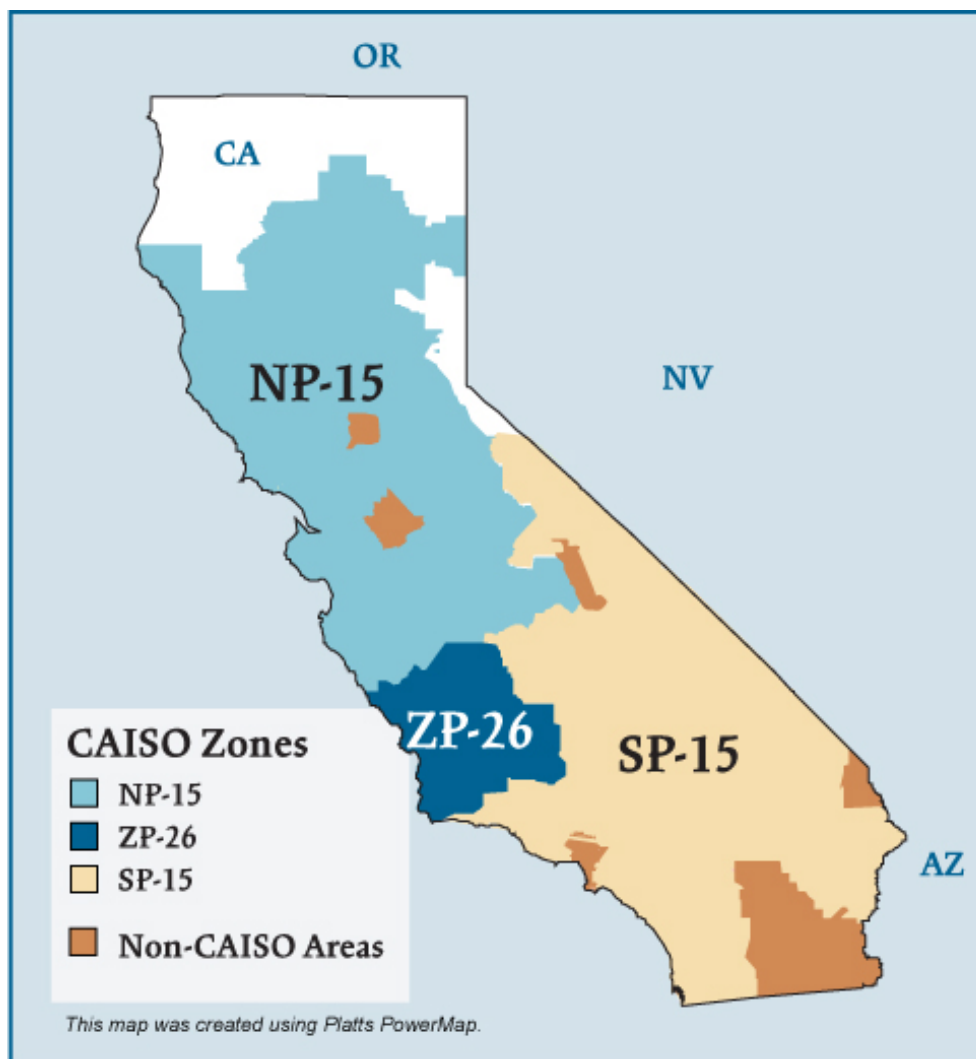


# California Electric Regions



## Overview

### Geography

States covered: California (most of) and northern Baja California (Mexico)

Reliability region: California-Mexico Power Area (CAMX) sub-region of the Western Electric Coordinating Council (WECC)

Balancing authorities: California ISO (CAISO), Sacramento Municipal Utility District (SMUD), Turlock Irrigation District (TID), Los Angeles Department of Water and Power (LADWP), and Comision Federal de Electricidad (CFE).

Approximately 80% of demand in the CAMX subregion is within the area of the CAISO balancing authority. The portion of the CAMX area within Mexico is comparatively small. The remaining 20% of California's load is managed primarily by municipal utilities and irrigation districts such as the Los Angeles Department of Water and Power, the Sacramento Municipal Utility District, and the Imperial Irrigation District.

CAISO zones: NP-15, ZP-26, SP-15

### RTO/ISO

California ISO (CAISO) (established 1998) operates the region's power grid and wholesale electric markets:

- Real-time imbalance energy,
- Ancillary services, and
- Transmission usage.

[CAISO 2007 State of the Markets Report](#)

Market Monitor: Keith Casey – Director, Department of Market Monitoring

**Generation/Supply**

Marginal fuel type: natural gas

Generating capacity (summer 2006): 56,347 MW

Capacity reserve (summer 2006): 6,077 MW

Reserve margin (summer 2006): 12%

**Demand**

All time peak demand: 50,270 MW (set July 24, 2006)

In July 2006, CAISO experienced an extreme heat wave that resulted in new records for peak loads and for temperatures across the state.

Peak demand growth: 10.7% (2006-2005)

	2004	2005	2006
Summer Peak Demand (MW)	45,597	45,431	50,270

Source: Derived from CAISO data.

Load pockets: Humbolt, North Bay, Greater San Francisco Bay, Sierra, Stockton, Los Angeles Basin, and San Diego areas.

**Prices (CAISO only)**

## Annual Average Price (ISO Real-time)

## NP-15:

2004: \$38.35/MWh

2005: \$54.39/MWh

2006: \$43.17/MWh

2007: \$54.44/MWh

## SP-15:

2004: \$39.47/MWh

2005: \$55.57/MWh

2006: \$46.50/MWh

2007: \$54.45/MWh

**Interconnections/Seams**

Load serving entities within CAISO rely on imports for approximately one-fourth of their annual energy needs.

## Supply and Demand Statistics for CAISO

<b>Supply Demand Statistics</b>			
	2004	2005	2006
Summer Generating Capacity MW (1)	54,038	55,694	56,347
Summer Peak Demand MW	45,597	45,431	50,270
Summer Reserves MW	8,441	10,263	6,077
Summer Reserve Margin:	19%	23%	12%
Annual Load (GWh):	239,788	236,449	240,259
Annual Net Generation GWh	178,304	179,188	177,757

Footnote (1): Generation capacity includes dynamically scheduled generation, and excludes any derates of the resources or imports.

