The Loading Order – How Are We Doing?

Jackalyne Pfannenstiel
Chairman
California Energy Commission

Independent Energy Producers
Annual Meeting
October 10, 2006
Energy Action Plan’s **Loading Order Directs Resource Additions**

- Energy efficiency and demand response
- Renewable energy resources
- Clean and efficient fossil generation
2006 Heat Storm Was a Wake-Up Call

How hot was it?

- Northern California peak temperatures at once-in-28-year levels.
- Southern California peak temperatures at once-in-10-years, even over the weekend.
- SDG&E load peaked on Saturday - first time ever.
- Record 11 days over 100° in Sacramento.
- Northern California overnight lows were highest in recorded history - at least 1 in 57 years.
An Improbable Peak

1 in 2

1 in 10

Actual Peak: about 1 in 50
Surviving The Heat Storm

What worked:

- Coordination and communication
- Generation, transmission and import availability
- Demand response
- Praying

What didn’t:

- Distribution transformers
Lessons For Next Time

- Distribution transformers fail under extreme heat conditions.
- Demand response well-suited for low probability events.
- Peak load system operations needs planning and coordination.
- Demand forecast needs to be updated often.
- Luck is not a resource.
Resource Needs

- Loads growing at 1.5%-2% per year
- Peaks growing faster
Peak Demand Growth
Declining Load Factors
California Energy Commission

Housing Drives Load Growth

- Multi-family
- Single

Number of units

Year


150
100
50
0
New Homes Add to Peak Demand

- 1.2 million new homes by 2017
- Most in hottest areas
- AC loads add 2,400 MW at peak
Air Conditioning Contributes to the Peak

- More Central Air Conditioning
- Housing Growth in Hotter Areas
- More AC in Existing Urban Centers
- Revised Peak Forecast for Summer 2006 and Beyond
Loading Order: Energy Efficiency

- First: Use energy efficiency and demand response as preferred means of meeting growing energy needs.
California Energy Commission

Energy Efficiency Works

Per Capita Electricity Consumption

Source: http://www.eia.doe.gov/emeu/states/sep_use/total/csv/use_csv.html

United States

California

kWh/person


Per Capita Electricity Consumption
Energy Efficiency Resource Additions

- Utility Efficiency Programs at a cost of ~1% of electric bill
- Building Standards
- Appliance Standards

Annual Energy Savings from Efficiency Programs and Standards
California Energy Commission

Energy Efficiency Resource Additions
## Meeting EE Goals

### Annual Goals As of July 2006

<table>
<thead>
<tr>
<th></th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>Achieved Annual Savings YTD</th>
<th>Achieved Savings As % of 2006 Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net Summer Peak MW</strong></td>
<td>442</td>
<td>478</td>
<td>528</td>
<td>84</td>
<td>19%</td>
</tr>
<tr>
<td><strong>Net Annual MWh</strong></td>
<td>2 million</td>
<td>2.2 million</td>
<td>2.5 million</td>
<td>382,000</td>
<td>19%</td>
</tr>
<tr>
<td><strong>Net Annual Therms</strong></td>
<td>30 million</td>
<td>37.3 million</td>
<td>44.4 million</td>
<td>4.3 million</td>
<td>14%</td>
</tr>
</tbody>
</table>
Loading Order: Renewables and Distributed Generation

- Second: New generation needs met first by renewable energy resources and distributed generation, such as combined heat and power.
Renewable Energy Growth

- Geothermal
- Biomass
- Wind
- Solar
Renewables: Stuck in Neutral?
Loading Order: Clean and Efficient Fossil-fuel Generation

- Third: To the extent the above are unable to satisfy energy and capacity needs, support clean and efficient fossil-fuel fired generation.
We’ve Been Adding Power Plants

New California Power Plants On-Line and Old Plants Retired
(1999 to 2006 by Year)

