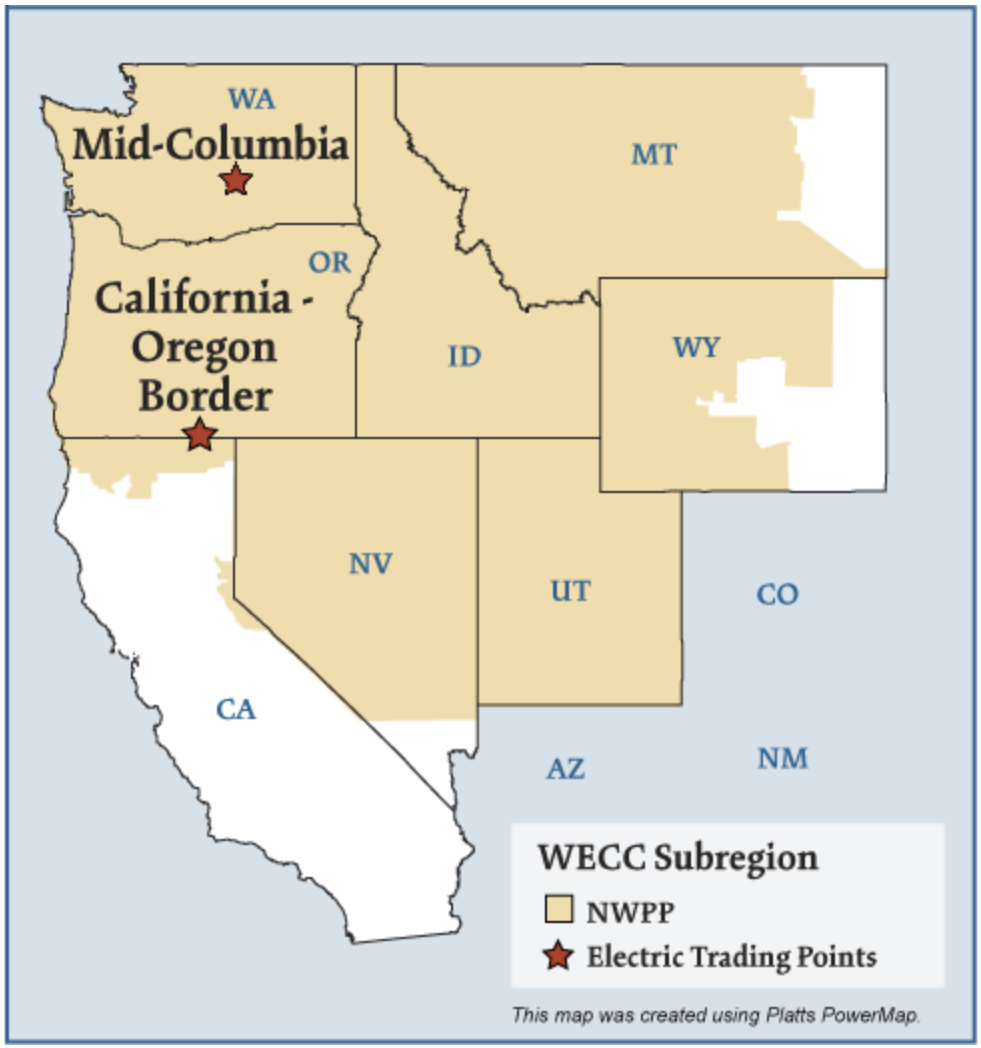
# Northwest Electric Market



# 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 | NERC Acronym |
|---|---|
| Alberta Electric System Operator | AESO |
| Avista Corp. | AVA |
| Bonneville Power Administration | BPAT |
| British Columbia Transmission Corporation | BCHA |
| Idaho Power Company | IPCO |
| NorthWestern Energy | NWMT |
| PacifiCorp-East | PACE |
| PacifiCorp-West | PACW |
| Portland General Electric Company | PGE |
| PUD No. 1 of Chelan County | CHPD |
| PUD No. 1 of Douglas County | DOPD |
| PUD No. 2 of Grant County | GCPD |
| Puget Sound Energy | PSEI |
| Seattle Department of Lighting | SCL |
| Sierra Pacific Power Company | SPPC |
| Tacoma Power | TPWR |
| Western Area Power Administration - Upper Great Plains West | WAUW |