## Annual Average Bilateral Prices

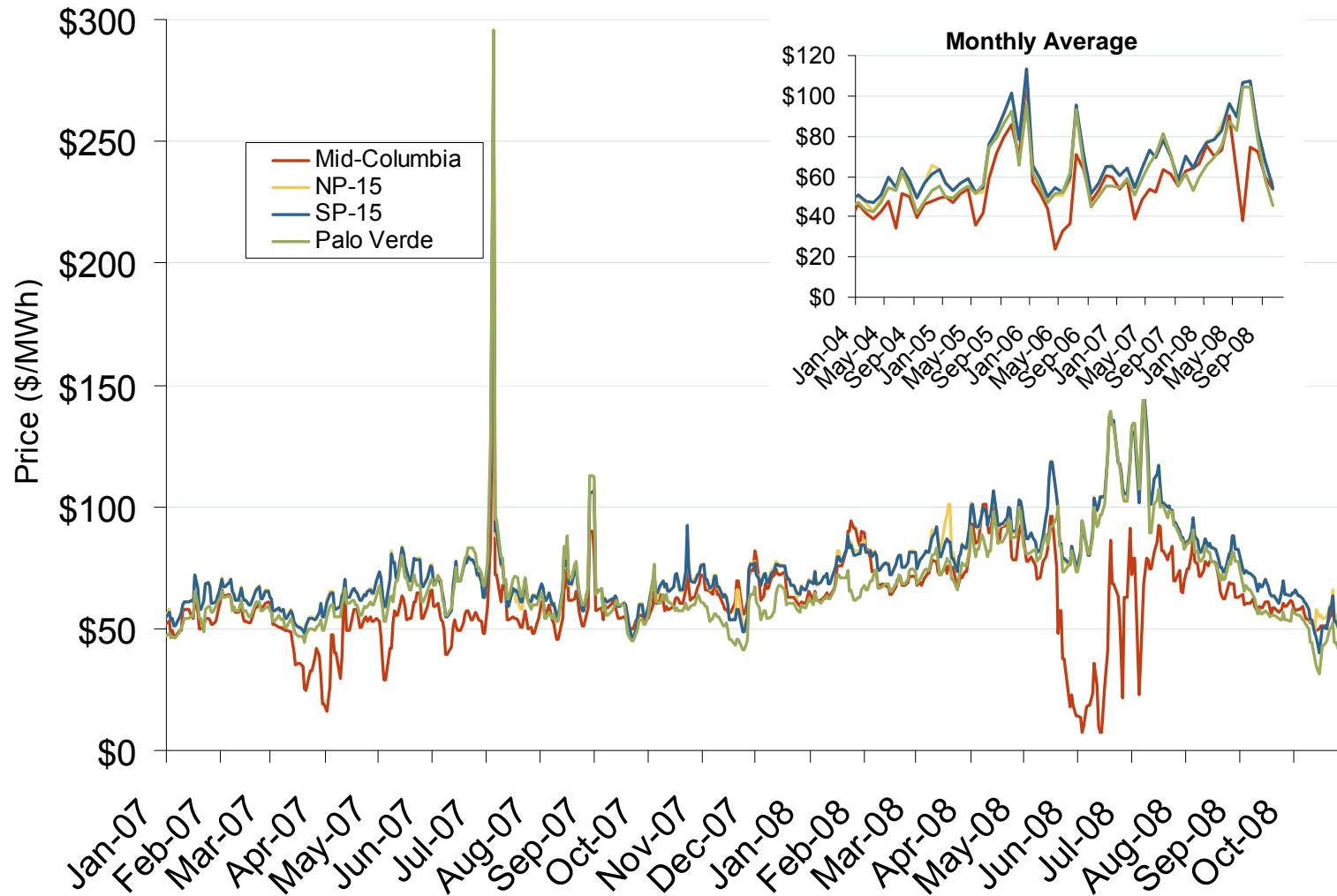
Annual Average Day Ahead On Peak Prices (\$/MWh)				
	2005	2006	2007	5 Years
NP15	\$72.49	\$61.08	\$66.59	\$60.72
SP15	\$73.04	\$61.95	\$66.48	\$61.57

Source: Derived from *Platts* data.

Updated March 7, 2008

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# Western Daily Bilateral Day-Ahead On-Peak Prices

