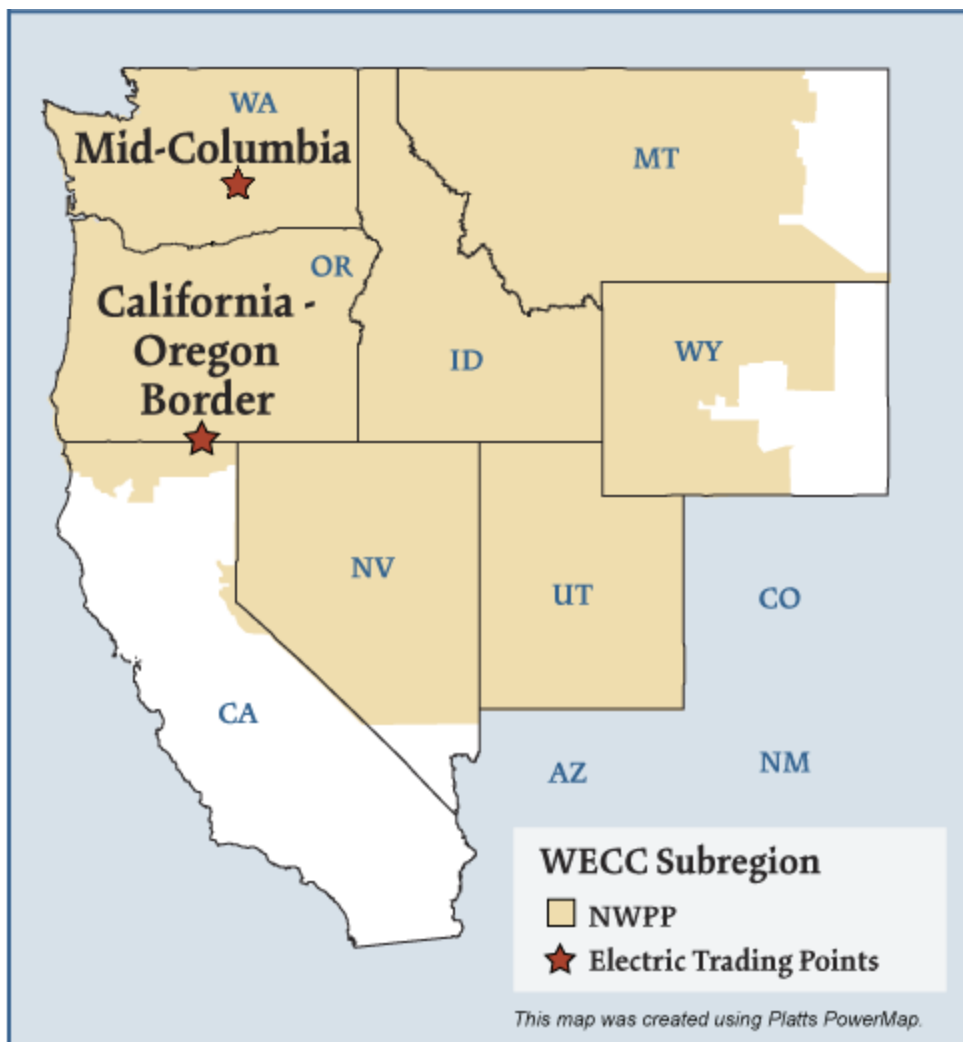


# Northwest Electric Market



## Overview

### Geography

States covered: All or most of Washington, Oregon, Idaho, Utah, Nevada, Montana, Wyoming and part of California.

Reliability region: Northwest Power Pool Area (NWPP) sub-region of the Western Electric Coordinating Council (WECC).

Balancing authorities: See page 5.

Hubs: California-Oregon Border (COB), Mid-Columbia (Mid-C)

### RTO/ISO

None

### Generation/Supply

Marginal fuel type: Hydro and natural gas

Generating capacity (winter 2005): 57,120 MW

Capacity reserve (winter 2005): 16,822 MW

Reserve margin (winter 2005): 42%

When taken together, hydro, fossil fuels, nuclear energy, and renewable resources, were adequate to provide electricity in excess of in-region needs.

## Demand

All time peak demand (2005): 40,298 MW

Peak demand growth: 1.5% (2004–2005)

## Prices

Index Annual Average of Daily Bilateral Day Ahead On-Peak Prices:

Platts California-Oregon Border (COB) Hub:

2004: \$49.02/MWh 2005: \$66.95/MWh 2006: \$55.58/MWh 2007: \$62.14/MWh

Platts Mid-Columbia (Mid-C) Hub:

2004: \$44.50/MWh 2005: \$62.95/MWh 2006: \$50.18/MWh 2007: \$56.57/MWh

Physical and financial electricity products are traded through brokers using the Mid-Columbia (Mid-C) and California-Oregon Border (COB) hubs as pricing points.

## Interconnections/Seams

The region relies on hydroelectric production for approximately two thirds of its electricity needs. In most years, Northwest sells surplus power into California and the Southwest.

