

Briefing on California's Electricity Outlook

California Power Authority
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 **E**lectric **P**ower **G**roup

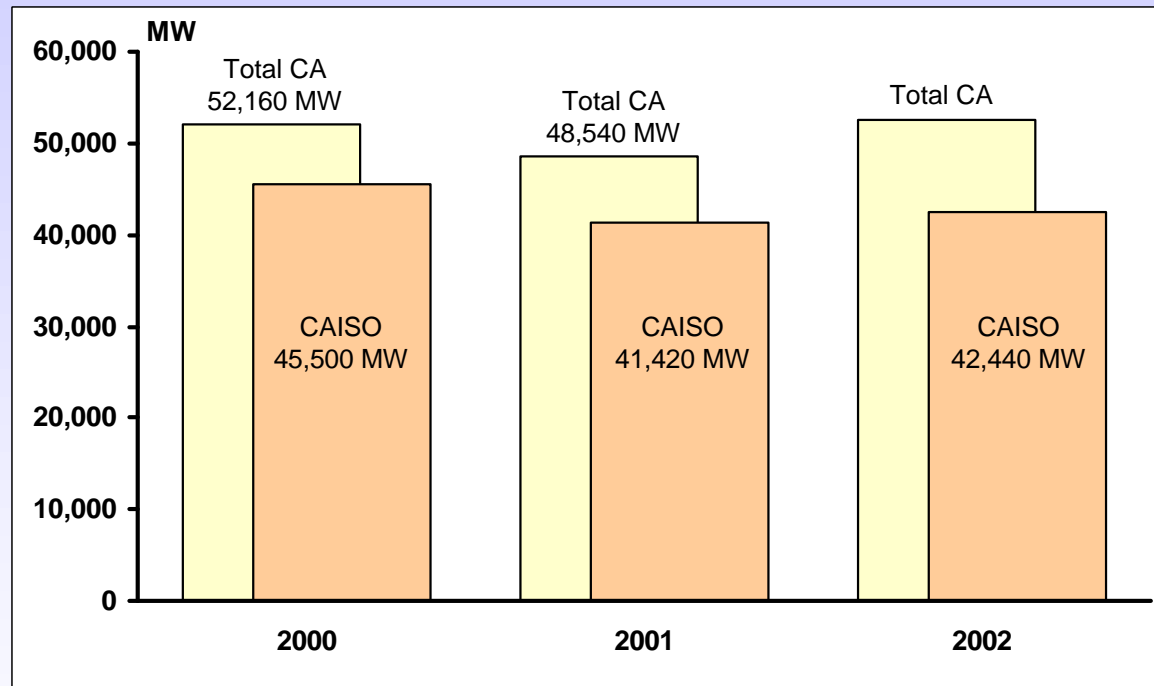
California's electric industry – historical perspective



Discussion Topics

- How much capacity has been built, and how much capacity is currently under construction?
- Does California have adequate resources to keep the lights on?
- What policy mechanisms need to be addressed to reach consensus on who plans and builds for transmission, conservation, renewables, and new power plants?
- What does California need to do to secure its electricity future?

CAISO 2002 recorded peak demand was 42,440 MW and is estimated to grow between 500 to 1,000 MW per year (approximately 1 to 2% per year)

