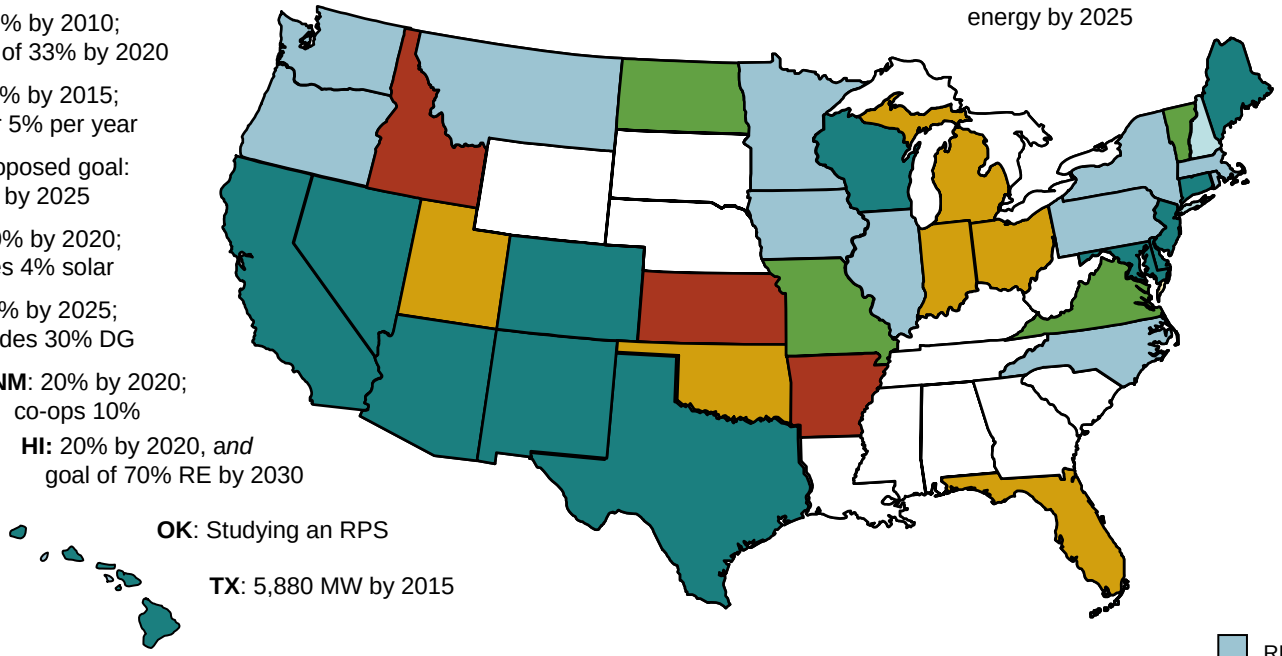
VA: 12% by 2022

NC: 12.5% by 2021

FL: 20% by 2020

OK: Studying an RPS

TX: 5,880 MW by 2015



- 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.

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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.
- 26 states and D.C. have renewable energy standards.
- Four states have enacted renewable goals without financial penalties.
- 54% of U.S. load is located in states with a renewable energy purchase obligation; an additional 6% is in states with a renewable energy goal.
- Nine states and D.C. have solar set-asides as part of their RPS; five offer extra credit to solar or distributed generation. New Jersey was the first state to create a separate solar credit tracking program (SREC). Maryland adopted a similar program in July 2007 modeled on New Jersey's.
- States revisit earlier RPS goals:
  - Arizona's governor asked the legislature to extend the RPS to cover all utilities.
  - A "green bill" in Massachusetts would increase the use of renewable energy and add energy efficiency.
  - The Maryland Energy Administration called for increasing the RPS and compliance payment; it also called for energy efficiency and advanced metering measures.
  - Iowa added a goal of 1,000 MW of installed wind by 2010, as its utilities long ago met their RPS requirements.
- Eleven states already include energy efficiency in their RPS or renewable goals.
- States which are considering an RPS or other renewable energy goals include:
  - Chambers in Michigan, Ohio and Vermont passed RPS legislation this session which include energy efficiency. Conference committees will try to reconcile details.
  - Indiana re-introduced an RPS from last session; in January, it failed in House Committee. The Senate is considering a separate bill.
  - Kansas' Governor Sibelius set a goal for wind to be 20% of generation by 2020.
  - In January, Oklahoma held a technical conference and issued a notice of inquiry on a possible RPS.
  - Idaho's Draft 2007 Energy Plan included a provision for utilities to give priority to demand response, energy efficiency, and in-state renewable energy over other resources.