Source: *NERC (www.tsin.com)*

*Updated February 7, 2007*

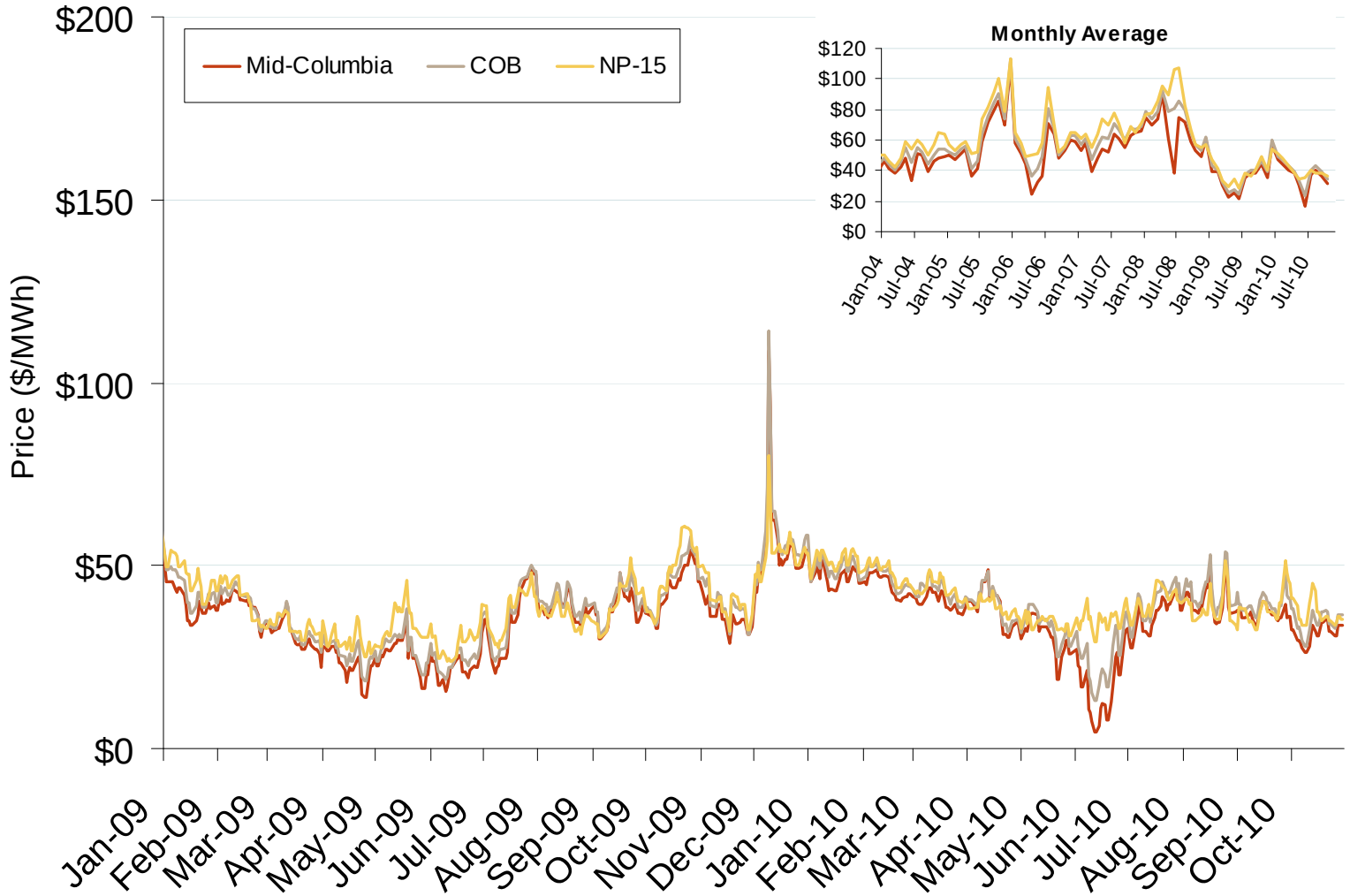
# Annual Average Bilateral Prices

| Annual Average Day Ahead On Peak Prices ($/MWh) | | | | | | |
|---|---|---|---|---|---|---|
| | 2005 | 2006 | 2007 | 2008 | 2009 | 5-Year Avg |
| Mid-Columbia (Mid-C) | $62.95 | $50.18 | $56.57 | $65.00 | $35.66 | $54.08 |
| California-Oregon Border (COB) | $66.95 | $55.58 | $62.14 | $73.86 | $38.02 | $59.32 |

Source: Derived from *Platts* data.

Updated January 8, 2010

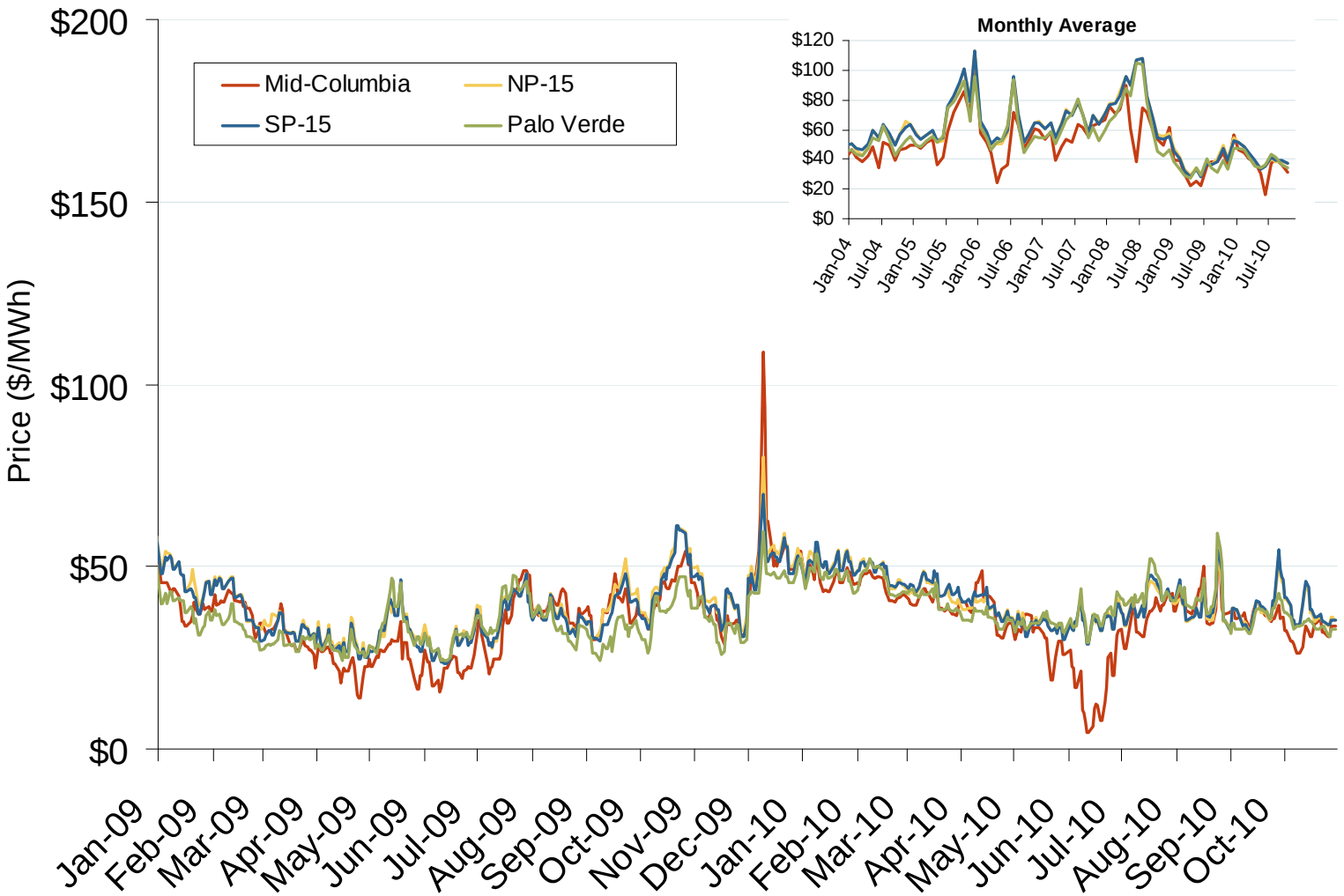
# Northwestern Daily Bilateral Day-Ahead On-Peak Prices




Source: Derived from *Platts* data.

