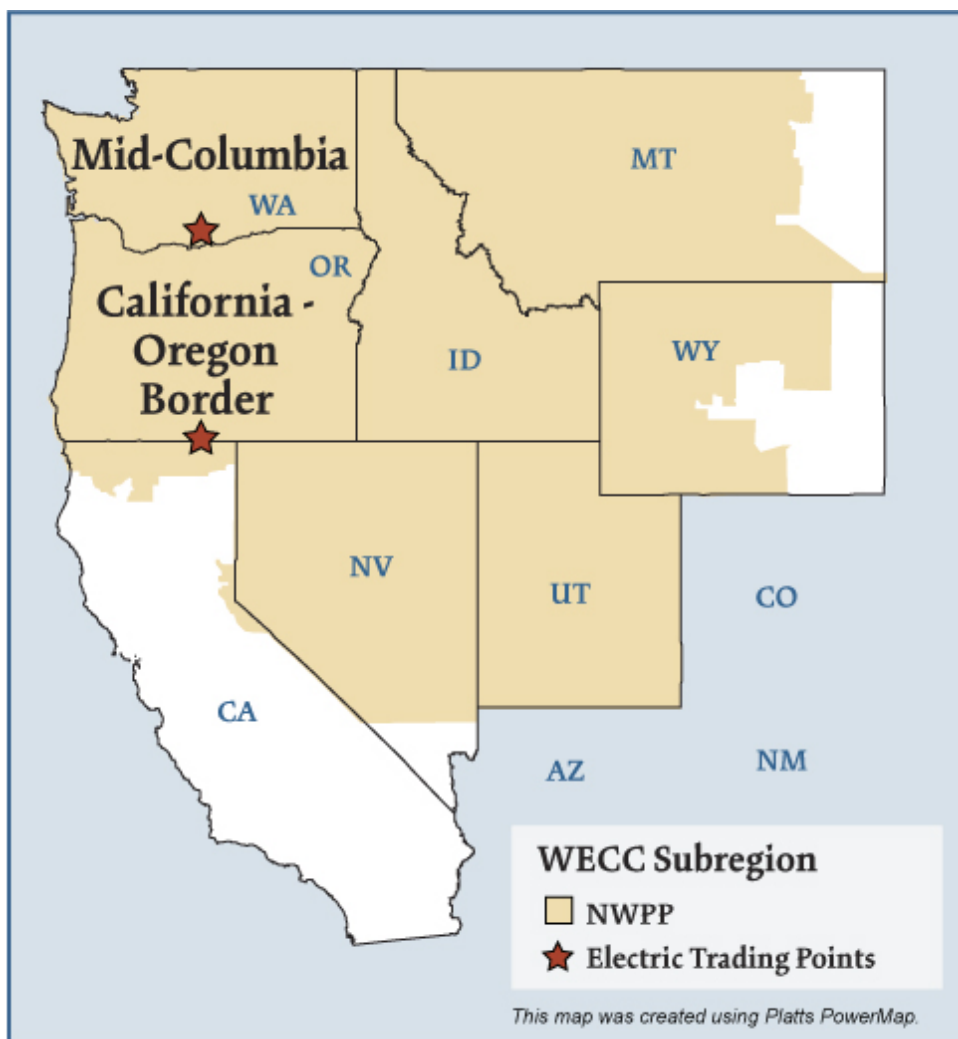


# Northwest Electric Market



## 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

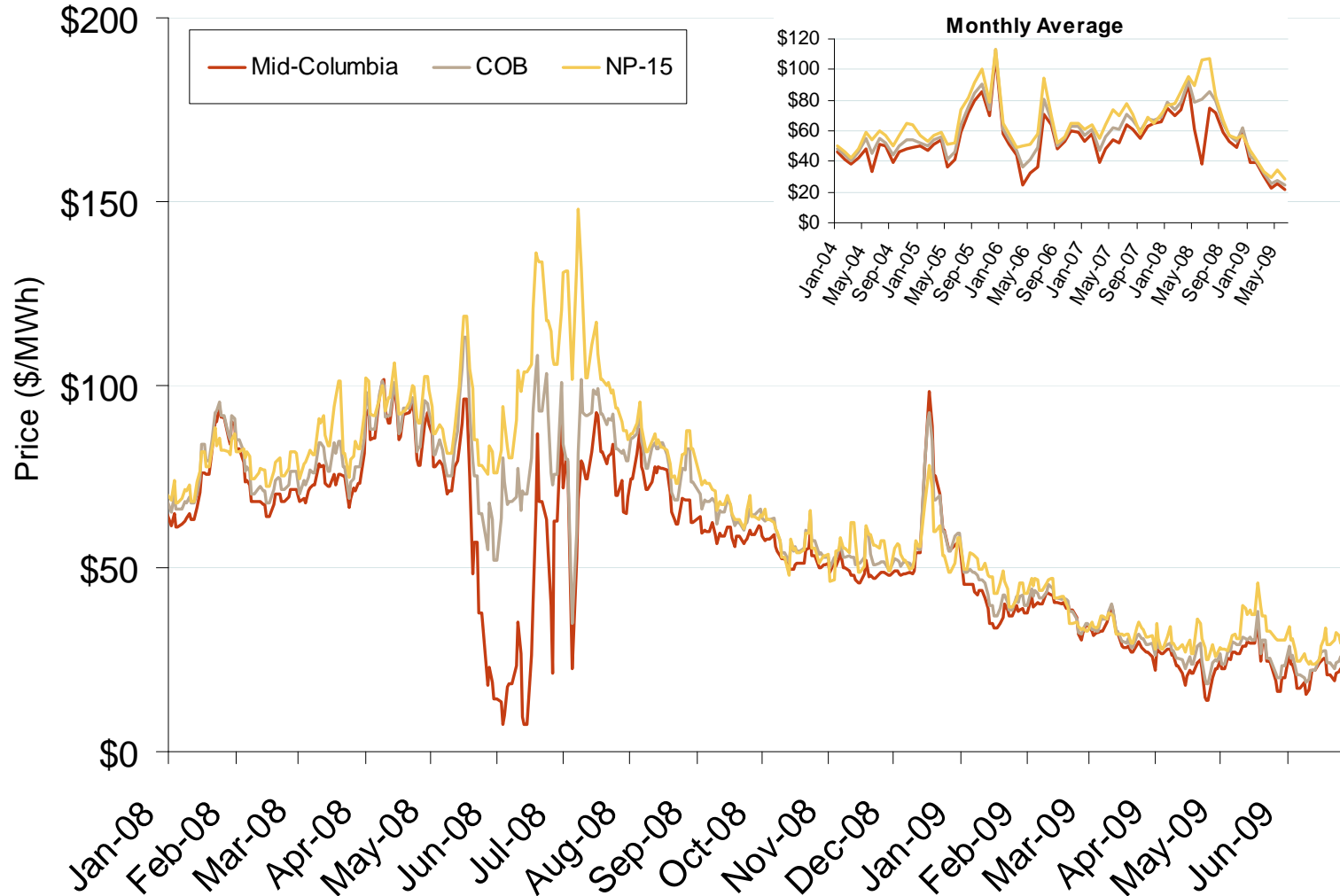
## Supply and Demand Statistics for the Northwest