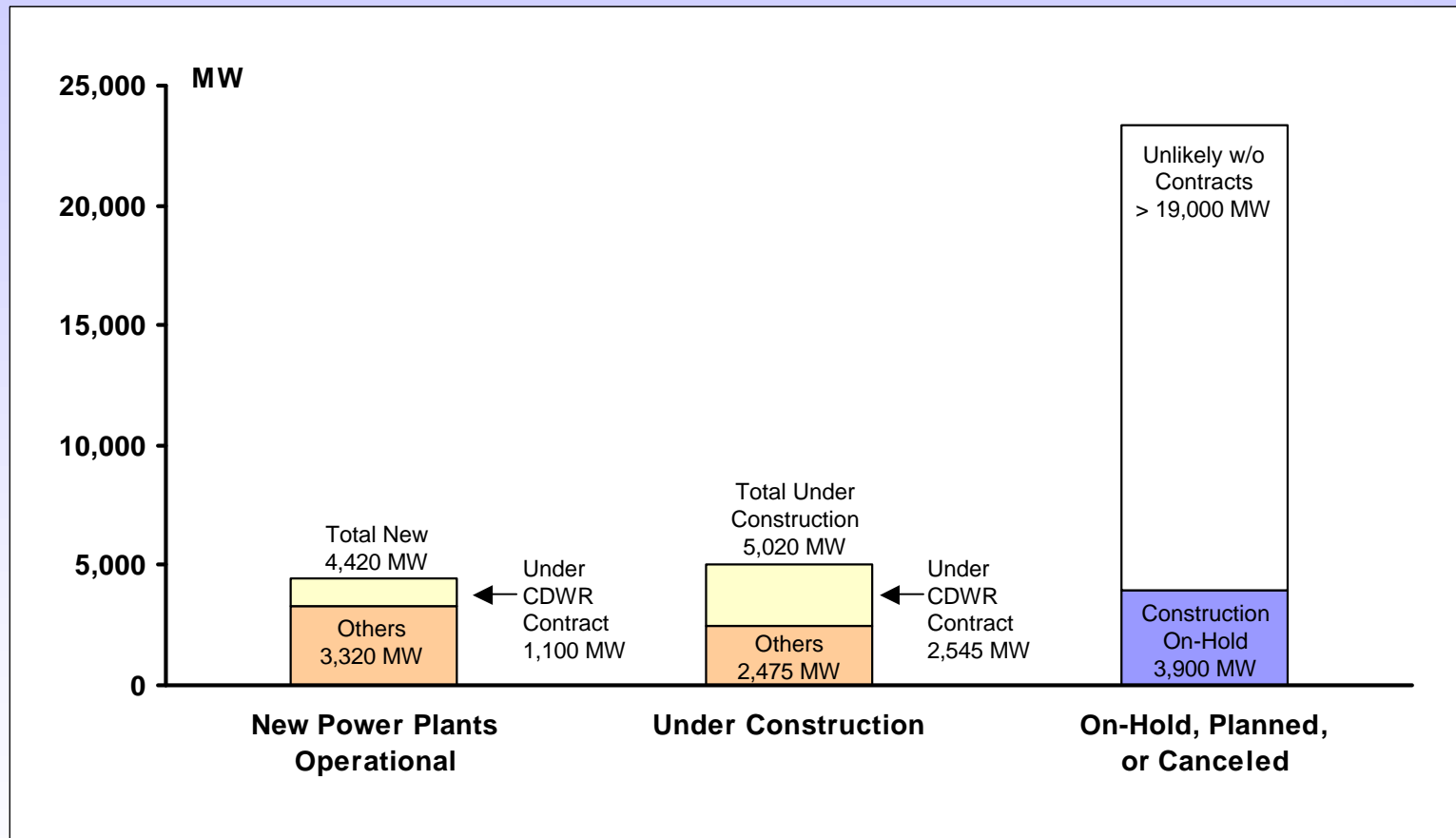


Source: CEC and CAISO reports

Key uncertainties can impact demand by 5,000 MW or more:

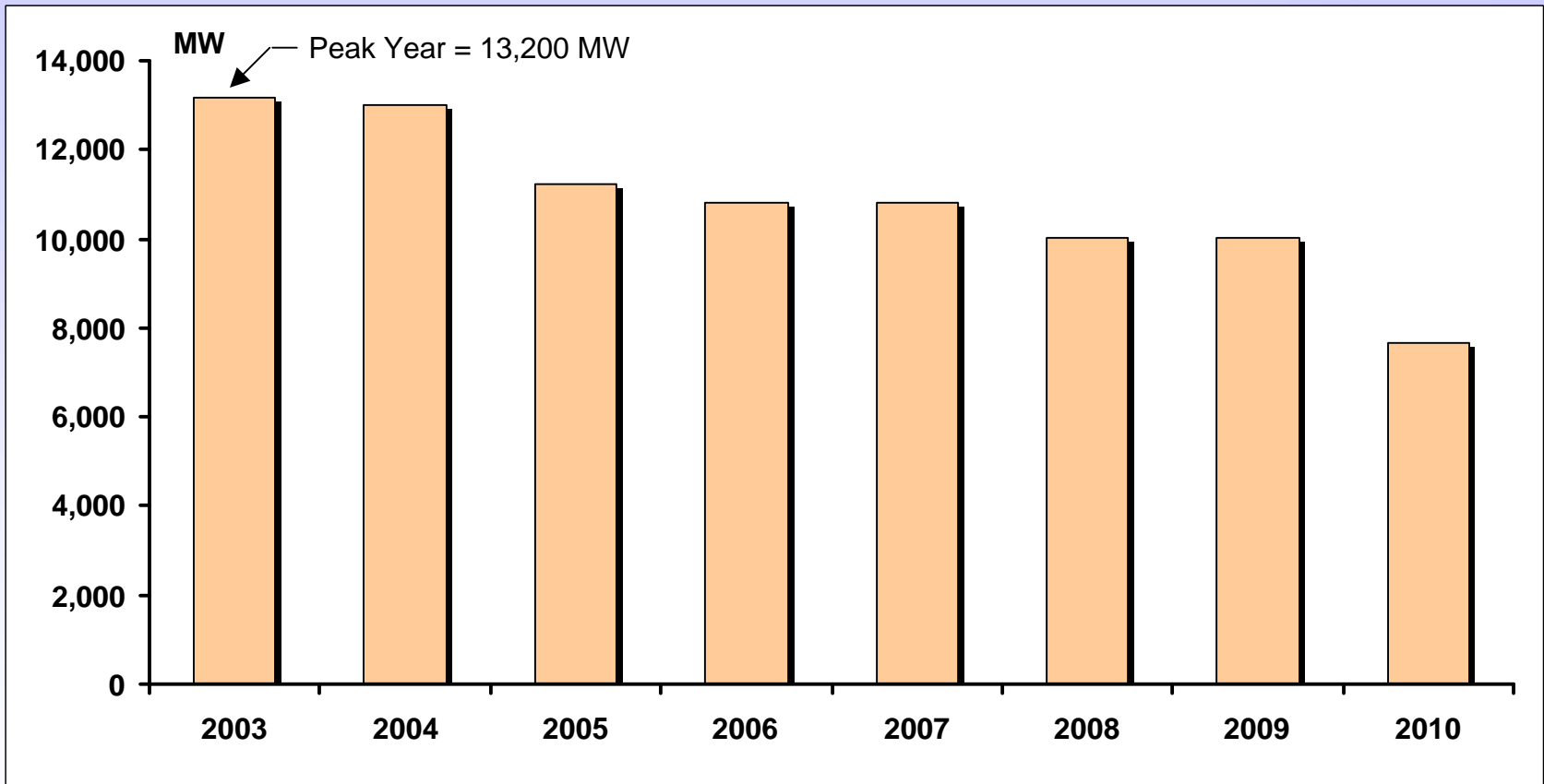
- Weather
- Economy
- Conservation
- Load Management
- Energy efficiency
- Electric rates

California has added over 4,400 MW of new power plants in 2001 and 2002, with an additional 5,000 MW under construction



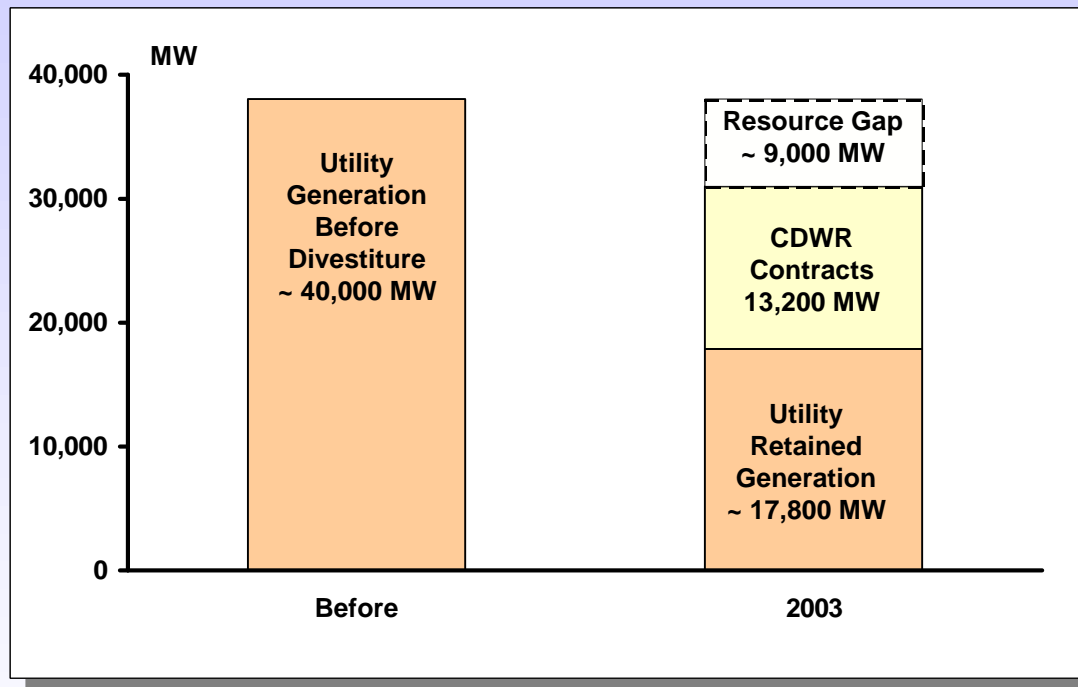
Source: Data from CEC and CDWR contracts. In addition, approximately another 3,000 MW under CDWR contracts are being built outside of California or are categorized in other stages of the CEC process.