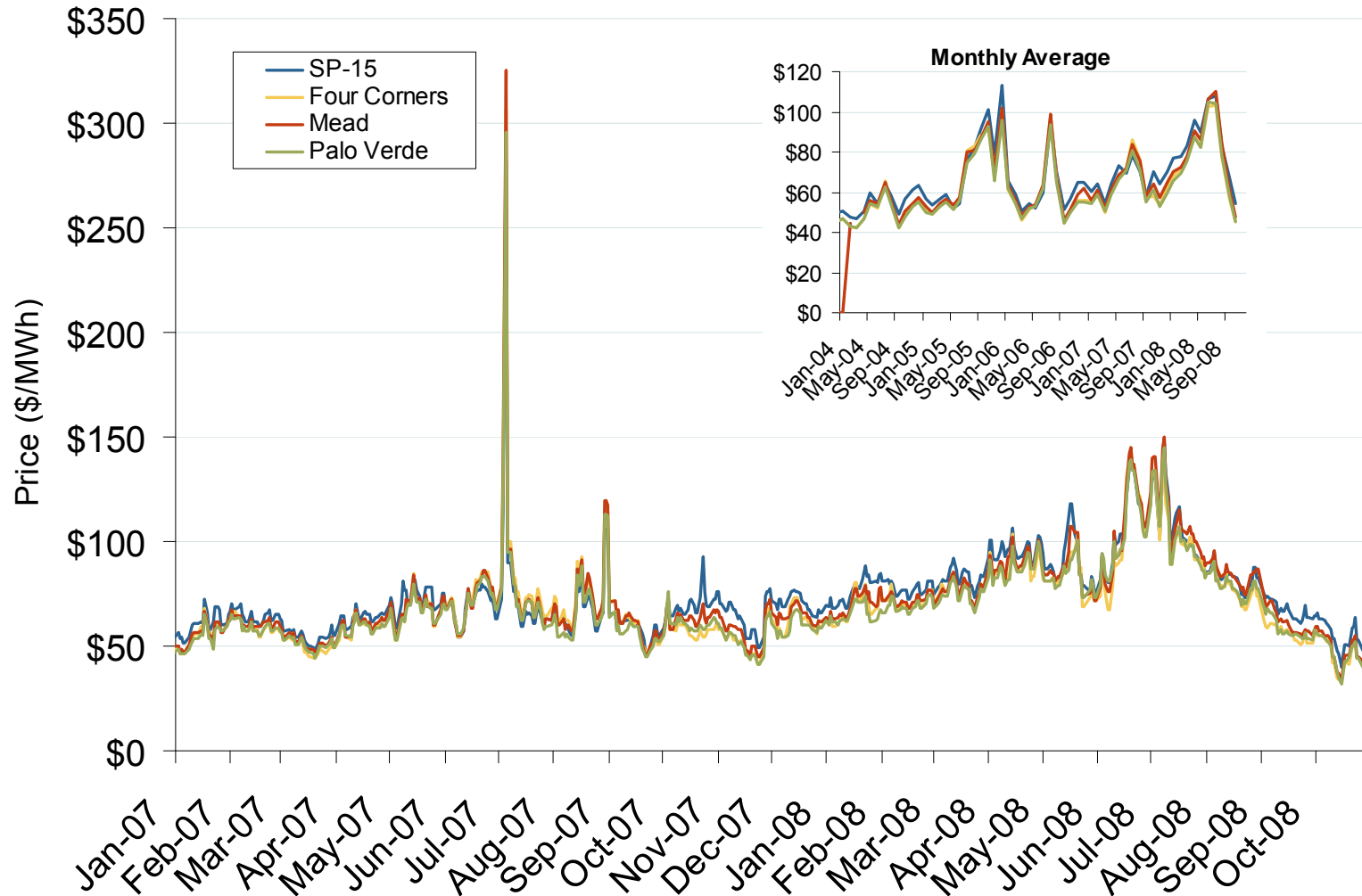


Source: Derived from *Platts* data.

Updated November 7, 2008

1006

# Southwestern Daily Bilateral Day-Ahead On-Peak Prices

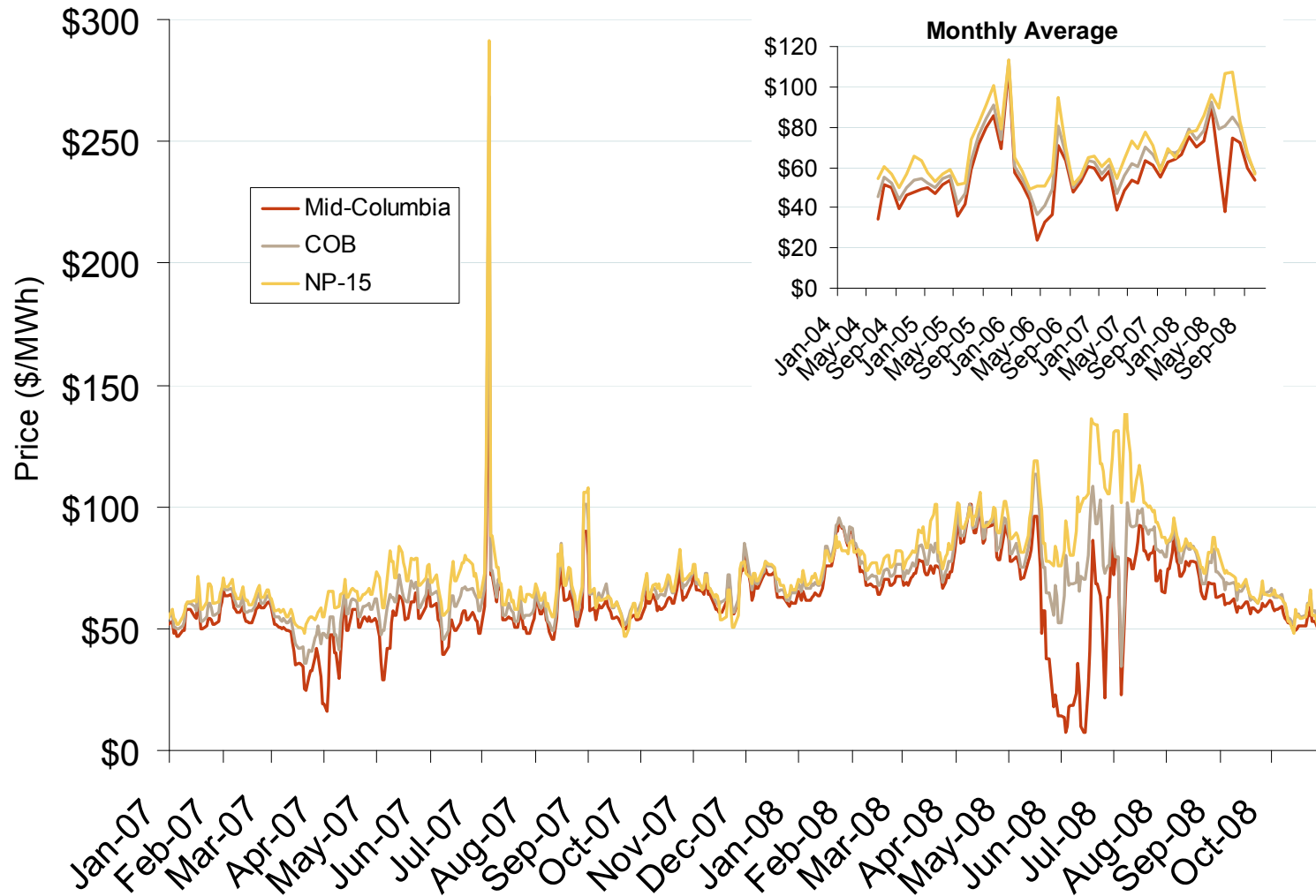


Source: Derived from *Platts* data.

