



California ISO

California Independent
System Operator

Market Analysis Report

Events of November and December 2004

Board of Governors Meeting
January 27, 2005

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Nov/Dec Highlights

- Approx. 4% load growth trend persisted through Q4 2004
- Real-Time Market patterns seen in Oct. continued in Nov. and Dec.
 - Short (5-10 min.) systemwide spikes due to quick ramp and market clearing
 - Longer (~30 min.) spikes within SP15 due to SCIT and Miguel congestion or other contingencies
 - Relatively few units, mostly SP15 steamers, from a small number of SC's, consistently setting spike prices, usually in \$150-\$165/MWh range
 - Spikes of either type daily during evening ramp (HE 17-18)
- Ancillary Service market bid insufficiency and price spikes down in December
 - No zonal A/S procurement since early December



Key Transmission Upgrades

- Path 15
 - Upgraded to 5,400 MW from 3,900 MW
 - In service and at full capacity December 23
- Pacific DC Intertie
 - Upgraded to 2,000 MW from 1,300 MW
 - In service and at full capacity December 30
- Miguel Substation
 - Upgraded from 1,100 MW to 1,200 MW
 - In service and at full capacity October 31
 - Full benefit will not be realized until Miguel-Mission line upgrade operational
 - Significant congestion costs continued due in part to San Onofre Unit 3 outage



Load Growth trend continues; Oct was only month in 2004 to see a decrease in load, due to considerably milder weather

Load Growth Rates Compared to Same Month Prior Year

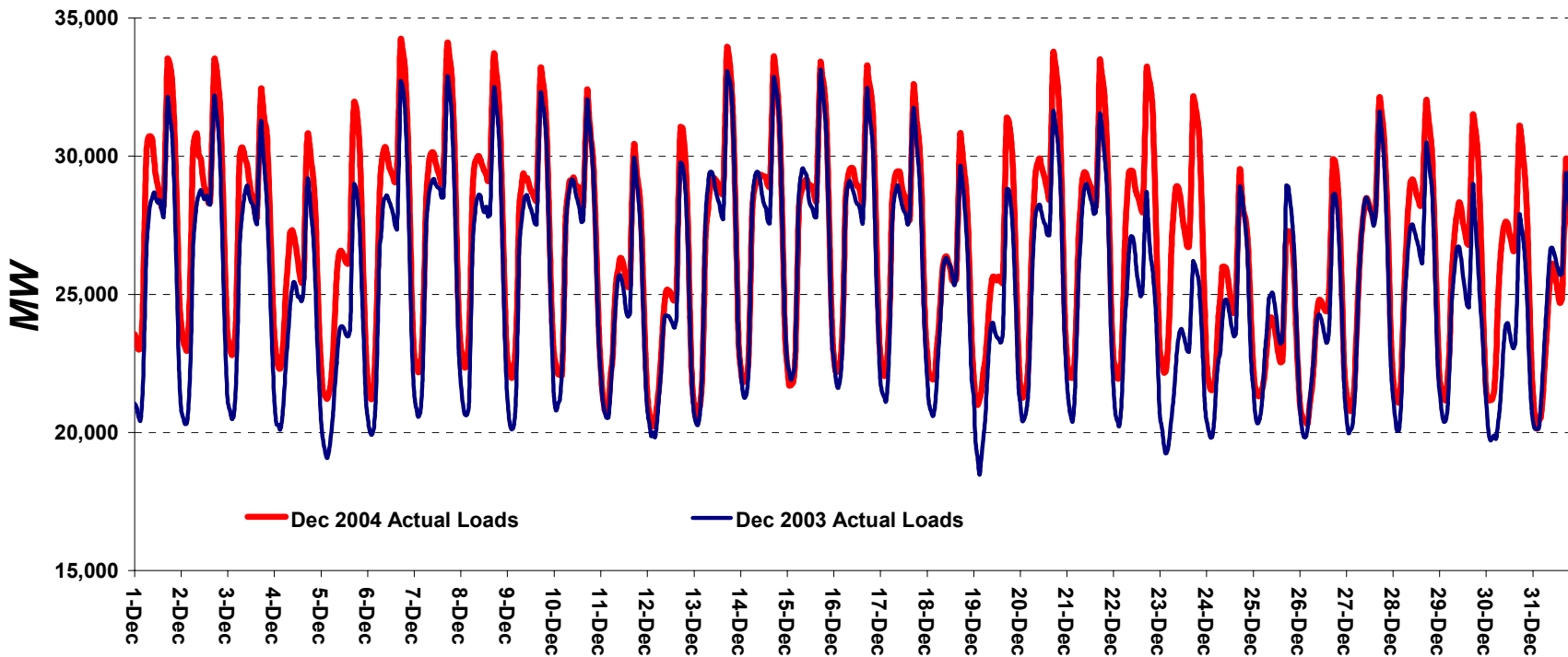
	<u>Avg. Hrly. Load</u>	<u>Avg. Daily Peak</u>	<u>Avg. Daily Trough</u>	<u>Monthly Peak</u>
January-04	4.3%	3.1%	5.1%	3.2%
February-04	4.5%	3.9%	5.4%	4.5%
March-04	4.4%	5.1%	2.5%	4.5%
April-04	7.1%	8.3%	4.8%	31.1%
May-04	7.3%	7.7%	5.5%	2.5%
June-04	6.6%	6.9%	6.1%	-4.7%
July-04	0.7%	0.3%	1.9%	4.0%
August-04	1.0%	0.6%	0.6%	5.2%
September-04	3.4%	3.5%	3.4%	10.1%
October-04	-1.4%	-2.8%	1.5%	-5.9%
November-04	4.2%	3.9%	3.9%	6.6%
December-04	4.4%	4.1%	6.5%	3.4%
Annual Average	3.7%	3.5%	3.8%	4.9%