## Balancing Authorities in the Northwest Electric Market

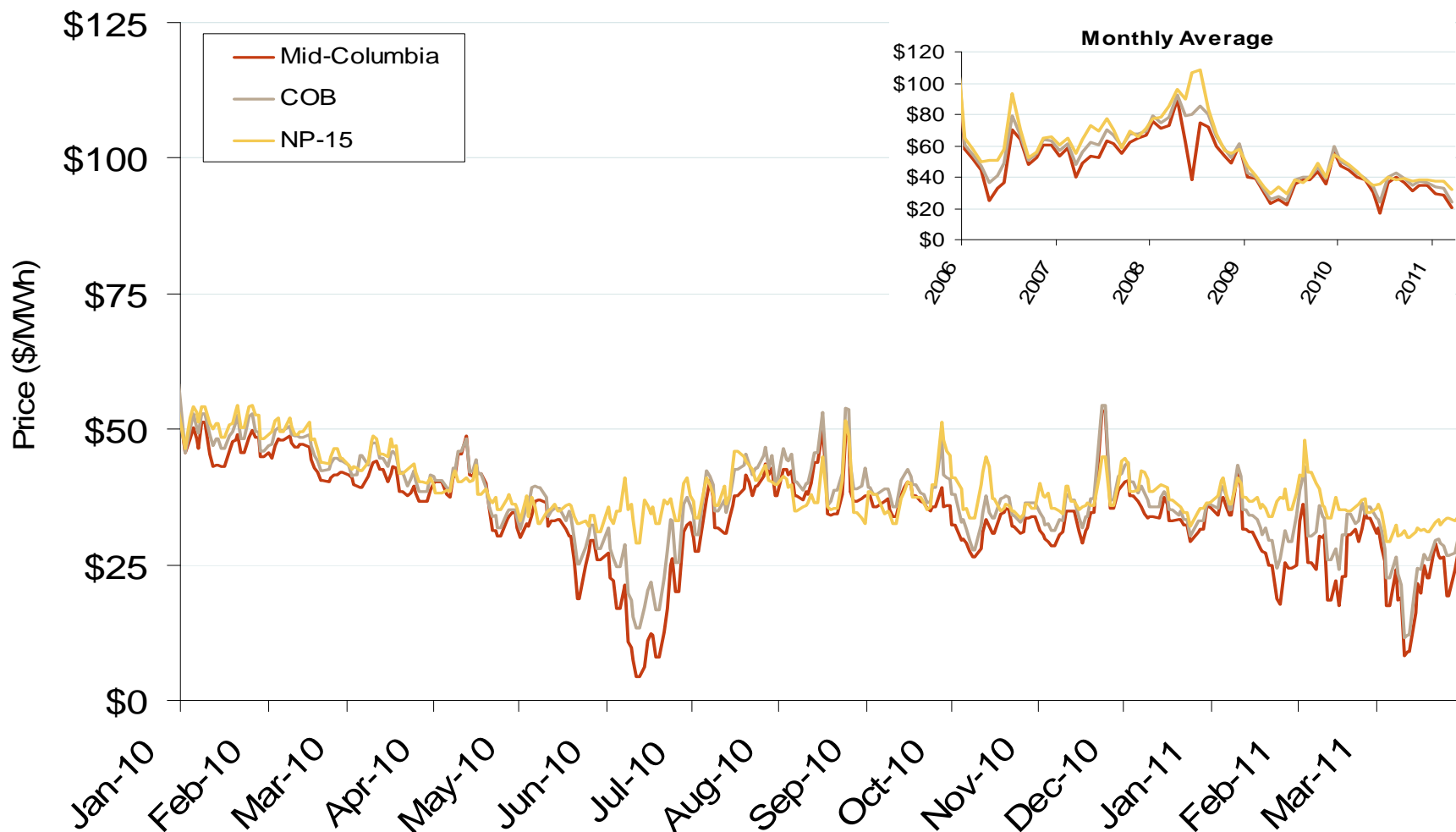
### Balancing Authority

Alberta Electric System Operator  
 Avista Corp.  
 Bonneville Power Administration  
 British Columbia Transmission Corporation  
 Idaho Power Company  
 NorthWestern Energy  
 PacifiCorp-East  
 PacifiCorp-West  
 Portland General Electric Company  
 PUD No. 1 of Chelan County  
 PUD No. 1 of Douglas County  
 PUD No. 2 of Grant County  
 Puget Sound Energy  
 Seattle Department of Lighting  
 Sierra Pacific Power Company  
 Tacoma Power  
 Western Area Power Administration - Upper Great Plains West

### NERC Acronym

AESO  
 AVA  
 BPAT  
 BCHA  
 IPCO  
 NWMT  
 PACE  
 PACW  
 PGE  
 CHPD  
 DOPD  
 GCPD  
 PSEI  
 SCL  
 SPPC  
 TPWR  
 WAUW

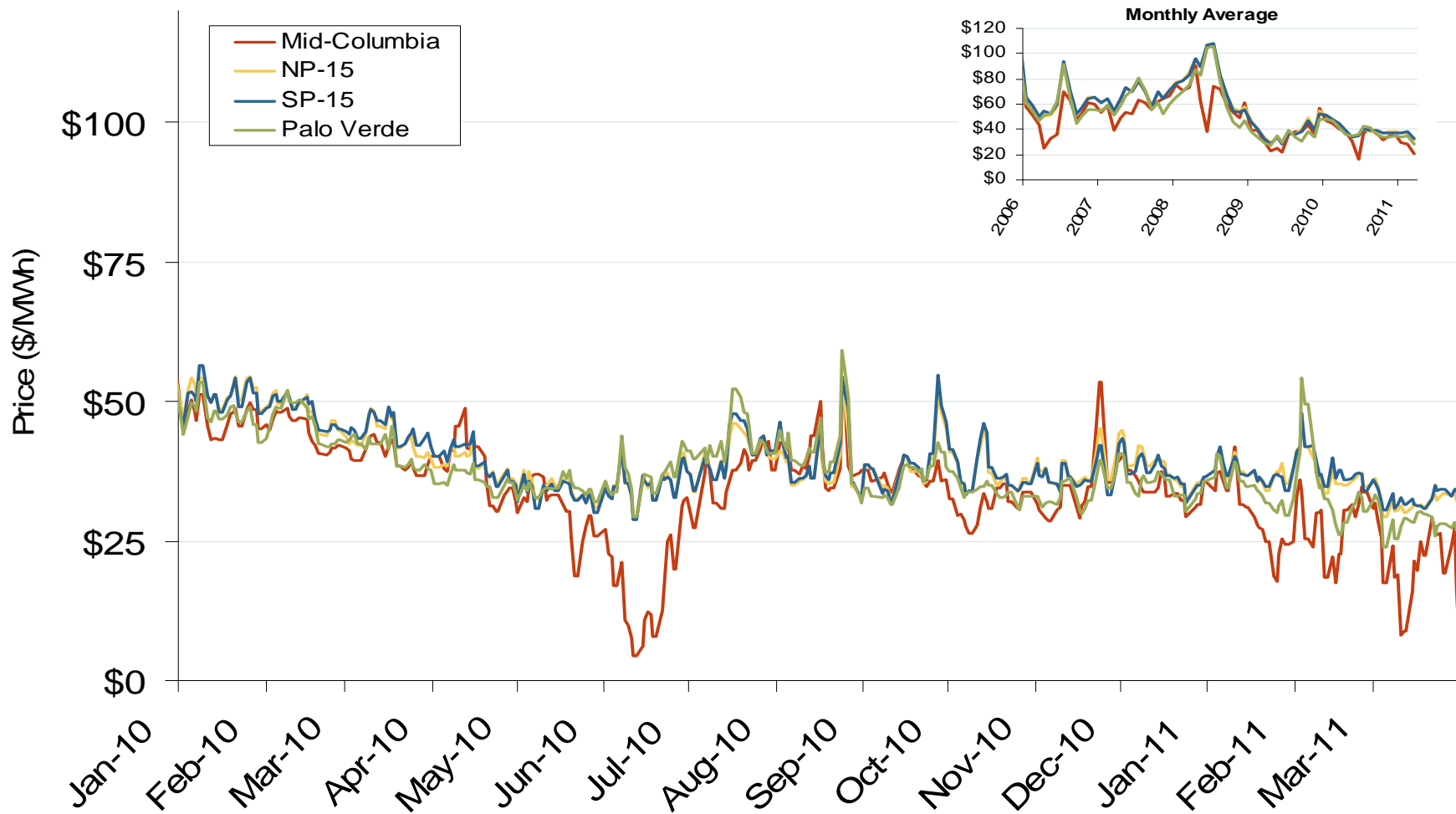
# Northwestern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.