<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

## Annual Average Bilateral Prices

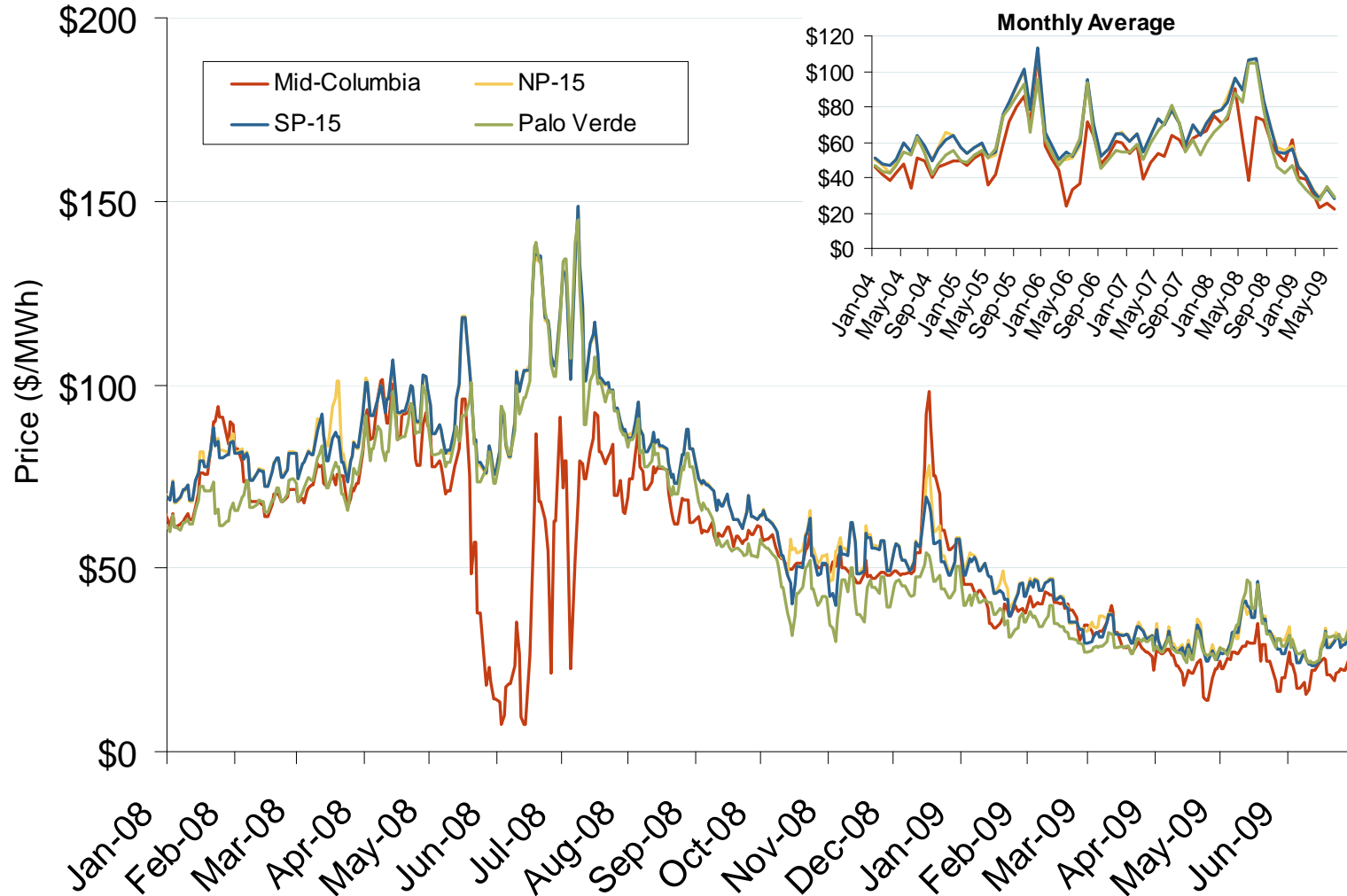
Annual Average Day Ahead On Peak Prices (\$/MWh)						
	2004	2005	2006	2007	2008	5-Year Avg
Mid-Columbia (Mid-C)	\$44.53	\$62.95	\$50.18	\$56.57	\$65.00	\$55.84
California-Oregon Border (COB)	\$49.08	\$66.95	\$55.58	\$62.14	\$73.86	\$61.52