Notes: Through 7/10/03: Actual loads at top of hour. Since 7/11/03: Hourly average loads.



Load growth observed in all periods in November and December

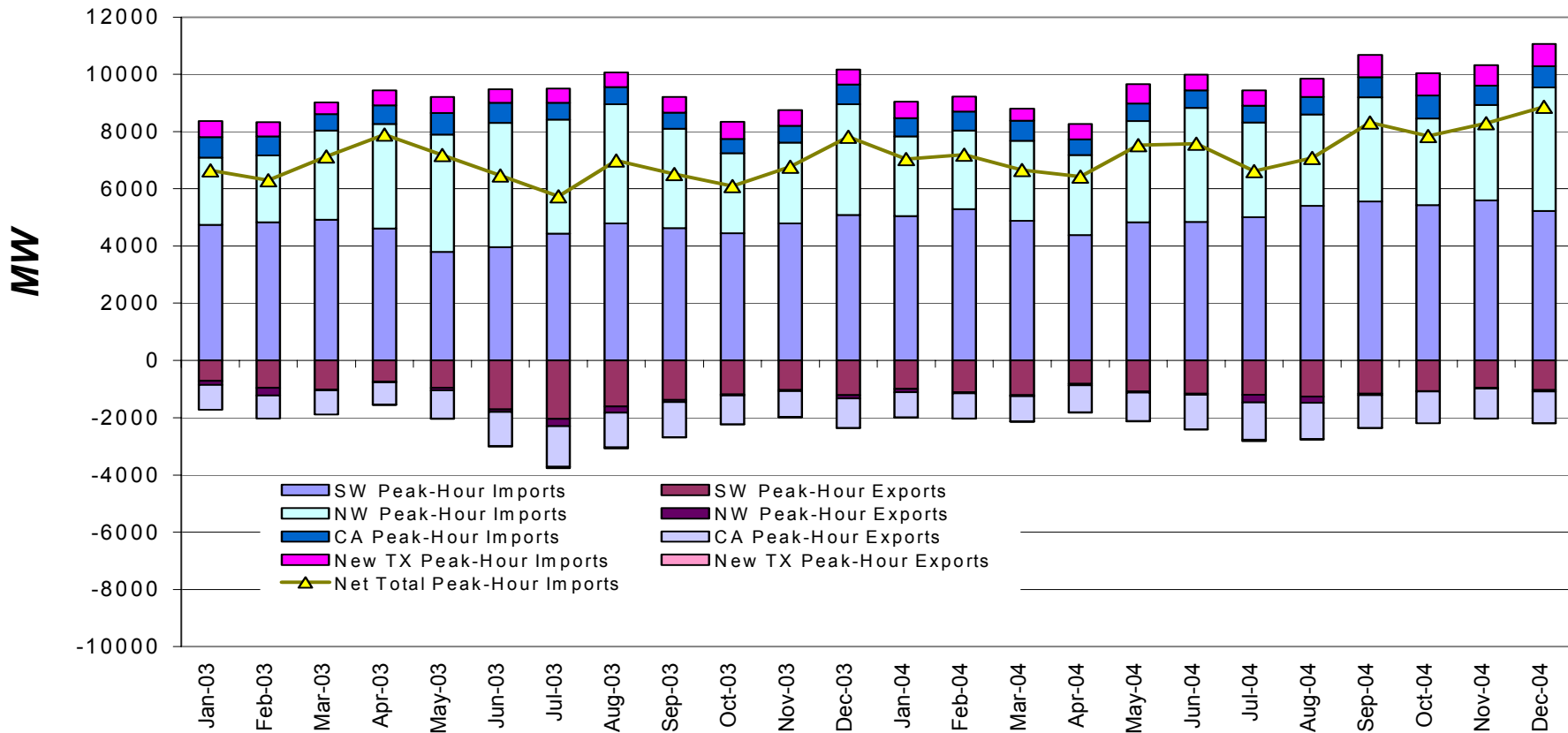
Comparison of Loads: December 2004 v. 2003