CDWR long-term contract portfolio peaks at 13,200 MW in 2003 and declines to an average of 10,400 MW between 2006 and 2009 than starts to drop off starting 2010



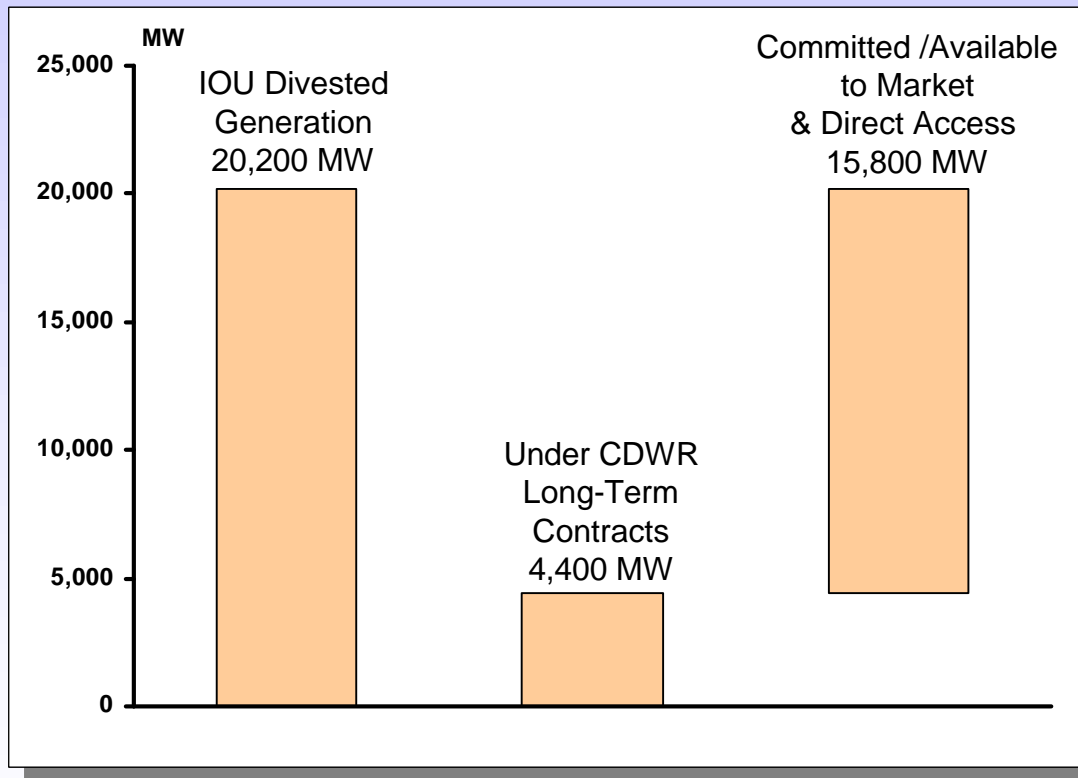
Source: CDWR contracts – based on July MW's of each year

