

Reliability, Market or Not..It is the Infrastructure Stupid!

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Who is the California ISO?

- Began Operations March 31, 1998
- Not-for-profit California corporation governed by five-member Governing Board appointed by the Governor
- Serves peak load in excess of 46,000 MW.
- Operates over 25,000 circuit miles of transmission, covering over 125,000 square miles.
- CAISO manages most heavily populated (30 million) control area in the United States.
- Oversees the dispatch of over 1400 generating units (55,000 MWs)
- Facilitates \$14 Billion Energy market.
- 4.2 million Energy market schedules processed per Month.
- CAISO Real-time Energy, Ancillary Service, Reliability Management markets - \$2.5 Billion.

Reliability Cost vs Worth

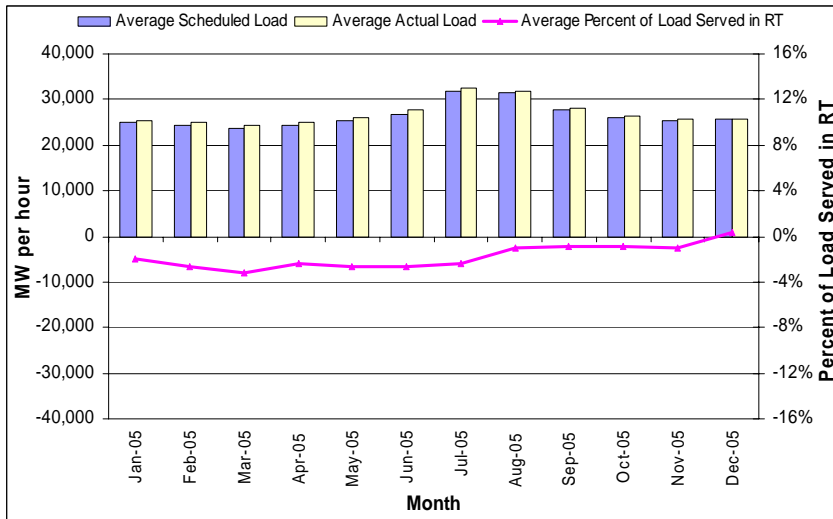
- The \$200 Question...
- The \$10 Billion Question....
- The \$100 Billion Question...

- Questions to the Regulators:
 - How many times do you want to split hairs?
 - Who best to answer the “worth” question?
California got it!

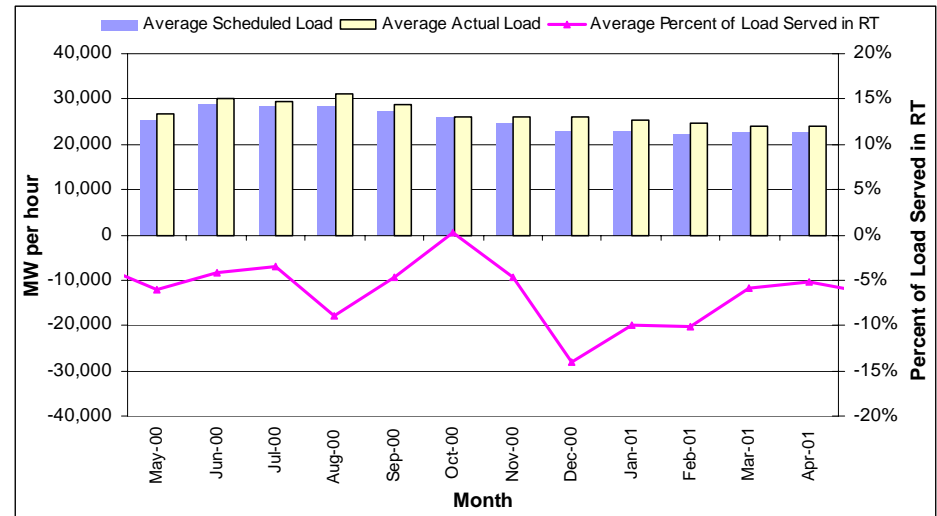
California ISO – Pre and Post Crisis

California ISO – Now only a fraction of the market – In 2005 averaging only 4% of total load!!

2005



2000



California's Aging Generation Fleet – We Are Catching Up

California's aging generation fleet – 46 units, 14,000MWs, average age 42 years, 14% capacity factor, runs 35% hours - needed for reliability but new investment is clearly needed...new generation is struggling to keep pace with load growth and retirements...