Updated November 5, 2010

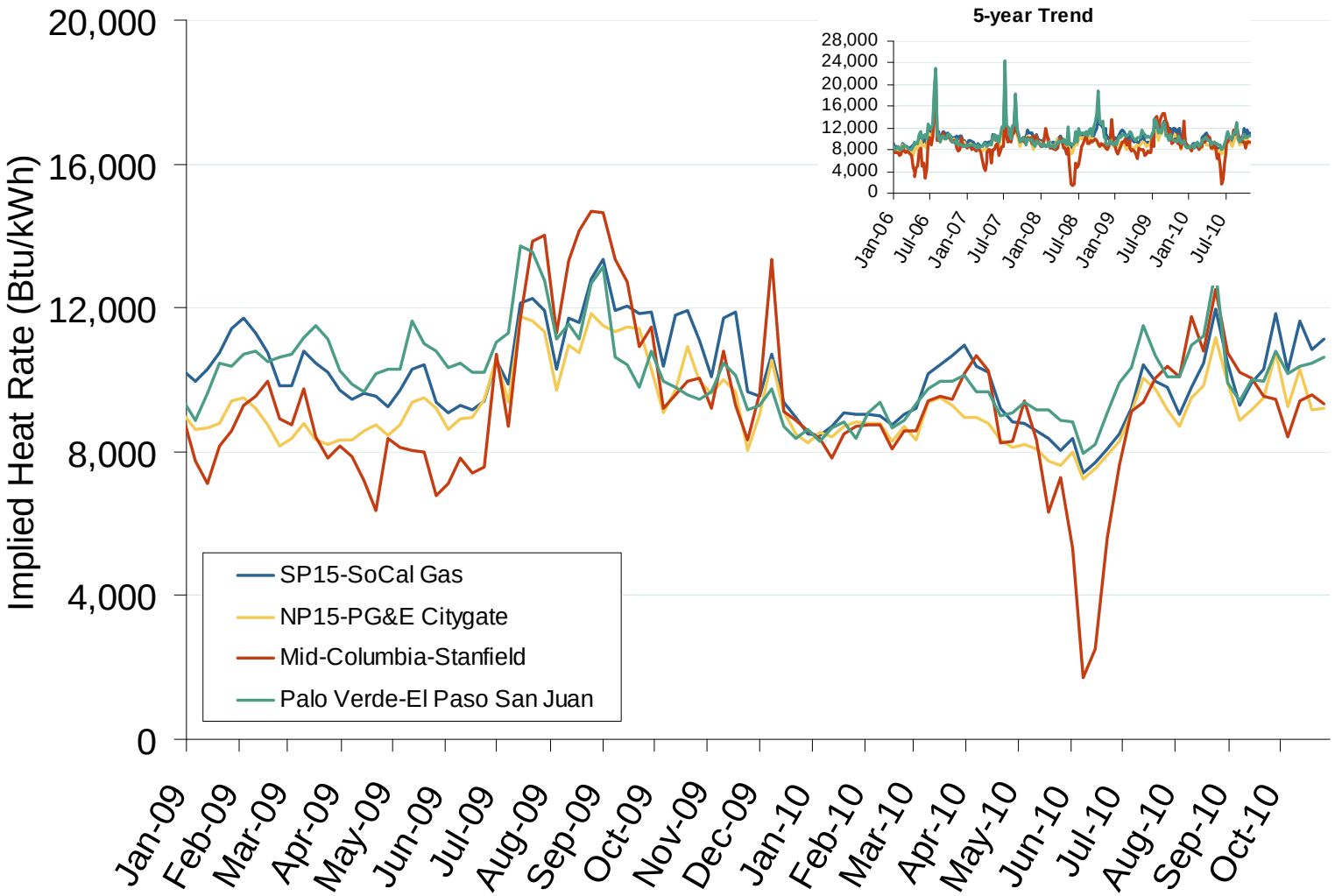
# Western Daily Bilateral Day-Ahead On-Peak Prices




