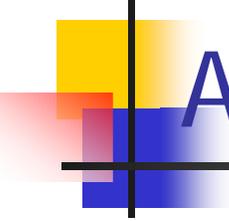


Update on Out-of-Region Winter Surplus Market

Mary Johannis

PNW Resource Adequacy

Technical Committee Meeting, 01-12-06



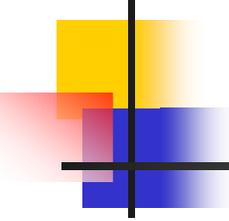
PNW Energy Metric & Target = Annual (Resources – Loads) \geq zero

LOADS

- Regional 1 in 2 Energy Load Forecast for a specified planning horizon

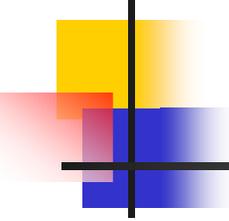
RESOURCES

- Thermal energy adjusted for planned & forced outages
- Hydro Energy under Critical Water
- **Out-of-Region Surplus**
- *Contracts + IPPs*
- *Intermittant Rs (wind)*



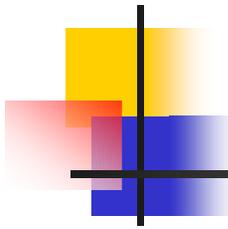
May, 2004 Out-of-Region Surplus Analysis

- From Council's LOLP studies, 1500 aMW energy from California used to meet PNW winter load based on assumption of 3,000 MW Winter Surplus in California
- **Intertie Capacity Sufficient:** In the winter of 2003, there was 3,675 MW capacity South to North on the AC Intertie and 3,100 MW on the DC Intertie
- **CA Winter Surplus Capacity Evaluation:** based on CA ISO's 2003 winter capacity evaluation



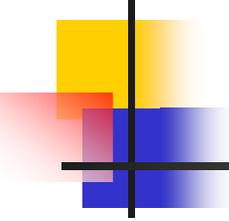
California's Resources in 2003

- From 2001 to 2004, 10,797 MW of new generation came on line in the CAISO control area while 3,433 MW were retired.
- From 2000 to 2003, merchant developers indefinitely delayed licensing and construction of 23 plants that would have supplied another 5,046 MWs of power.
- The 'pipeline' of new power plants in California has slowed down dramatically.
- Calpine is one of the few IPPs that are still building power plants in California.



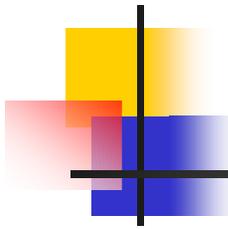
California's Resources in 2003

- Calpine operates 39 power plants in California capable of generating 3,900 megawatts [2,500 megawatts since July 2001].
- Three projects under construction in California will bring the total to 5,800 megawatts. All three of these projects Pastoria phase II 500 MW, Metcalf 600 MW, and Otay Mesa 615 MW are in ISO's control area.
- Reliance on Calpine for most new generation – highly leveraged [high cost of capital] and ability to continue to finance new plants is questionable. April 30th S&P credit rating of single B- with a negative outlook
- Calpine [NYSE Ticker CPN] is a \$3 dollar stock with \$17.7 billion in debt [as of 12/03] with a net profit in FY03 of \$55.5 million.



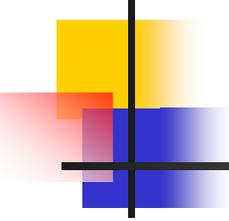
Environmental Constraints on California's Resources

- On January 1st, 2004, the Bay Area implemented new Nox limits which affects both Hunters Point and Potrero power plants with 476 MW in combined generation.
- For the entire CAISO, there is 1,037 MW of capacity built in the 1960's and 1970's that may retire prior to January 1st, 2005 if the cost of Nox retrofits cannot be justified.



Potential Retirements

- Mohave [coal-fired] will likely retire in December 2005 (*not retired yet*) taking out over 885 aMW that served SCE customers. Loss of diversification of resources – one of three SW coal plants that are dedicated to serving loads in CA [the other two are Intermountain and Four Corners].
- CAISO [5 yr assessment Oct 10th, 2003] More than 3,870 MW of thermal generation is potentially at risk of retiring the next several years and this is not reflected in their 5-year assessment.



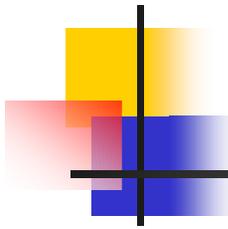
CAISO's 5 year winter outlook

- Published Oct 10th, 2003 – includes new generation of 2,222 MWs by the summer of 2007 [since August 2003], retirements of 2,325 MWs, and the loss of Mohave [accounted for in dynamic scheduling].
- Base analysis concludes before imports that there is a winter surplus [including reserve requirements but before imports] of 4,956 MWs in the winter of 05-06 - down to a winter surplus of 2,295 in the winter of 08-09 [see page 15].