Updated November 7, 2008 1005



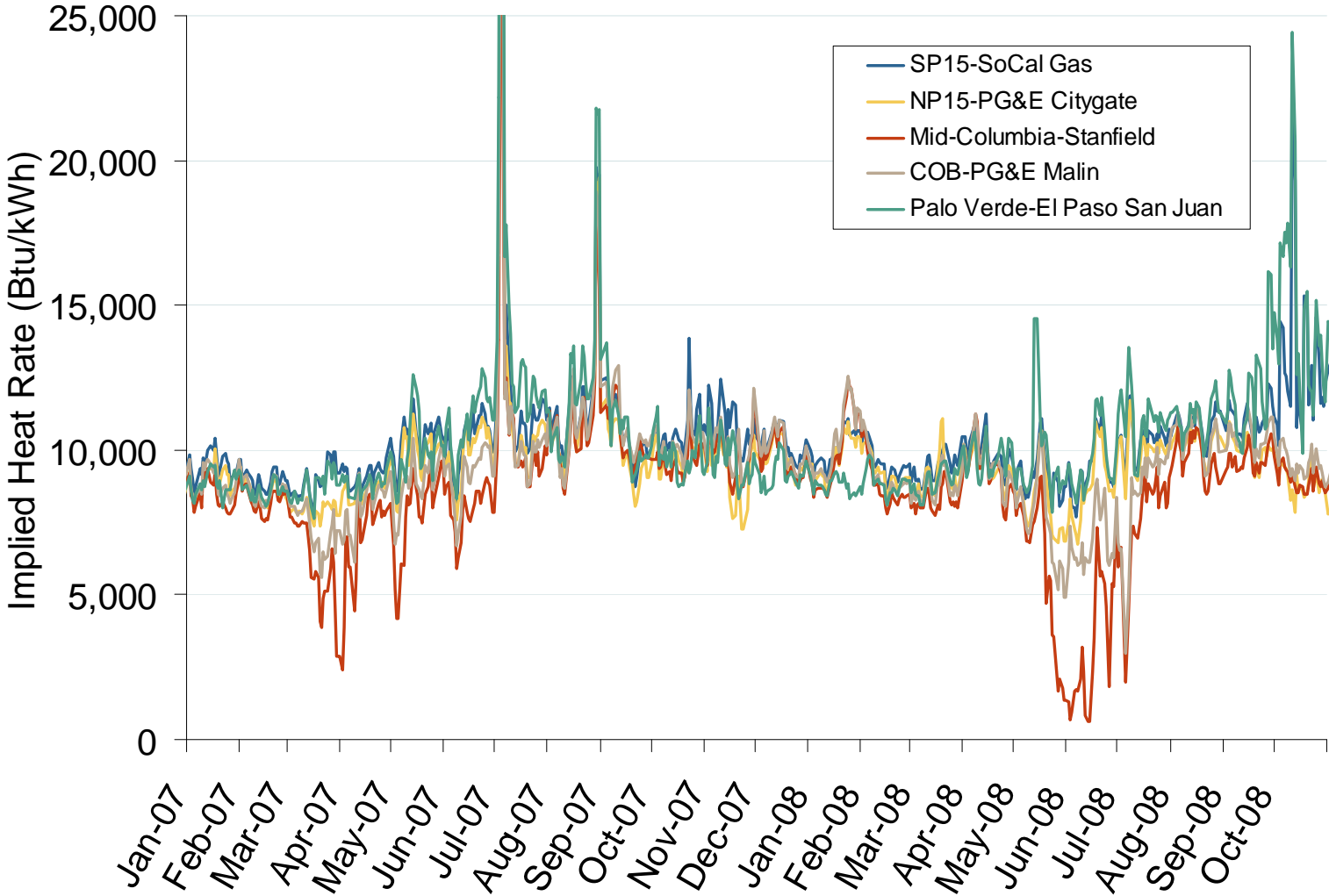
# Northwestern Daily Bilateral Day-Ahead On-Peak Prices



Source: Derived from *Platts* data.

Updated November 7, 2008

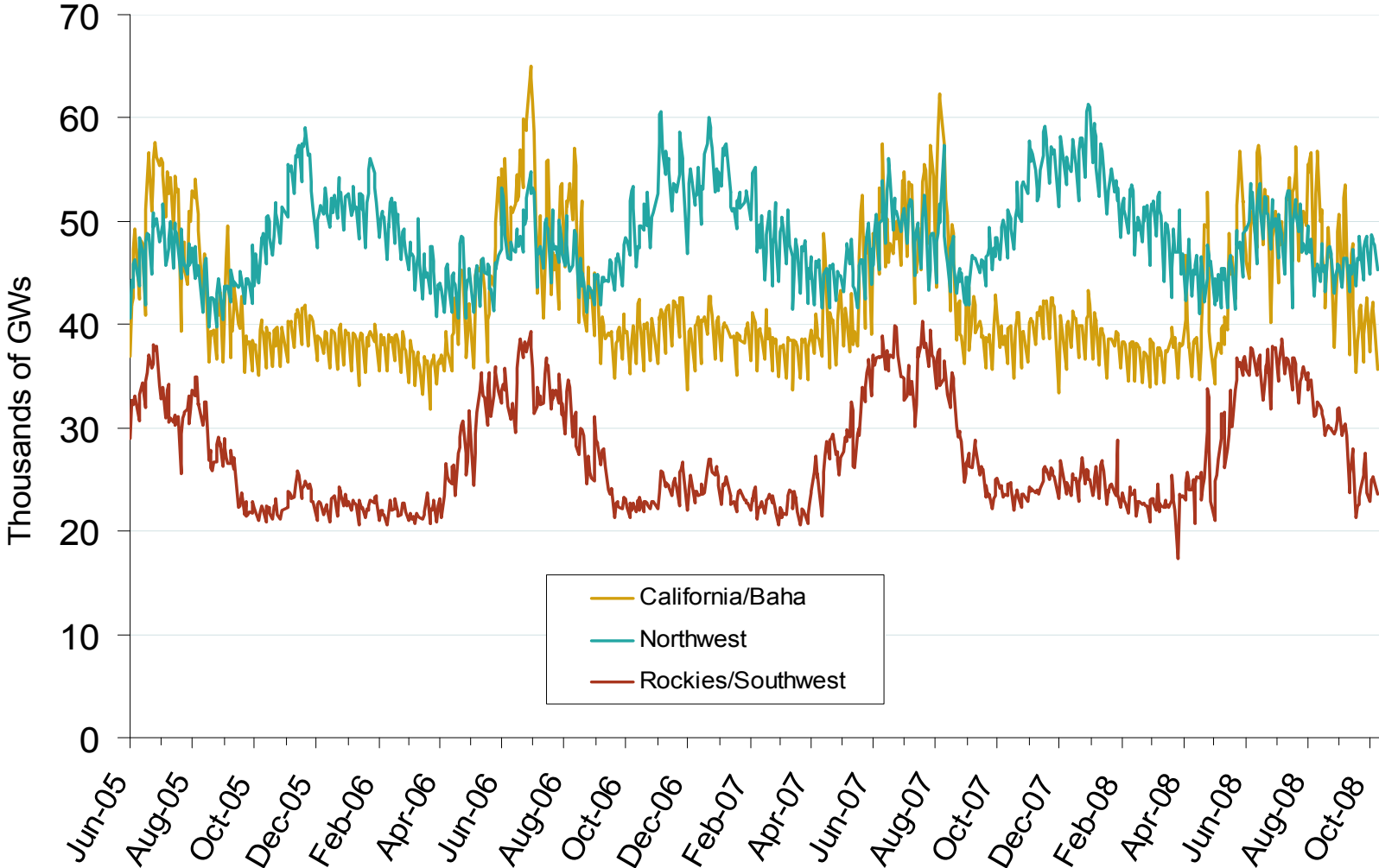
# Implied Heat Rates at Western Trading Points