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

Updated November 5, 2011

# Implied Heat Rates at Western Trading Points
# Weekly Averages

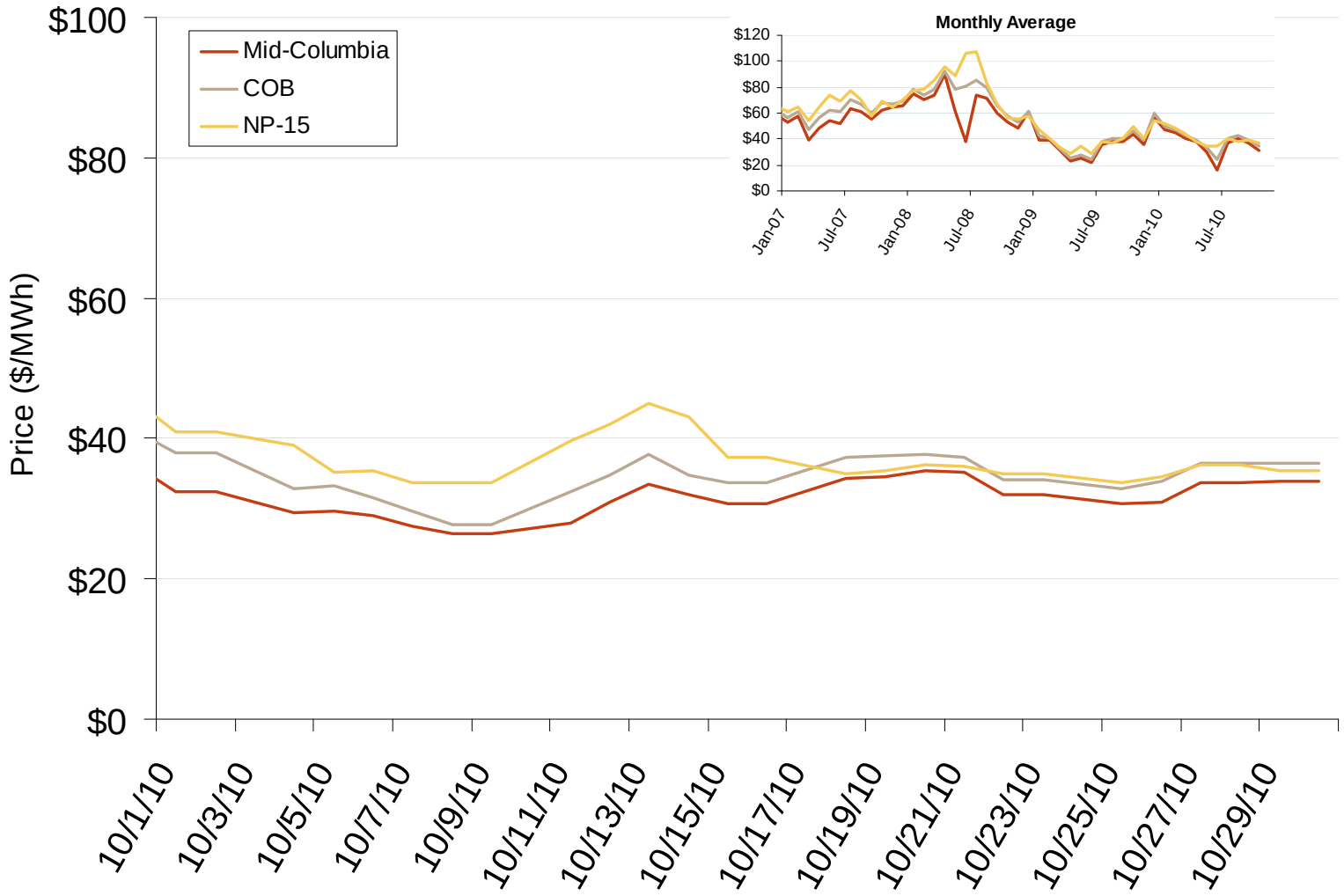



Source: Derived from *Platts* data

Updated November 5, 2010

November 2010

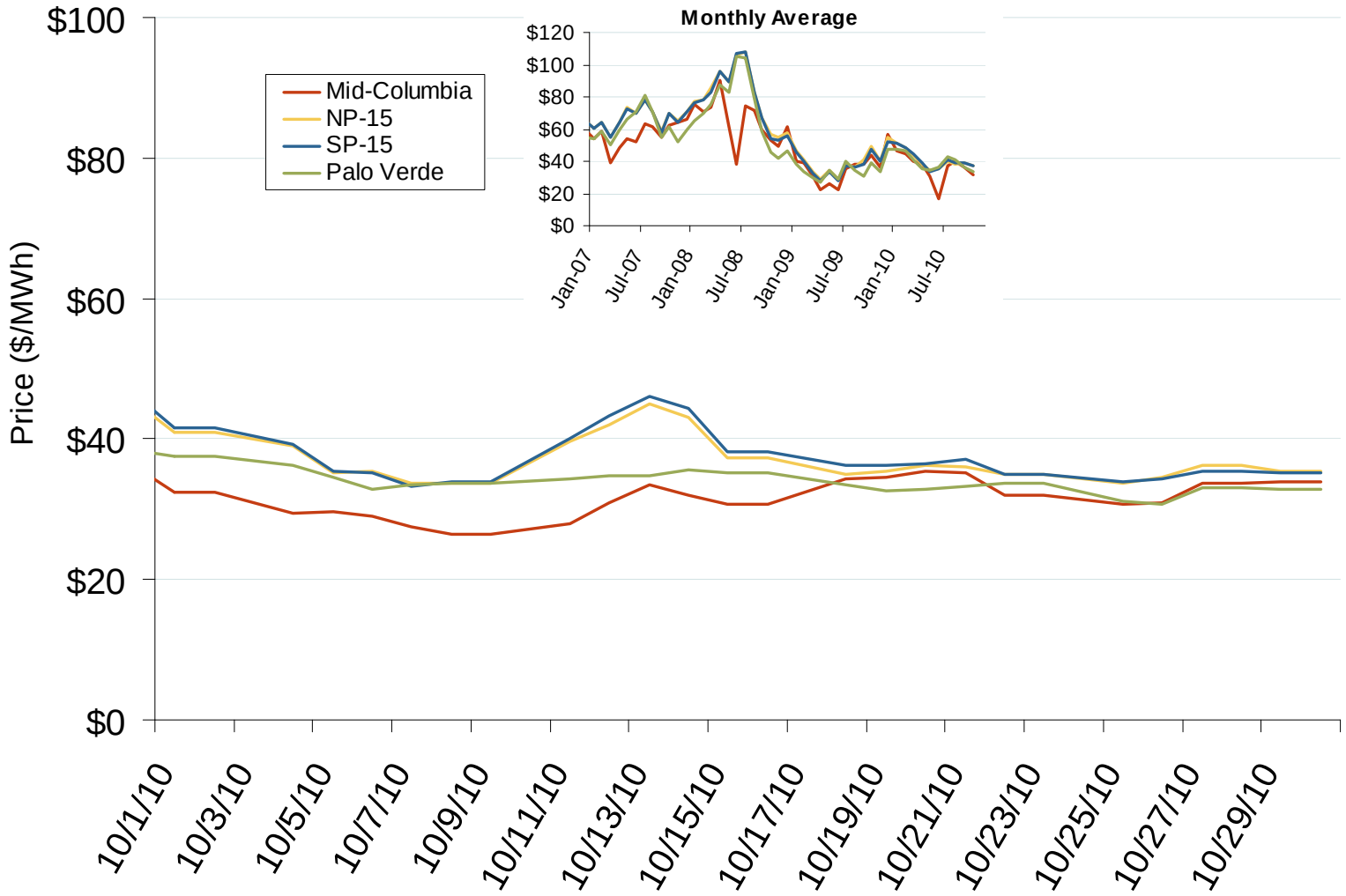
# Northwestern Daily Bilateral Day-Ahead On-Peak Prices




Source: Derived from *Platts* data.

Updated November 5, 2010

# Western Daily Bilateral Day-Ahead On-Peak Prices




Source: Derived from *Platts* data.