Updated April 8, 2011

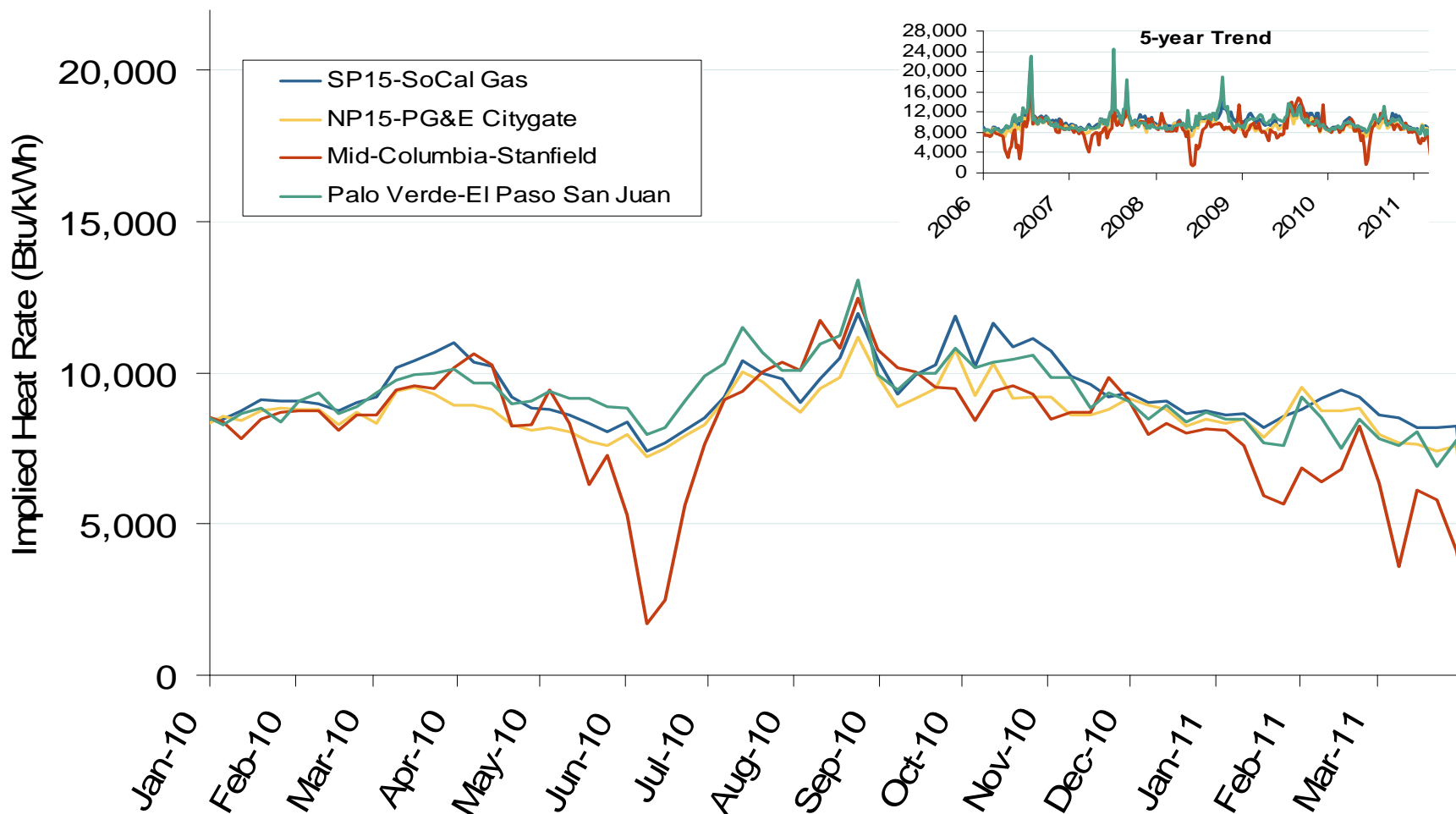
# Western Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.