# Northwestern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from Platts data.  
July 2009

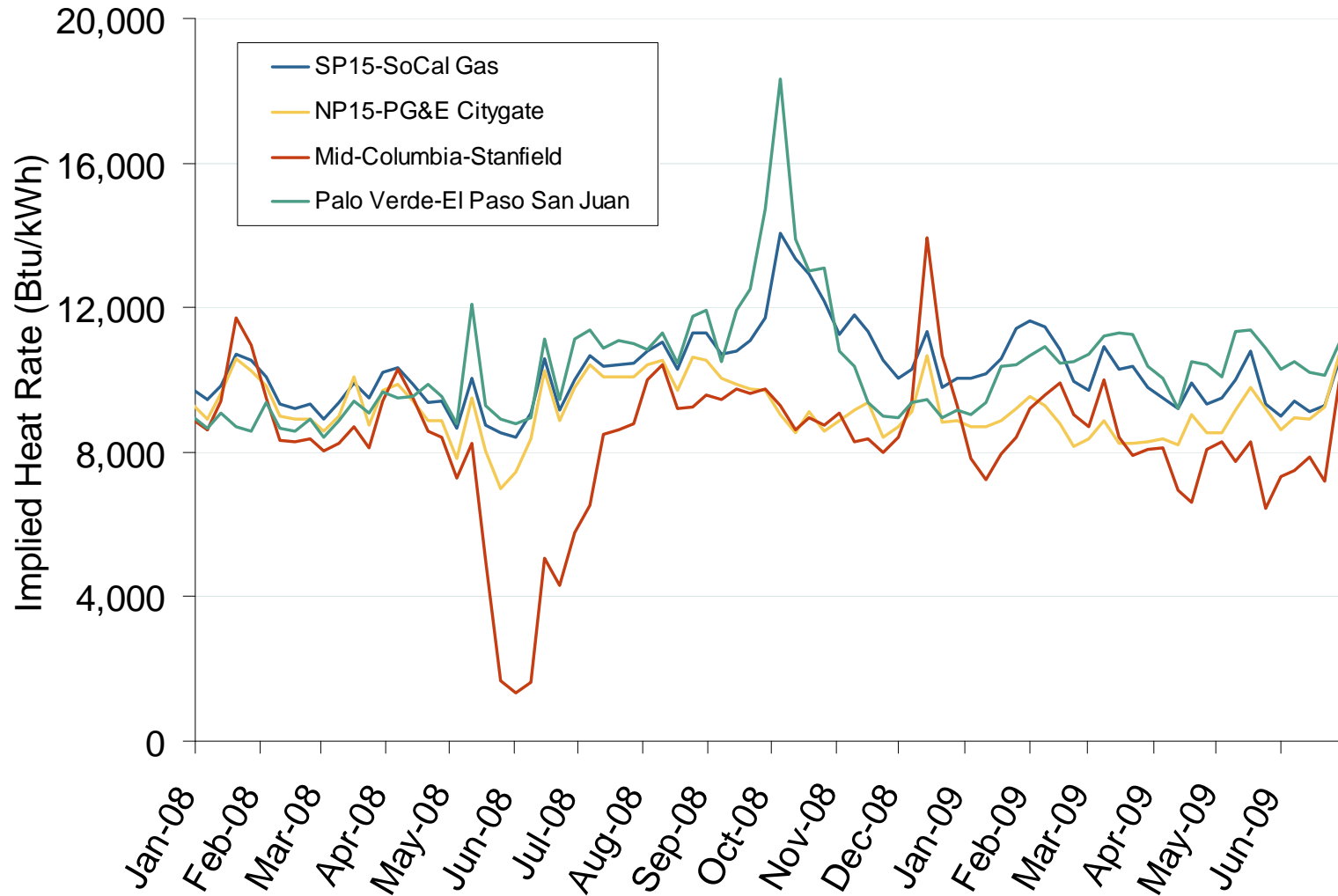
# Western Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.  
July 2009



## Implied Heat Rates at Western Trading Points Weekly Averages



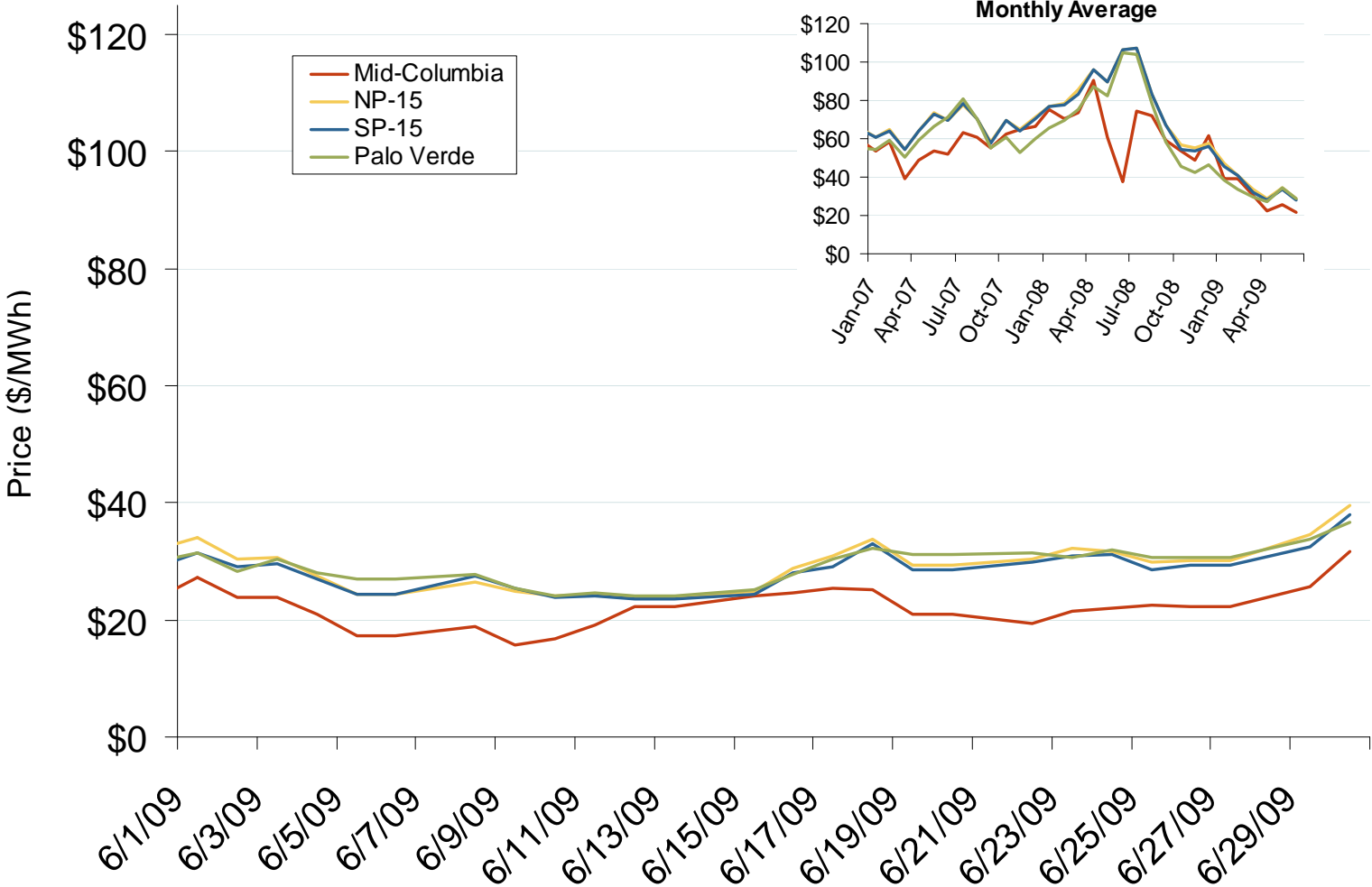
# Northwestern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from Platts data.  
July 2009