Updated November 5, 2010

## Northwest Electric Market: Daily Peak Demand

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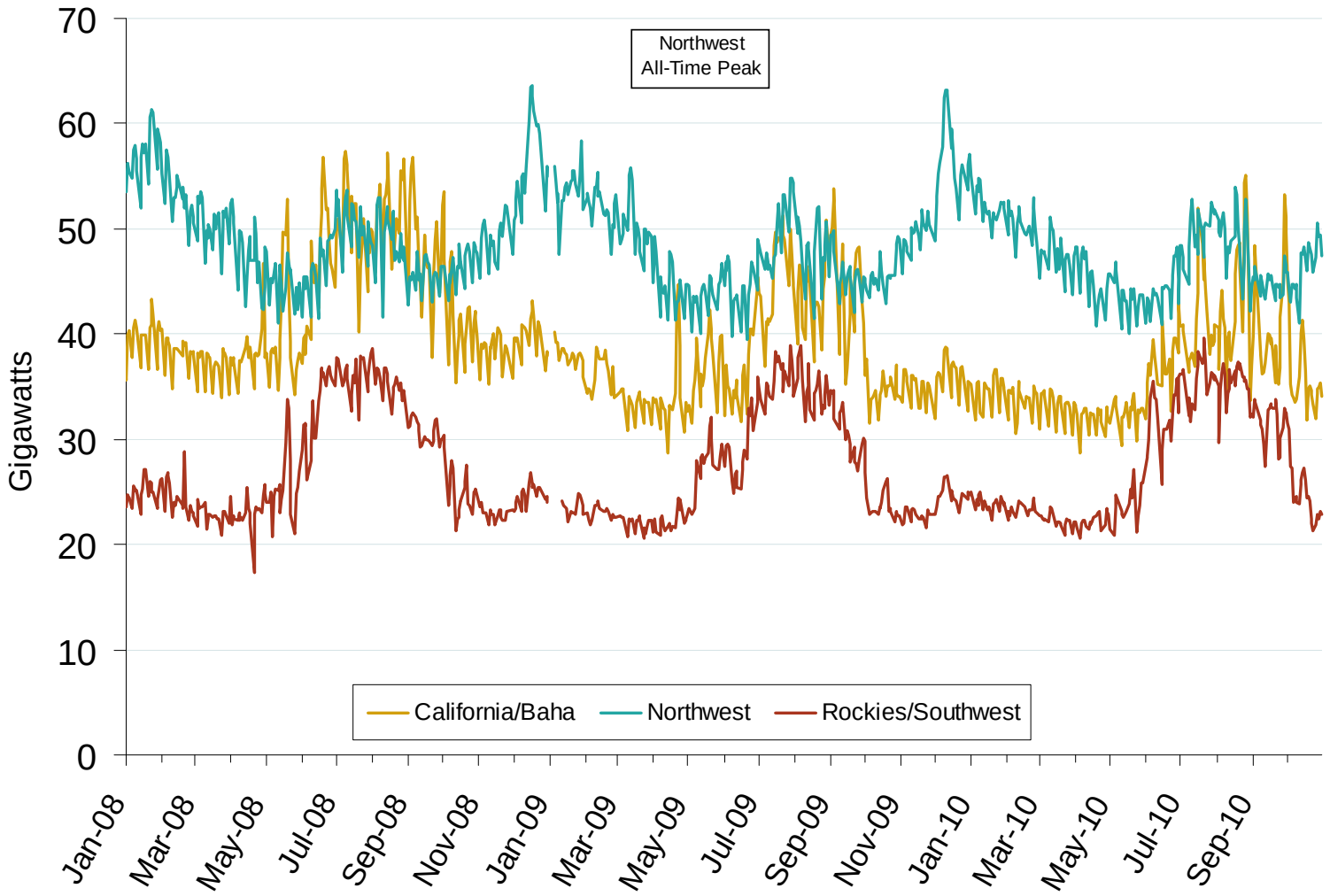
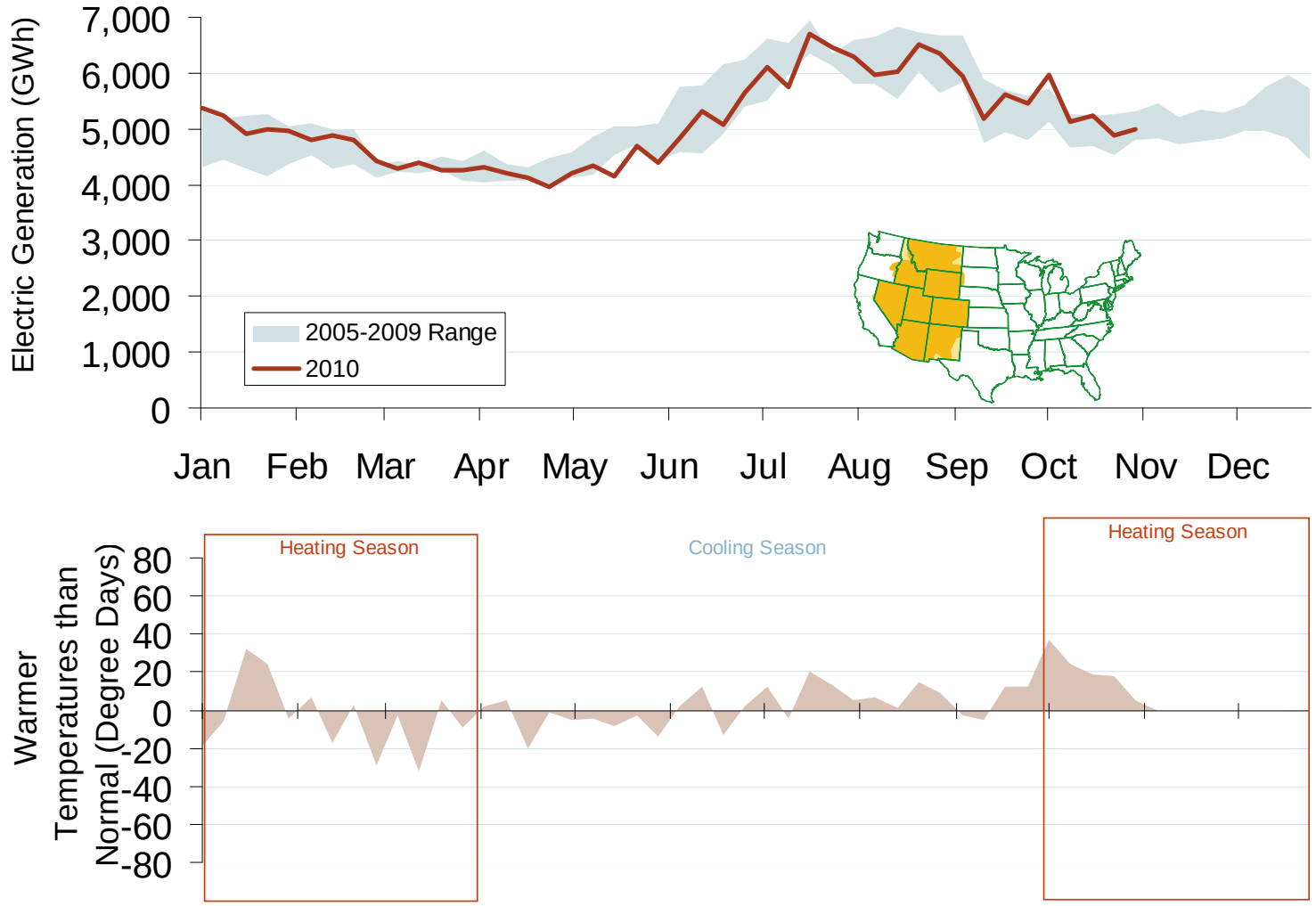
# Western Daily Actual Peak Demand