Comparison of available resources before deregulation and today



- Resource gap of 9,000 MW can be met from new power plants and market resources, including divested units not under contracts
- Resource availability from market must also serve direct access loads
- Utility retained generation (URG) includes about 1,500 MW of coal plants built in the 1960's and 4,000 MW of nuclear commissioned during the 1980's

The IOUs had divested over 20,000 MW, of which 4,425 MW or 20% are associated under CDWR long-term contracts



Majority of Divested MW's:

- Over 35 years old
- 10,000 Btu/kWh heat rate
- High maintenance
- Subject to retirement and economic shutdowns
- Owned and operated by financially weak companies

Source: CEC and CDWR contract information.
For 2003, 4,425 MW's under CDWR contract are Dynegy 2,300 MW, Williams 1,875 MW, & Allegheny 250 MW.
However, some or all MW's can be substituted from other market sources. Dynegy contract with CDWR expires at year-end 2004, Williams expires at year-end 2010, and Allegheny expires at year-end 2011

Companies owning/marketing the divested generation in California are financially weak and are unlikely to invest capital in upgrades and retrofits without contracts

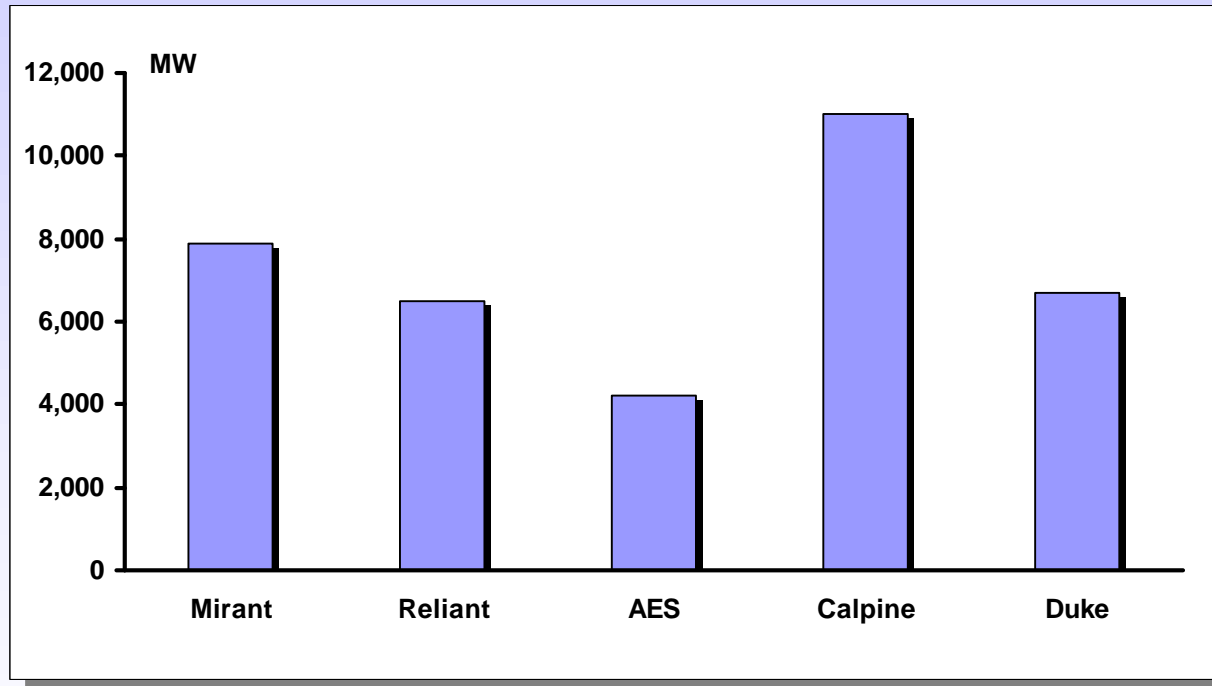
Moody's Ratings		
Investment Grade	Aaa	Duke Energy
	Aa1	
	Aa2	
	Aa3	
	A1	
	A2	
	A3	
	Baa1	
	Baa2	
	Baa3	
"Junk Status"	Ba1	Mirant
	Ba2	AES Corporation Reliant Resources Inc. Calpine Corporation Williams Companies
	Ba3	
	B1	
	B2	Dynergy Inc.
	B3	