Source: Derived from Platts data

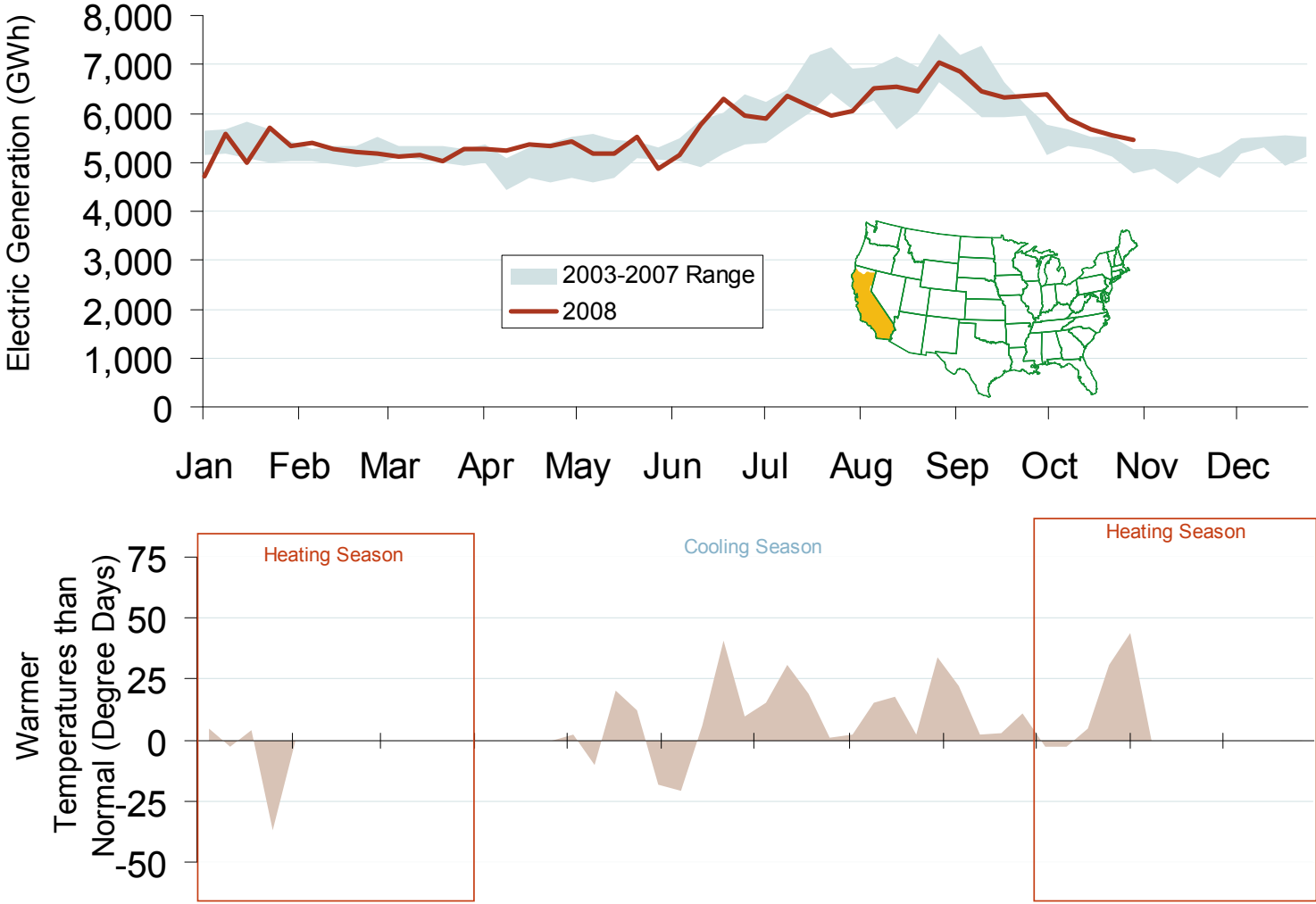
Updated November 7, 2008 1143

# 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.

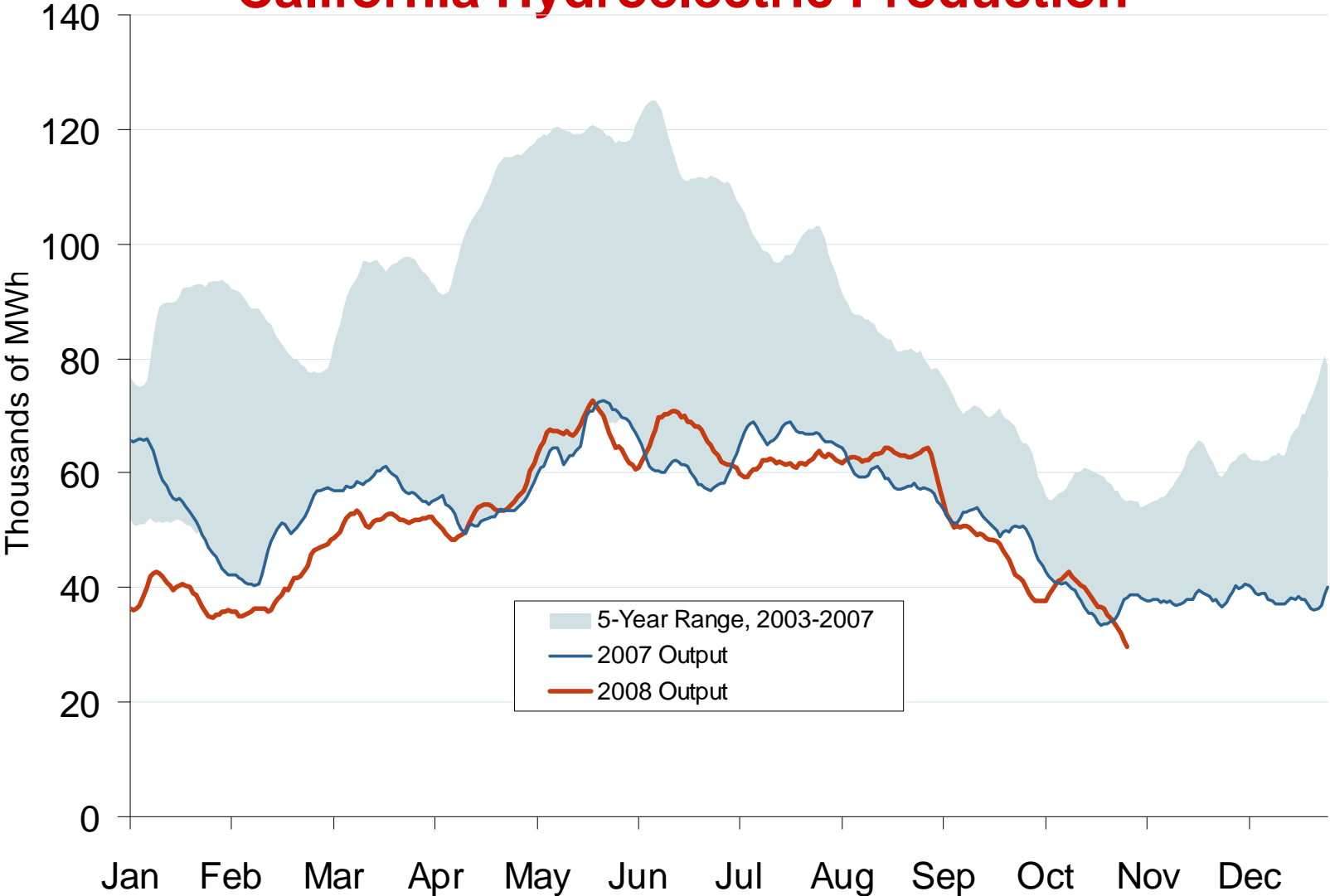
# Weekly Electric Generation Output and Temperatures California



Source: Derived from EEI and NOAA data.