Updated July 8, 2009

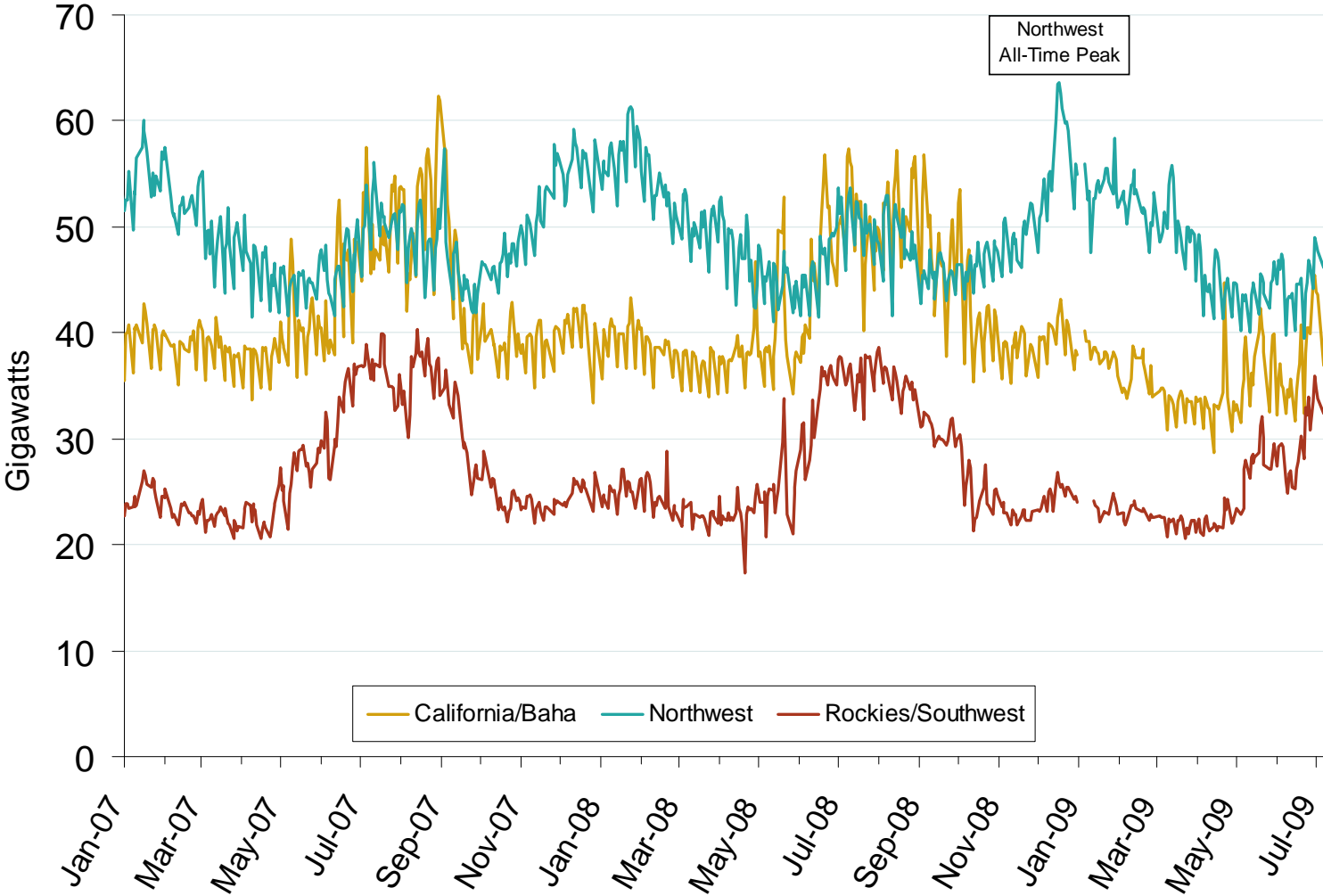
# Western Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from Platts data.  
July 2009

