



CALIFORNIA ISO

California Independent
System Operator

Short-term Price Cap Policy Options

June 21, 2000



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Price Cap History

May 28, 1998 FERC Order on temporary price cap for BEEP authorized due to software defect (initially set at \$125/MWh)

May 26, 1999 FERC Order allows the ISO to retain the authority to impose a purchase price cap through November 15, 1999.

November 12, 1999 FERC Order - ISO proposed to extend purchase price cap until November 15, 2000, set caps to \$750/MWh effective 9/30/99, with a proposal to lower caps to \$500 effective June 1, 2000 if the Governing Board decided that any of the following conditions were met:

- 1) the markets are not workably competitive,
- 2) there are no practicable demand side management options in place, **or**
- 3) the IOU UDC's have sought and have not obtained from CPUC practicable options to self-provide A/S and to use hedging products in Cal PX markets.

FERC approved price cap for an additional 12 months. FERC's rationale is that the purchase price cap is not a cap on what a seller of A/S may charge, rather it is a cap on what the ISO as a purchaser is willing to pay.

March 14, 2000 - ISO Governing Board authorized continuation of \$750/MWh price caps for Summer 2000.



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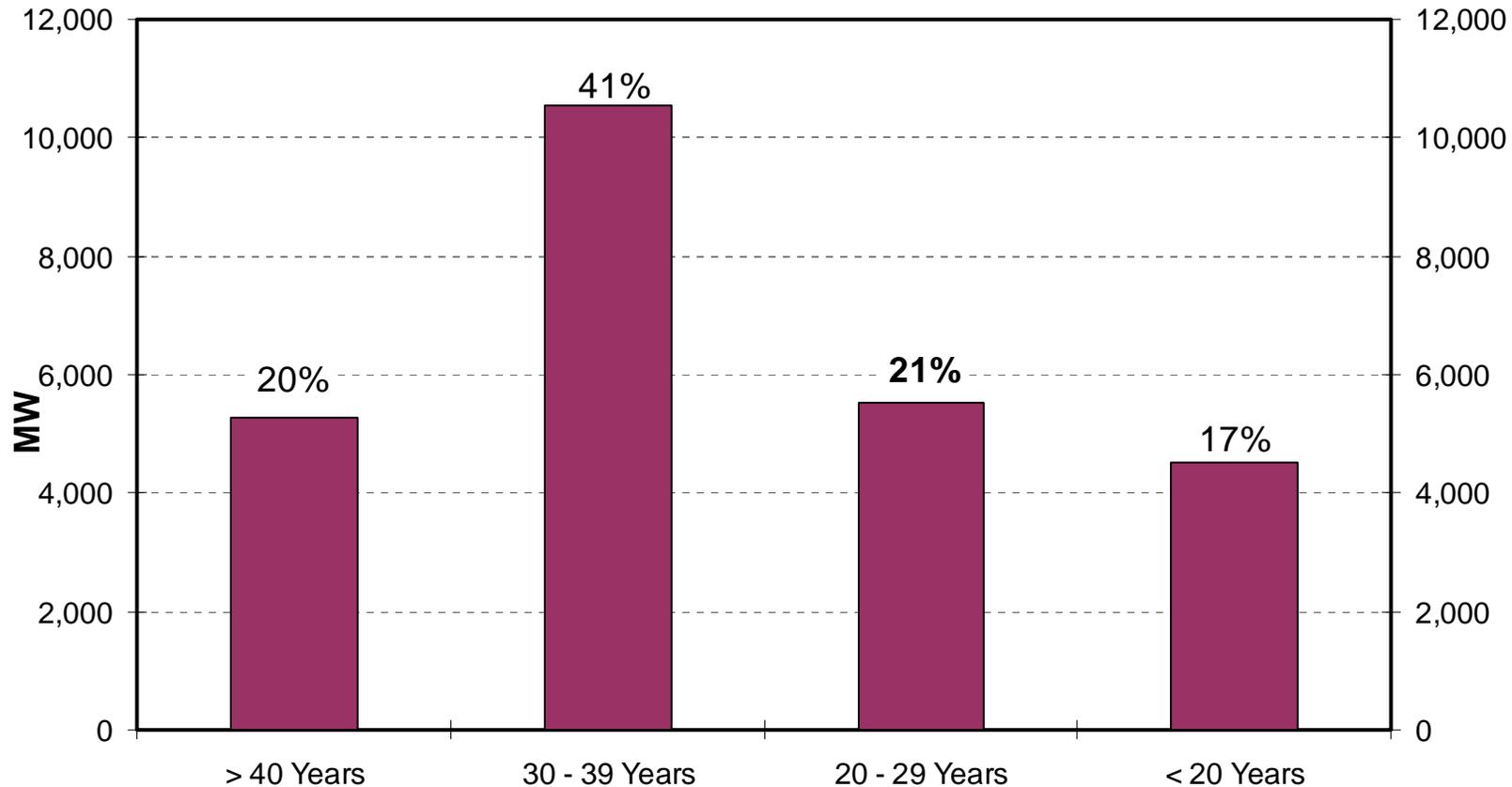
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What is the Reliability Picture?