	<i>November</i>			<i>December</i>			
	2003	2004	Pct. Chg.	2003	2004	Pct. Chg.	
Peak Load (MW)	31,595	33,681	6.6%	Peak Load (MW)	33,070	34,201	3.4%
Avg. Energy (MW)	24,565	25,599	4.2%	Avg. Energy (MW)	25,583	26,715	4.4%



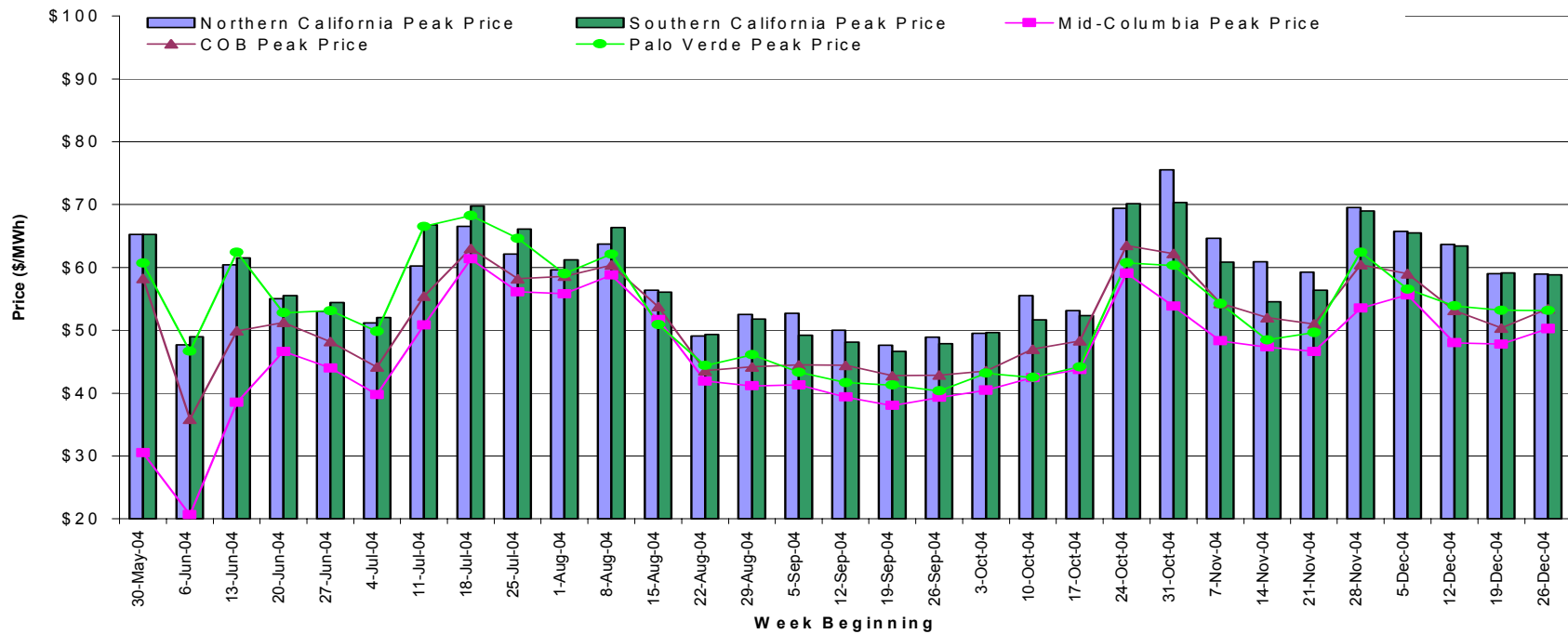
Monthly Average Peak-Period Imports and Exports: Jan-03 through Dec-04