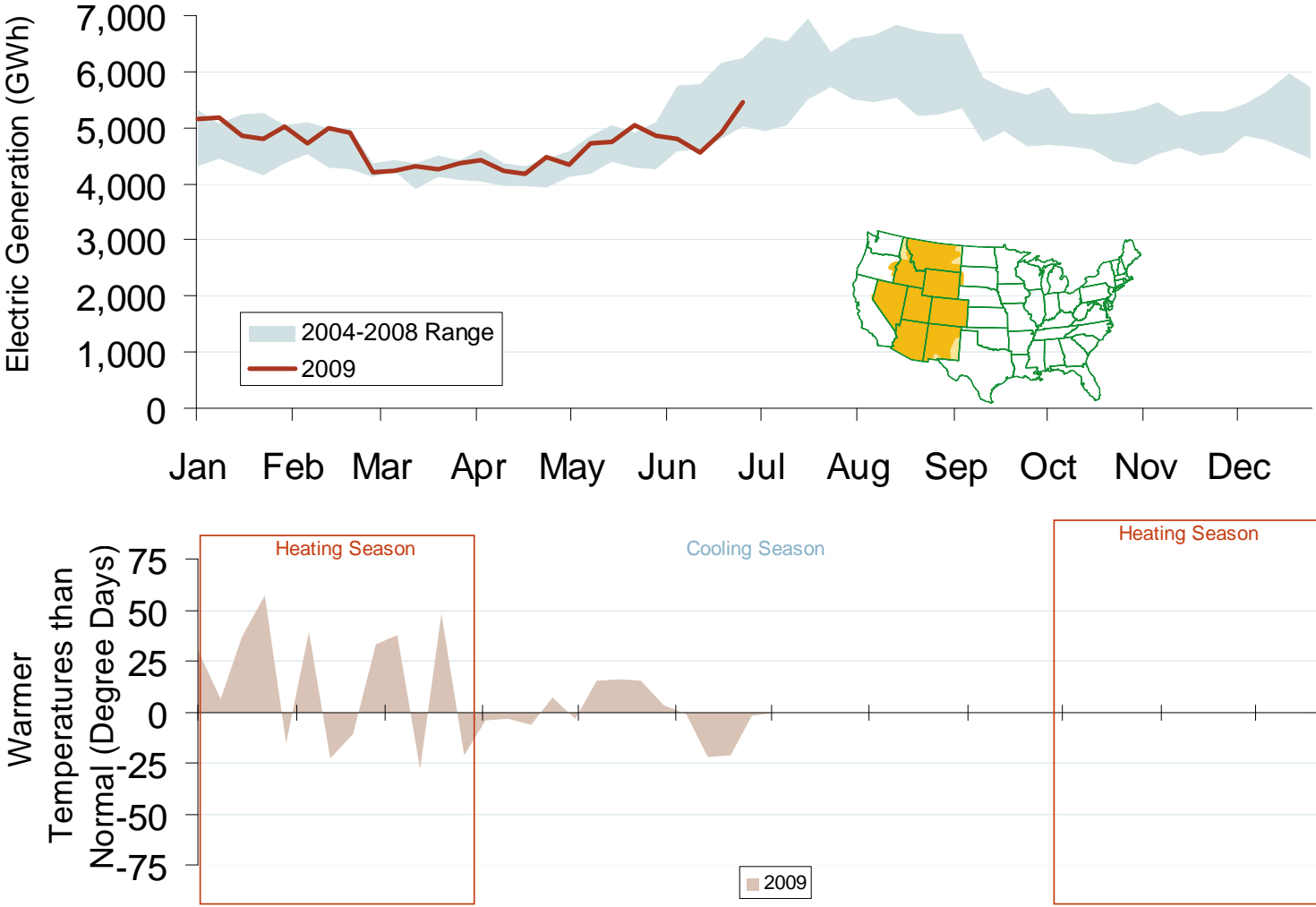
Updated July 8, 2009

# 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.

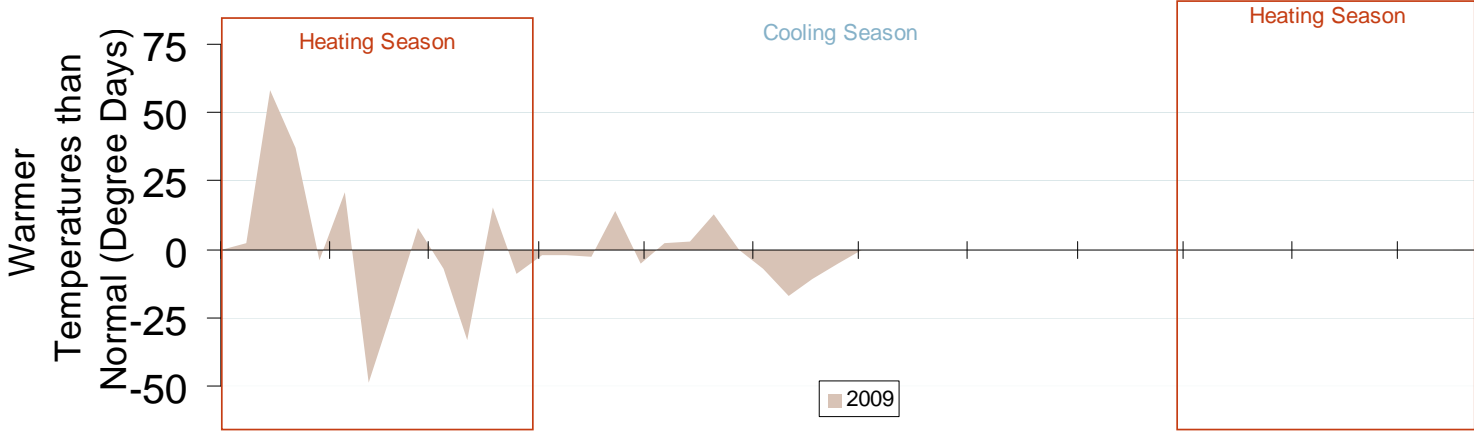
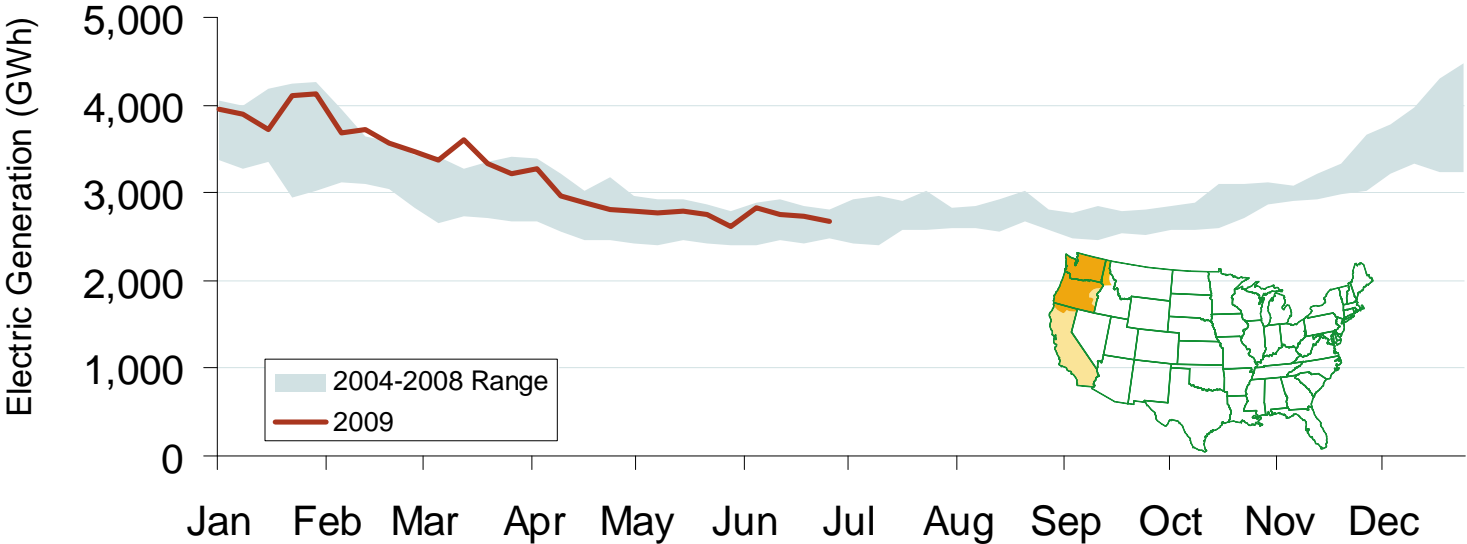
# Weekly Electric Generation Output and Temperatures Rocky Mountains Region