- Regional resource adequacy
- California resource adequacy
- Operational experience week of June 12-16



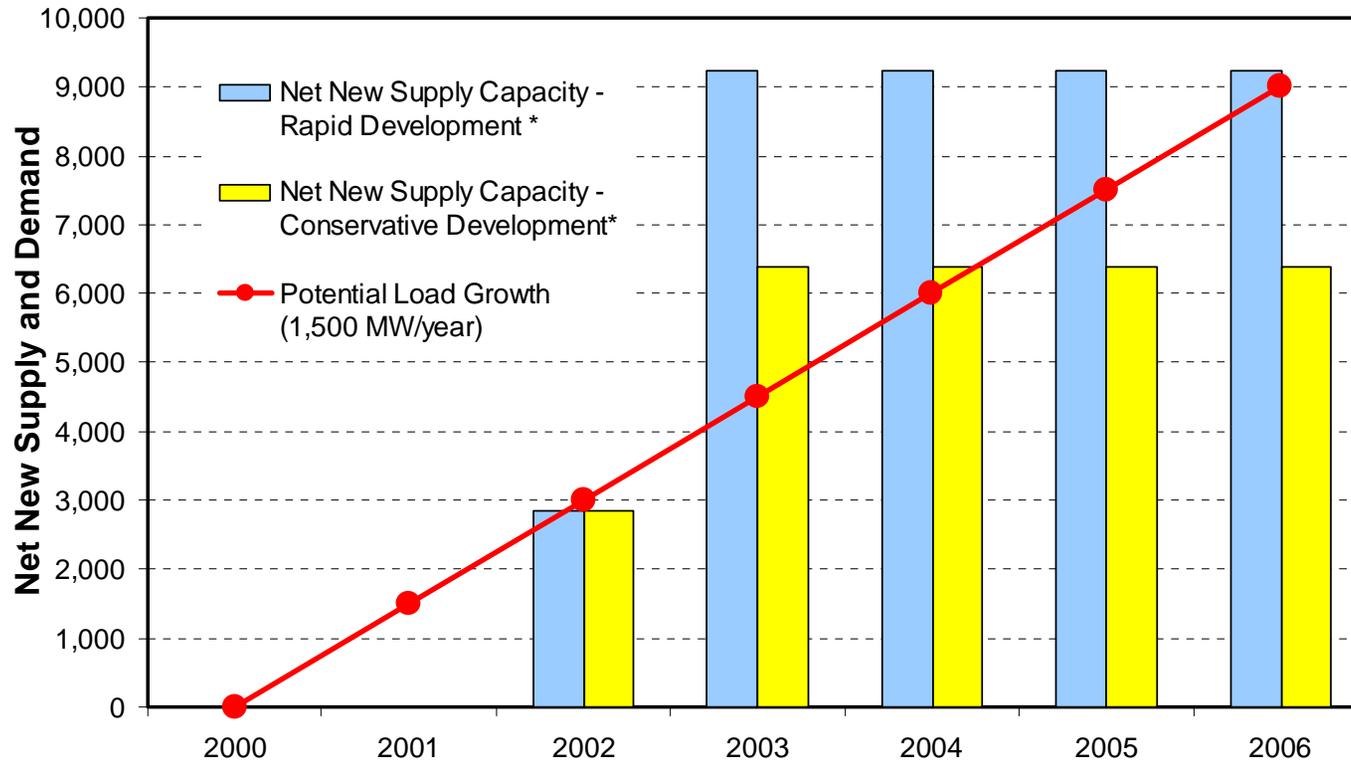
Age of Gas & Oil-fired Plants in California



Source: NERC 1988 Electricity Demand and Supply Database, as summarized by California Energy Commission, in *High Temperatures and Electricity Demand: An Assessment of Supply Adequacy in California - Trends and Outlook*, July 1999.