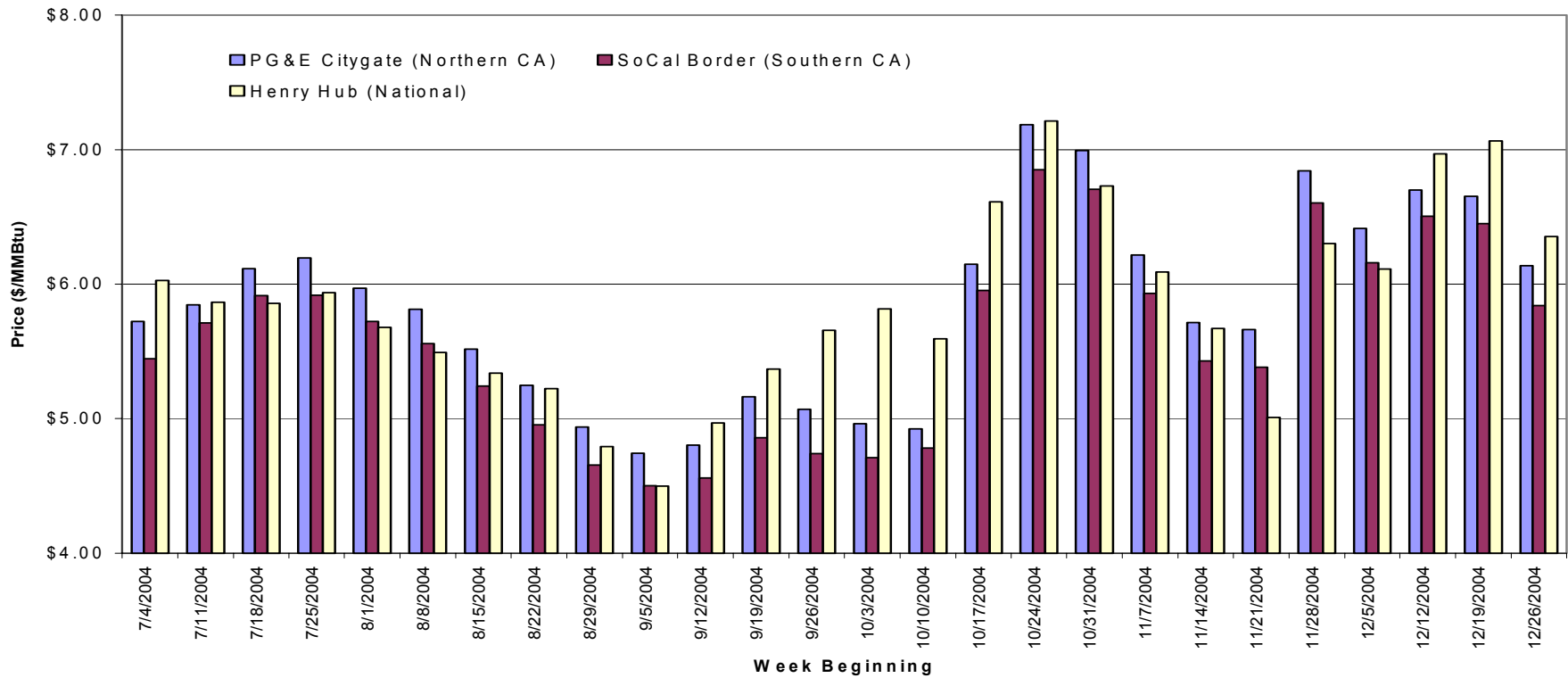
Price spreads tend to reflect congestion on Palo Verde, COI, and PDCI