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Energy Efficiency Resource Standards (EERS)

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

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

MI: proposed EERS -- incremental savings increasing to 2012 for E&G

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

MT: Governor's initiative - 20% reduction by 2020

IA: mandated study

WI: RPS requires utility EE programs

VT goal: EE & RE to meet 2007-12 growth

WA: must pursue all cost-effective, conservation

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

MA: EE & RE to meet 2007-12 growth

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

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

NV: up to 25% by 2015; part of RPS

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

UT: goal to increase EE 20% by 2015

PA: EE is a Tier II resource:10% 2020

CO: save 40 MW and 100 GWh annually to 2013*

NJ: 20% load reduction by 2020

MD: 15% reduction by 2015

NM: Public utilities must use EE and DR to save 10% of 2005 retail kWh by 2020; also in *separate* RPS

DE: created Sustainable Energy Utility to promote EE , conservation

KS: studying for E&G utilities

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

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

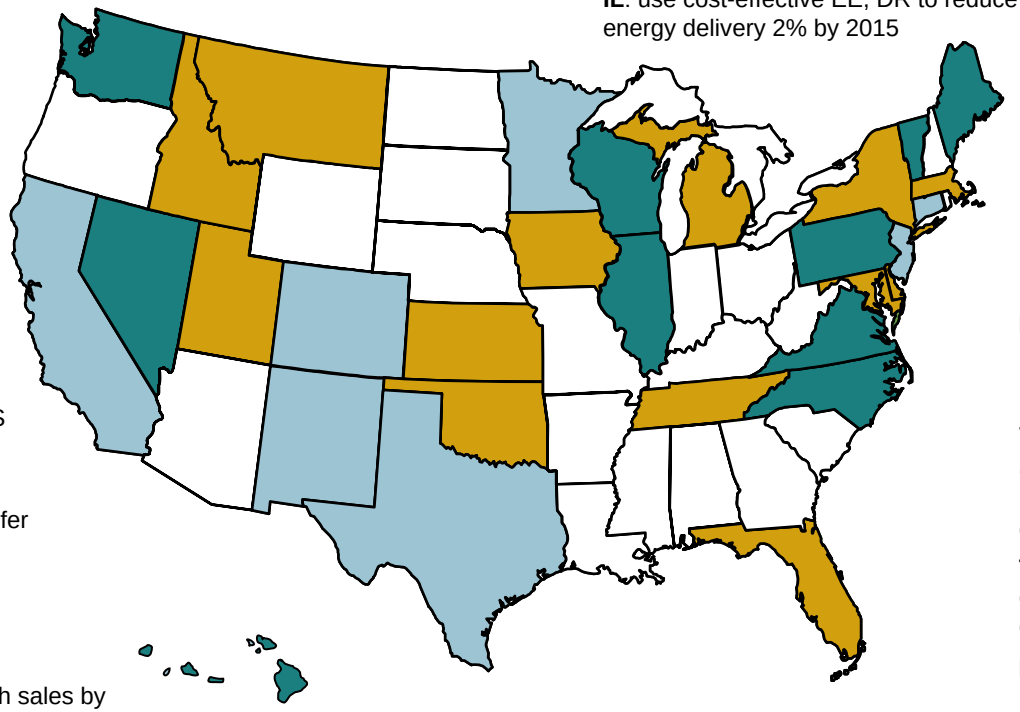
NC: EE to meet up to 25% of RPS to 2011; later to 40%

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

TVA (TN): encouraging customers to save 1200 MW per day 2008 - 2012

FL: PUC directed to study EE

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



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

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

* Colorado's standard applies to Public Service of Colorado

** Oklahoma's applies to PS of Oklahoma

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

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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
- 19 states have energy efficiency standards or goals; ten of those include energy efficiency as part of a renewable portfolio standard (RPS) or goal.
  - Five states added an EERS in 2007: Minnesota, Virginia, North Carolina, Connecticut, and Illinois.
  - New Mexico enacted an EERS in February 2008; this is in addition to the energy efficiency already in an RPS.
- States that proposed, are studying, or mandated an EERS design include: Florida, Maryland, Massachusetts, Michigan, Ohio, New Jersey, New York, and Vermont.
- New Mexico's "Utility Customer Load Management" is among the acts which put energy efficiency, conservation, and load management or demand-side resources explicitly on a par with generation resources. They are eligible for cost recovery and form a basis for just and reasonable rates. Many states added performance-based financial incentives as well as cost-recovery.
- Delaware created a "Sustainable Energy Utility" to use a market-based approach to address energy efficiency, conservation, and renewable energy.
- States can encourage participation through public benefit funds or by decoupling utilities' revenues from power sales. Not all use financial penalties for non-compliance.