Source: Derived from EEI and NOAA data.  
July 2009

Updated July 8, 2009

# Weekly Electric Generation Output and Temperatures Pacific Northwest Region



Source: Derived from EEI and NOAA data.  
July 2009

Updated July 8, 2009

## Pacific/Northwest Hydro and Snowpack Levels

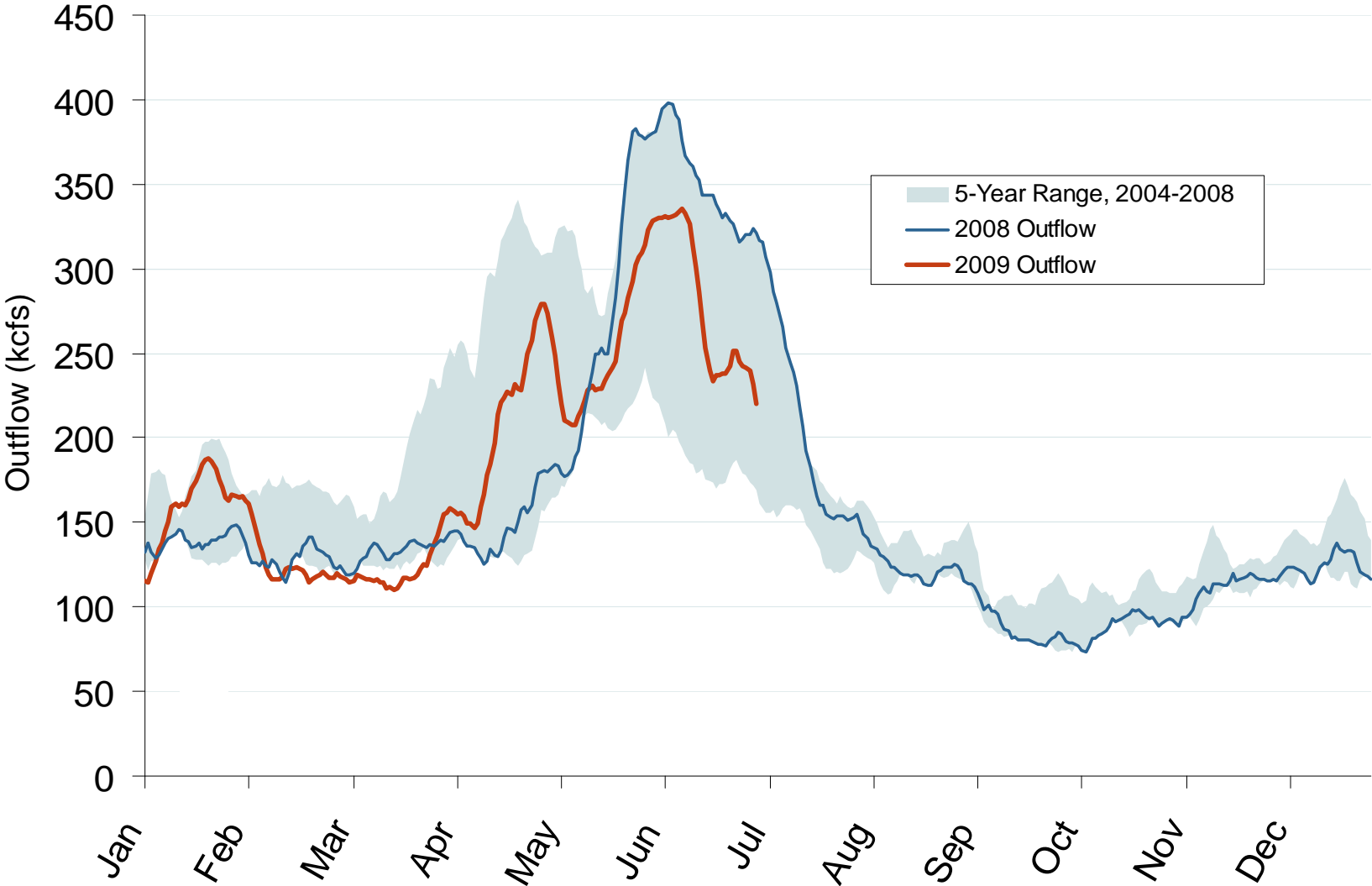
	Hydro Generation		Snow Water Equivalent <sup>3</sup>		
	In-State Capacity (MW) <sup>1</sup>	Additional Capacity Created Downstream (MW) <sup>2</sup>	One Year Ago (% of average)	3/5/09 (% of average)	3/27/09 (% of average)
<b>Washington</b>	<b>21,500</b>	<b>0</b>	<b>130%</b>	<b>74%</b>	<b>90%</b>
<b>Oregon</b>	<b>9,100</b>	<b>0</b>	<b>145%</b>	<b>83%</b>	<b>100%</b>
<b>California</b>	<b>10,400</b>	<b>0</b>	<b>98%</b>	<b>88%</b>	<b>88%</b>
<b>Idaho</b>	<b>2,700</b>	<b>19,700</b>	<b>104%</b>	<b>83%</b>	<b>88%</b>
<b>Montana</b>	<b>2,700</b>	<b>16,200</b>	<b>110%</b>	<b>87%</b>	<b>94%</b>
<b>British Columbia</b>	<b>10,000</b>	<b>16,200</b>	<b>105%</b>	<b>85%</b>	<b>89%</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.

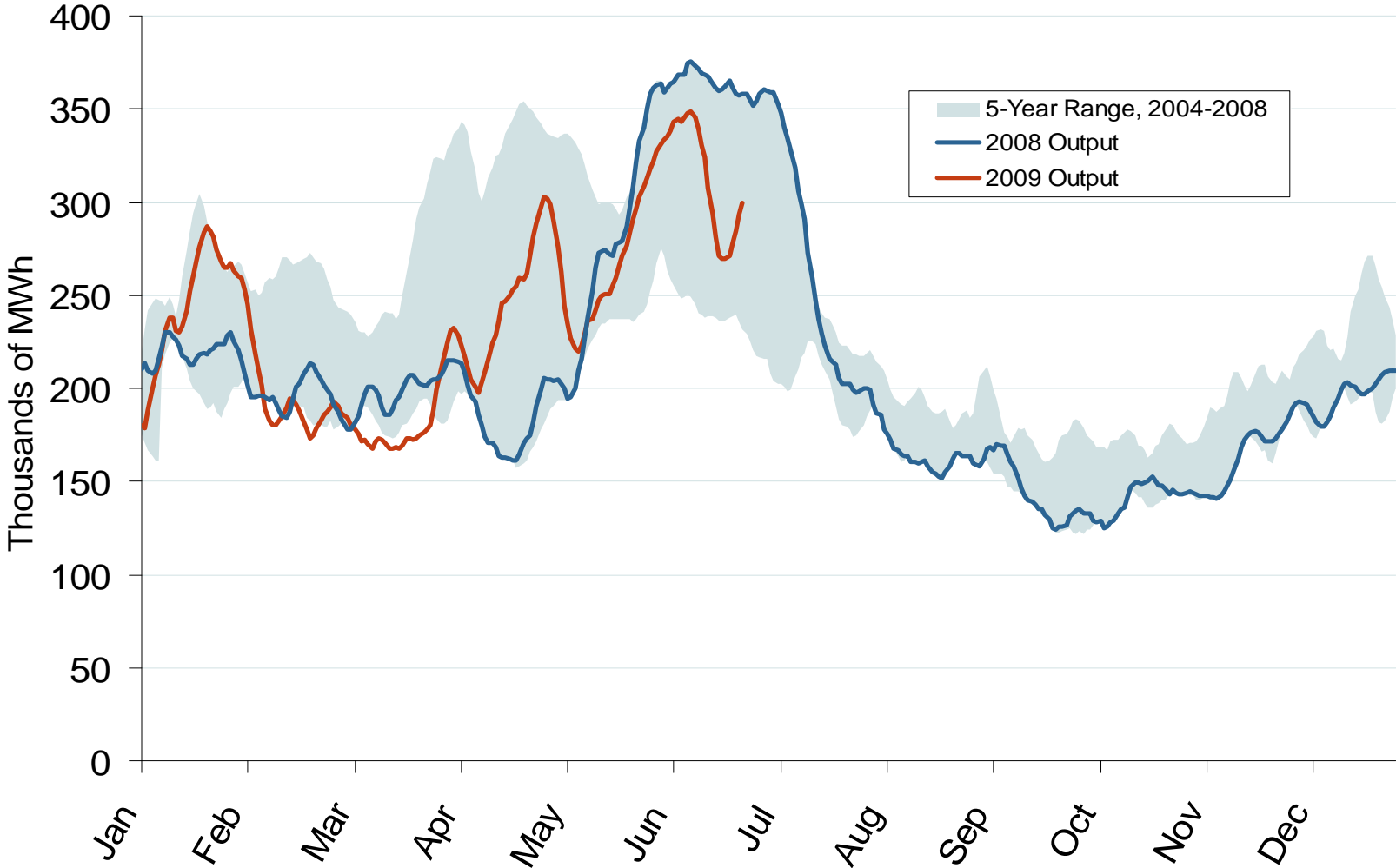
Trend lines are 7-day moving averages.

