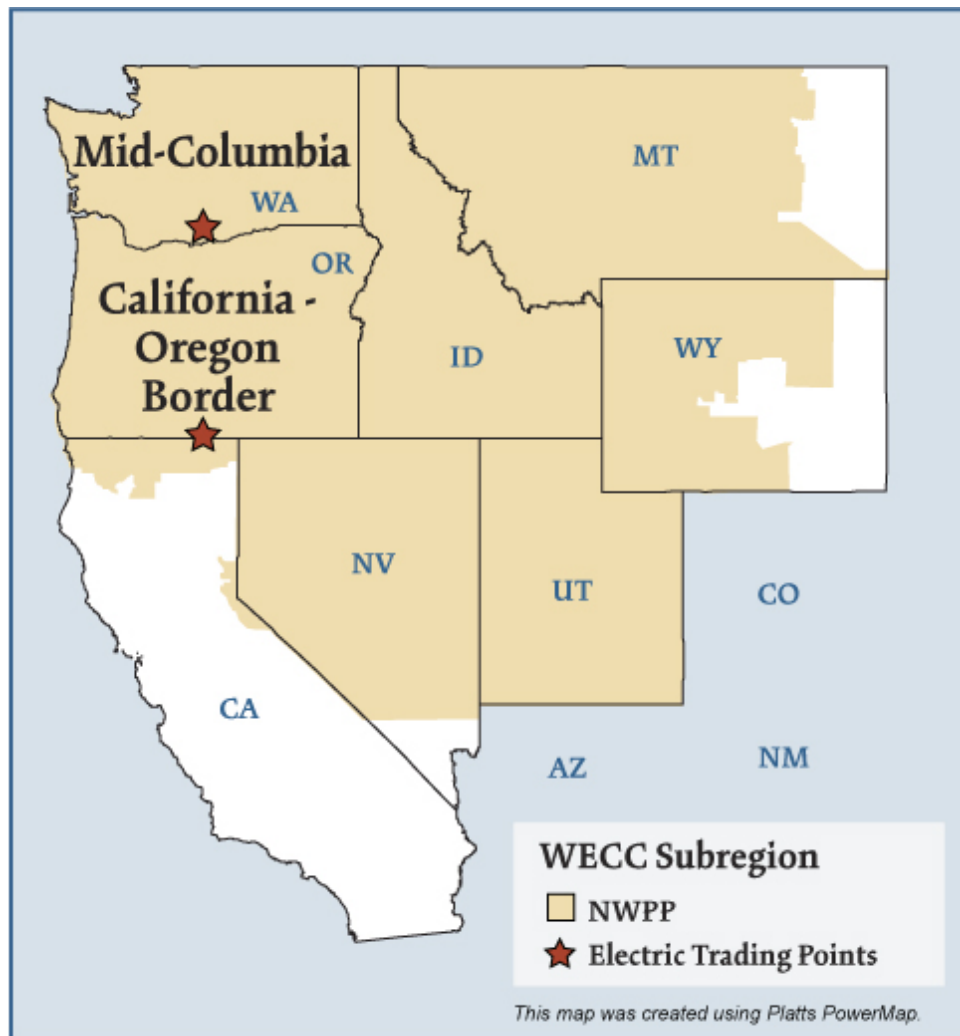


# Northwest Electric Market



## 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

Peak demand: 36,519 MW (2005)

Peak demand growth: 3.5% (2004–2005)

## Prices

Annual Average of Daily Bilateral Day Ahead On-Peak Prices

Platts "Palo Verde" Index

2004: \$50.09/MWh

2005: \$67.39/MWh

2006: \$57.59/MWh

2007: \$61.74/MWh

## Interconnections/Seams

Generation suppliers export excess power to the rest of the West and particularly to California.

## Focal Points

**BPA in the Market:** The Bonneville Power Administration (BPA) is the largest wholesale power supplier in the Northwest, according to the agency. BPA meets approximately 40 percent of the region's firm energy supply from resources under its control, primarily the federal hydroelectric dams in the Northwest.

BPA has agreements to sell power from federal hydropower generation in the Northwest and from certain nonfederal power plants, such as Energy Northwest's nuclear plant, Columbia Generating Station. BPA sells most of its power at cost-based rates to regional public power and municipal utilities, electric cooperatives, and direct service industries (such as aluminum smelters). After meeting its regional commitments, BPA sells surplus power to other Western market participants at market prices.

**Severe Heat Wave:** In late July 2006, a severe heat wave resulted in 100+ degree temperatures over much of the West - and greater than 110 degrees in some areas. Northwest utilities urged consumers to conserve. From July 17 through July 25, various peak load records were set by utility customers (e.g., Idaho Power and NorthWestern Energy) which is notable since the Northwest overall is typically a winter-peaking area. Control areas managed by Portland General Electric, PacifiCorp, and Puget Sound Energy declared NERC Energy Emergency Alert levels 1 and 2 (for Puget Sound Energy, level 1 only), meaning all resources were in use and/or load management procedures were in effect. Although a concurrent fire in eastern Oregon threatened power lines in the Idaho-Oregon area, no curtailment of non-firm load was called. Power prices in the Northwest bilateral markets rose to over \$350/MWh on July 24, the date that CAISO declared a Stage 2 Emergency - CAISO's call for critical conservation due to very tight power supplies in its control area.

