



California ISO

California Independent
System Operator

Market Analysis Report

Events of April 2004

Board of Governors Meeting
May 27, 2004

Greg Cook
Manager of Market Monitoring



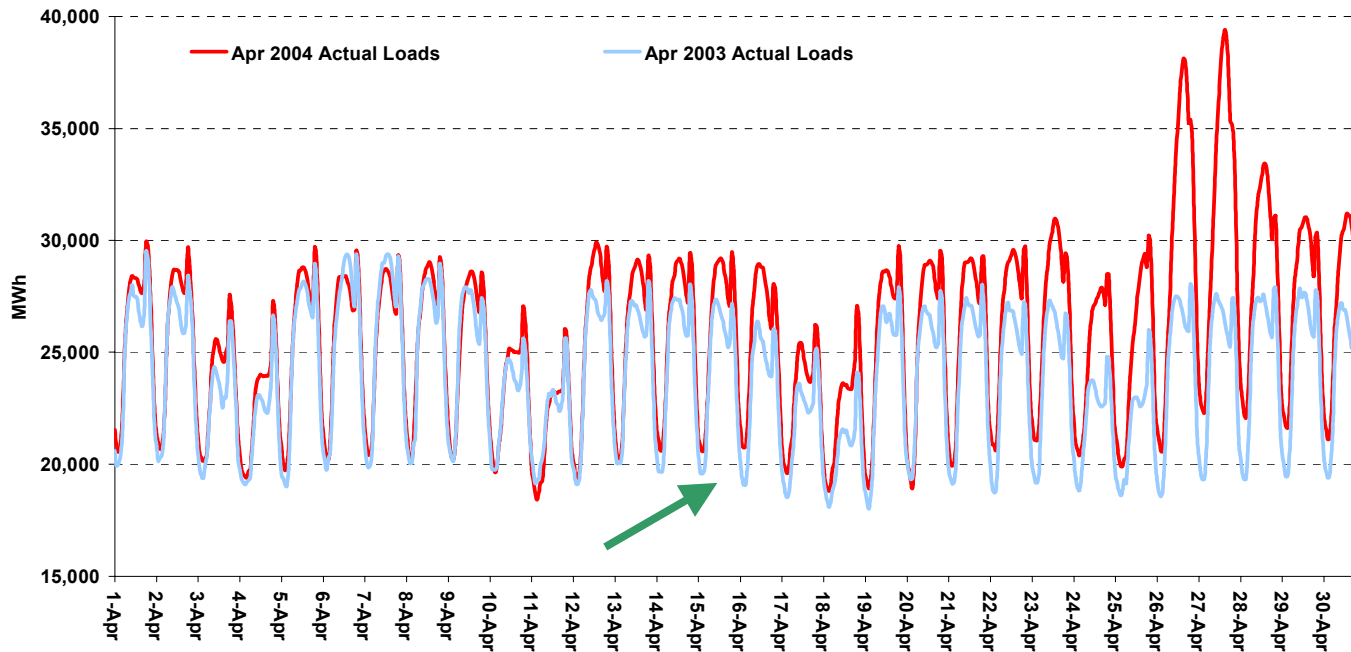
April Highlights

- Mid-Summer level loads on April 27th and May 3rd
 - Snowpack decreasing at a faster rate than normal; decreased imports from Northwest
 - Tight supplies in transmission constrained areas of Southern California
- Key differences: 2004 v. 2000
 - Utilities now largely hedged against exposure to high short-term and real-time prices during periods of tight supply
 - Some exposure to gas price fluctuation remains
 - 2004 problems more localized, whereas 2000 problems were systemwide
 - Generation more competitive due to new generation additions
- Intrazonal (within zone) congestion redispatch costs down in April to \$5.7 million from \$8.1 million in March
- Additional supply leads to reduced Ancillary Service prices and frequency of bid insufficiency



Record Apr-04 peak of 39,400 on 4/27 exceeded Apr-03 peak by 31.1%; level not typically seen until June or July. Persistent increase in load (including off-peak hours) suggests load growth

Comparison of Loads: Apr-04 to Apr-03

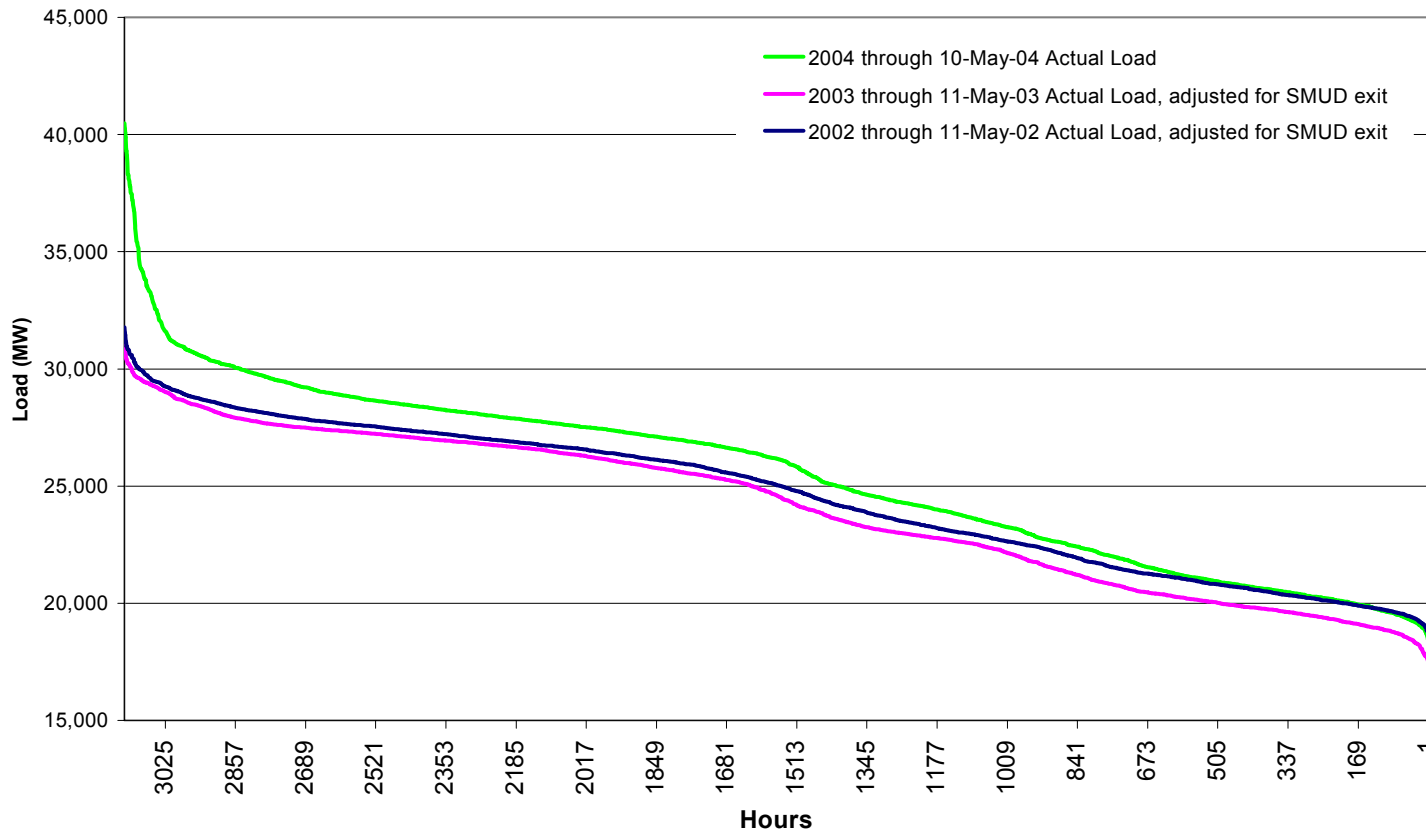


	2003	2004	Pct. Chg.
Peak Load (MW)	30,062	39,400	31.1%
Avg. Energy (MW)	24,029	25,730	7.1%