Source: For senior unsecured debt - Salomon Smith Barney report – Oct. 2002

- Closing trading desks
- Selling assets and restructuring balance sheets
- Canceling capital investments and construction of new power plants
- Preserving cash

Power sector has \$90 billion in debt – new power plant projects are being cancelled due to slumping power prices, credit ratings and liquidity concerns

Sample Set of Companies Postponing & Canceling Projects throughout U.S
(January 2000 through July 2002)

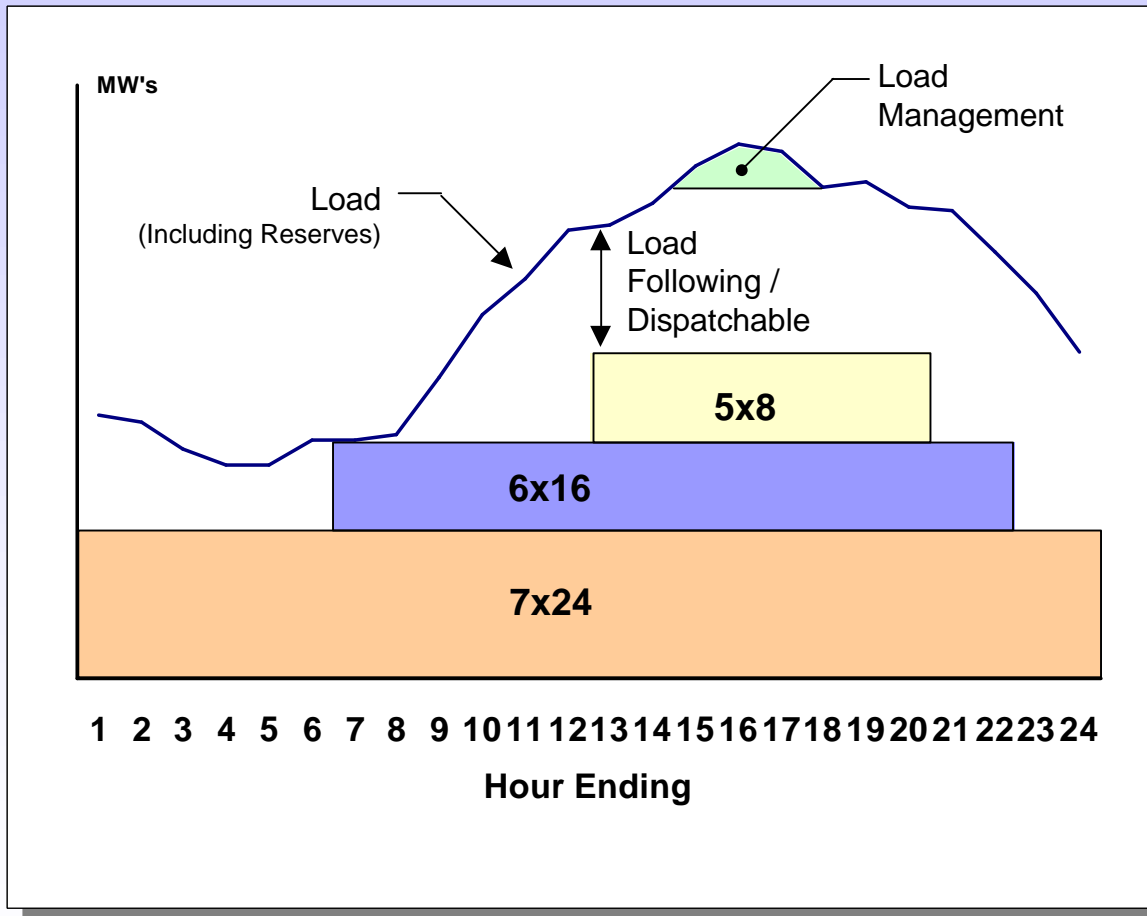


Source: Platts Energy Business & Technology, Oct. 2002

- Nearly 40,000 MW canceled or tabled throughout the WECC
- Of which, over 19,000 MW were canceled or tabled in California

Standard block products from the market do not fit well under the load curve and do not meet the need for reserves, load following, and dispatchability