## 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

## Supply and Demand Statistics for the Northwest

<b>Supply Demand Statistics</b>			
	2003	2004	2005
Winter Generating Capacity MW	54,802	57,101	57,120
Winter Peak Demand MW	35,456	39,710	40,298
Winter Reserves MW	19,346	17,391	16,822
Winter Reserve Margin:	55%	44%	42%
Annual Load (GWh):	219,582	223,148	234,153
Annual Net Generation GWh	NA	NA	NA

Source: Derived from WECC data.

Updated February 2, 2007

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## Annual Average Bilateral Prices

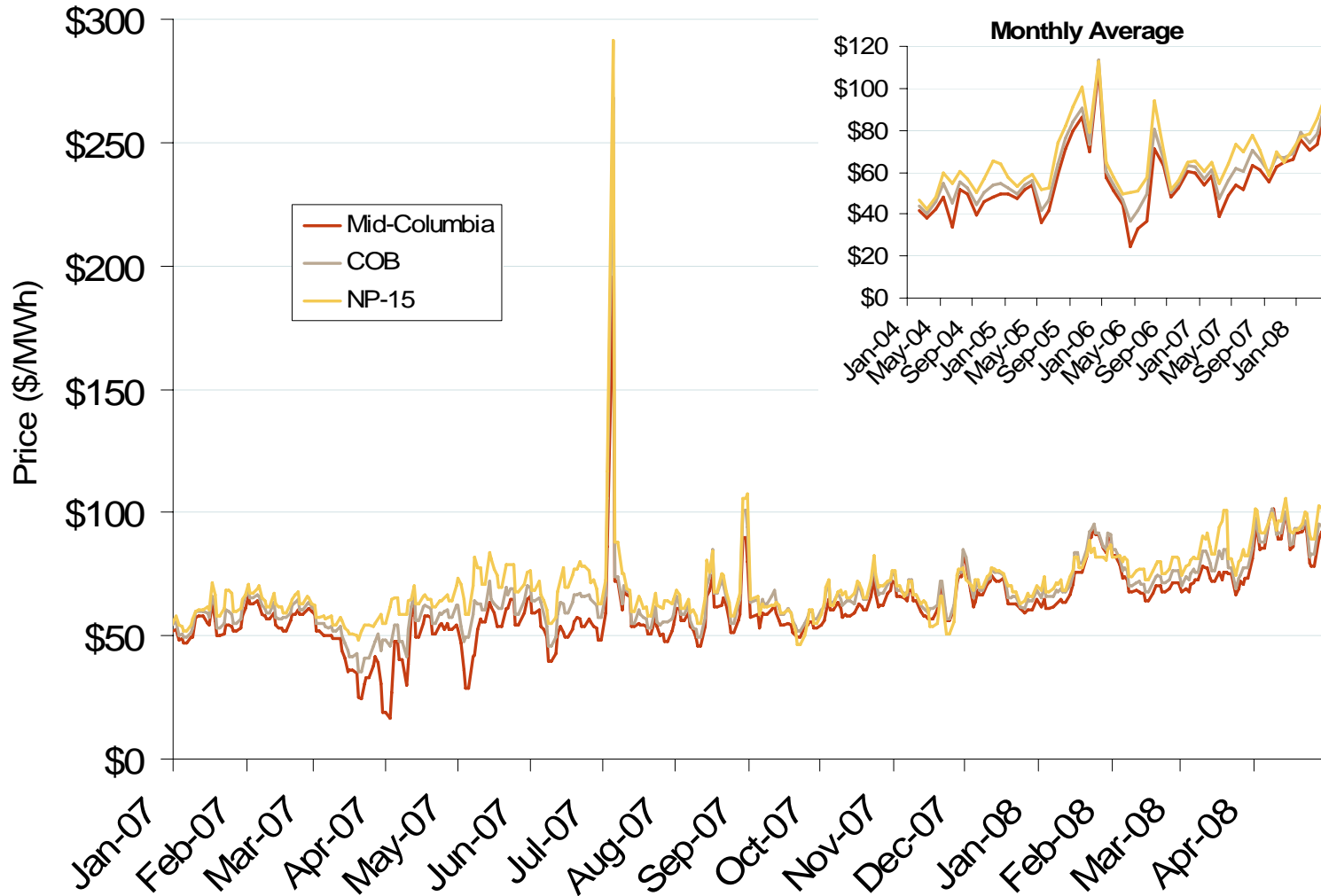
<b>Annual Average Day Ahead On Peak Prices (\$/MWh)</b>				
	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>5 Years</b>
Mid-Columbia (Mid-C)	\$62.95	\$50.18	\$56.57	\$50.97
California-Oregon Border (COB)	\$66.95	\$55.58	\$62.14	\$55.62

Source: Derived from *Platts* data.