Due to weather and economic growth, 2004 load has increased remarkably when compared to recent years

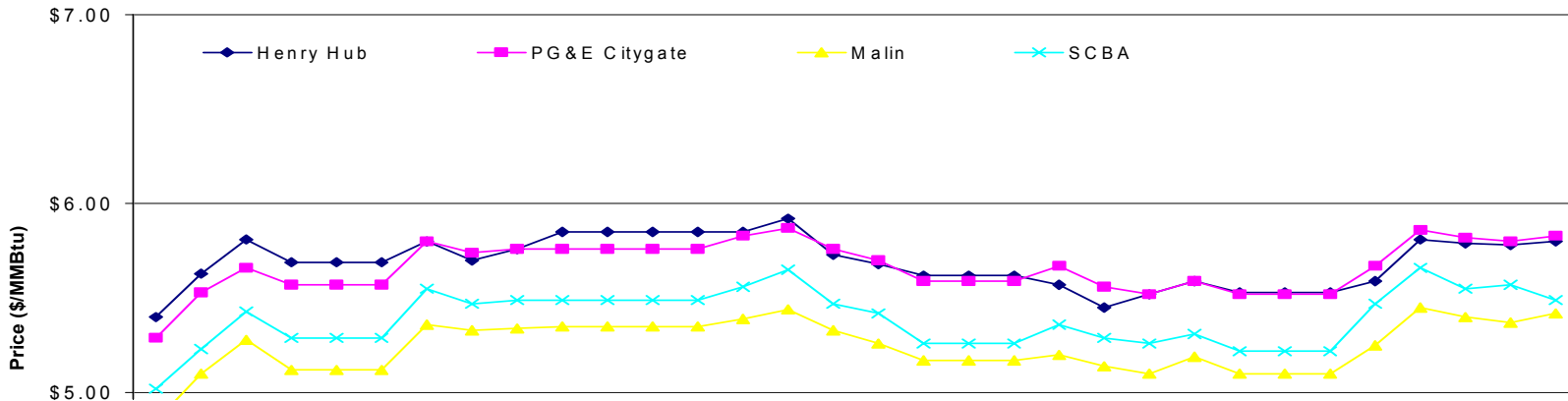
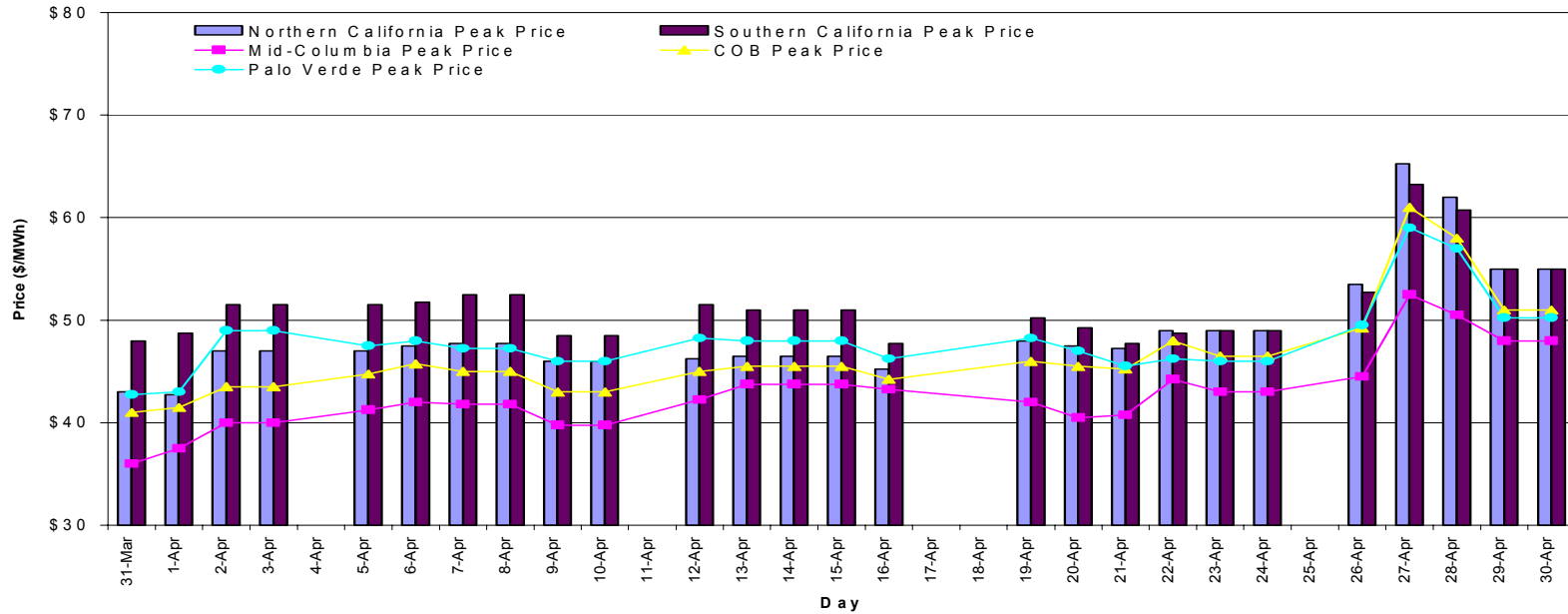
Load Duration Curves: First 131 days, 2002-2004