Updated November 7, 2008

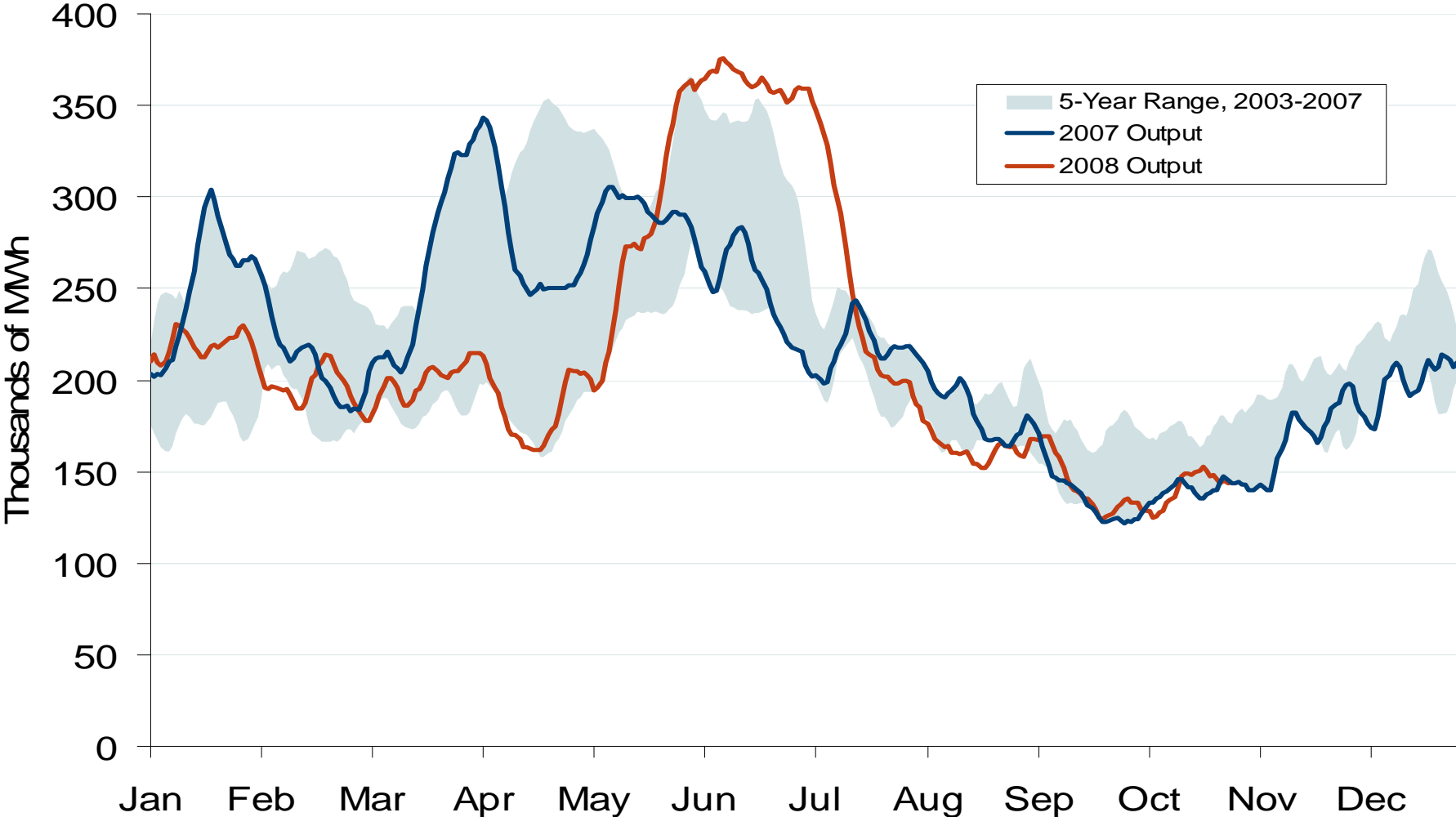
# California Hydroelectric Production



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

Updated November 7, 2008

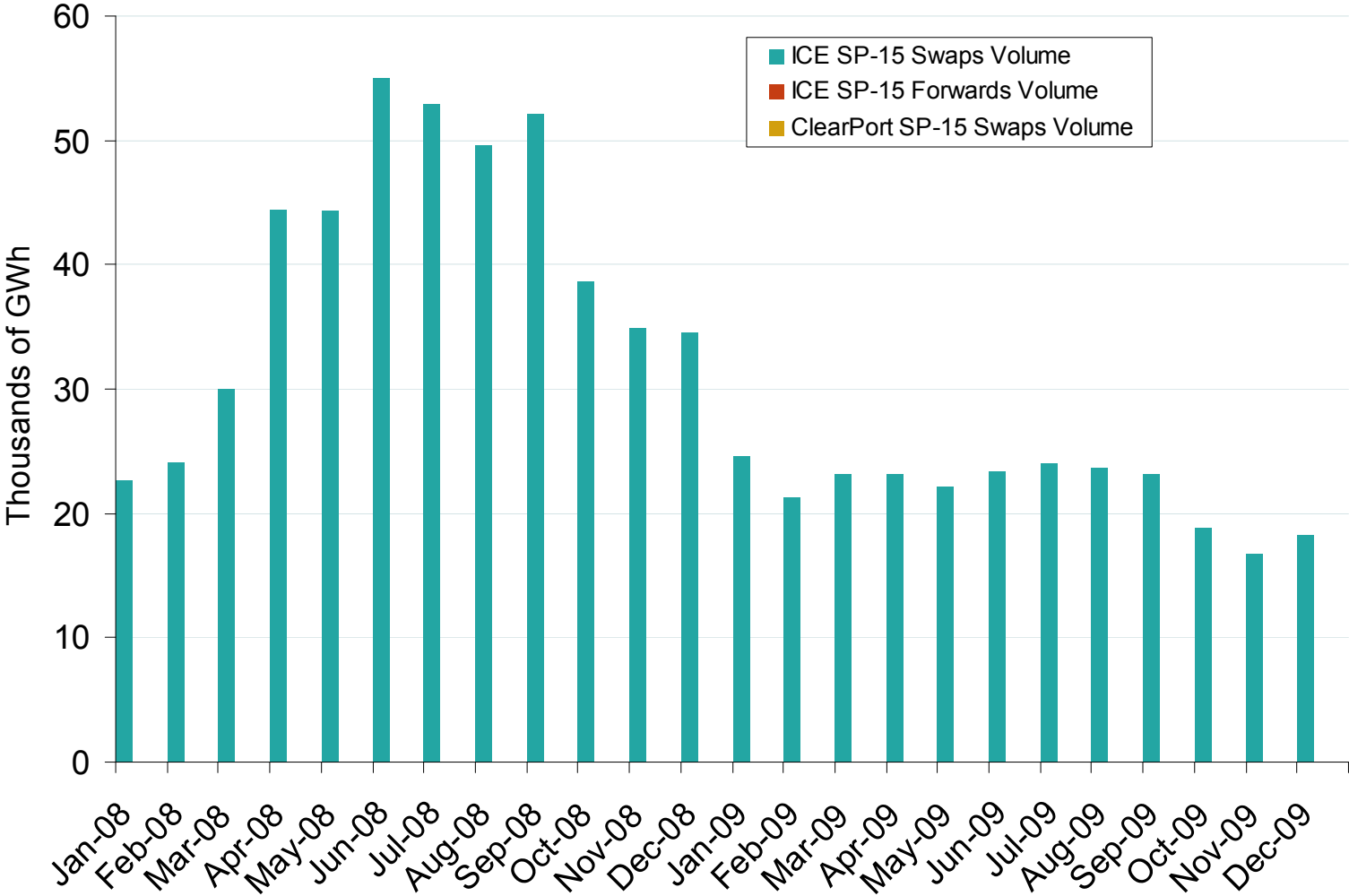
# Pacific Northwest Hydroelectric Production