Updated March 7, 2008

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# Northwestern Daily Bilateral Day-Ahead On-Peak Prices



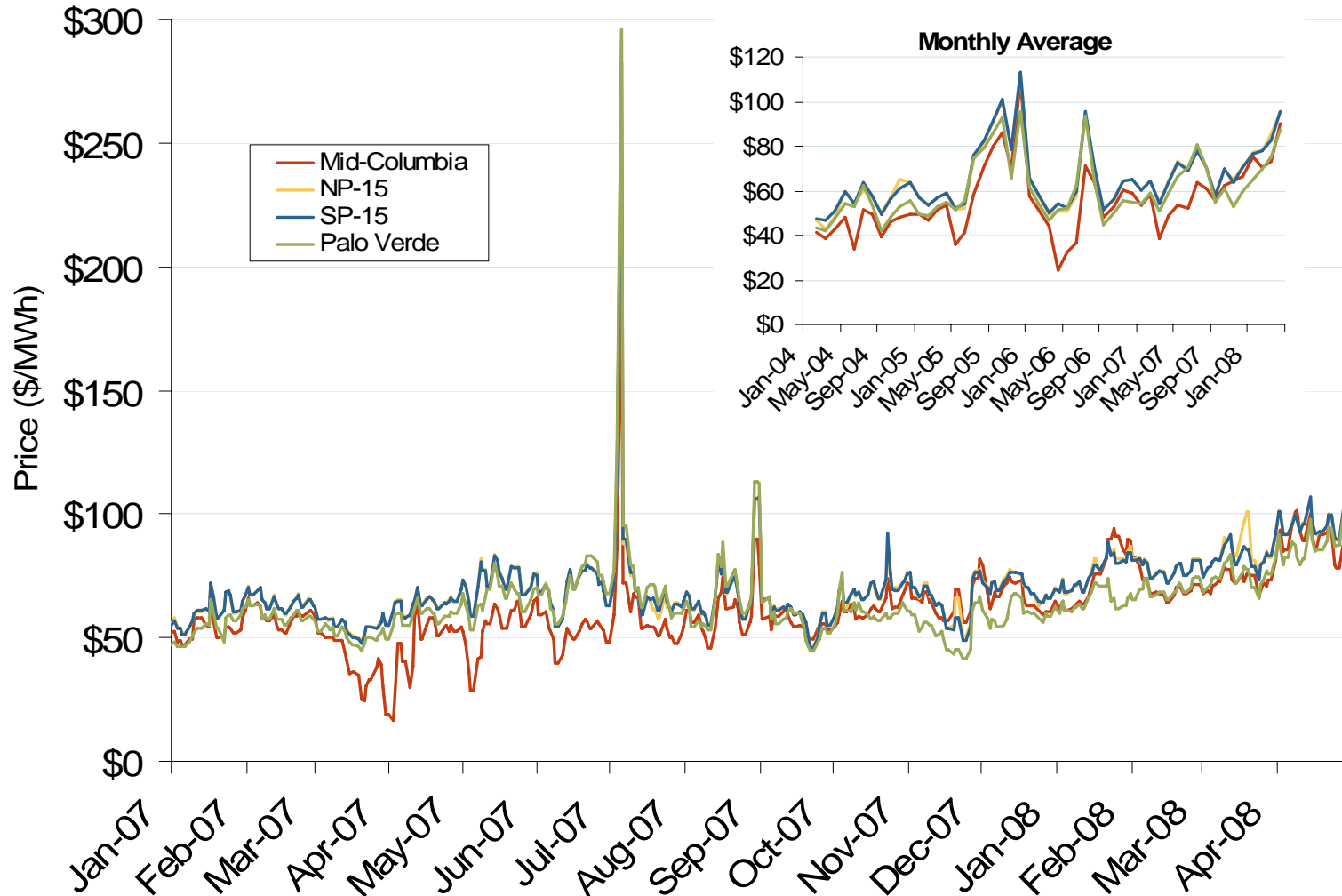
Source: Derived from Platts data.