Updated April 8, 2011

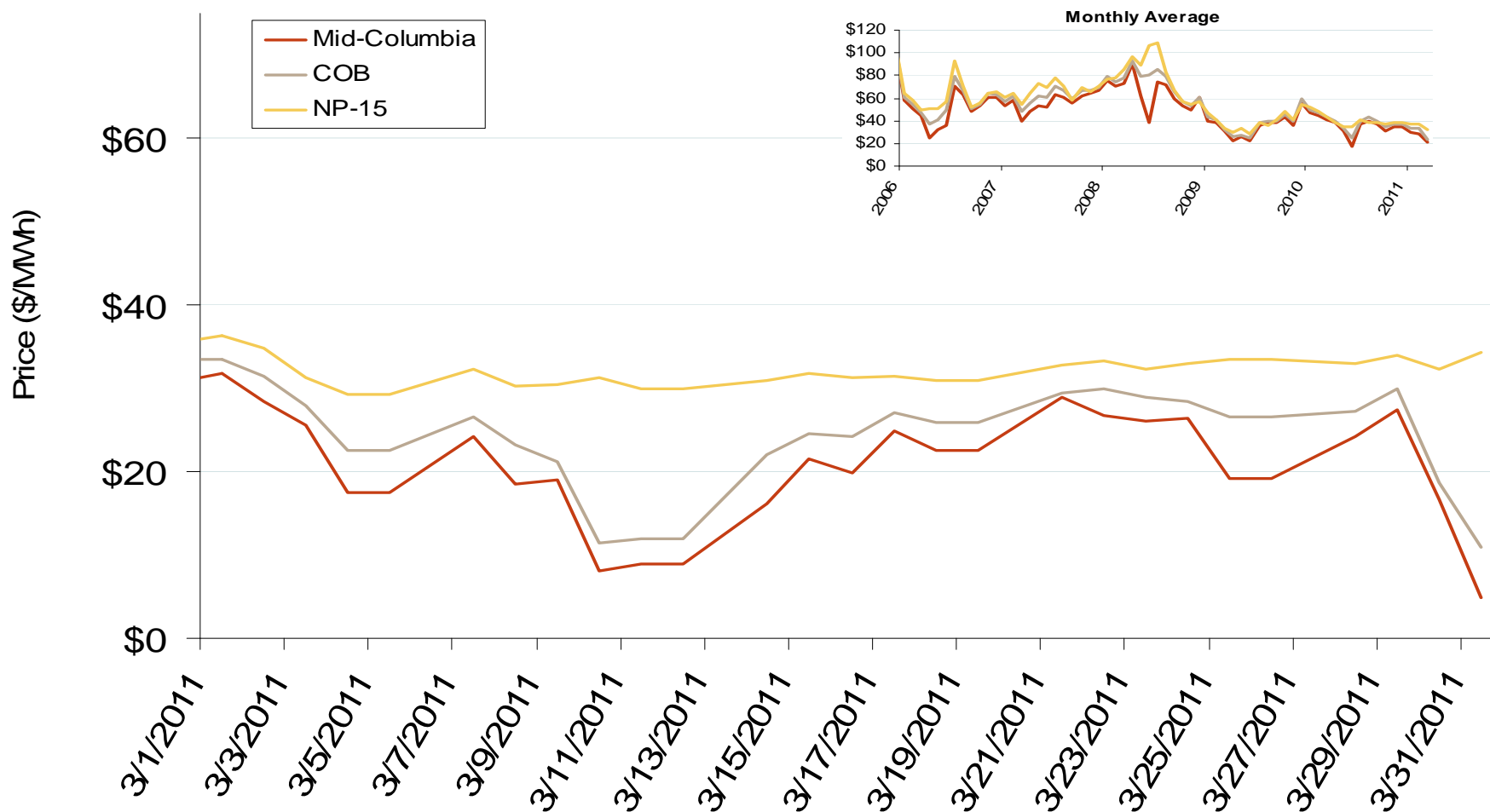
# Implied Heat Rates at Western Trading Points Weekly Averages



Source: Derived from *Platts* on-peak electric and natural gas price data.

Updated April 8, 2011

# Northwestern Daily Bilateral Day-Ahead On-Peak Prices

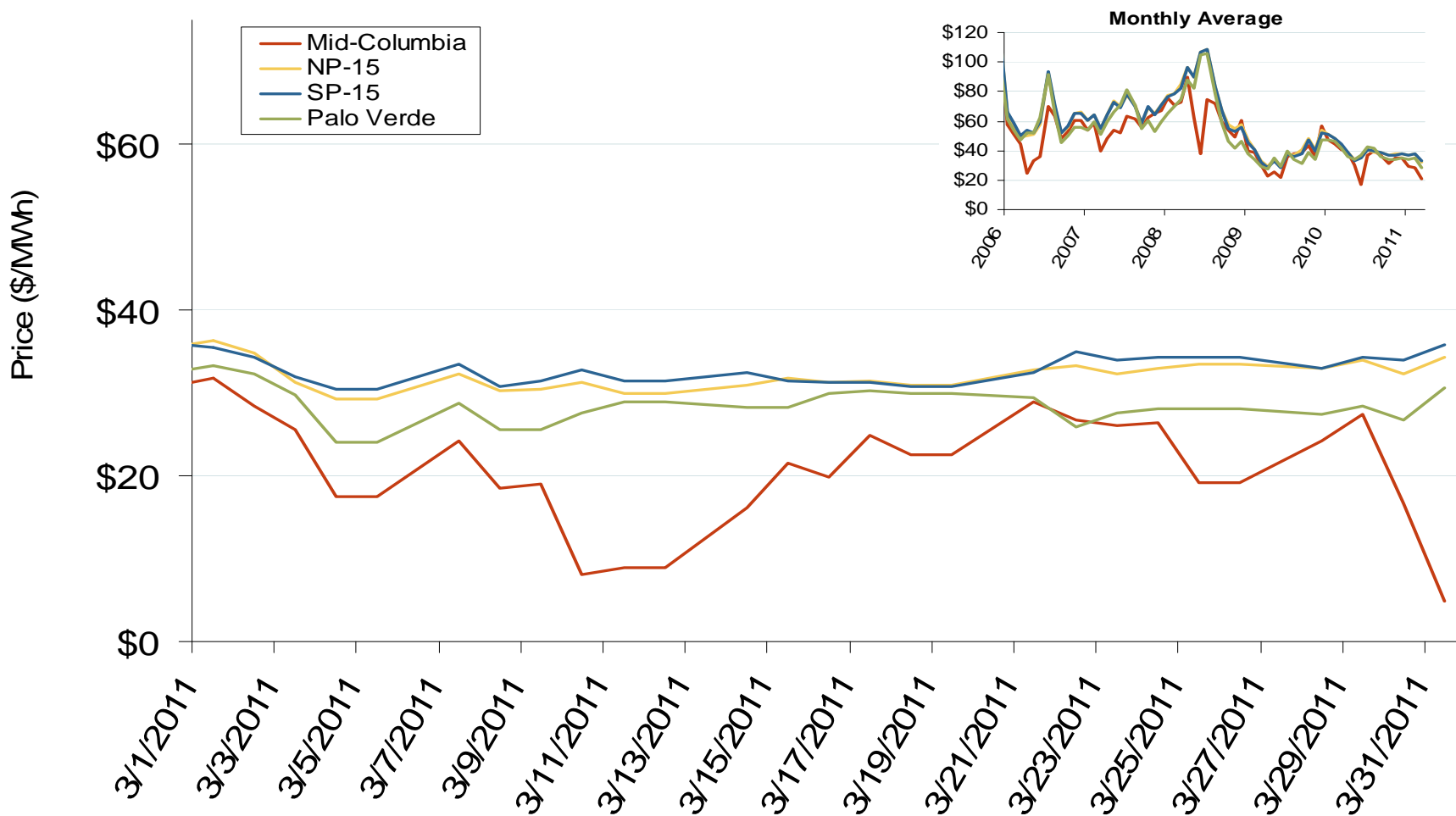


Source: Derived from *Platts* data.