	2001	2002	2003	2004	2005	Projected 2006	Total Through 2006
SP15							
New Generation	639	478	2,247	745	2,376	352	6,837
Retirements	0	(1,162)	(1,172)	(176)	(450)	(1,320)	(4,280)
Forecast Load Growth*	491	500	510	521	531	542	3,094
Net Change	148	(1,184)	565	48	1,395	(1,510)	(537)
NP26							
New Generation	1,328	2,400	2,583	3	919	89	7,322
Retirements	(28)	(8)	(980)	(4)	0	(215)	(1,235)
Forecast Load Growth*	389	397	405	413	422	430	2,456
Net Change	911	1,995	1,198	(414)	497	(556)	3,631

* Assumes 2% peak load growth using 2005 forecast from 2005 Summer Assessment.

Reliability & Adequacy

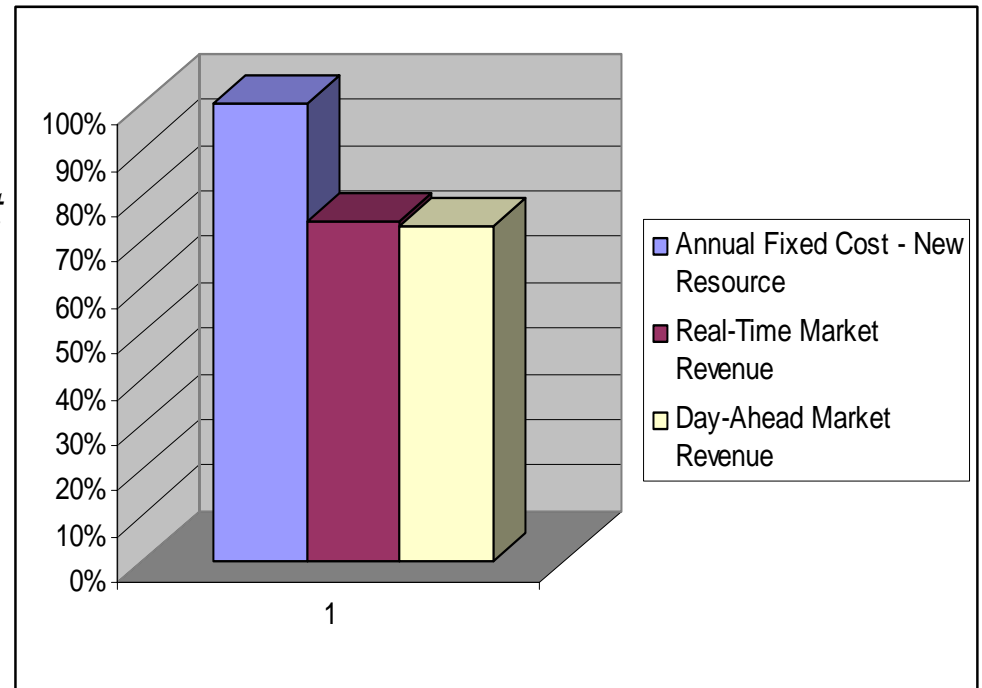
The California Paradigm

- The resource adequacy paradigm for California involves the state developing and implementing a *resource adequacy* program designed to ensure the long-term *service reliability* of the system.
- Complementing that construct, the ISO must continue to ensure the *short-term reliability* of the system through spot energy and capacity markets.
- By necessity, the ISO must also be able to identify the *reliability requirements* necessary to satisfy the state's standards for reliable service, i.e., be able to marry to the two objectives.

Capacity Payments

Challenge: Establish a compensation level (capacity payment) that provides appropriate compensation to *existing* resources and is sufficient to attract *new* resources.

- *Original PJM Capacity Market*
- *New England LICAP*
- *Energy-only Market*



CAISO Proposed Four-Part Long-term Framework

1. Bilateral contracting between load-serving entities and suppliers.
2. Integrated infrastructure planning process.
3. On a medium-term basis, e.g., 1-3 yrs. out, the CAISO will identify gaps and provide back-stop procurement mechanism only if needed. Possible role for for capacity markets .
4. Well-functioning CAISO spot markets for energy, transmission, ancillary services (MRTU). Use of some form of scarcity pricing.

Transparency Presents

Grid Congestion Costs

California's \$1 Billion Issue

- Transmission: The hard learning of the “no-brainer”
- The BC experience – the alternative to the evil, but which one is the evil?
- The California experience – transparency has made it clear!