Updated May 6, 2008

1041



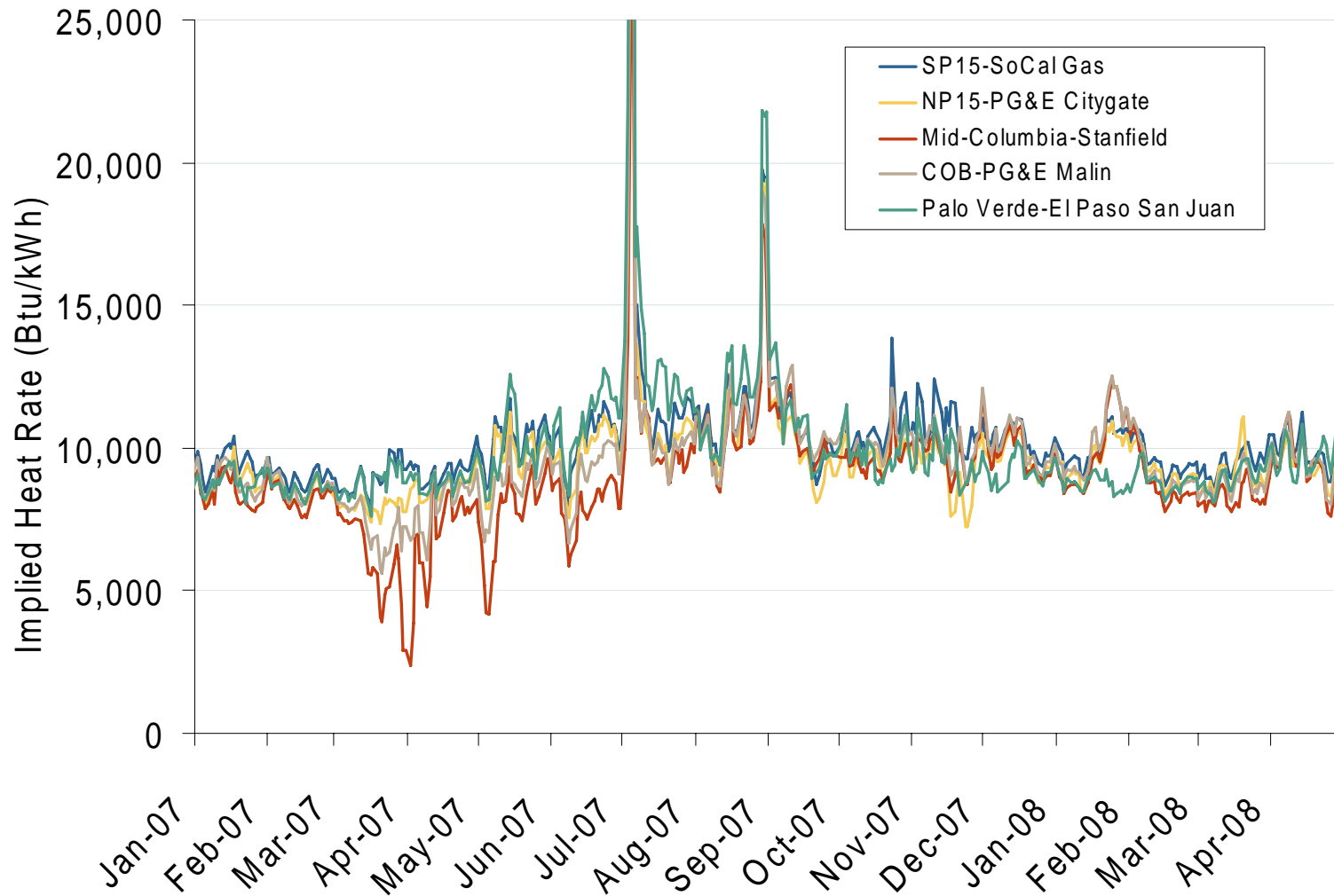
# Western Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from Platts data.