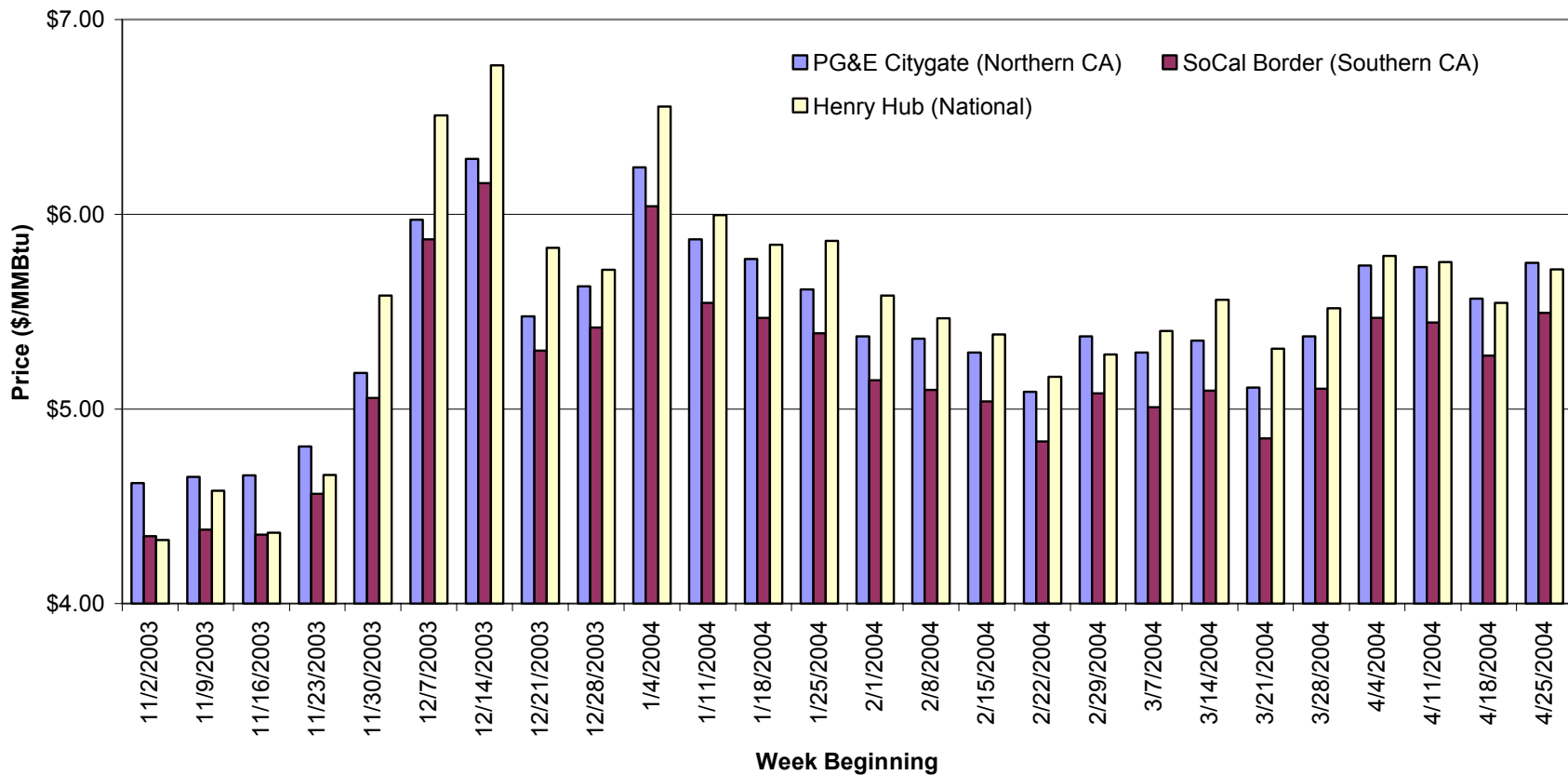
Day-ahead price increased \$10/MWh on 4/27

Regional Day-Ahead Bilateral Electric Prices through Apr 30



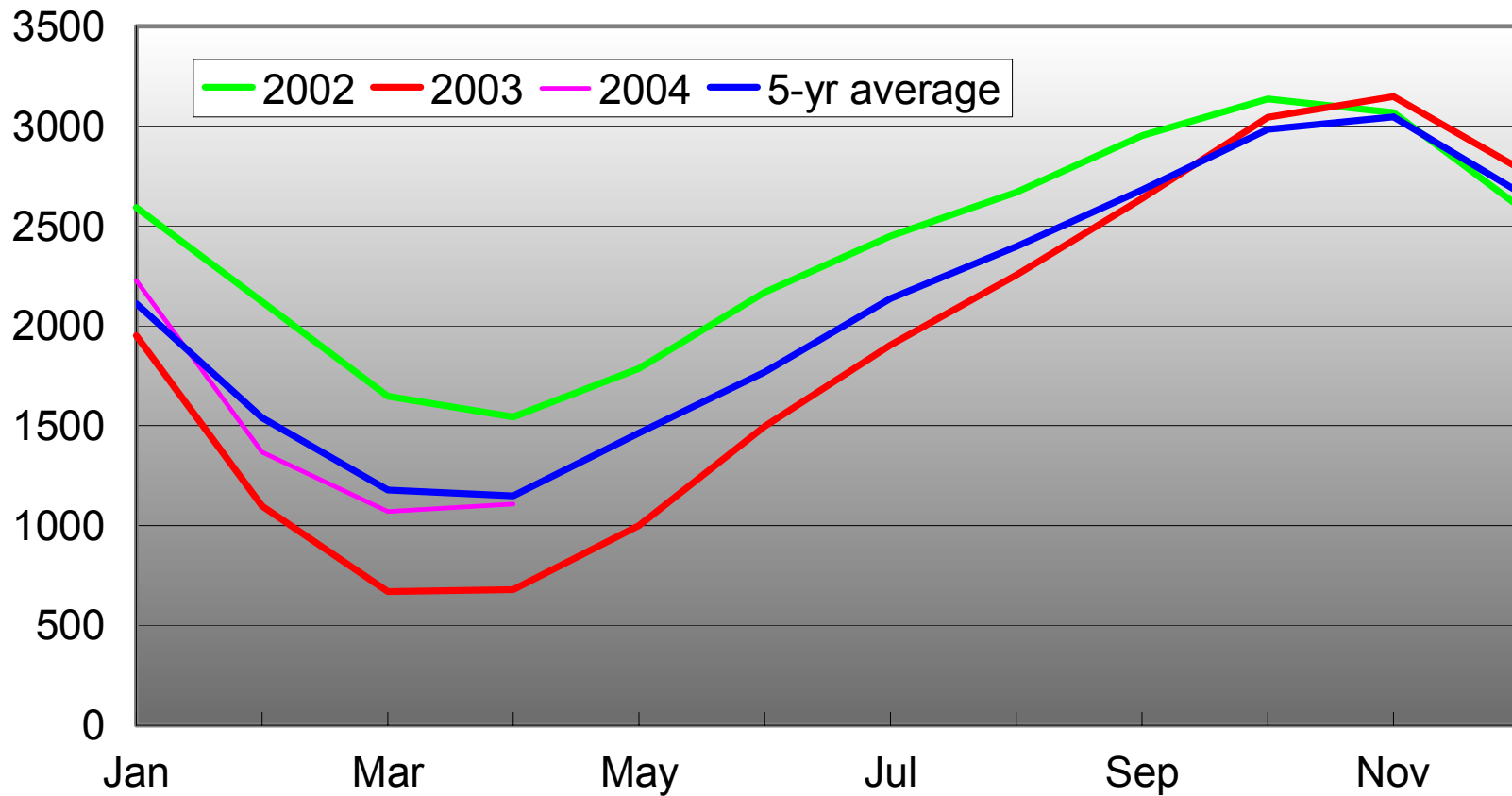


Gas prices have varied between \$5 and \$6/MMBtu since January Weekly Average Gas Prices Nov-03 through Apr-04