July 2009

Updated July 8, 2009



# Pacific Northwest Hydroelectric Production



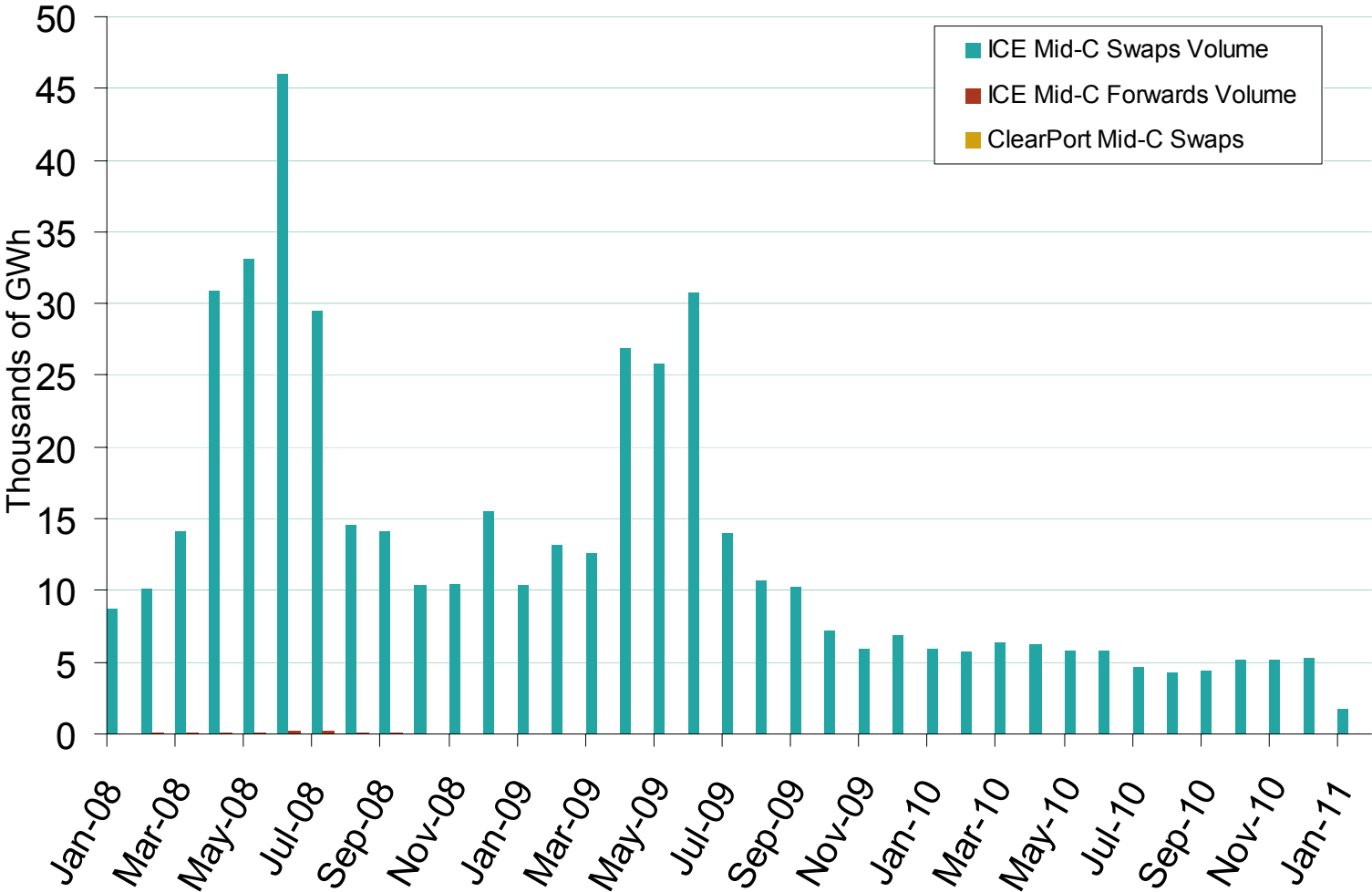
Source: Derived from USACE data reflecting the output of the 24 largest facilities.

Trend lines are 7-day moving averages.