Updated May 6, 2008  
1042

## Implied Heat Rates at Western Trading Points

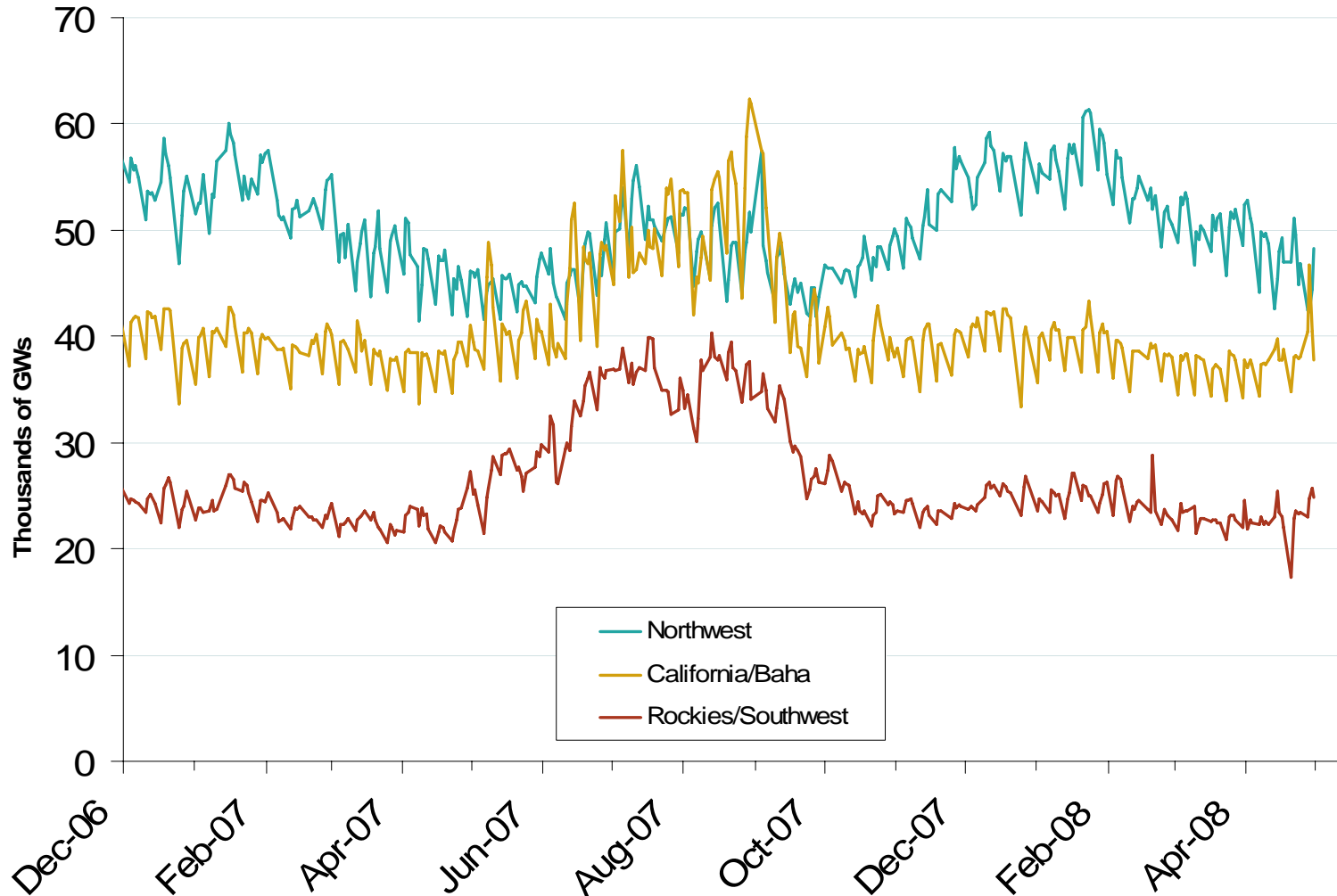


Source: Derived from *Platts* data

Updated May 6, 2008

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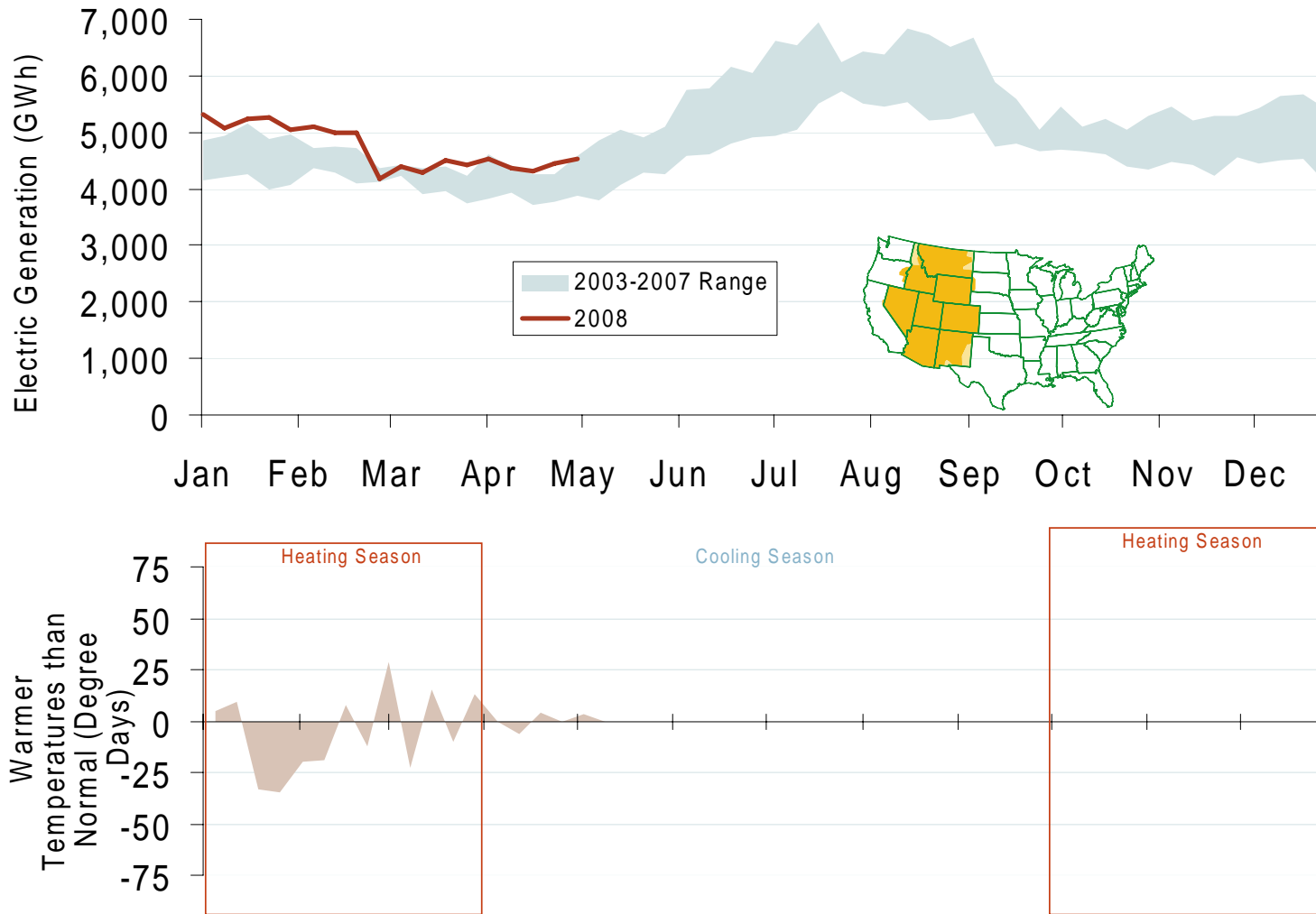
## Western Daily Actual Peak Demand



