Overview

- Review the reliability of electricity supply in California since deregulation.
- What was the outlook for the summer of 2001?
- Why no rotating blackouts this summer?
- What about next summer and beyond?
- CEC programs available to help local governments save energy
Measures of Reliability

- Operating Reserves 7% Above Demand
  - Required for reliable service

- Operating Reserves Below 7% - **Stage 1**
  - Customers voluntarily curtail usage

- Operating Reserves Below 5% - **Stage 2**
  - Curtail interruptible customers
    (voluntary load curtailments)

- Operating Reserves Below 1.5% - **Stage 3**
  - Involuntary load curtailments initiated
    (Rotating blackouts)
Reserve Margins in the West
Peak Summer Demand
1993 - 1999
Reliability Since Deregulation

• ISO begins operations Spring 1998.

• Summer of 1998 (hottest in last 40 years)
  – Operating reserve drop below 5% 5 times.
  – No Stage III alerts

• Summer of 1999 one of the coolest on record
  – Operating reserves drop below 7% 3 times
  – No Stage II alerts
  – ISO peak demand exceeds previous summer
Summer 2000

- Summer of 2000 unseasonably warm spring
  - average summer
    - Stage II declared on May 22nd due to high temps in Bay area. 6,000 MW of generation off-line.
    - June 14th temperatures in Bay Area reach highest recorded level in 125 years
      - Two large power plants down in Bay Area
      - PG&E institutes rolling blackouts in Bay Area for the 1st time
      - Rest of ISO only in Stage I alert

- 16 Stage II alerts called during the summer
  - no stage III
2000-2001 'The Winter of our Discontent'

- December 7th first Stage III is declared
  - DWR drops 200 MW of pumping load to avert rotating blackouts
- 20 consecutive days in Dec. of Stage I or II alerts
- State under Stage III alerts Jan 16th - Feb 16th
- Statewide rotating blackouts
  - 3 days in January
  - 2 days in March
  - 2 days in May 2001
ISO Daily Peak Loads
January 2000 - August 31, 2001

Summer Peak is 50% higher than rest of year

Yet blackouts occurred here

Megawatts
Historical Generation Outages
Scheduled and Forced
(Average MW/Month)

Outages 2-4x greater in Fall/Winter/Spring 2000-01
<table>
<thead>
<tr>
<th>Temperature Probability</th>
<th>1-in-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Demand + 7% Operating Reserve</td>
<td>61,125</td>
</tr>
<tr>
<td>Firm In-State Generating Capacity</td>
<td>54,375</td>
</tr>
<tr>
<td>Firm Imports</td>
<td>4,841</td>
</tr>
<tr>
<td>Available Generation Capacity</td>
<td>59,216</td>
</tr>
<tr>
<td>Estimated Outages</td>
<td>3,050</td>
</tr>
<tr>
<td>Dependable Generation Capacity</td>
<td>56,166</td>
</tr>
<tr>
<td>Surplus / Deficit</td>
<td>-4,959</td>
</tr>
</tbody>
</table>
Bridging the Gap

• Generation
  – Increased output from existing plants
  – Accelerate construction of approved plants
  – Develop new peaking and renewable plants

• Goal 5,067 MW

• Conservation
  – State, Fed. & Local Govt. emergency load reduction
  – Augment existing utility conservation programs
  – New conservation programs
    • Demand responsive energy systems
    • Energy efficiency
  – Demand responsive load
  – Public outreach, 20/20

• Goal 6,244 MW
Results as of August 1st

- **Generation**
  - Increased output from existing plants
    - **505 MW**
  - Accelerate construction of approved plants
    - **1,365 MW**
  - Develop new peaking and renewable plants
    - **460 MW**
  - **Total 2,330 MW**

- **Conservation**
  - State, Fed. & Local Govt. emergency load reduction
    - **658 MW**
  - Augment existing utility conservation programs
    - **124 MW**
  - New conservation programs
    - **501 MW**
  - Demand responsive load
    - **1,795 MW**
  - Public outreach, 20/20
    - **4,016 MW**
  - **Total 7,094 MW**
California Monthly Average Energy Costs
1998-2001
($/MWH)

Sources: 1998-1999 PX Market Clearing Price
Maximum Powerplant Development Outlook in California

- **2001**: 2,453 MW
  - Projects Currently Approved: 13
  - Projects Currently Under Review: 7
  - Projects Currently Announced: 6

- **2002**: 6,300 MW
  - Projects Currently Approved: 6
  - Projects Currently Under Review: 7
  - Projects Currently Announced: 12