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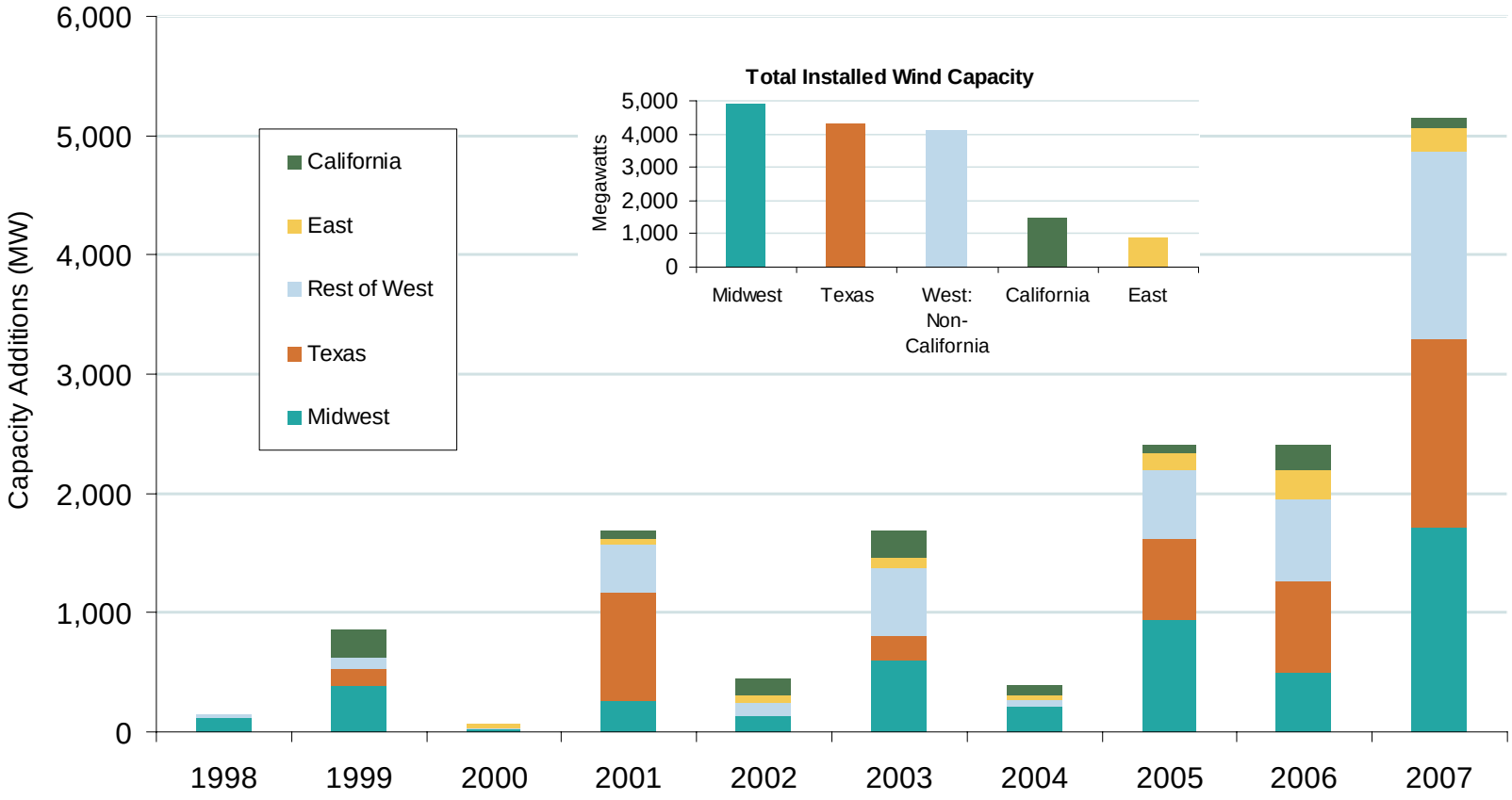
Growth of U.S. Installed Wind Capacity (MW)



Midwest includes: Il, IA, KS, MI, MN, MS, NE, ND, OH, OK, SD, WI
East includes: ME, MA, NH, NJ, NY, PA, RI, TN, VT, WV

Source: American Wind Energy Association (AWEA)

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2007 Review of Wind Generation

- Installed wind capacity grew 5,244 MW from 11,603 MW in 2006 to 16,818 MW in 2007, a 45% increase.
- More new wind capacity was added in 2007 than any prior year:.
- Just over half of new capacity – 2,704 MW – was installed in states with the highest wind potential. 59 percent of that – 1,588 MW – was in Texas.
- Installed capacity grew 150% from 2004 to 2007, while:
  - the number of states (including D.C.) with a renewable portfolio standard grew from 21 to 27, and
  - the wind production tax credit did not lapse.
- The top five states by capacity added in 2007 were: Texas (1,618 MW), Colorado (776), Illinois (592), Oregon (447), and Minnesota (405). Texas moved into 1st place in installed wind capacity in 2006, passing long-time leader California.
- The top 10 states by cumulative installed capacity have 14,366 MW of wind, or 85% of U.S. capacity. Nine of them had a Renewable Portfolio Standard (RPS) in 2007.
- The rapid growth of wind generating capacity has led to a backlog in many interconnection queues. The Commission held a Technical Conference on December 11, 2007 (AD08-2-000) to re-examine the Large Generator Interconnection Rule. Many ISO/RTOs reported that the queuing procedures specified by Order 2003 impede the timely interconnection of wind resources.

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