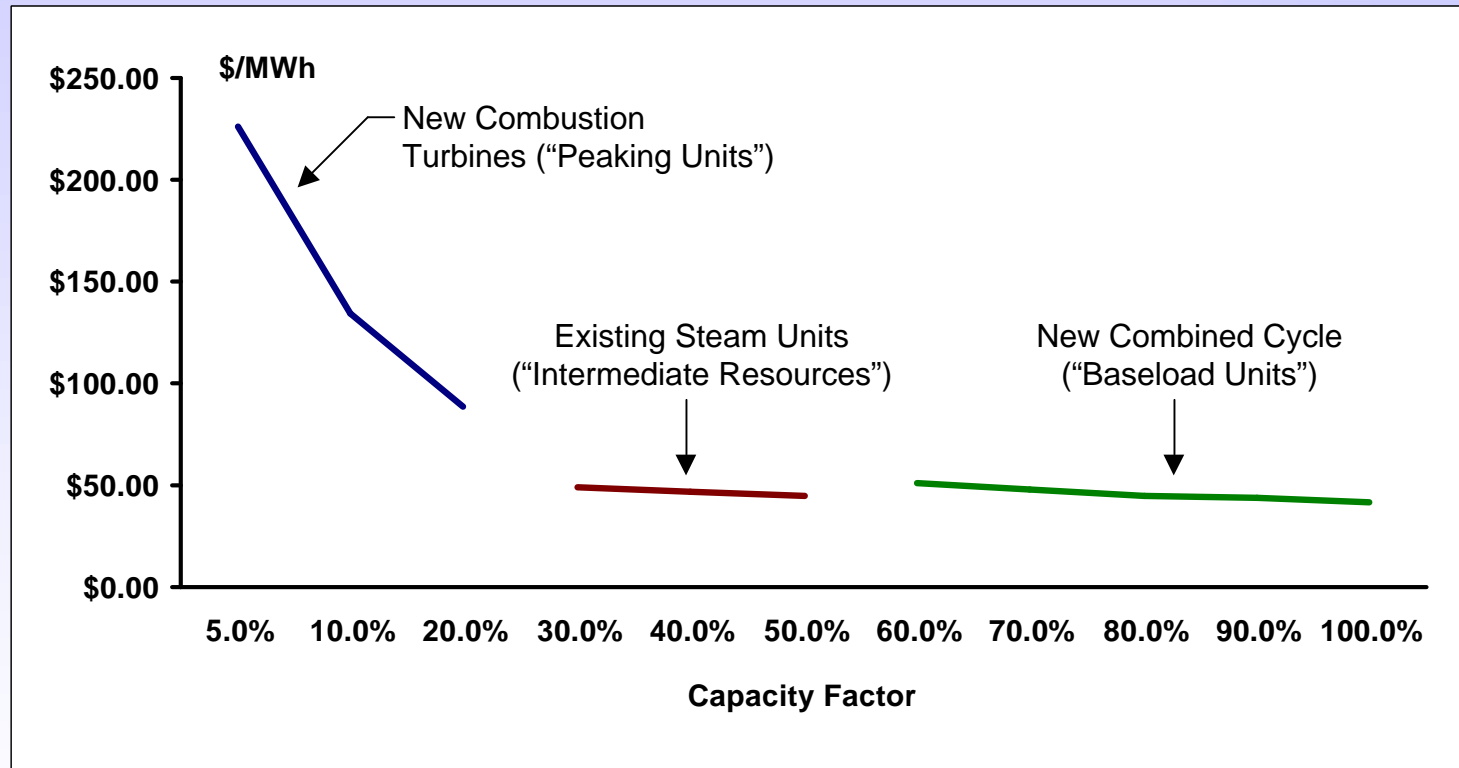
Illustrative Example



- Top 10% of demand only occurs for approximately 1% of the time
- Resources need to cover at least 7% operating reserve plus allowances for unexpected outages and contingencies
- California needs load management, load following / dispatchable capacity, and reserves to cover the peak demand

Low market prices in the \$30-40/MWh range do not support new power plants or operation of older units

Power Plant Cost and Utilization Curve



Assumptions: Combustion turbines - \$500 kW @ 16% annual carrying cost, 11.5 MMBtu/MWh heat rate @ \$3.50/MMBtu gas price, & \$3.00/MWh VOM.
Existing steam units - \$30-kW/Yr, 10.0 MMBtu/MWh heat rate @ \$3.50/MMBtu gas price, & \$3.00/MWh VOM.
Combined cycle - \$700 kW @ 16% annual carrying cost, 7.5 MMBtu/MWh heat rate @ \$3.50/MMBtu gas price, & \$3.00/MWh VOM.