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 November 5, 2010

# Weekly Electric Generation Output and Temperatures
# Rocky Mountains Region

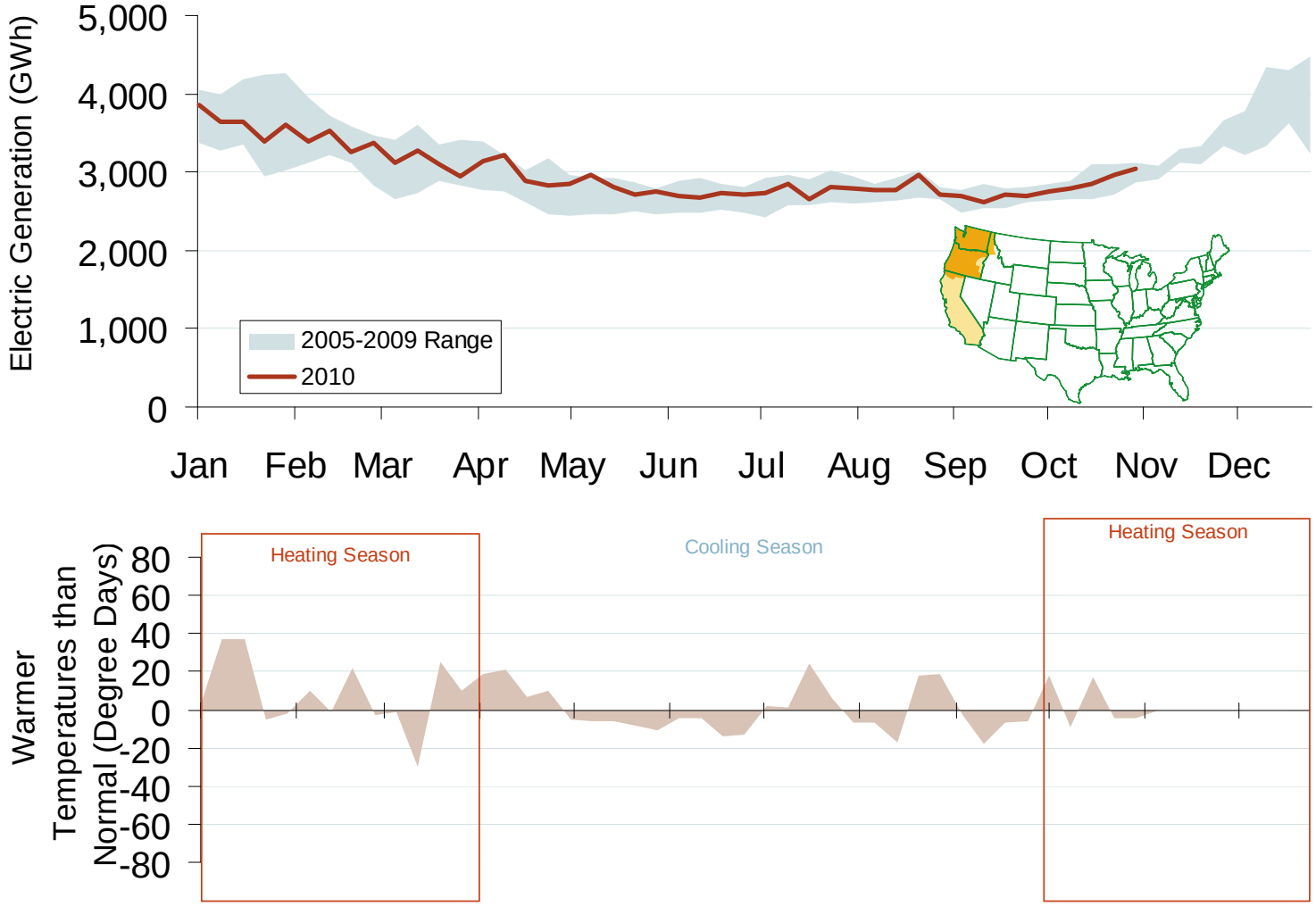



Source: Derived from *EEI* and *NOAA* data.