Potential New Supply vs. Demand Growth

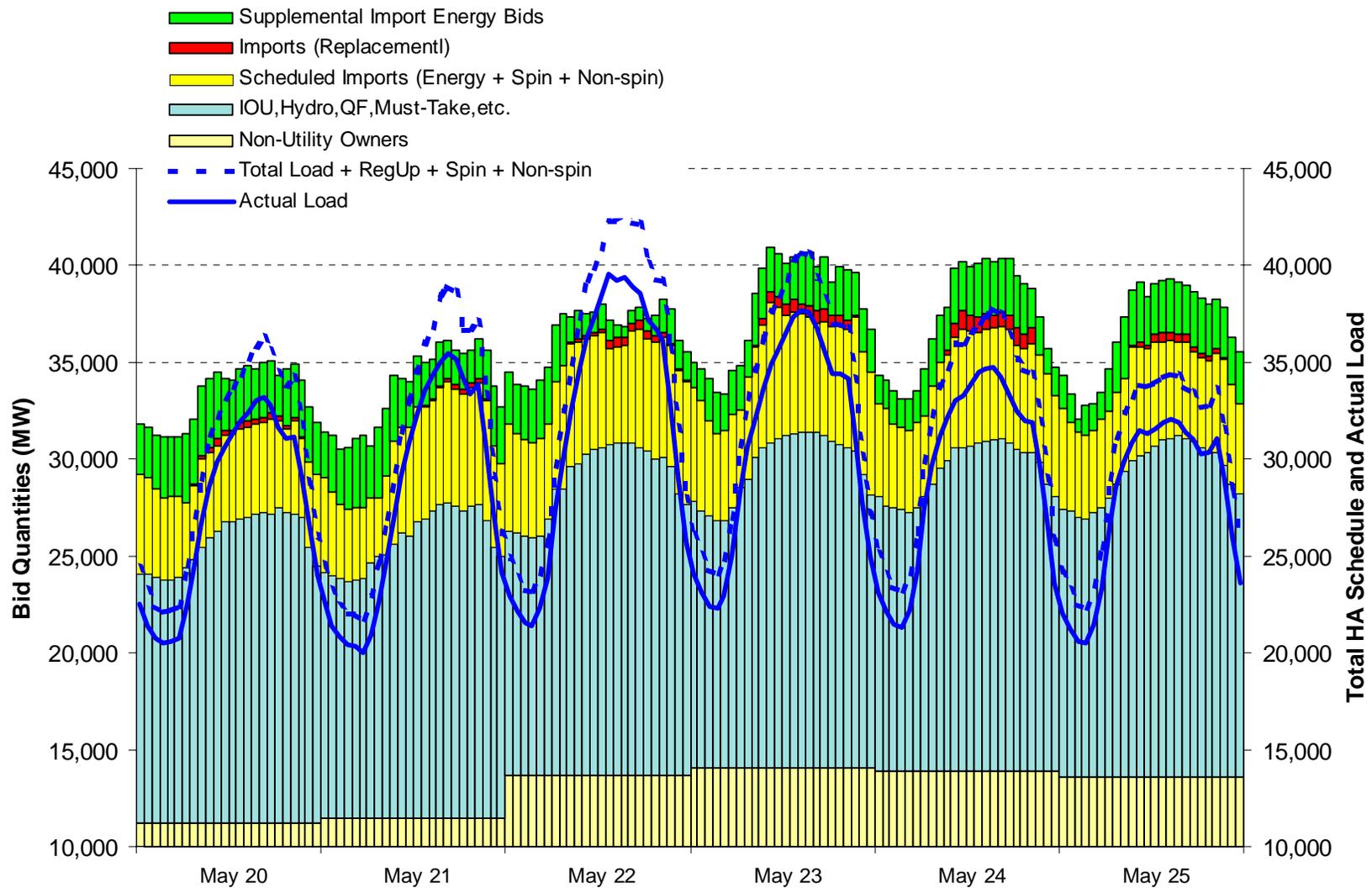


* Net new capacity = New supply - 1,390 MW of existing generation assumed to retire in 2002.

Source: California Energy Commission, in *High Temperatures and Electricity Demand: An Assessment of Supply Adequacy in California - Trends and Outlook*, July 1999.

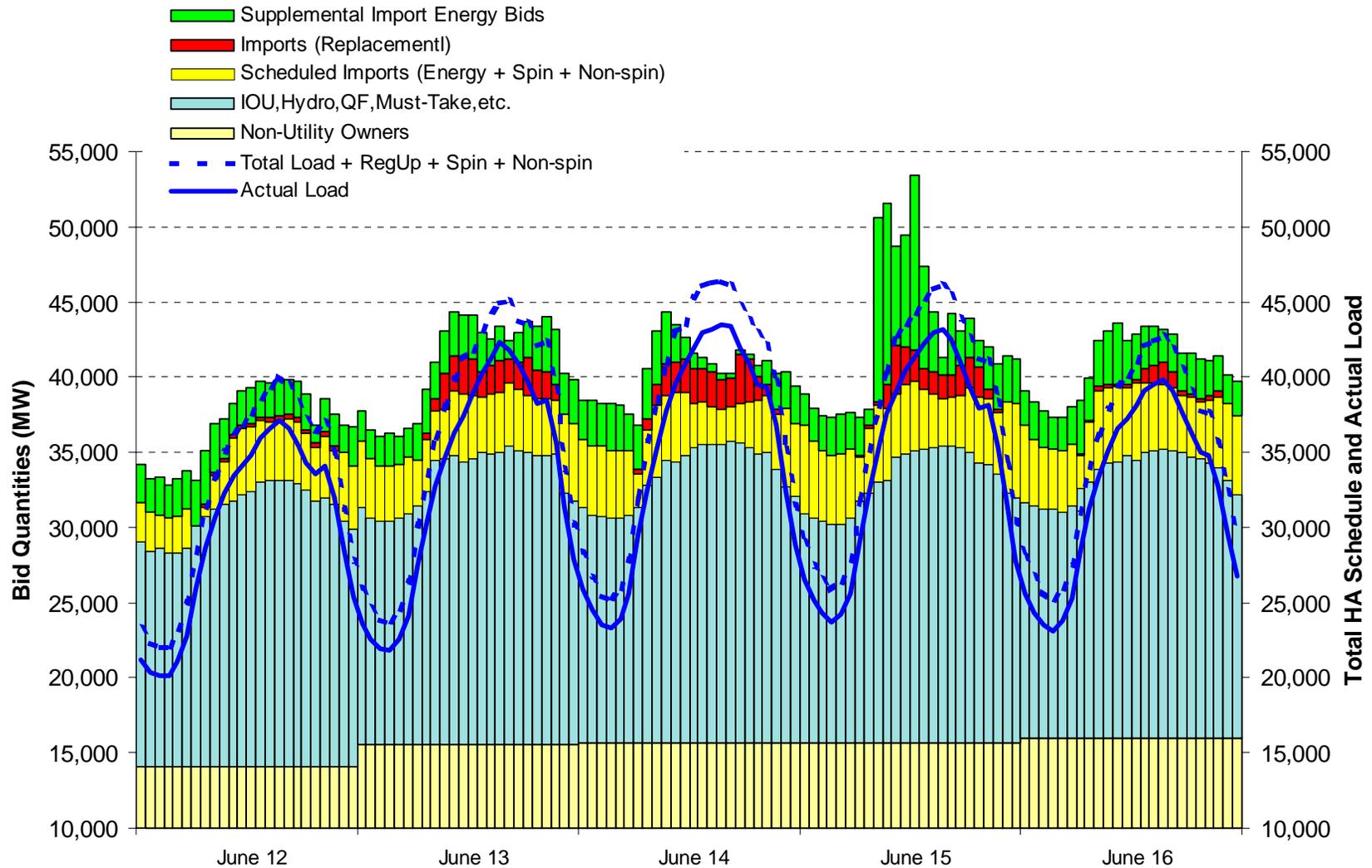


Sources of Supply – May 20 - 25





Sources of Supply – June 12 - 16





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Market Issues and Options

- Recent Market Performance
- Key Issues which Need to be Addressed
- Potential Short-term Options
- Policy Criteria



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What are the Issues?