Updated April 8, 2011



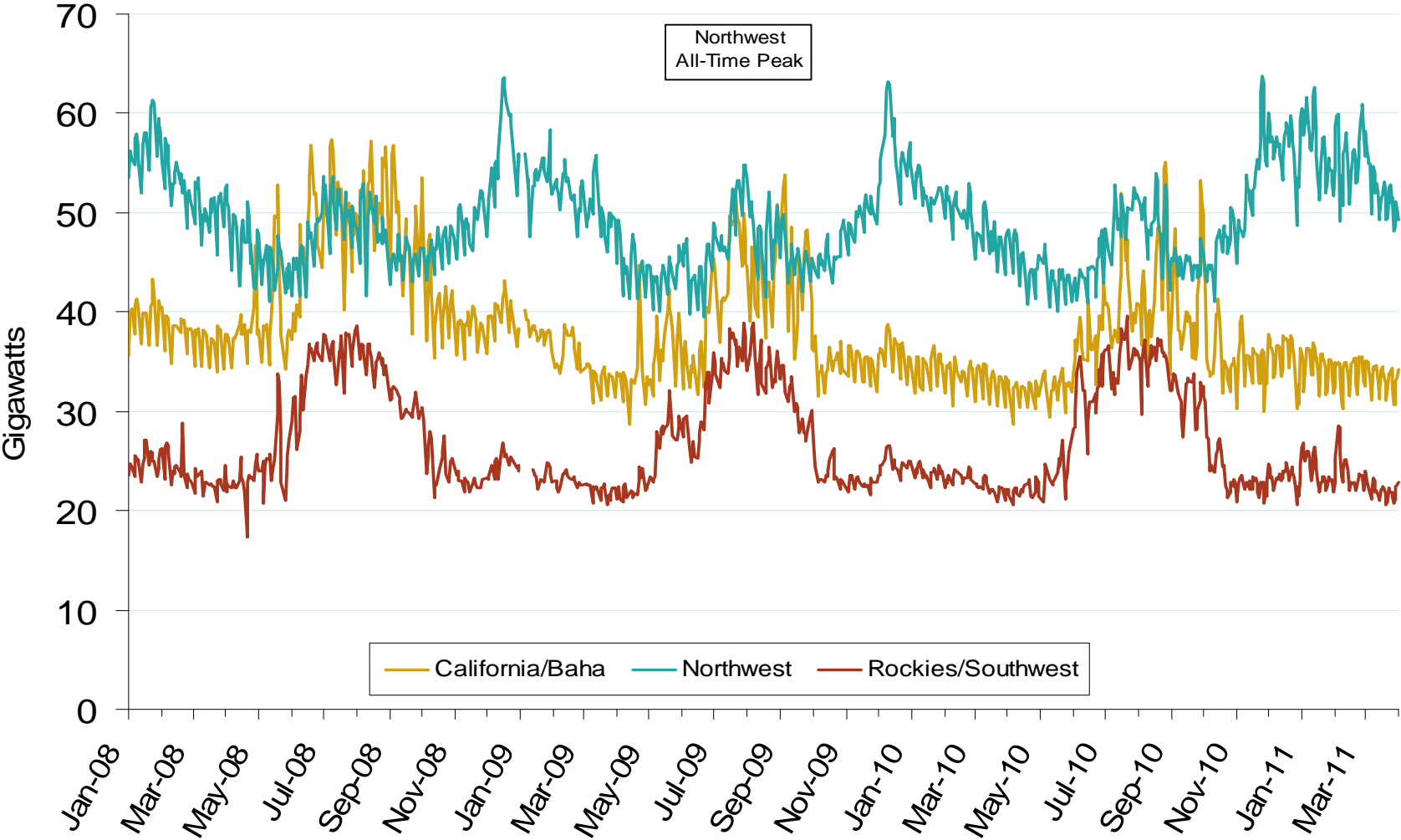
# Western Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.

