California Electric Market: Overview and Focal Points

California Electric Regions

[Map of California showing regions NP-15, ZP-26, SP-15, and Non-CAISO Areas]

CAISO Zones:
- NP-15
- ZP-26
- SP-15
- Non-CAISO Areas

This map was created using Platts PowerMap.

September 2011
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 2008 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)

System peak loads declined in 2008, due in large part to a generally mild summer

Peak demand change: -3.5% (2007-2008)

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer Peak Demand (MW)</td>
<td>45,597</td>
<td>45,562</td>
<td>50,270</td>
<td>48,615</td>
<td>46,897</td>
</tr>
</tbody>
</table>

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.
# California Annual Average Bilateral Prices

## Annual Average Day Ahead On Peak Prices ($/MWh)

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>5-Year Avg</th>
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<tbody>
<tr>
<td>NP15</td>
<td>$61.08</td>
<td>$66.59</td>
<td>$80.14</td>
<td>$39.29</td>
<td>$40.08</td>
<td>$57.45</td>
</tr>
<tr>
<td>SP15</td>
<td>$61.95</td>
<td>$66.48</td>
<td>$79.36</td>
<td>$38.31</td>
<td>$40.21</td>
<td>$57.28</td>
</tr>
</tbody>
</table>

Source: Derived from *Platts* data.

September 2011
Western Daily Bilateral Day-Ahead On-Peak Prices

Price ($/MWh)

Source: Derived from Platts data
Updated: September 01, 2011
Western Daily Bilateral Day-Ahead On-Peak Prices

Source: Derived from *Platts* data
September 2011

Updated: September 01, 2011
California Electric Market: Last Month’s Southwestern Bilateral Prices

Southwestern Daily Bilateral Day-Ahead On-Peak Prices

Price ($/MWh)

2006 2007 2008 2009 2010 2011

Updated: September 01, 2011

Source: Derived from Platts data

September 2011
Northwestern Daily Bilateral Day-Ahead On-Peak Prices

Source: Derived from Platts data

Updated: September 01, 2011
California Electric Market: Western Implied Heat Rates

Implied Heat Rates at Western Trading Points - Weekly Avgs.

Note: 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.

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

Updated: September 01, 2011
Weekly Electric Generation Output and Temperatures California

Source: Derived from EEI and NOAA data
September 2011

Updated: September 08, 2011
California Electric Market: Pacific Northwest Hydro Production

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: September 13, 2011

September 2011
California Electric Market: Physical & Financial Market Volumes

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

SP-15 Forward and Swap Volumes

Notes:
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.

Source: Derived from ICE data

September 2011

Updated: September 20, 2011
Western Daily Actual Peak Demand

Notes: Data prior to 9/14/2010 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: September 02, 2011