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

Updated November 7, 2008

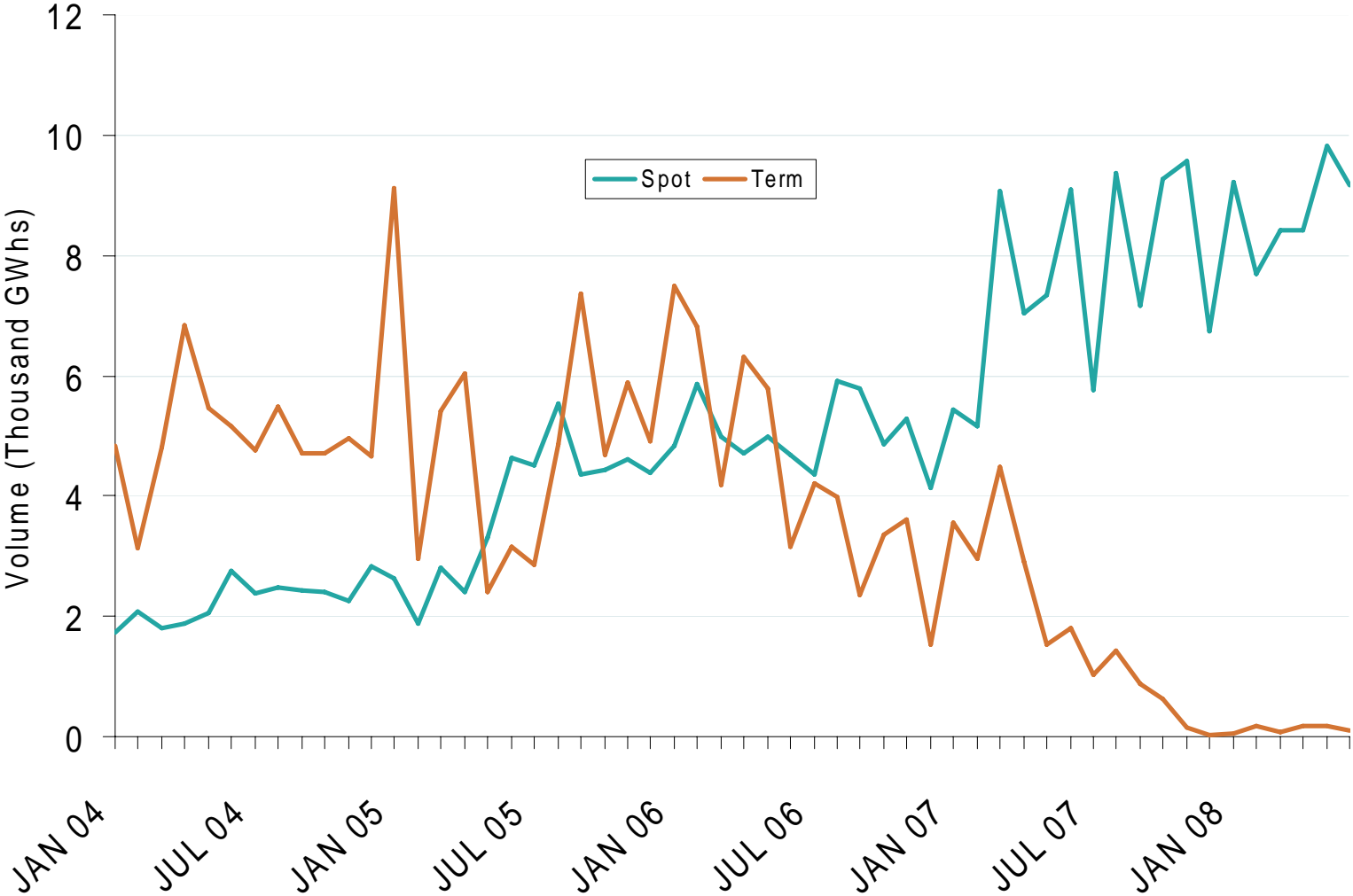
# SP-15 Forward and Swap Volumes



Source: Derived from ICE and Nymex ClearPort . ICE on-peak forward (physical) and swap (financial) volumes are for SP-15 and include monthly, dual monthly, quarterly, and calendar year contracts traded for each month. Nymex