Updated April 8, 2011

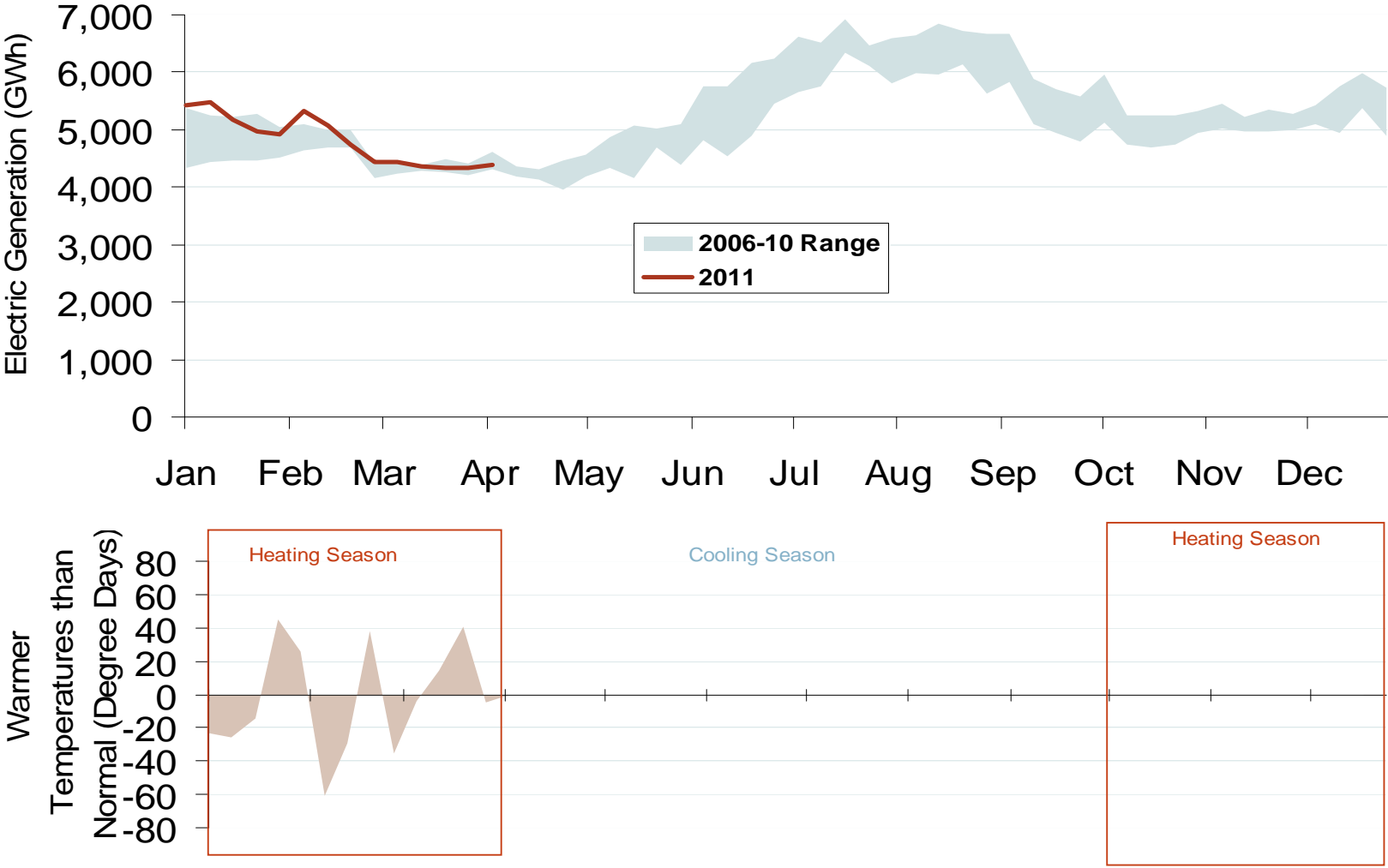
# Western Daily Actual Peak Demand



Source: Derived from WECC Daily Report data available at <http://wecc.biz>. Data does not include weekends and holidays. Some data for 12/31/2008 – 1/9/2009 are not available from WECC.

Updated April 8, 2011

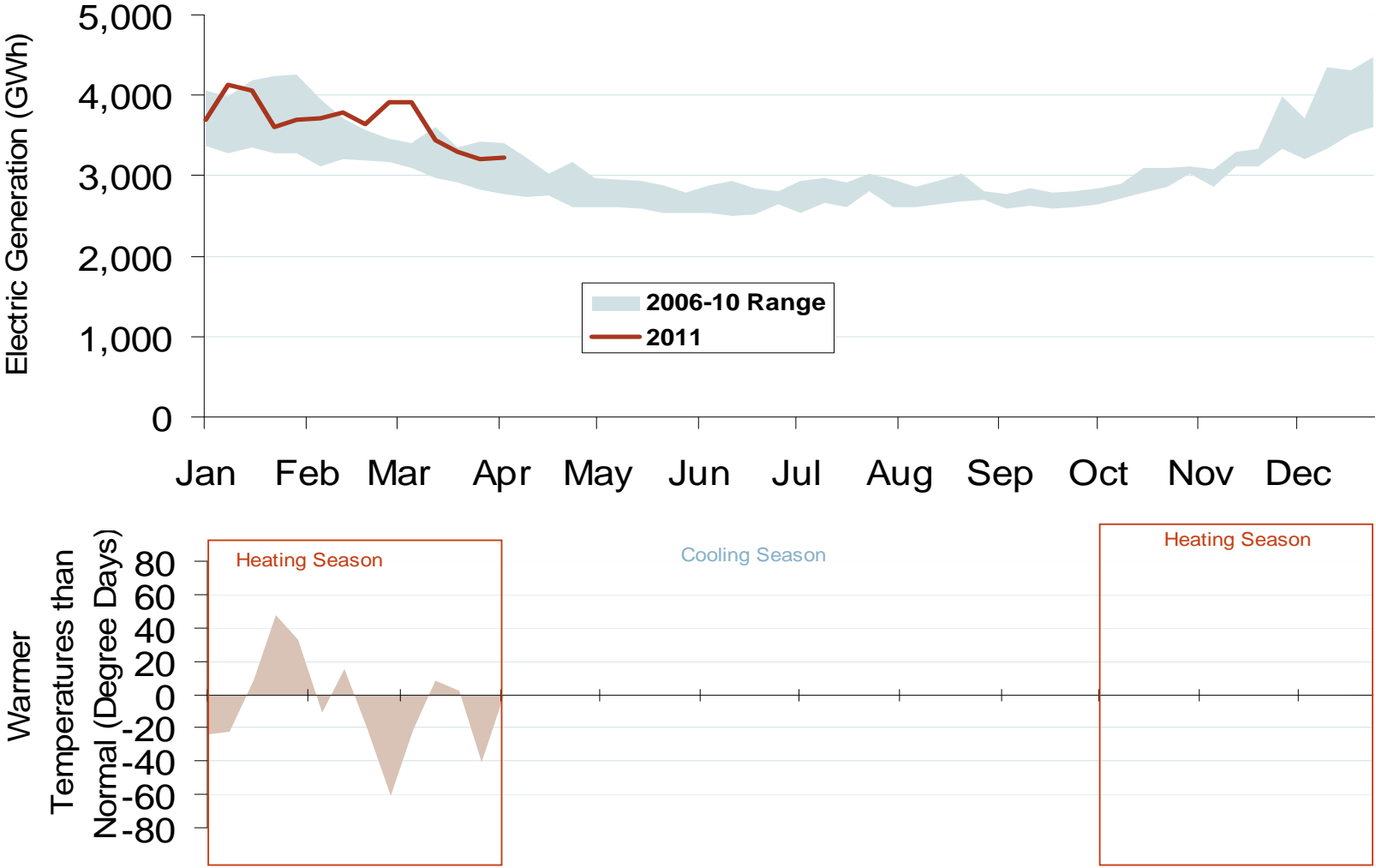
# Weekly Electric Generation Output and Temperatures Rocky Mountains Region