- Reliability
 - high real-time imbalances
 - scarcity of supply
- Cost
 - high cost of energy and reserves
 - Market power concerns



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Market Performance

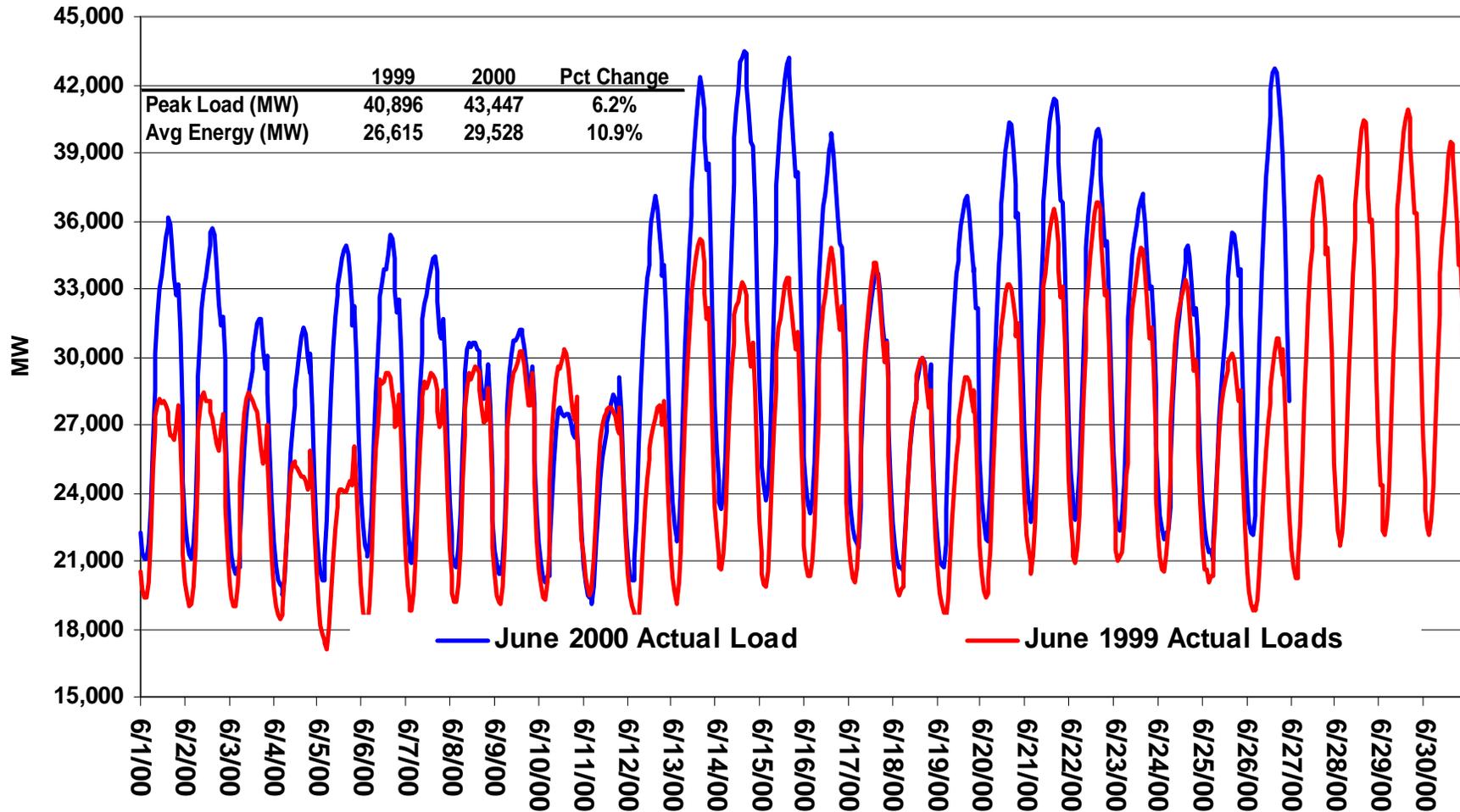
- Load Growth and Increasing Number Load Days over 40,000 MW
- PX price and Real Time Price
- Under-scheduling of load and generation
- Price for replacement reserves