November 2010

Updated November 5, 2010

# Weekly Electric Generation Output and Temperatures
# Pacific Northwest Region




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

November 2010

Updated November 5, 2010

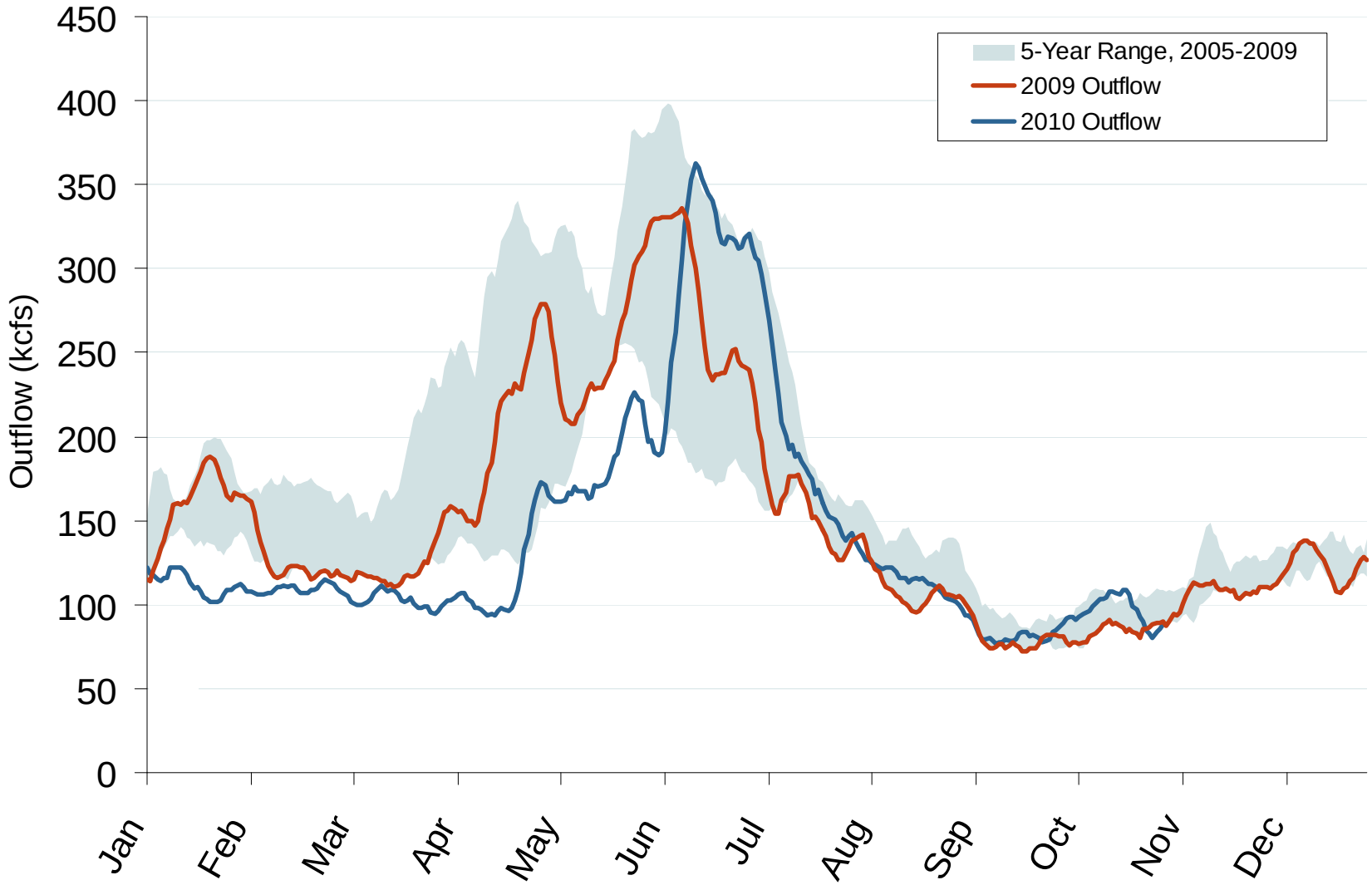
# Pacific/Northwest Hydro and Snowpack Levels

| | Hydro Generation | | Snow Water Equivalent[3] | | |
|---|---|---|---|---|---|
| | In-State Capacity (MW)[1] | Additional Capacity Created Downstream (MW)[2] | One Year Ago (3/27/09) (% of historical average) | Last Month 3/1/10 (% of historical average) | Current 4/1/10 (% of historical average) *(percentage point change from 3/1/10) |
| British Columbia | 10,000 | 16,200 | 89% | 78% | 80% (+2) |
| Idaho | 2,700 | 19,700 | 88% | 64% | 67% (+3) |
| Montana | 2,700 | 16,200 | 94% | 62% | 64% (+2) |
| Washington | 21,500 | 0 | 90% | 67% | 72% (+5) |
| Oregon | 9,100 | 0 | 100% | 64% | 67% (+3) |
| California | 10,400 | 0 | 88% | 112% | 106% (-6) |

- [1] Net summer capacity in megawatts by state (EIA).
- [2] Approximate electric capacity created by water flow through the downstream states (From 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, California Dept. of Water Resource and Government of British Columbia Ministry of Environment).
- + Correction: The data reported for 3/1/10 in British Columbia is revised from 69% up to 78% due to a data error.