Source: Derived from *EEl* and *NOAA* data.  
April 2011

Updated April 8, 2011

# Weekly Electric Generation Output and Temperatures Pacific Northwest Region



Source: Derived from EEI and NOAA data.  
April 2011

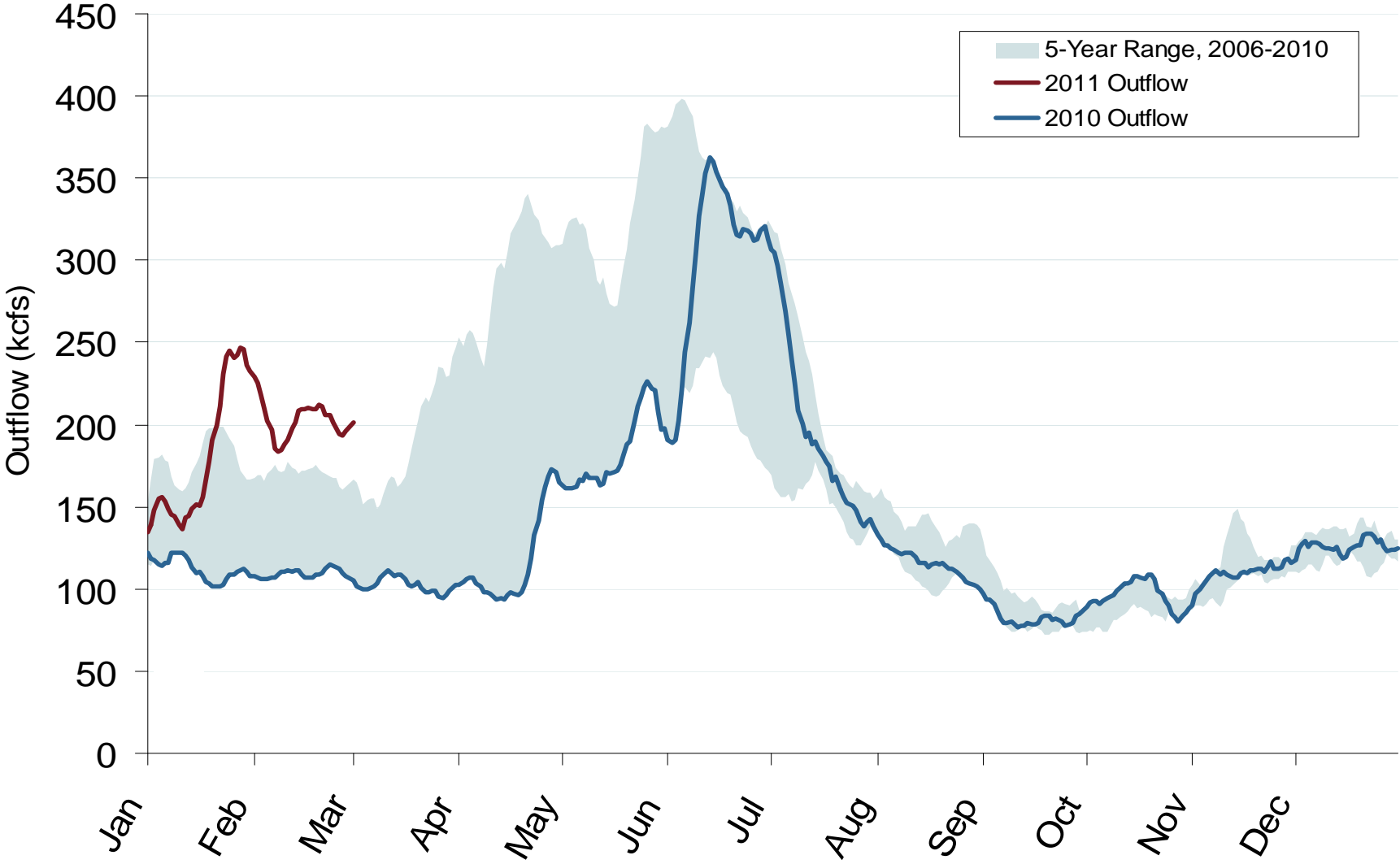
Updated: March 08, 2011

## Pacific/Northwest Hydro and Snowpack Levels

	Hydro Generation		Snow Water Equivalent <sup>3</sup>		
	In-State Capacity (MW) <sup>1</sup>	Additional Capacity Created Downstream (MW) <sup>2</sup>	One Year Ago (4/1/10) (% of historical average)	Current (3/30/11) (% of historical average)	% Change from One Year Ago
<b>Washington</b>	<b>21,500</b>	<b>0</b>	<b>72%</b>	<b>112%</b>	<b>+40%</b>
<b>Oregon</b>	<b>9,100</b>	<b>0</b>	<b>67%</b>	<b>130%</b>	<b>+63%</b>
<b>California</b>	<b>10,400</b>	<b>0</b>	<b>106%</b>	<b>166%</b>	<b>+60%</b>
<b>Idaho</b>	<b>2,700</b>	<b>19,700</b>	<b>67%</b>	<b>116%</b>	<b>+49%</b>
<b>Montana</b>	<b>2,700</b>	<b>16,200</b>	<b>64%</b>	<b>119%</b>	<b>+55%</b>
<b>British Columbia</b>	<b>10,000</b>	<b>16,200</b>	<b>80%</b>	<b>106%</b>	<b>+26%</b>

- <sup>1</sup> Net summer capacity in megawatts by state (EIA).
- <sup>2</sup> 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.
- <sup>3</sup> 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, California Dept. of Water Resource and Government of British Columbia Ministry of Environment).