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Load Conditions - June 2000





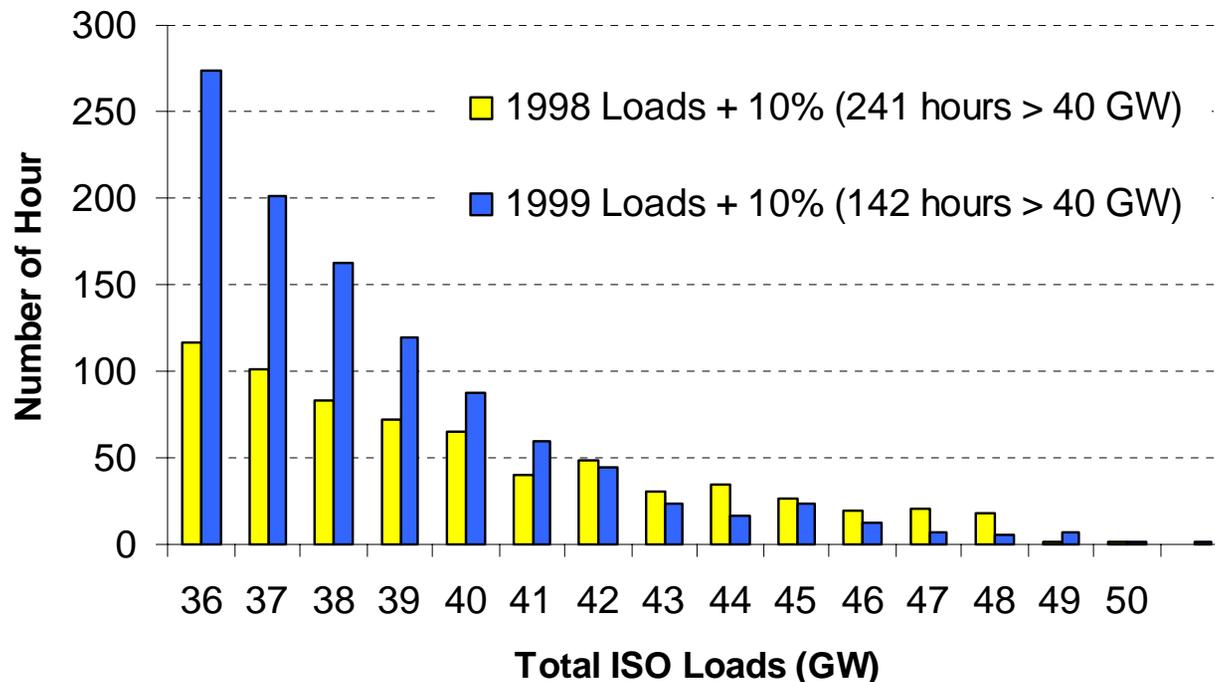
High Load Frequency Up for June

- Number of Hours when load was greater than 40GW:
 - June 1998: 0 hours
 - June 1999: 26 hours
 - June 2000: 50 hours



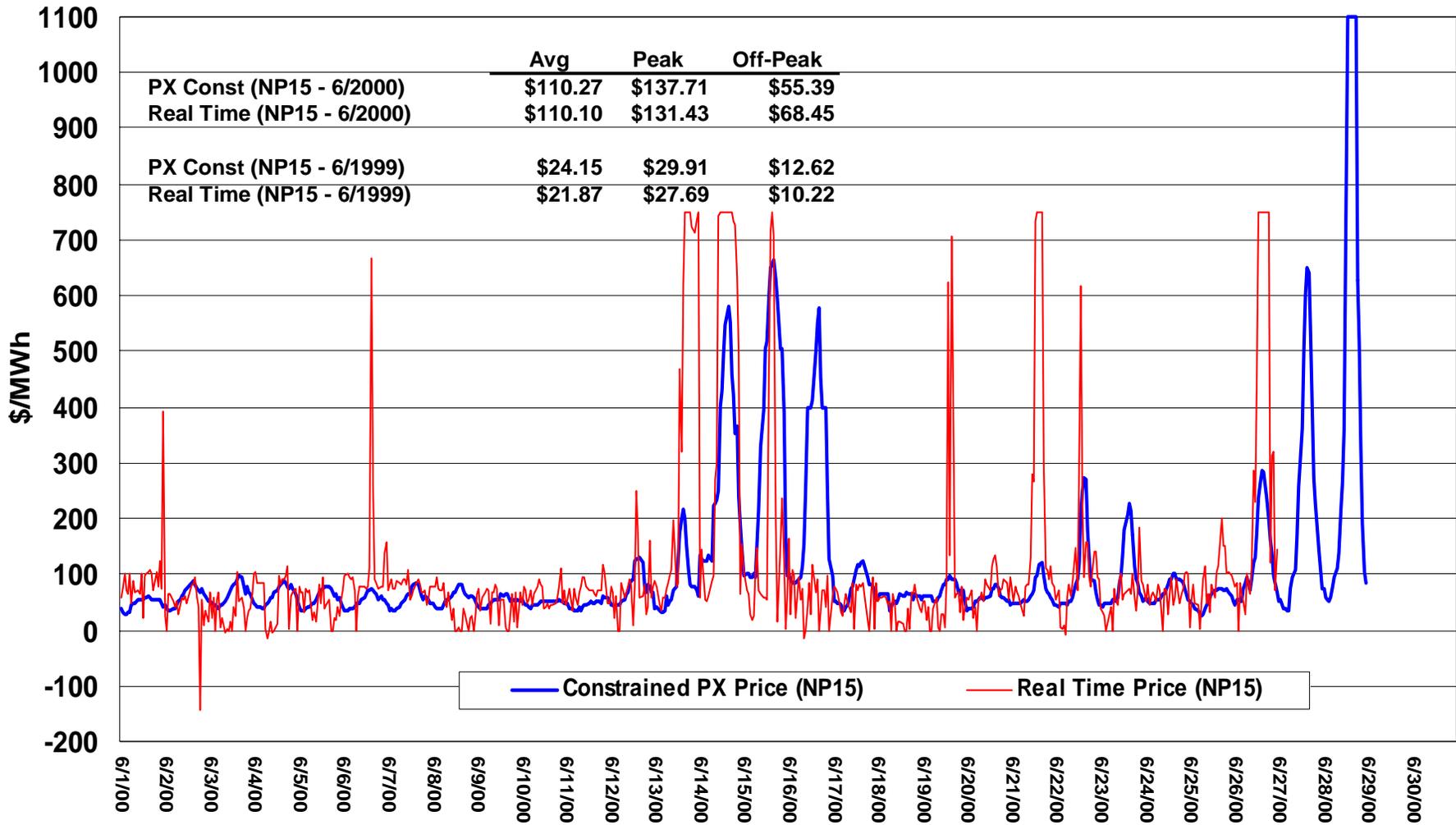
High Load Hours: Load > 40,000 MW

- Summer 1998: 82 Hours
- Summer 1999: 34 Hours
- Summer 2000 (projected): 142 – 241 Hours