MEGAWATTS

<table>
<thead>
<tr>
<th>Year</th>
<th>On-Line</th>
<th>Retired</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>0</td>
<td>0.56</td>
</tr>
<tr>
<td>2000</td>
<td>0</td>
<td>0.07</td>
</tr>
<tr>
<td>2001</td>
<td>1,914</td>
<td>30</td>
</tr>
<tr>
<td>2002</td>
<td>2,729</td>
<td>807</td>
</tr>
<tr>
<td>2003</td>
<td>3,668</td>
<td>2,024</td>
</tr>
<tr>
<td>2004</td>
<td>0</td>
<td>1,725</td>
</tr>
<tr>
<td>2005</td>
<td>3,112</td>
<td>0</td>
</tr>
<tr>
<td>2006</td>
<td>1,539</td>
<td>1,487</td>
</tr>
</tbody>
</table>
More Applications Are Being Considered

<table>
<thead>
<tr>
<th>Projects</th>
<th>No.</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>In Active Review</td>
<td>14</td>
<td>4,506 MW</td>
</tr>
<tr>
<td>Possible New Filings through June 30, 2007</td>
<td>~12</td>
<td>~5,000 MW</td>
</tr>
<tr>
<td>Plants on Line for Summer 2007</td>
<td>1</td>
<td>160 MW</td>
</tr>
<tr>
<td>Plants on Line for Summer 2008</td>
<td>2</td>
<td>893 MW</td>
</tr>
<tr>
<td>Plants on Line for Summer 2009</td>
<td>~4</td>
<td>1,350 MW</td>
</tr>
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</table>
9,036 MW Licensed, But Not Built

<table>
<thead>
<tr>
<th>Reason</th>
<th>Number</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancelled/expired</td>
<td>6</td>
<td>1,393</td>
</tr>
<tr>
<td>No contract</td>
<td>6</td>
<td>5,057</td>
</tr>
<tr>
<td>Other reasons</td>
<td>5</td>
<td>2,586</td>
</tr>
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Overall, How Are We Doing With the Loading Order?

<table>
<thead>
<tr>
<th>Resource</th>
<th>Goal</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>2 Million MWH</td>
<td>19%</td>
</tr>
<tr>
<td>Demand Response</td>
<td>2,400 MW</td>
<td>1,100 MW</td>
</tr>
<tr>
<td>RPS</td>
<td>20% by 2010</td>
<td>11%</td>
</tr>
<tr>
<td>Fossil</td>
<td>As Needed</td>
<td>2,400 MW for next 3 years</td>
</tr>
</tbody>
</table>
Prospects for Improvement

- Energy legislation
- Transmission progress
- Utility solicitations: renewable, non-renewable
- Advanced metering
  - RPS improvement
  - Load Management Standards authority
2006 Energy Legislation

**AB 32**  
*Greenhouse Gases* – GHG emission reductions

**AB 2021**  
*Energy Efficiency* – Statewide EE target

**SB 1**  
*Solar Energy* – 3,000 MW goal

**SB 107**  
*Renewable Energy* – Acceleration of RPS

**SB 1059**  
*Transmission* -- Designation of corridors for future use

**SB 1368**  
Transmission Progress

- **Devers-Palo Verde No. 2**
  - Expected Operating Date: December 2009

- **Tehachapi**
  - Agreed on Plan of Service
  - Permitting of First Phase in Process
  - Phase 2 and 3 CPCN applications 2007

- **Sunrise**
  - Application Accepted as Adequate Sept. 2006
  - Will allow 700 MW of renewable generation

- **Trans-Bay Cable**
  - Approvals and Construction Started in 2007
Progress in Procurement

- The CPUC process is underway
- Solicitations are resulting in signed contracts - renewables and non-renewables
- Stakeholder groups are expressing optimism
Progress With Renewables

- CPUC has approved nearly 3,000 MW of contracts
- WREGIS is expected to be deployed in 2007
- The California Solar Initiative, beginning in 2007, has a goal of 3,000 MW of PV in ten years
Advanced Metering Update

- **PG&E**
  - Network deployment begun in September
  - Meter deployment to begin in November in the Bakersfield area.

- **SDG&E**
  - CPUC decision scheduled for the first quarter of 2007.
  - AMI deployment is expected to be completed mid-2008-2010.

- **SCE**
  - Pre-deployment efforts positive: expects compatible system available soon.
  - AMI project application and business case filing expected in July 2007.
The Energy Action Plan was a valuable call to action; there’s been too little action since

- We need more energy efficiency, more demand response, more renewables, more fossil generation

- We’re not out of the woods yet on summer reliability

- We need to find new approaches

- We all need to take responsibility