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

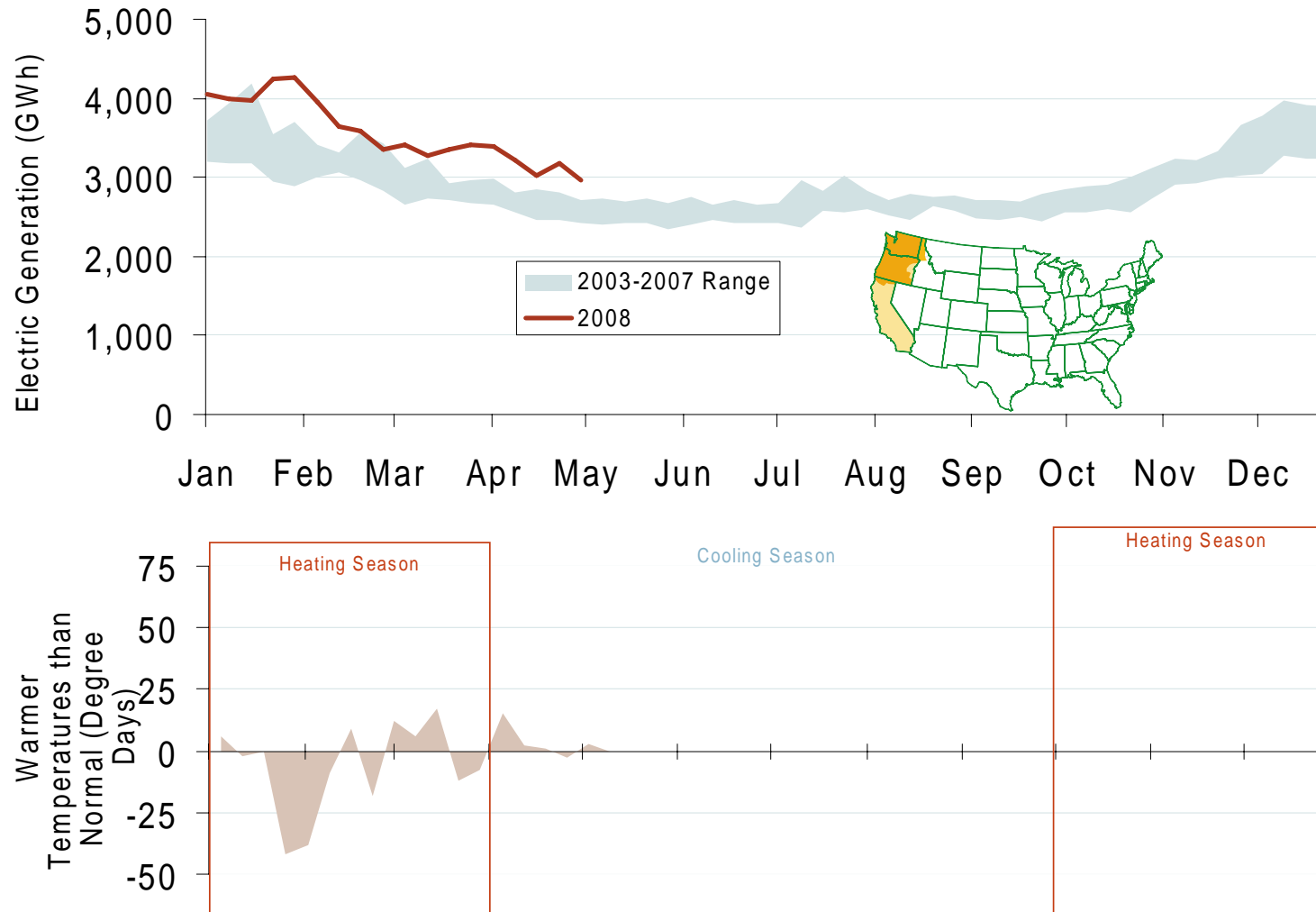
# Weekly Electric Generation Output and Temperatures Rocky Mountains Region



Source: Derived from EEI and NOAA data.

Updated May 6, 2008

# Weekly Electric Generation Output and Temperatures Pacific Northwest Region



Source: Derived from EEI and NOAA data.