PX and Real Time Prices (NP15) - June 2000

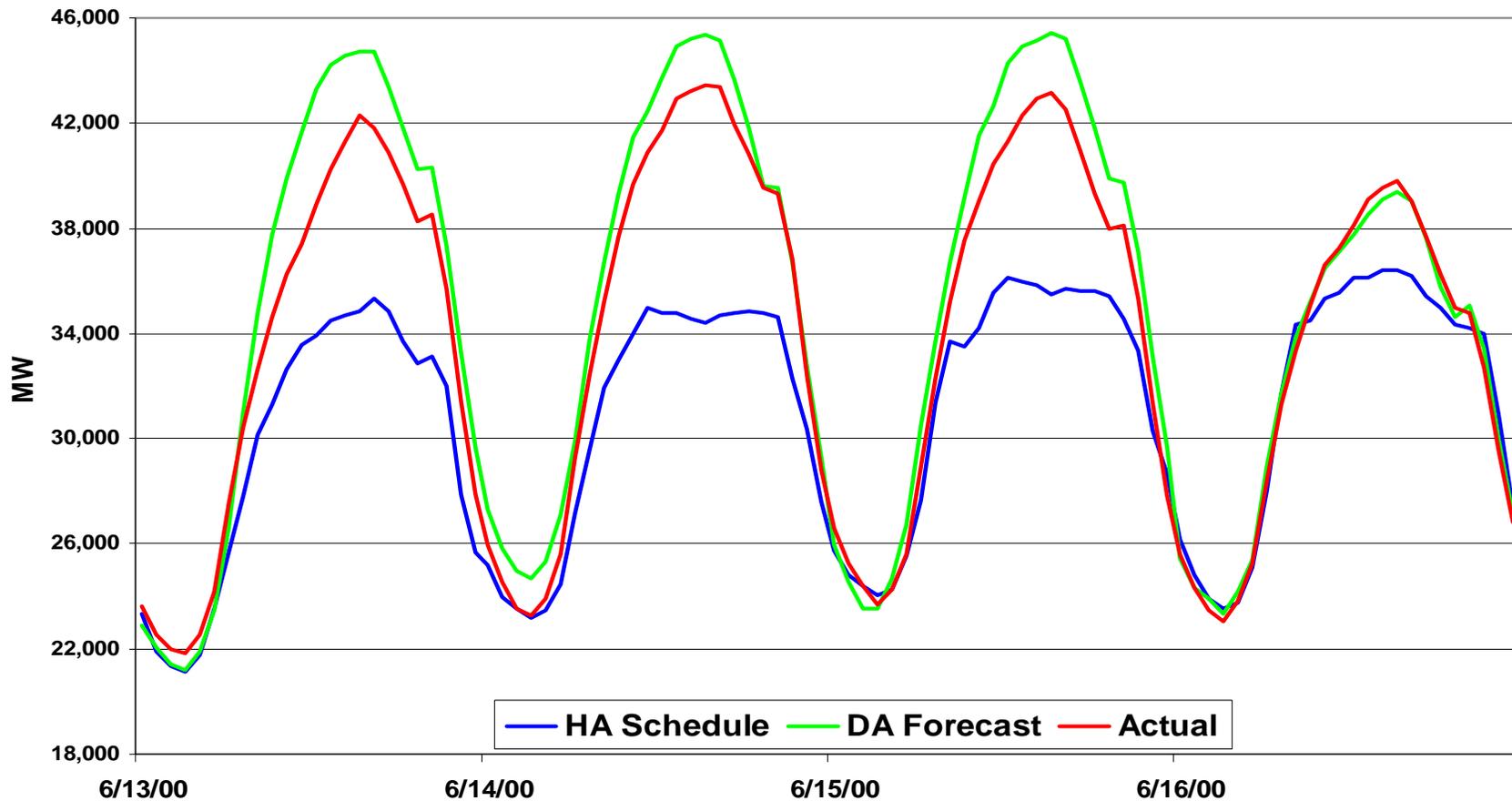




Under-Scheduling by Load and Generation

DA Forecast & HA Forecast versus Actual Loads

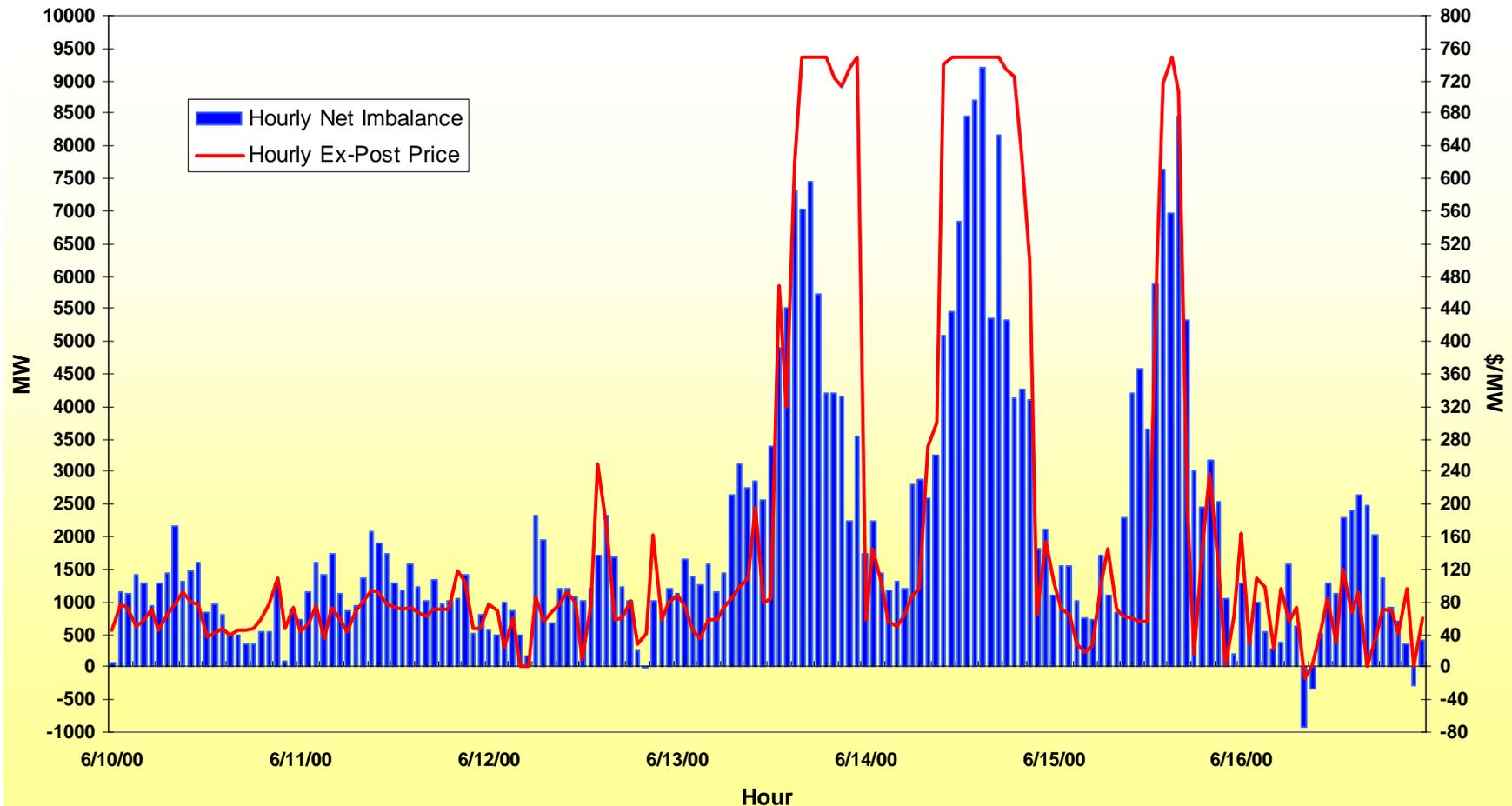