California's policy options

Rely on market



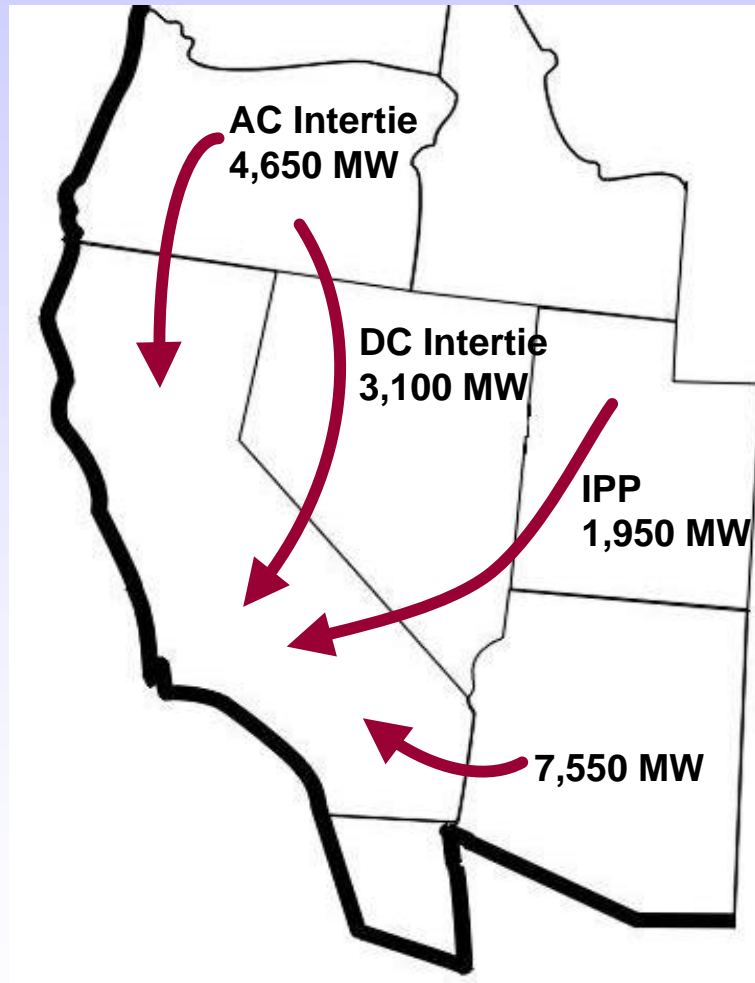
Low prices require surpluses which are not sustainable in the current market environment exposing California to price and supply uncertainty

**Secure needed
load management
and generation
supplies**



Assure price and supply certainty

California's Transmission Import Capability



- Total California import capability 17,250 MW
- Northwest transmission totals 7,750 MW of which 6,400 MW is for CAISO Control Area
- IPP mostly dedicated power from Intermountain coal plant
- Capability from Southwest to bring share of nuclear and coal plants owned by the utilities plus additional firm and economy energy

Over \$1 billion dollars needs to be invested to address California's transmission issues



- Transmission bottlenecks at Path 15 and Path 26
- Local reliability problems due to transmission limitations and inadequate local generation, such as San Francisco and San Diego
- New lines at Palo Verde to access new southwest capacity

California resource picture becomes uncertain in the latter part of the decade

- Retirements and economic shutdown of existing older units
- Attrition of QF resources
- Transmission bottlenecks, congestion, and local reliability
- Conservation and load management
- Direct access
- Expiration of CDWR contracts
- New power plants unlikely without contracts

What does California need to do to secure its electricity future?

- Pursue load management programs
- Promote energy efficiency and conservation programs
- Pursue investments in renewable resources
- Develop long-term resource plans
- Provide stable regulatory and market environment
- Encourage sustainable investments
- Assure operability of older existing units for reserve capacity
- Upgrade transmission within California and interconnections with neighboring states
- Promote new technologies, including advanced metering and distributed generation