July 2009

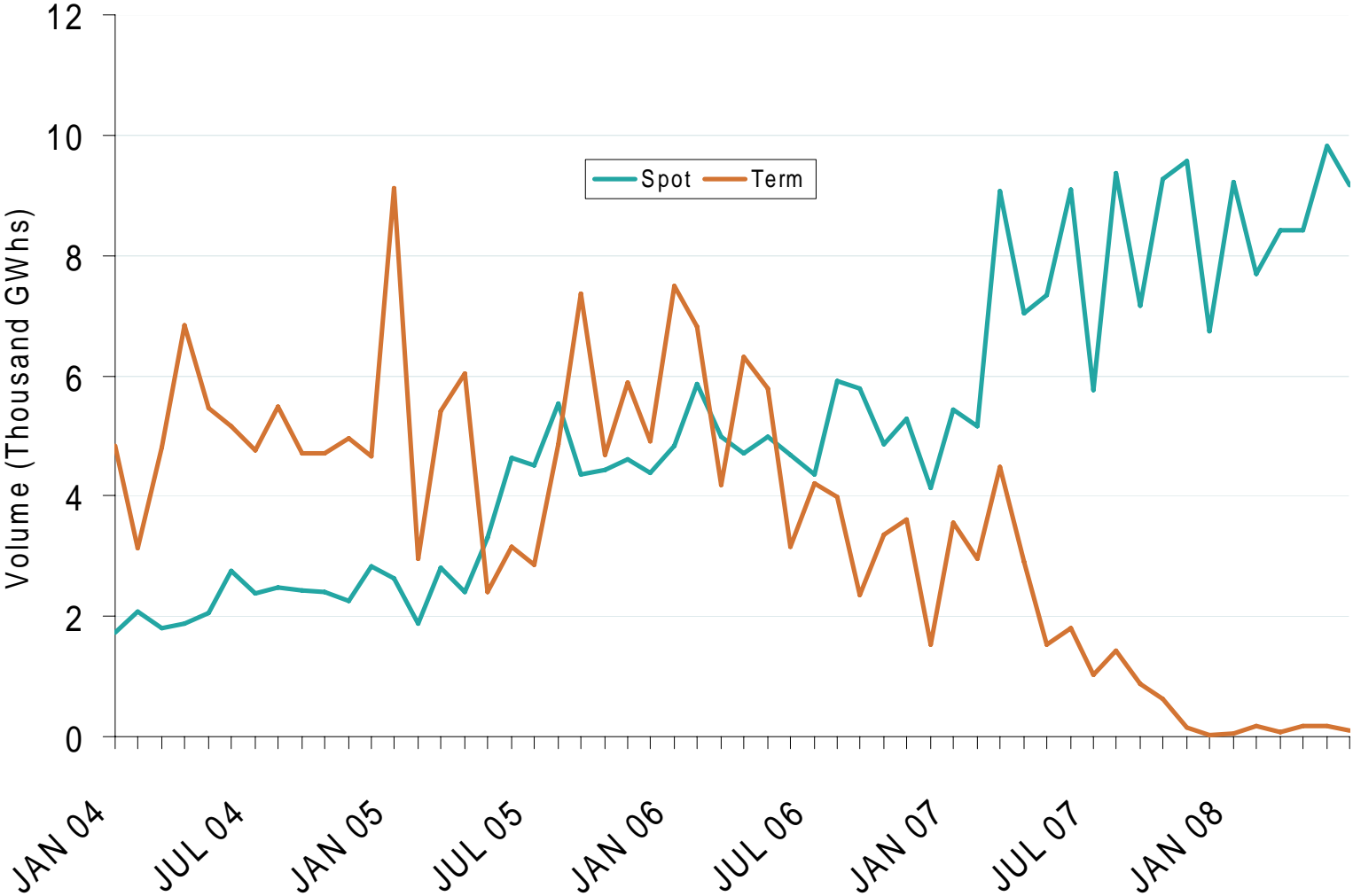
Updated July 8, 2009

# 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.

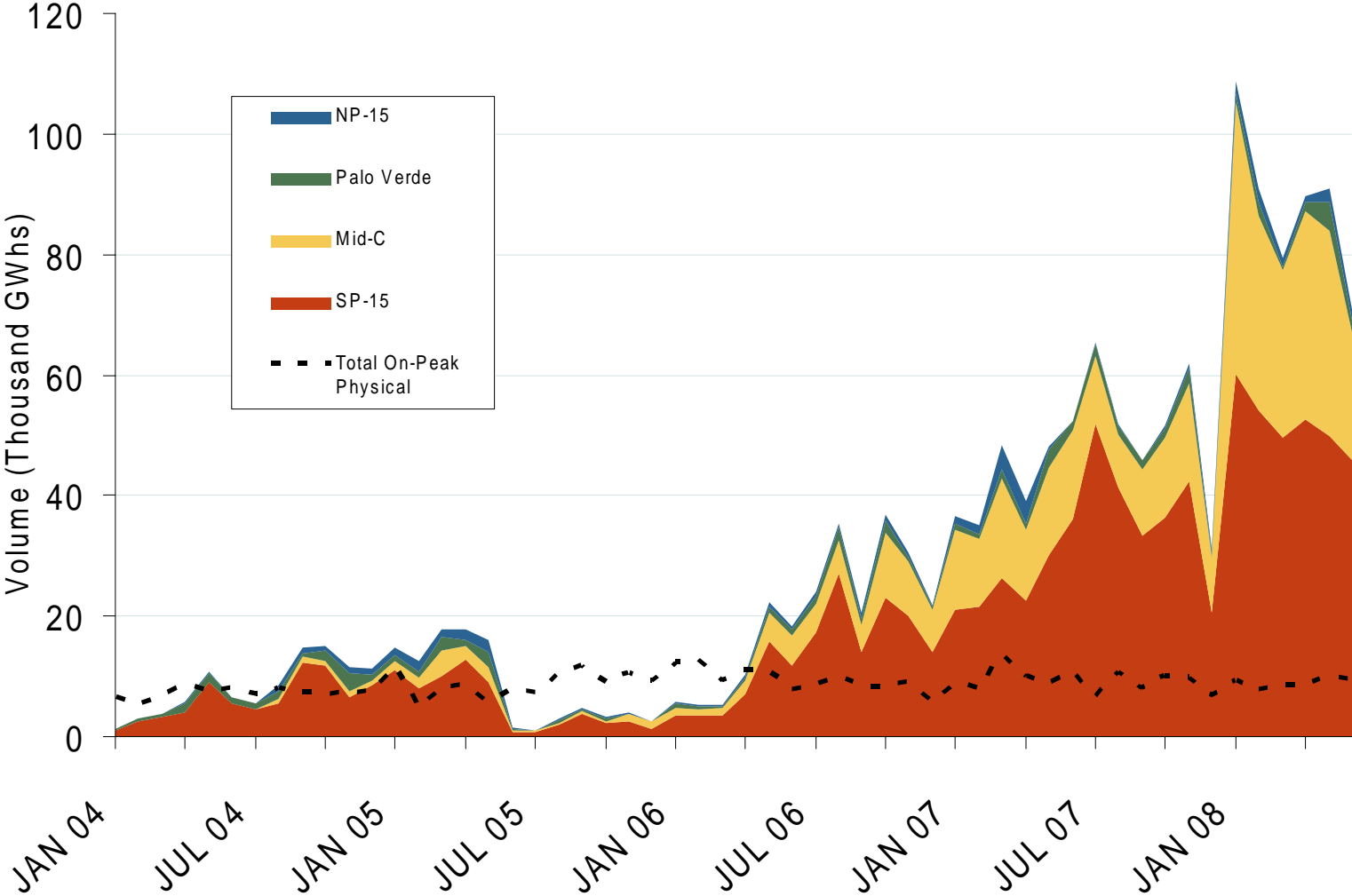
# Western Physical Power Volumes Traded on ICE by Month



Source: Derived from ICE data.  
July 2009

Updated August 14, 2008

# Western Financial On-Peak Products Traded on ICE by Hub



Source: Derived from ICE data. July 2009

Updated August 14, 2008