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

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

Source: NERC (www.tsin.com)
Northwest Annual Average Bilateral Prices

<table>
<thead>
<tr>
<th>Annual Average Day Ahead On Peak Prices ($/MWh)</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>5-Year Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-Columbia (Mid-C)</td>
<td>$50.18</td>
<td>$56.57</td>
<td>$65.00</td>
<td>$35.66</td>
<td>$35.90</td>
<td>$48.67</td>
</tr>
<tr>
<td>California-Oregon Border (COB)</td>
<td>$55.58</td>
<td>$62.14</td>
<td>$73.86</td>
<td>$38.02</td>
<td>$38.84</td>
<td>$53.70</td>
</tr>
</tbody>
</table>

Source: Derived from Platts data.

Updated January 4, 2011
Northwestern Electric Market: Northwestern Bilateral Prices

Northwestern Daily Bilateral Day-Ahead On-Peak Prices

Source: Derived from Platt's data

Updated: October 03, 2011
Western Daily Bilateral Day-Ahead On-Peak Prices

Source: Derived from Platts data

Updated: October 03, 2011
Implied Heat Rates at Western Trading Points - Weekly Avgs.

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

Updated: October 03, 2011
Northwestern Daily Bilateral Day-Ahead On-Peak Prices

Source: Derived from Platts data

Updated: October 03, 2011
Western Daily Bilateral Day-Ahead On-Peak Prices

Source: Derived from Platts data

Updated: October 03, 2011
Northwest Electric Market: Generation Output and Temperatures

Weekly Power Generation & Temps. - Rocky Mountains

Source: Derived from EEI and NOAA data

Updated: October 06, 2011
Weekly Power Generation & Temps. - Pacific Northwest

Source: Derived from EEI and NOAA data
October 2011

Updated: October 06, 2011
### Pacific/Northwest Hydro and Snowpack Levels

<table>
<thead>
<tr>
<th></th>
<th>Hydro Generation</th>
<th>Snow Water Equivalent&lt;sup&gt;3&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>In-State Capacity (MW)&lt;sup&gt;1&lt;/sup&gt;</td>
<td>Additional Capacity Created Downstream (MW)&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Washington</td>
<td>21,500</td>
<td>0</td>
</tr>
<tr>
<td>Oregon</td>
<td>9,100</td>
<td>0</td>
</tr>
<tr>
<td>California</td>
<td>10,400</td>
<td>0</td>
</tr>
<tr>
<td>Idaho</td>
<td>2,700</td>
<td>19,700</td>
</tr>
<tr>
<td>Montana</td>
<td>2,700</td>
<td>16,200</td>
</tr>
<tr>
<td>British Columbia</td>
<td>10,000</td>
<td>16,200</td>
</tr>
</tbody>
</table>

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, California Dept. of Water Resource and Government of British Columbia Ministry of Environment).
Notes: Trend lines are 7-day moving averages
Source: Derived from USACE data
Updated: October 04, 2011

Northwest Electric Market: The Dalles Dam Stream Flow

Federal Energy Regulatory Commission • Market Oversight • www.ferc.gov/oversight

Stream Flows at the Dalles Dam

Outflow (kcfs)

- 5-Year Range, 2006-2010
- 2011 Outflow
- 2010 Outflow

Updated: October 04, 2011
Pacific Northwest Hydroelectric Production

Notes: Trend lines are 7-day moving averages
Source: Derived from USACE data reflecting the output of the 24 largest facilities
Updated: October 13, 2011
Western Daily Actual Peak Demand

Notes: Data does not include weekends and holidays. Some data for 12/31/2008 – 1/9/2009 are not available from WECC.

Source: Derived from WECC Daily Report data available at http://wecc.biz

Updated: October 04, 2011
Mid-Columbia Forward and Swap Volumes

Source: Derived from ICE data
Updated: October 05, 2011