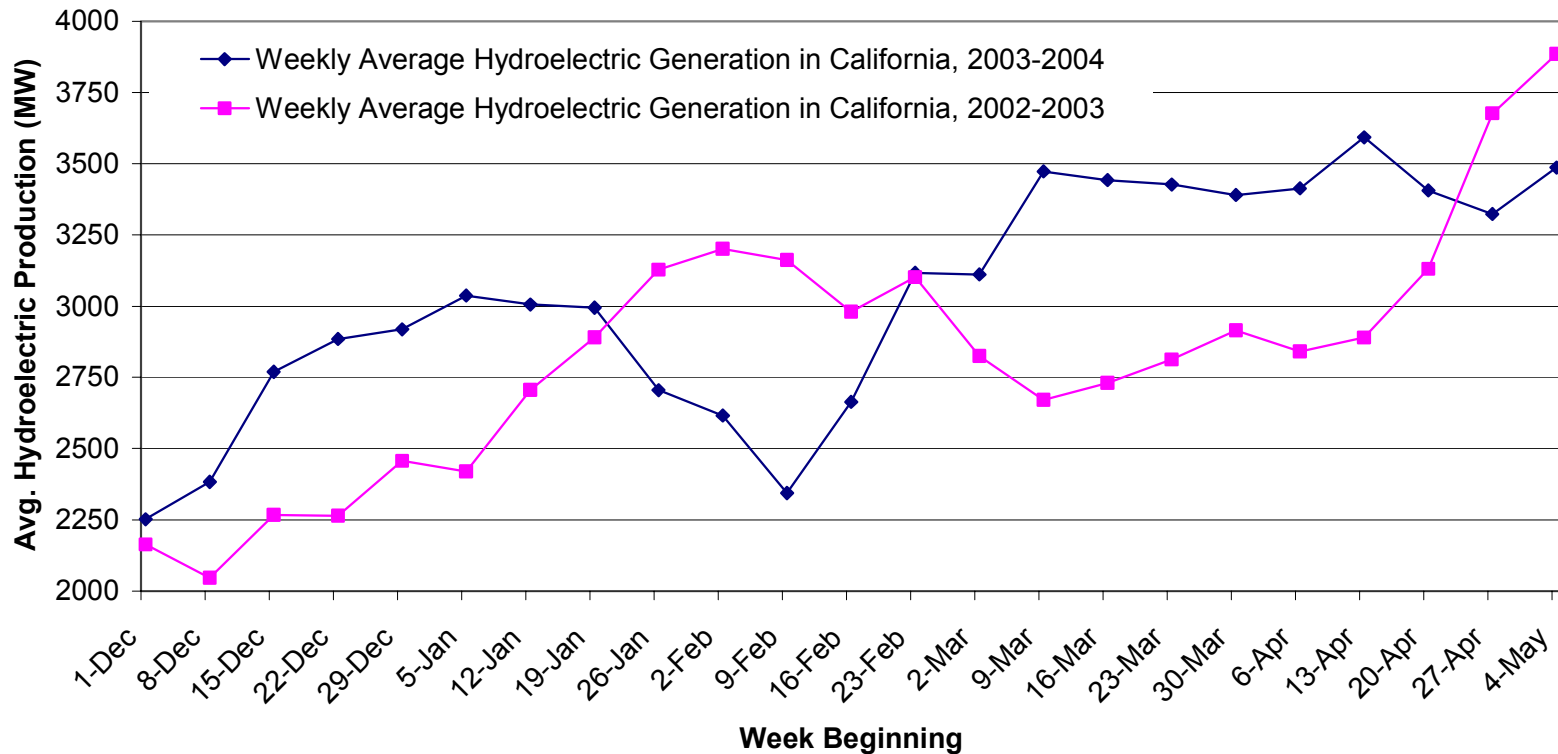
Total US natural gas in storage (bn ft³)





Early winter and warm spring resulted in early runoff; Sierra Nevada snowpack below 50% of average by early May, similar situation in Pacific Northwest¹

Approx. Weekly Average Hydro Generation through early May²

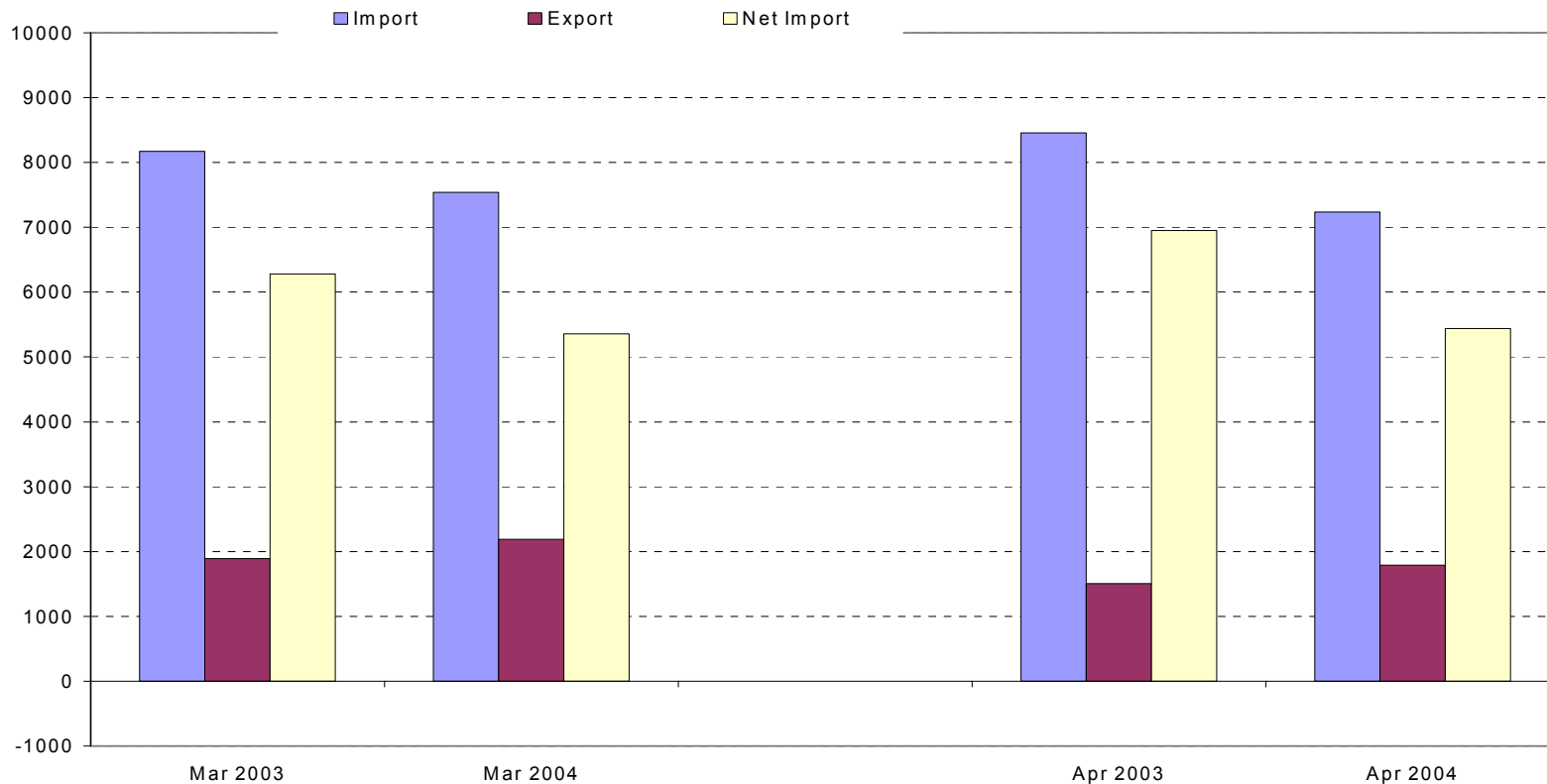


1. Source: USDA Natural Resources Conservation Service, <http://www.wcc.nrcs.usda.gov/water/drought/wdr.pl>
2. Source: ISO