ClearPort on-peak swap (financial) volumes are for the SP-15 Hub traded by month.

Updated November 7, 2008

# Western Physical Power Volumes Traded on ICE by Month

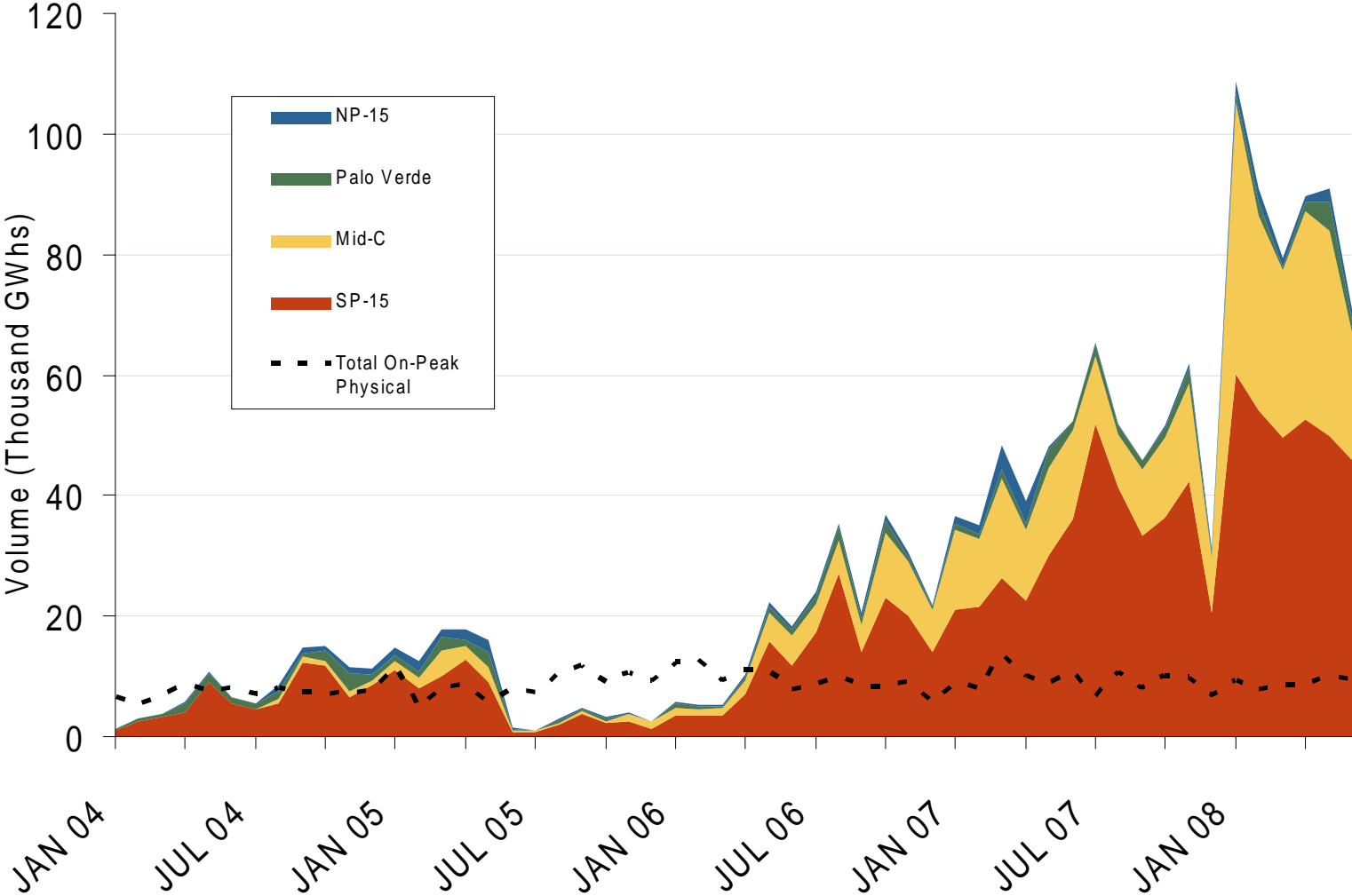


Source: Derived from ICE data.

Updated August 14, 2008



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



Source: Derived from ICE data.

Updated August 14, 2008