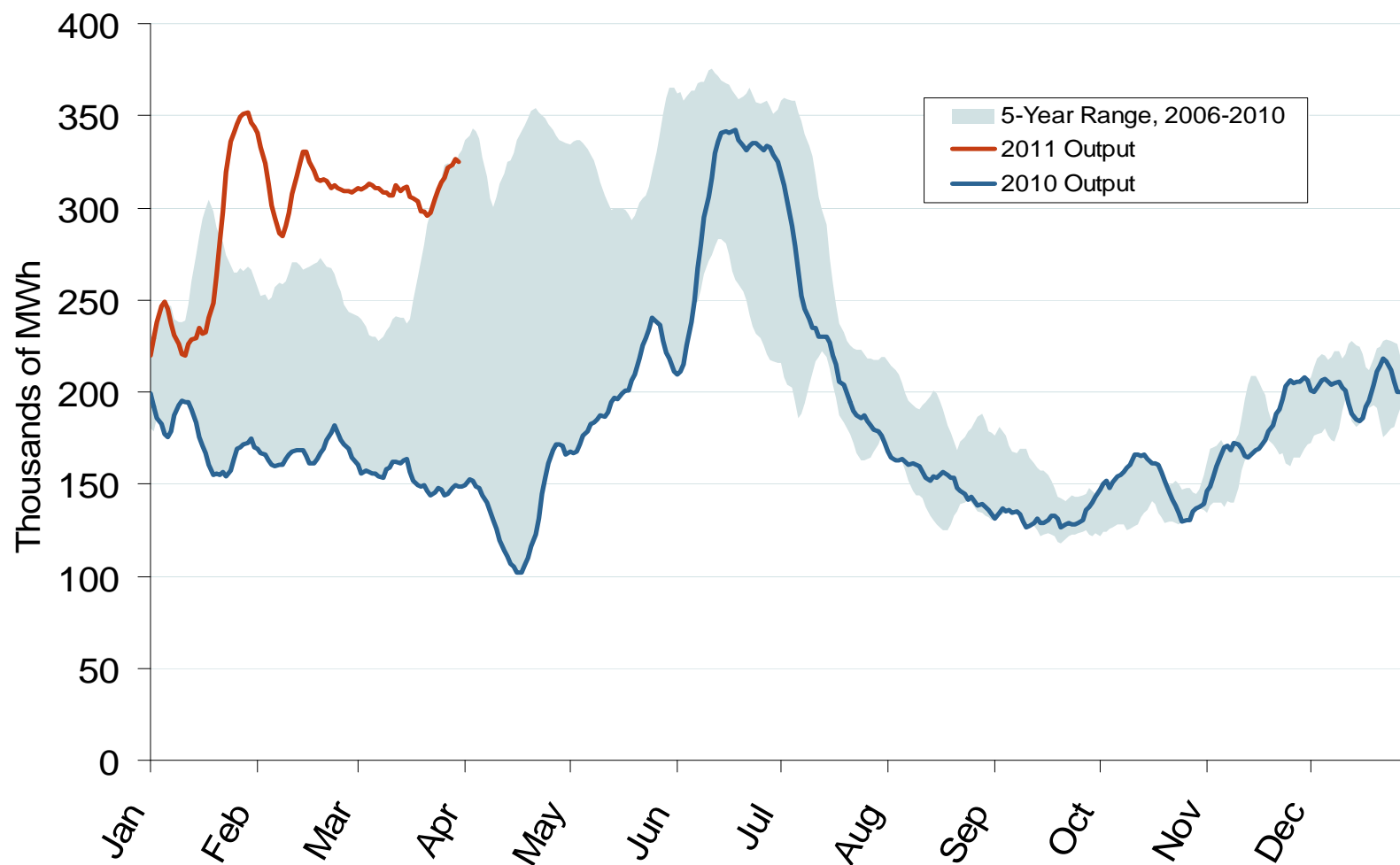
# Stream Flow at The Dalles Dam



Source: Derived from USACE data.  
Trend lines are 7-day moving averages.  
April 2011

Updated April 8, 2011

## Pacific Northwest Hydroelectric Production



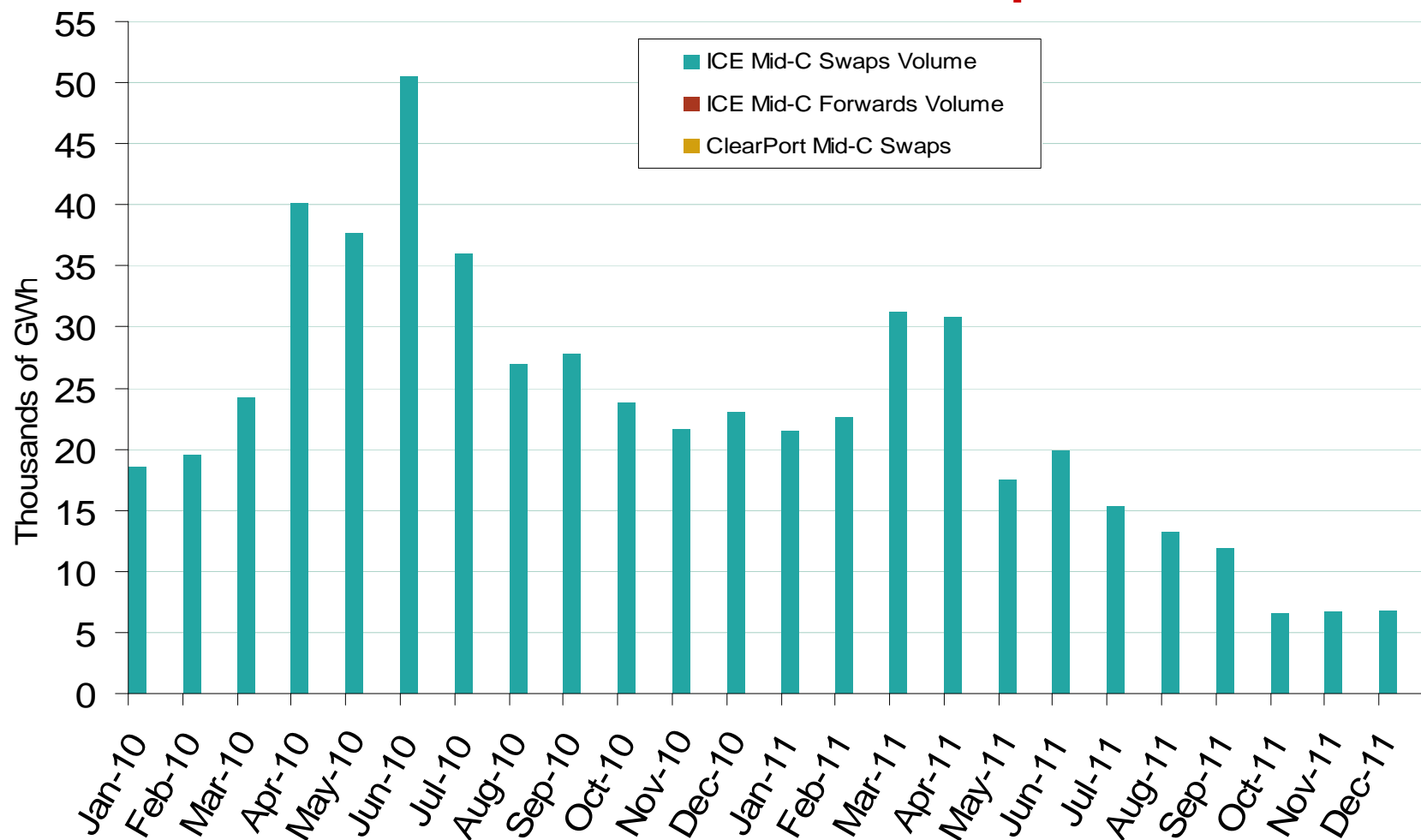
Source: Derived from USACE data reflecting the output of the 24 largest facilities.

Note: Trend lines are 7-day moving averages.

April 2011

Updated April 8, 2011

## Mid-Columbia Forward and Swap Volumes



Source: Derived from *ICE* and *Nymex ClearPort* data.

Note: *ICE* on-peak forward (physical) and swap (financial) volumes are for Mid-Columbia and include monthly, dual monthly, quarterly, and calendar year contracts traded for each month. *Nymex ClearPort* on-peak swaps (financial) volume are for Mid-Columbia and are traded by month.

Updated April 8, 2011