June 13-16, 2000





Under-scheduling Causes Large Imbalance and High Real Time Price

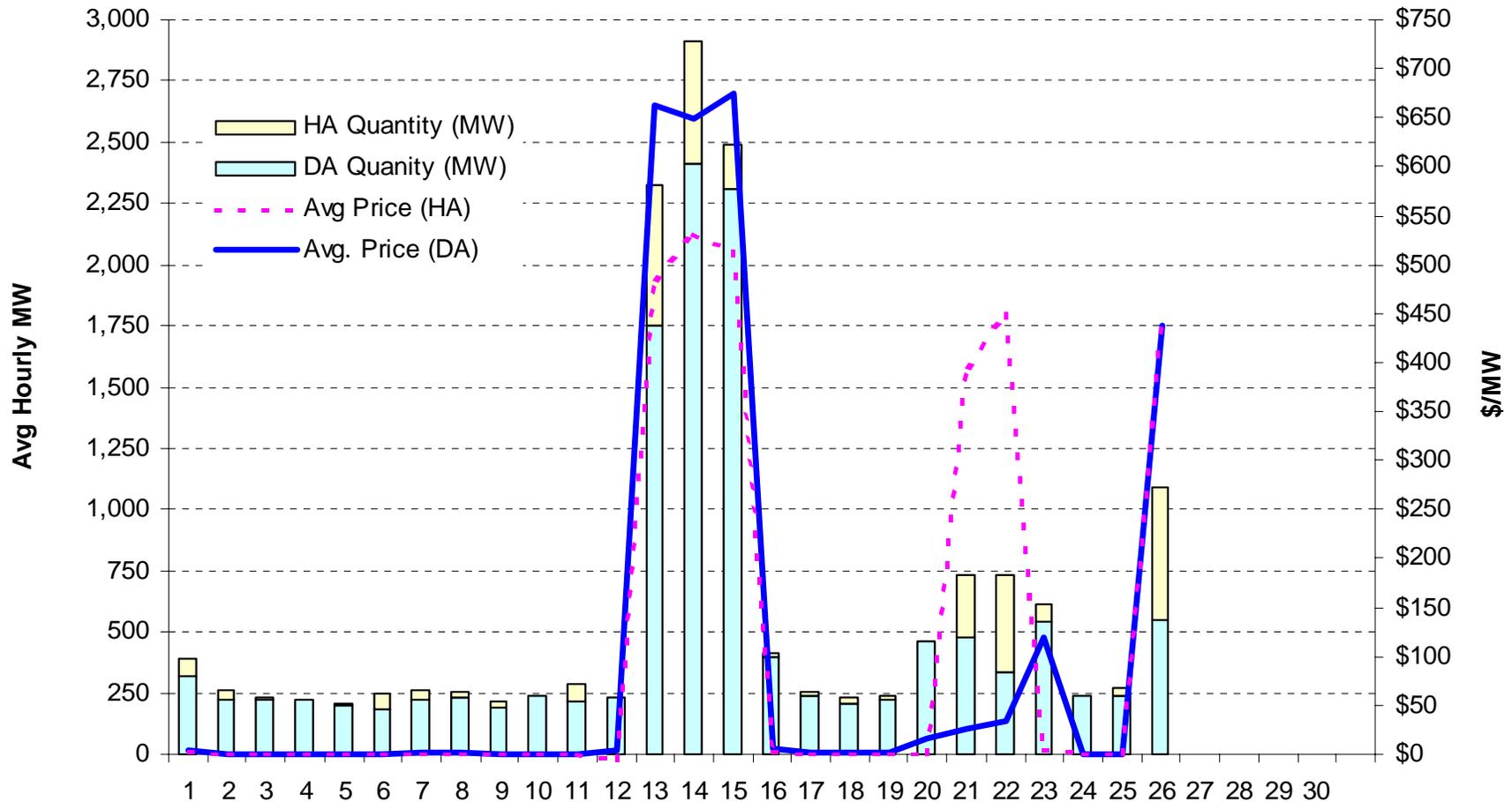
Hourly Net Imbalance versus Ex-post Energy Price (June 10-16, 2000)