Updated April 15, 2010

# Stream Flow at The Dalles Dam

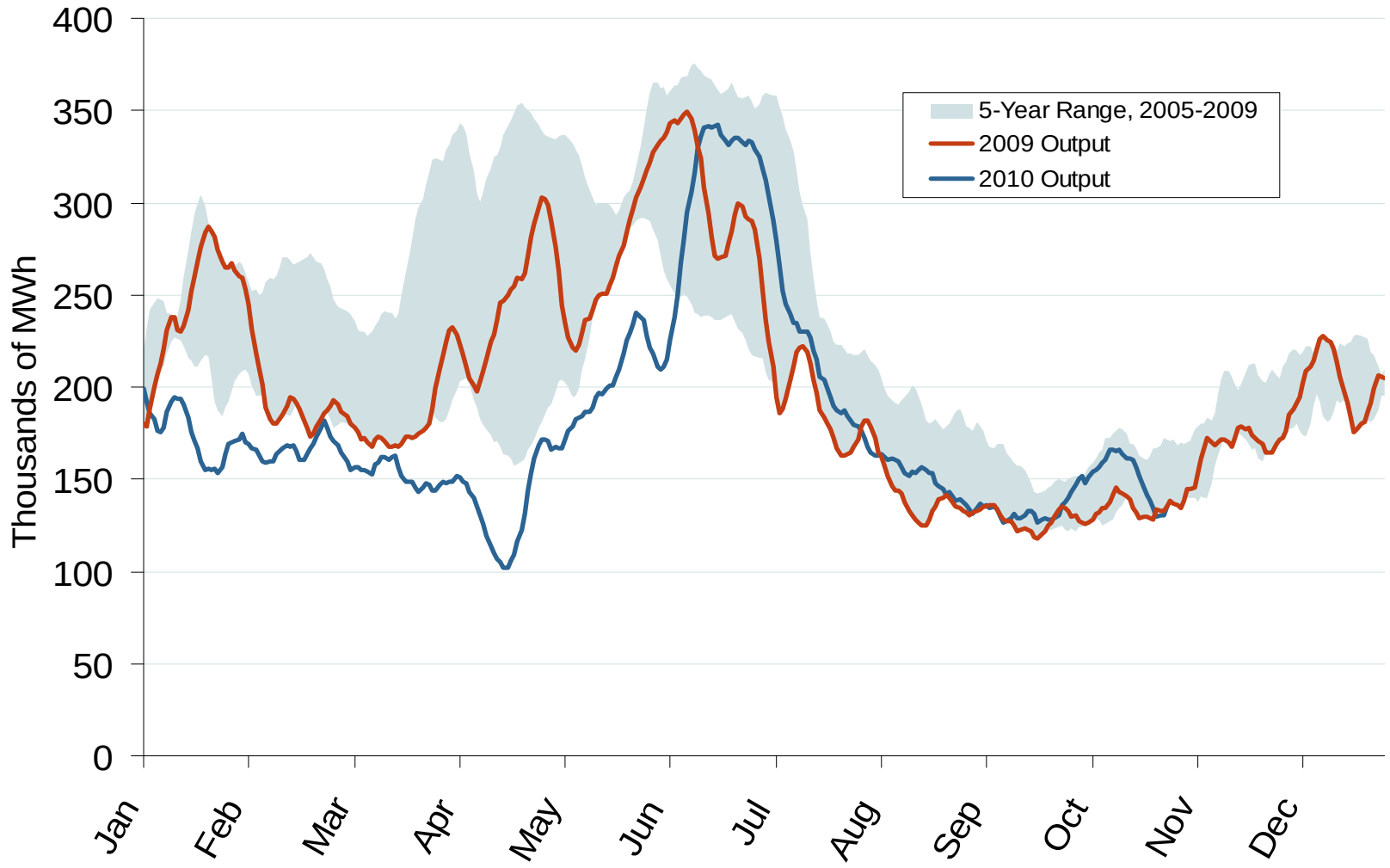



Source: Derived from *USACE* data.

Trend lines are 7-day moving averages.

Updated November 5, 2010

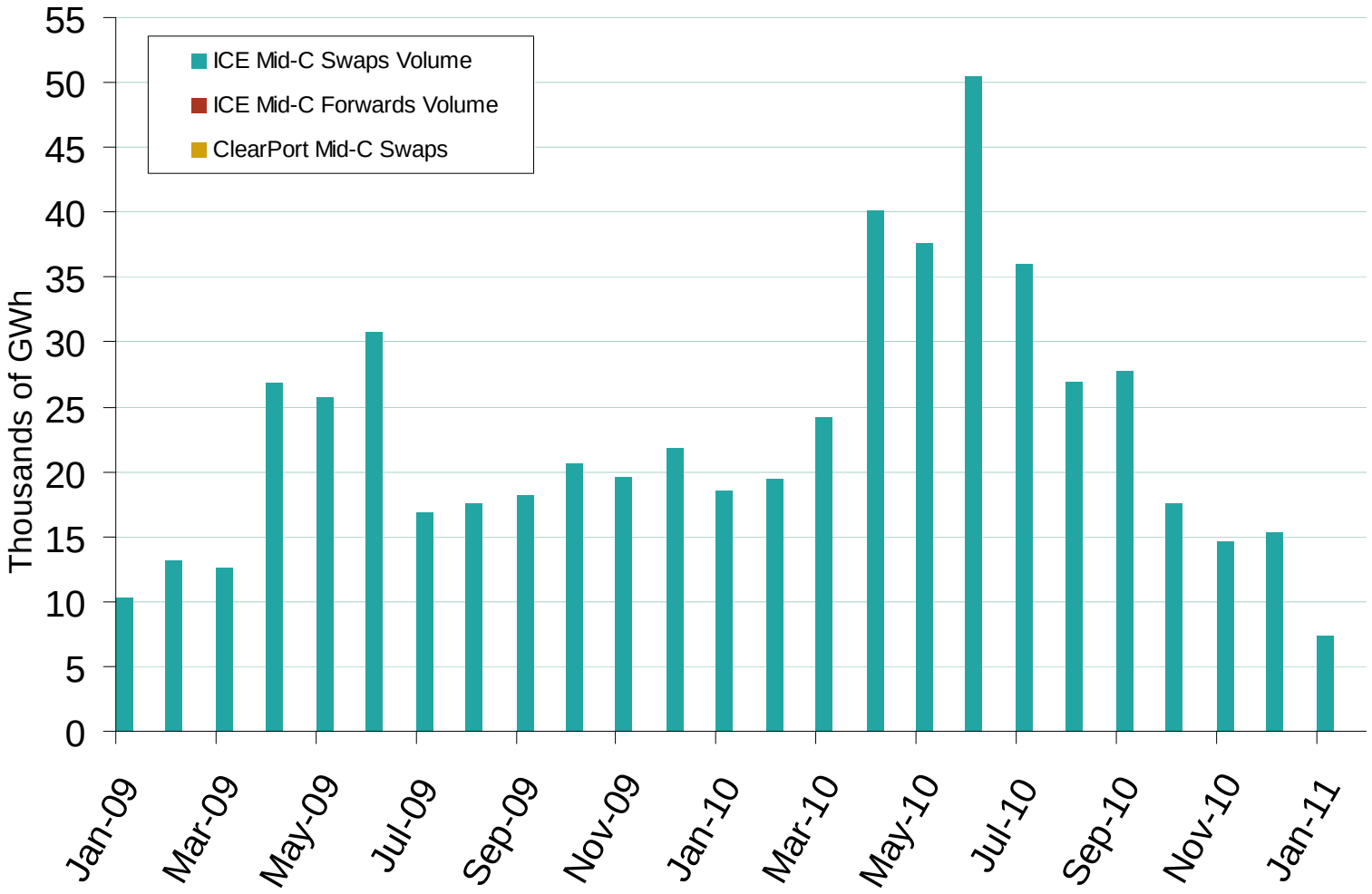
# Pacific Northwest Hydroelectric Production




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

Updated November 5, 2010

# 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.

Updated November 5, 2012