Updated May 6, 2008

## Pacific/Northwest Hydro and Snowpack Levels

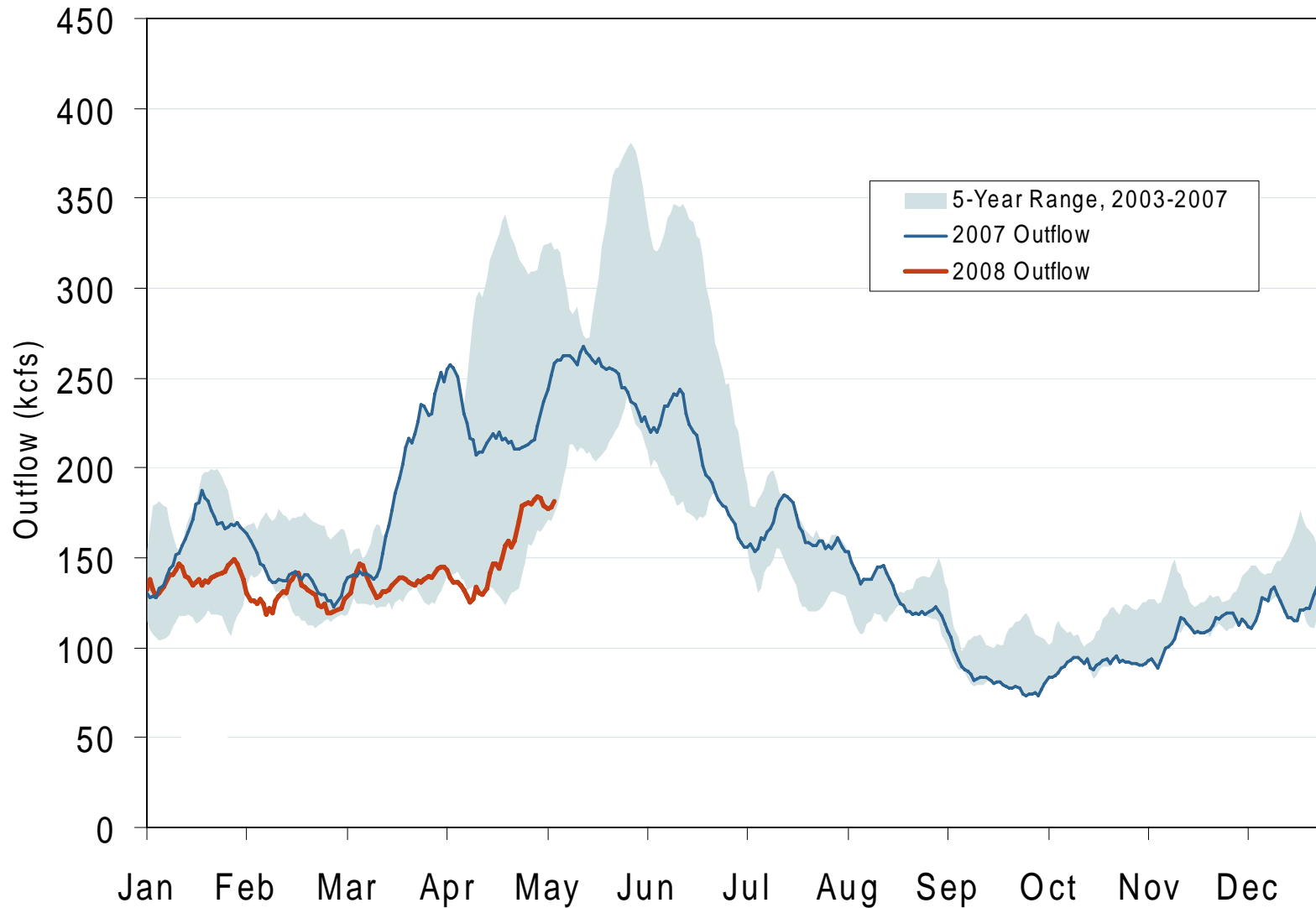
	Hydro Generation		Snow Water Equivalent <sup>3</sup>		
	In-State Capacity (MW) <sup>1</sup>	Additional Capacity Created Downstream (MW) <sup>2</sup>	One Year Ago (% of average)	3/31/08 (% of average)	5/5/08 (% of average)
<b>California</b>	<b>10,400</b>	<b>0</b>	<b>30%</b>	<b>98%</b>	<b>74%</b>
<b>British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

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).

## Stream Flow at The Dalles Dam



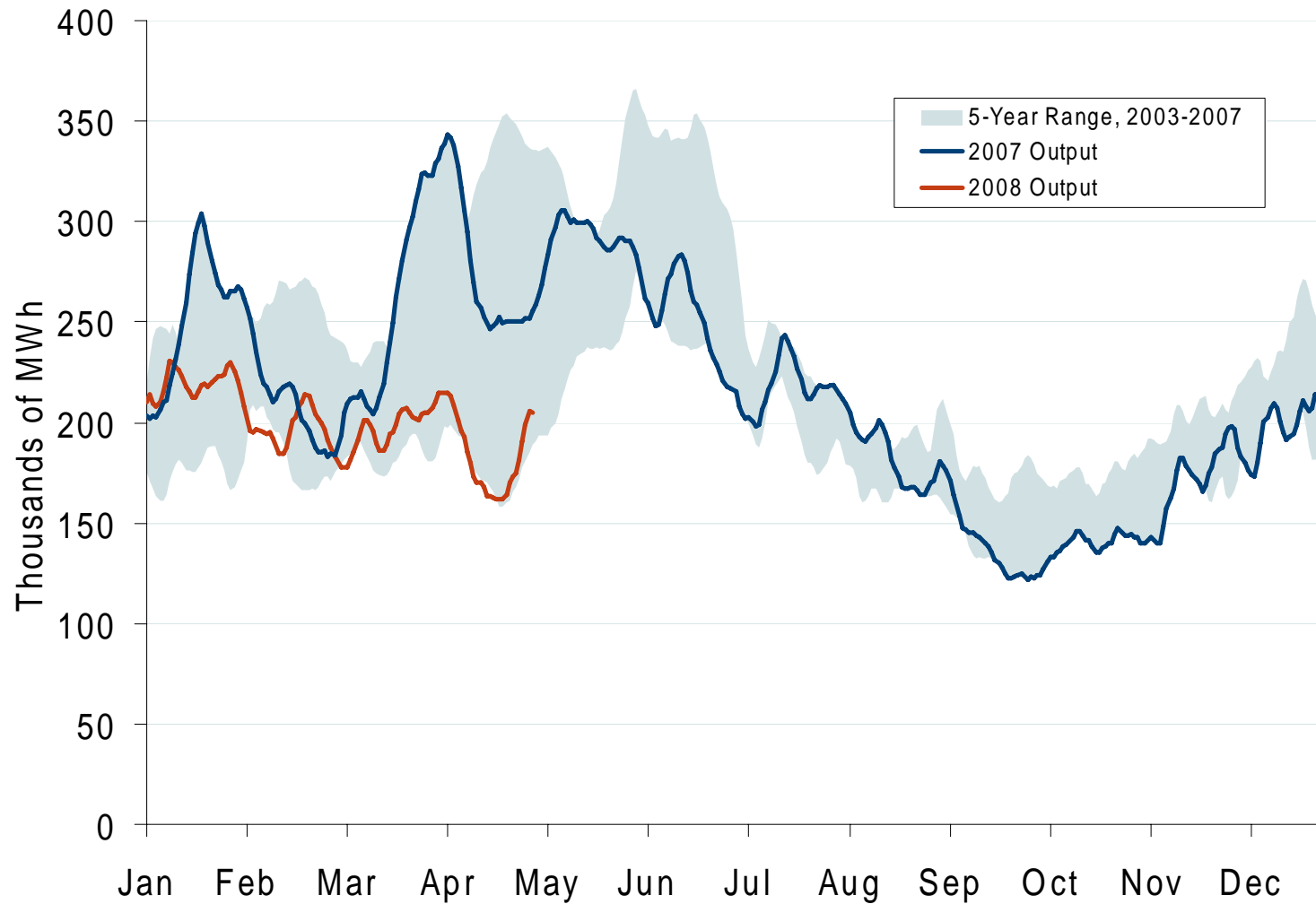
Source: Derived from USACE data.