Fewer imports available from the Pacific Northwest, due to unseasonably warm and dry conditions, and transmission derates

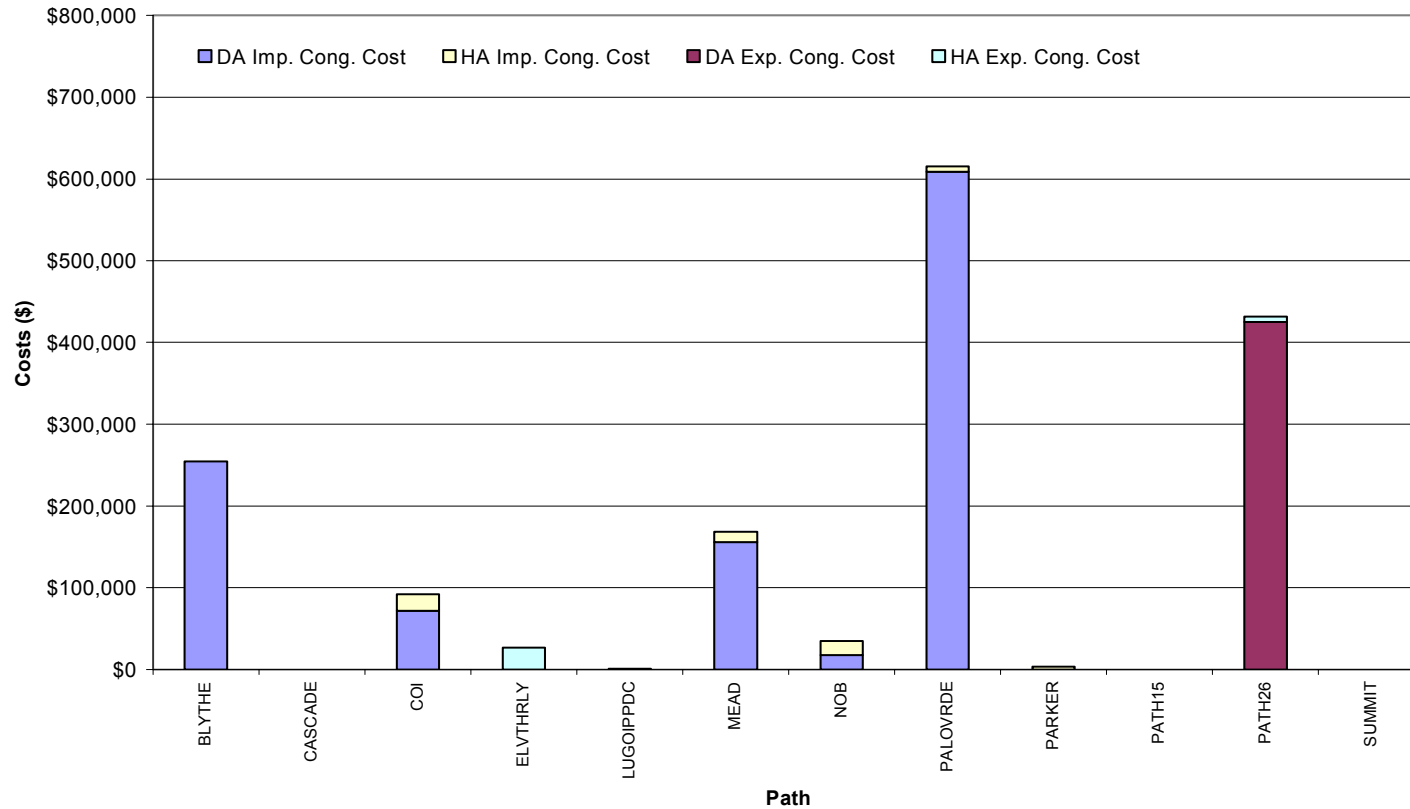
Imports and Exports - Monthly Averages





Most interzonal congestion incurred into Southern California due to SCIT, derates, and path overloads

Congestion Costs by Path: Day Ahead & Hour Ahead Markets, April 2004

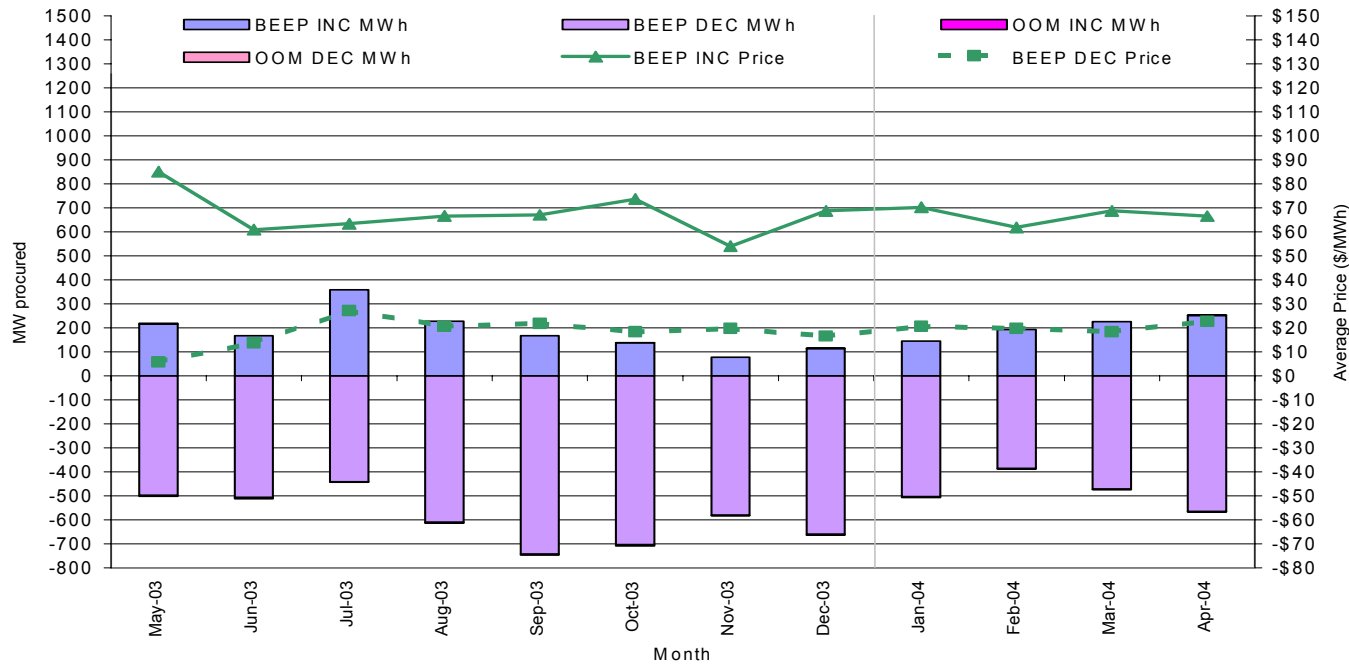


“Export” on Path 26 represents the North-to-South direction.