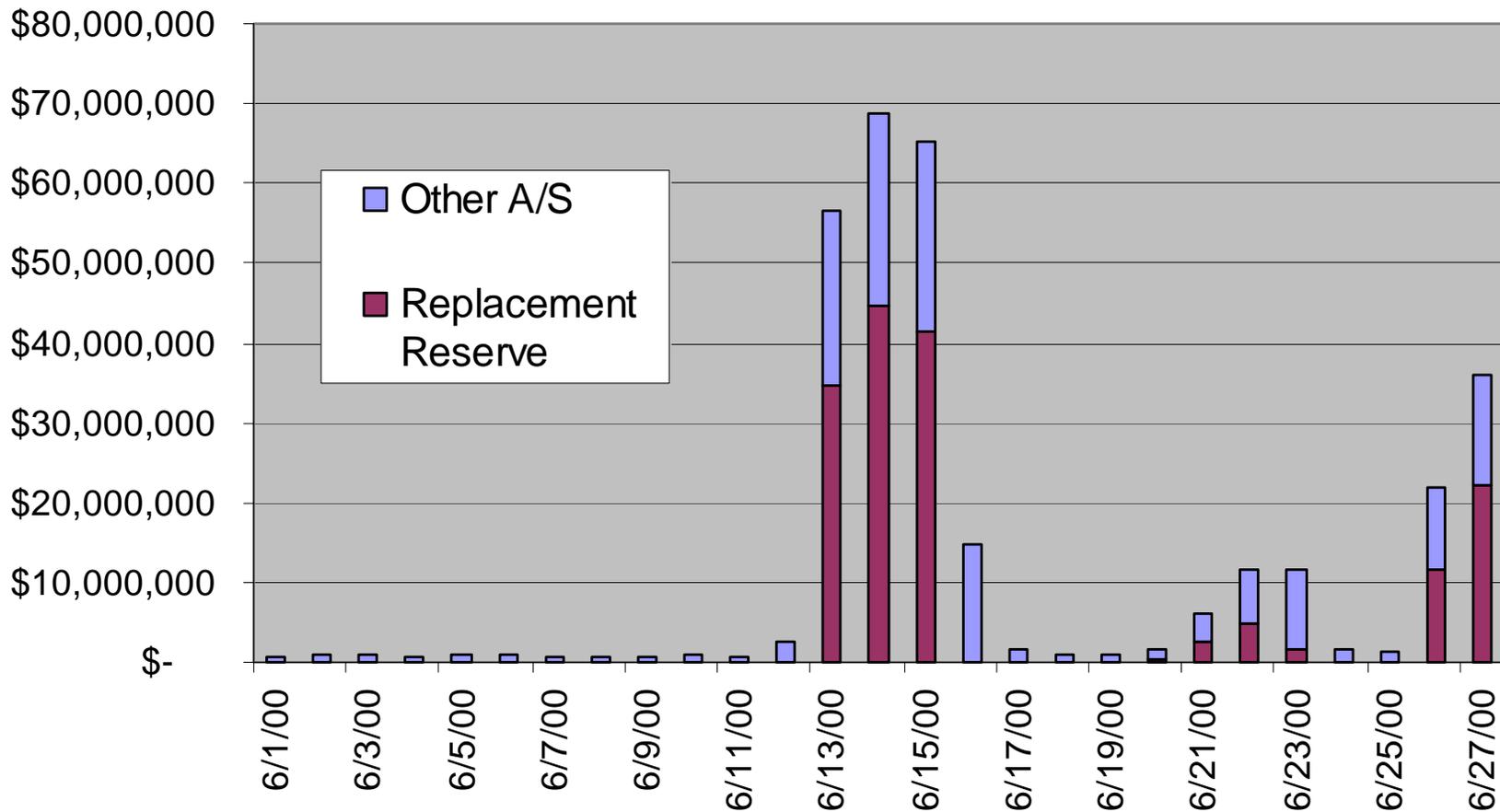
Under-Scheduling also Results in Large Purchase of Replacement Reserve and High Price

Average Daily Replacement Reserve Prices (June 2000)





High Cost of Replacement Reserve Purchase





Scarcity Rent or Market Power?

- **Market Power:** Market power to a seller is the ability to profitably maintain prices above competitive levels for a significant period of time (definition used by DOJ and FTC Horizontal Merger Guidelines, Section 0.1)
- **Scarcity Rent:** High prices when demand is such that there is little, if any, unused capacity available throughout the system.
- **California Market Condition:**
 - There have been some hours of true scarcity, and some hours with market power
 - Further analysis needed to determining system capacity and opportunity costs



What Factors Contributed to High Cost?

- Load growth and un-seasonal warm weather
- Under-scheduling of load and generation and the current ISO replacement reserve purchase procedure
- High natural gas price (almost doubled from June of last year)
- Outages (maintenance and forced outage)
- Tight supply condition of neighboring control areas
- Tight supply conditions exacerbate market power



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Potential Short Term Options

1. Lower price caps to \$250 or \$500
2. Pay as bid for A/S and real time instead of uniform market clearing prices
3. Impose price cap of \$750 for PX markets and raise ISO real time price cap to \$2500
4. Scheduling restriction: Load must schedule at least 90% load in forward markets
5. ISO to forward contract for reserves



Potential Short Term Options

6. Bid Cap of \$250 for in-state generation while allow OOM from out-of-state to set real time market price up to \$750
7. New Replacement Reserve Procurement
Procedure: Change replacement reserve price cap to \$100 for capacity and reduced purchase quantity with consequences of more OOM calls
8. Agreement with in-state generators to bid full capacity to a market when load is above 38,000MW



What Should be the Policy Criteria?

- System reliability
- Impact on total energy costs
- Proper price signal and incentive (new investment and out-of state supply)
- ISO's role in the market
- Promote demand responsiveness and hedging so load can protect them from high prices
- Mitigate market power while recognizing scarcity conditions