- **2003**: 5,932 MW
  - Projects Currently Approved: 7
  - Projects Currently Under Review: 1
  - Projects Currently Announced: 6

- **2004**: 9,880 MW
  - Projects Currently Approved: 5
  - Projects Currently Under Review: 10
  - Projects Currently Announced: 2

MW On-line by Year (# of projects): Projects Currently Approved, Projects Currently Under Review, Projects Currently Announced.
WSCC Proposed Generation By Region

- California/Mexico: 37,040 MW
- Southwest: 31,123 MW
- Northwest: 26,793 MW
- Rocky Mtn.: 6,565 MW

Total WSCC Proposed Generation: 101,521 MW
California Statewide Load/Resource Balance
July 2001-2004
“Maximum Conservation/Demand Responsive Load - Cautious New Plant Development Scenario”

August 16, 2001
Inadequate Transmission Capacity

- Path 15 limits flows from south to north which contributes to power shortages in Northern California.

- Transmission upgrades are vital to a reliable electric system, and to promoting greater competition among generators.
<table>
<thead>
<tr>
<th>Local Areas</th>
<th>2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humboldt</td>
<td>00</td>
</tr>
<tr>
<td>The recommended solution is faster clearing times on the 66KV lines, no additional generation. PG&amp;E is working on a project to fix this.</td>
<td></td>
</tr>
<tr>
<td>Battle Creek</td>
<td>10</td>
</tr>
<tr>
<td>North Bay</td>
<td></td>
</tr>
<tr>
<td>Eagle Rock</td>
<td>30</td>
</tr>
<tr>
<td>Vaca Dixon</td>
<td>16</td>
</tr>
<tr>
<td>Greater Bay Area</td>
<td></td>
</tr>
<tr>
<td>San Jose</td>
<td>350</td>
</tr>
<tr>
<td>This is the 115KV sub-area between Newark and Metcalf.</td>
<td></td>
</tr>
<tr>
<td>Sierra</td>
<td></td>
</tr>
<tr>
<td>Summit</td>
<td>50</td>
</tr>
<tr>
<td>Transmission lines would help this area more than generation additions. PG&amp;E has an approved project for 2003 that would eliminate the most stringent contingency.</td>
<td></td>
</tr>
<tr>
<td>Colgate</td>
<td>10</td>
</tr>
<tr>
<td>Fresno</td>
<td></td>
</tr>
<tr>
<td>Wilson 115 KV sub-area</td>
<td>70</td>
</tr>
<tr>
<td>Wishon 70 KV sub-area</td>
<td>10</td>
</tr>
</tbody>
</table>
Summary

• New generation, conservation programs, and voluntary load reductions turning around supply/demand imbalance

• Major Demand/Supply Uncertainties
  – Resolution of SCE & PG&E financial problems and the impact on demand from any additional rate increases
  – Generators perception of market conditions and whether to proceed with construction plans

• Adequate transmission capacity, both within California and between western states, more critical to long-term reliability, and promoting competition among generators

• Some “local” reliability areas within the State lack adequate generation
Energy Efficiency Opportunities

- **Energy Partnership Program** - Provides technical assistance to identify cost-effective lighting, HVAC and other energy efficiency projects
  - New and existing facilities
  - Buildings/processes

- **Energy Efficiency Financing** - Provides low interest rate loans for efficiency and self generation projects (as low as 3% interest rate)
  - Lighting, HVAC, controls
  - Pumps and motors
  - LED Traffic lights
  - Cogeneration systems

**For information:**

**Tech Assistance:** www.energy.ca.gov/efficiency/partnership/index.html

**Financing:** www.energy.ca.gov/efficiency/financing/index.html
Peak Load Reduction Grants

• **Cool Savings Program** - Provides incentives for the installation of highly reflective roofing materials
  – Up to $0.20/sq ft for installations 10/1/01-11/2002, if funds available

• **Water/Wastewater Retrofits** - Provides incentives for water and wastewater agencies to retrofit diesel and natural gas generators to reduce Nox
  – About $4 million available
  – Maximum incentive of $300/kW
  – For info: [www.energy.ca.gov/peakload/wastewater.html](http://www.energy.ca.gov/peakload/wastewater.html)
Need More Information?

CEC staff at the League of Cities Conference

– Energy Doctor
– Energy Commission Booth (#333)

Visit the Energy Commission Web Site
- From home page go to - Peak Load Reduction Program
- Click on Public Sector Programs
- or http://www.energy.ca.gov/efficiency/publicsectorjump.html

Contact us at: 1-800-555-7794 or at 916-654-4008