Real-time prices stable on a month-to-month average basis, but highly variable during the day

Monthly Average Real-Time Prices and Volume through Apr-04

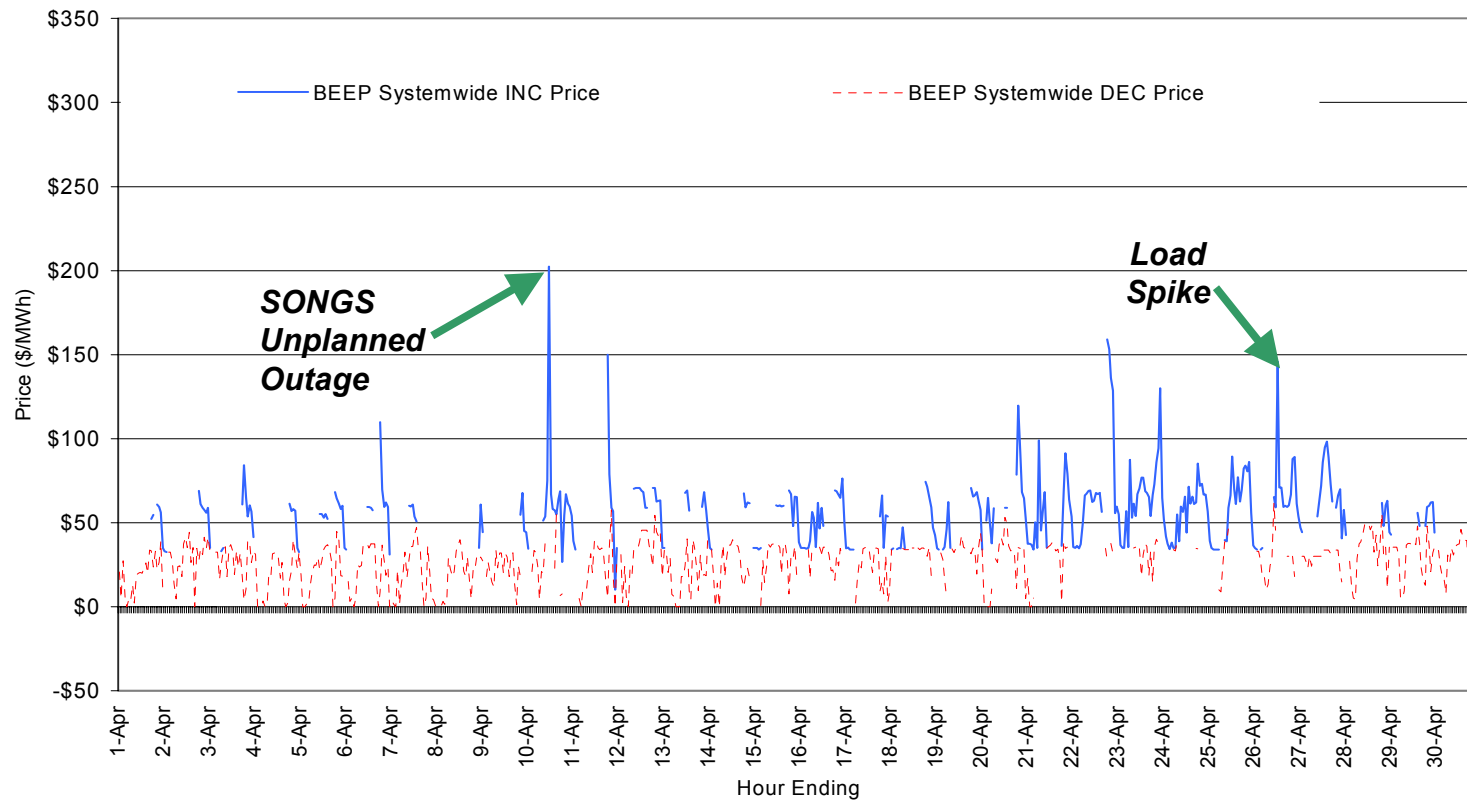


Apr-04 INC Average: \$66.64/MWh, 252 MW
Apr-04 DEC Average: \$22.77/MWh, 566 MW



Price Spikes resulted from unplanned outages and high loads

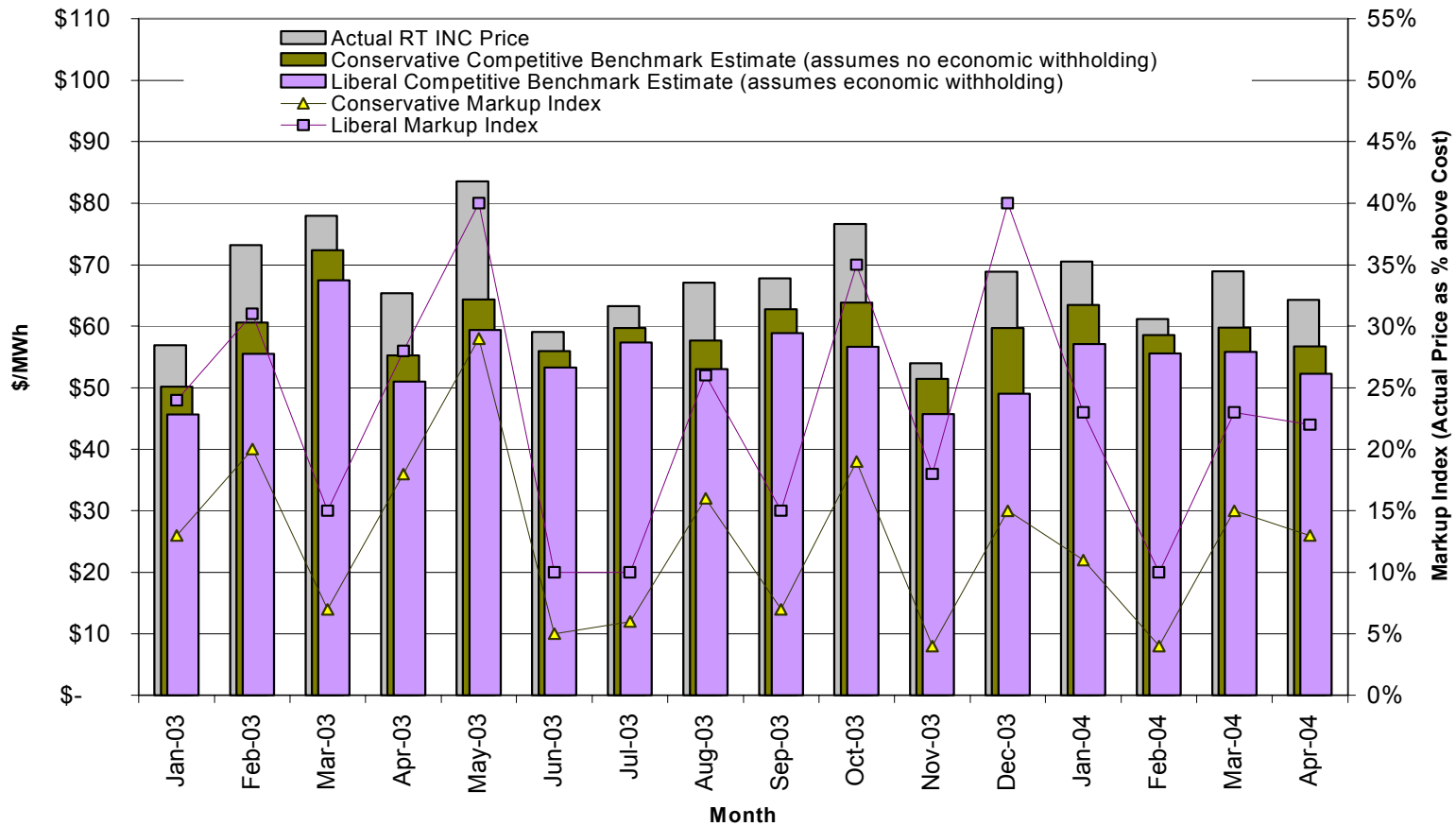
Real-Time INC and DEC Hourly Average Prices, Apr-04