Trend lines are 7-day moving averages.

Updated May 6, 2008

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## Pacific Northwest Hydroelectric Production

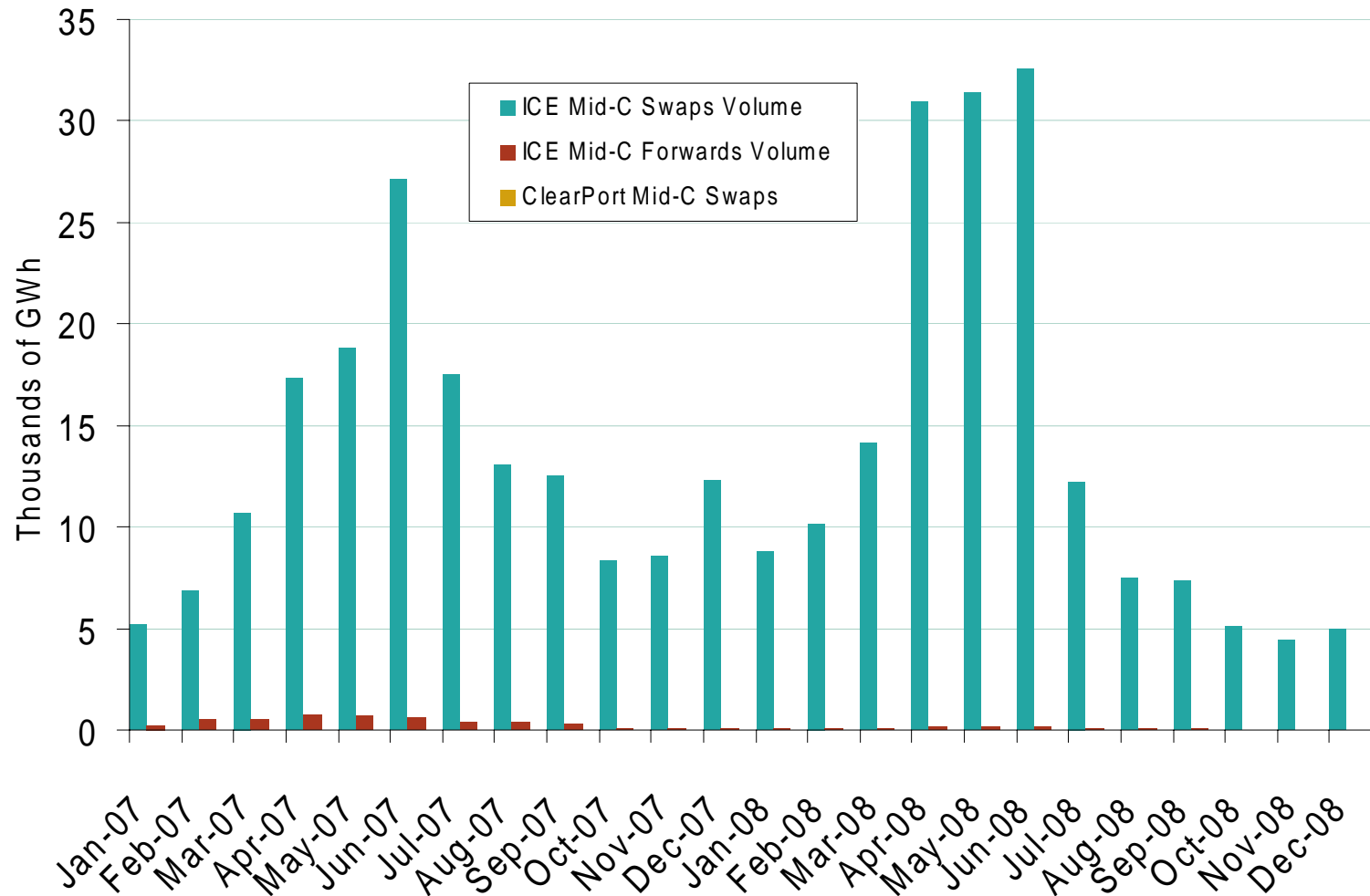


Source: Derived from USACE data reflecting the output of the 24 largest facilities.  
Trend lines are 7-day moving averages.

Updated May 6, 2008



## Mid-Columbia Forward and Swap Volumes



Source: Derived from ICE and Nymex ClearPort data. 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.