2003 Analysis of Winter Surplus Available from CAISO

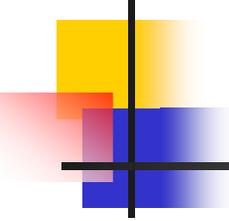
Update of Analysis of Load Resource Balance of CAISO Extreme Case Conditions

	Winter 04-05	Winter 05-06	Winter 06-07	Winter 07-08	Winter 08-09
2003 Analysis Surplus before Imports	4,956	4,046	3,317	3,123	2,295
Potential Retirements			-3,870	-3,870	-3,870
Base Case to High Demand	-800	-800	-800	-800	-800
Mountainview Power Plant [SCE]			1,054	1,054	1,054
Pastoria Project Phase 2 July 05	-500				
Surplus/[deficit]	3,656	3,246	(299)	(493)	(1,321)



2003 Analysis Comments

- Analysis conservative because it did not consider surplus available from munis and other non-jurisdictionals
- Analysis predated CPUC's resource adequacy requirement (RAR), which requires IOUs to file plans to meet 90% of RAR one year out in 2006 and monthly compliance in 2007



Pros & Cons of CA RAR

PROS

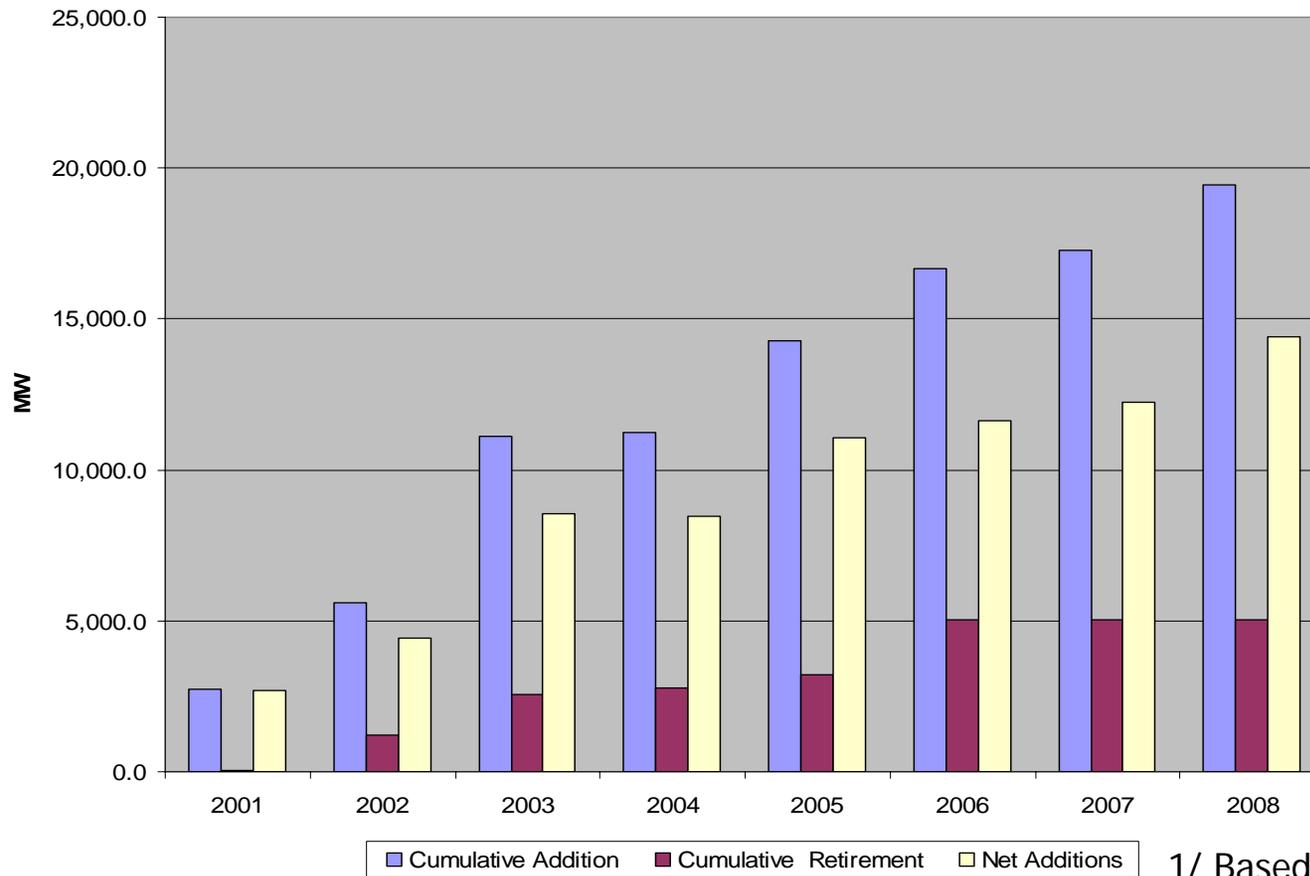
- RAR favors new generation in CA:
 - Month ahead requirement to secure load + 15-17%
 - Liquidated Damage Contracts phased out by 2009
 - Other contracts must identify resource
 - CPUC may institute 3-5 year RAR to incentivize construction of new plants by IOUs

CONS

- Excess RAR capacity is only released by CA ISO after day-ahead schedule approved

Updated CA Surplus Winter Capacity Assessment

California Generation Additions 1/

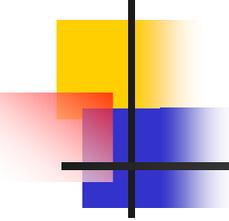


1/ Based on CA ISO Data

Updated CA ISO Winter Surplus Capacity Analysis

Update of Analysis of Load Resource Balance of CAISO Extreme Case Conditions

	Winter 04-05	Winter 05-06	Winter 06-07	Winter 07-08	Winter 08-09
2003 Analysis Surplus before Imports	4,956	4,046	3,317	3,123	2,295
REVISED Retirements	-1,583	-2,033	-3,832	-3,832	-3,832
Base Case to High Demand	-800	-800	-800	-800	-800
REVISED Power Plant Additions	431	4,956	5,514	7,023	8,323
Surplus/[deficit]	3,004	6,169	4,199	5,514	5,986



Conclusions

- 3,000 MW of CA winter surplus is a reasonable assumption for the time being
- Need to monitor how CA RAR is implemented and adjust CA winter surplus assumption on a periodic basis