Price-to-Cost Markup between 13 and 22% in April

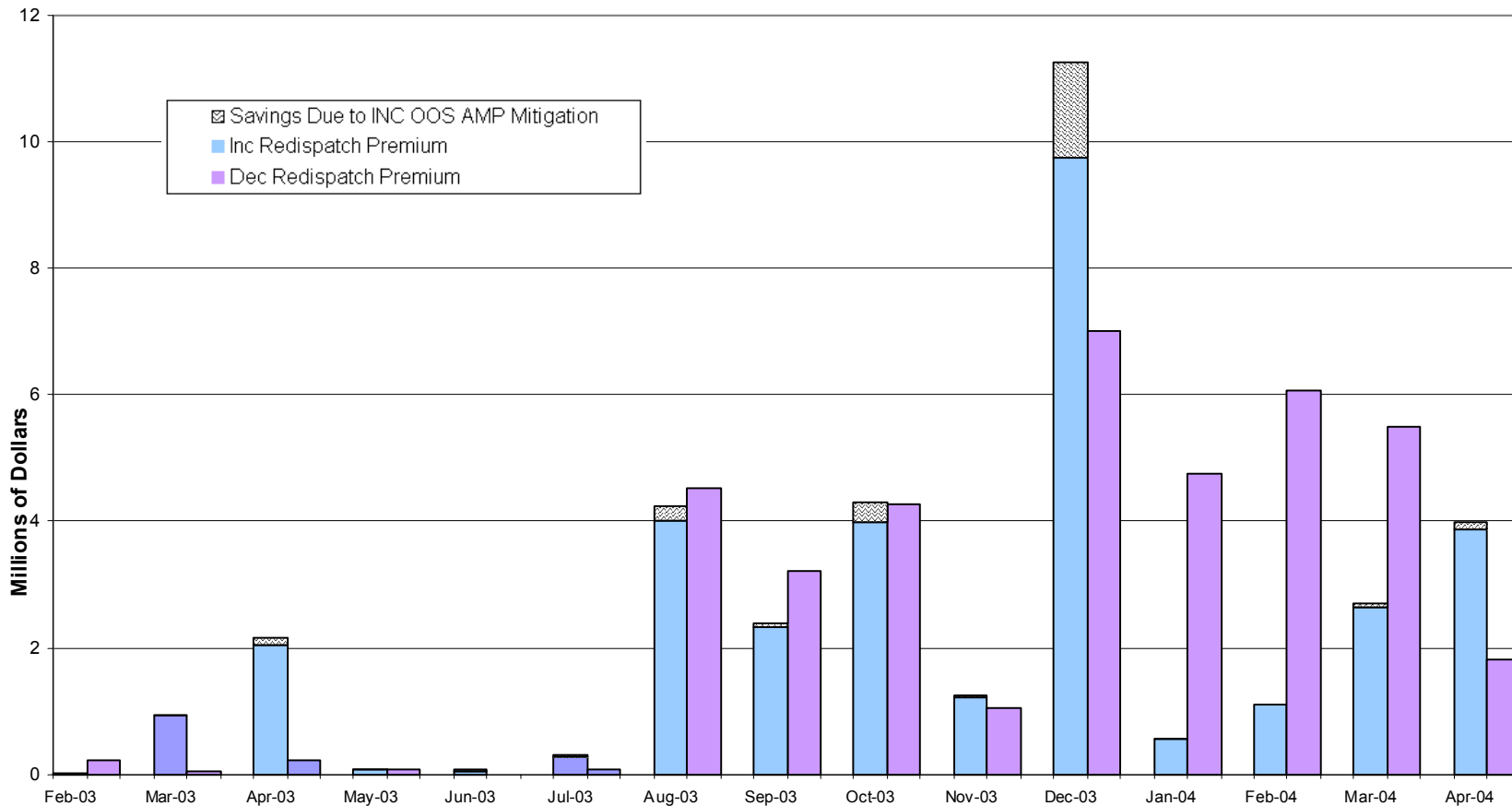
Estimated Range of Competitive Price Indices Compared to Monthly Average Real-Time Incremental Price





INC and DEC intrazonal congestion costs respectively totaled \$3.8 and \$1.8 million, due primarily to South-of-Lugo and Miguel congestion

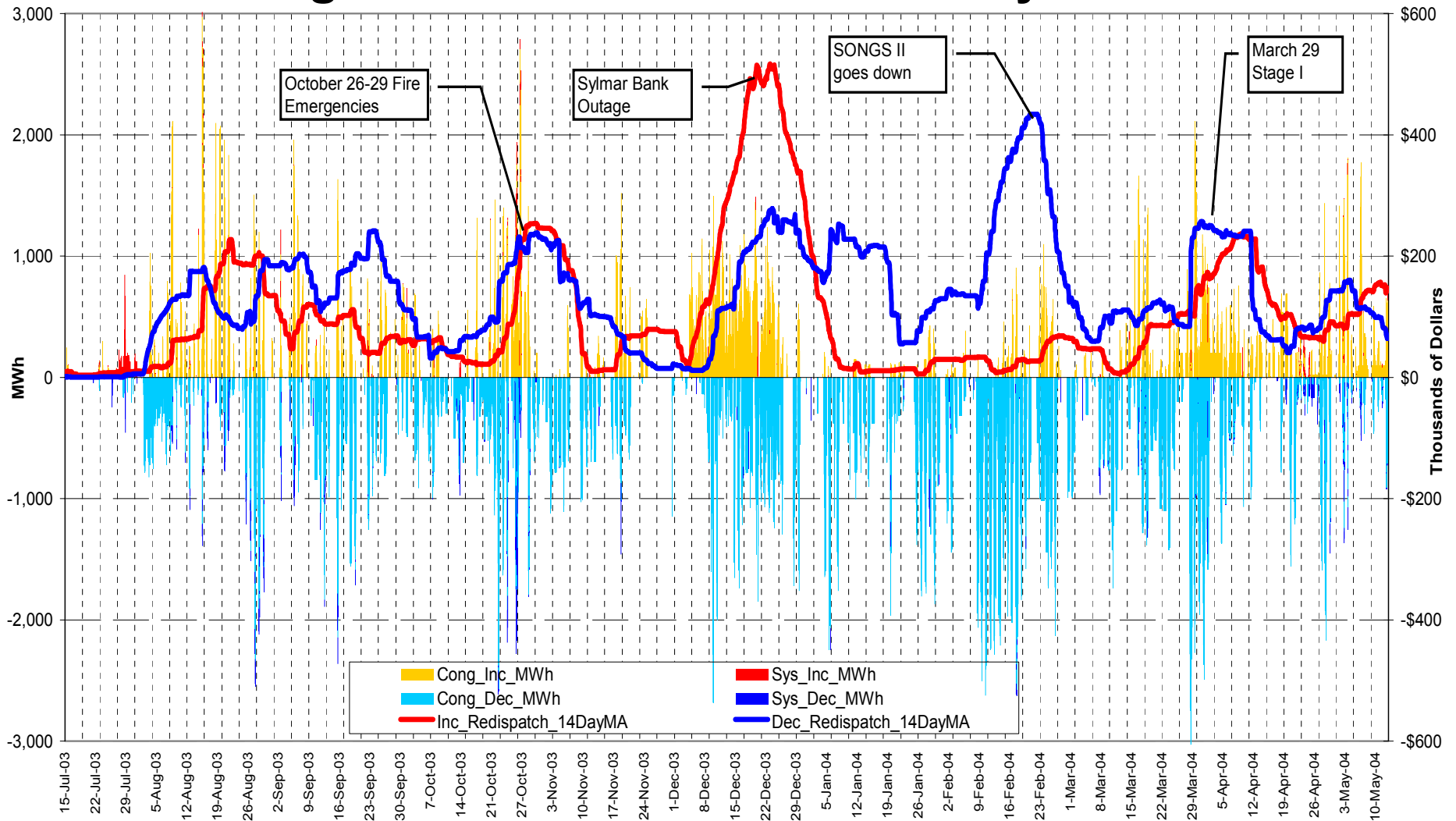
Monthly Total Intrazonal Congestion Costs through Apr-04





Intrazonal congestion costs tend to be event driven

Average Intrazonal Costs and Hourly Volumes



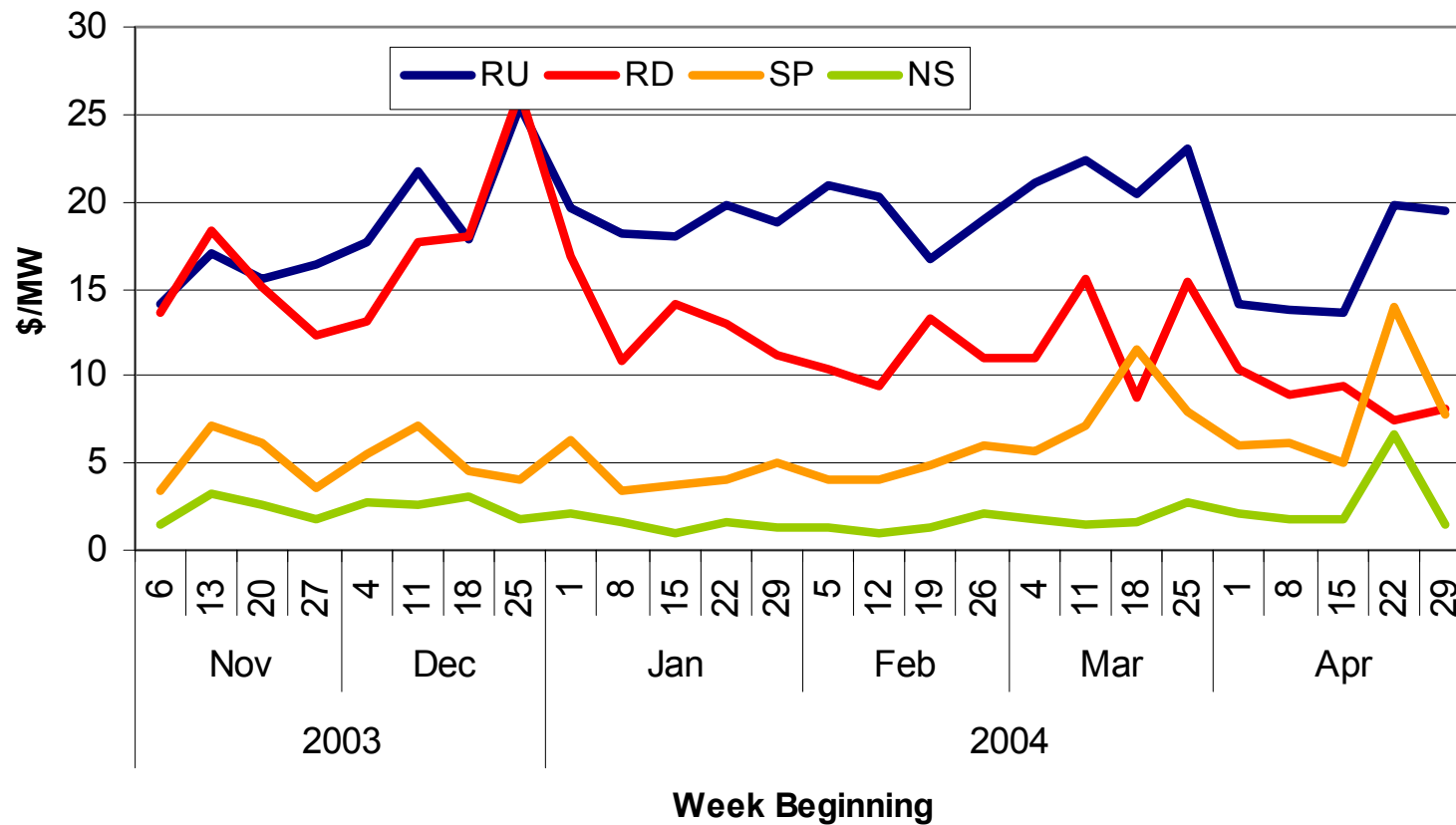


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Ancillary Services prices decreased 13.4% on average from March to April

Weekly Weighted Average Ancillary Service Prices





Frequency of bid insufficiency decreased by 41% between March and April

Bid Insufficiency in April