Regional Day-Ahead Forward Electric Prices - Weekly Averages



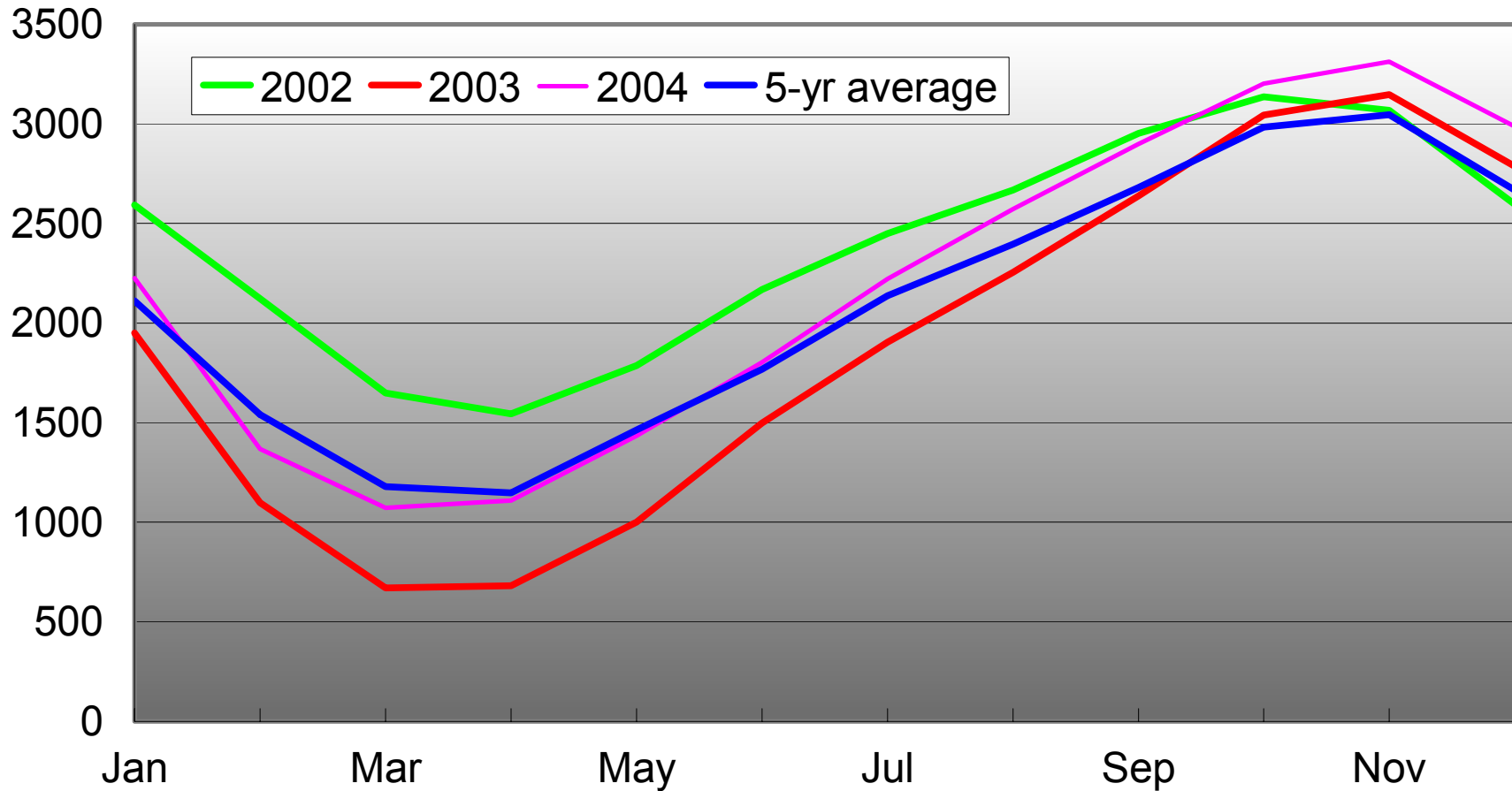


Average Monthly Gas Prices December 2002 through December 2004





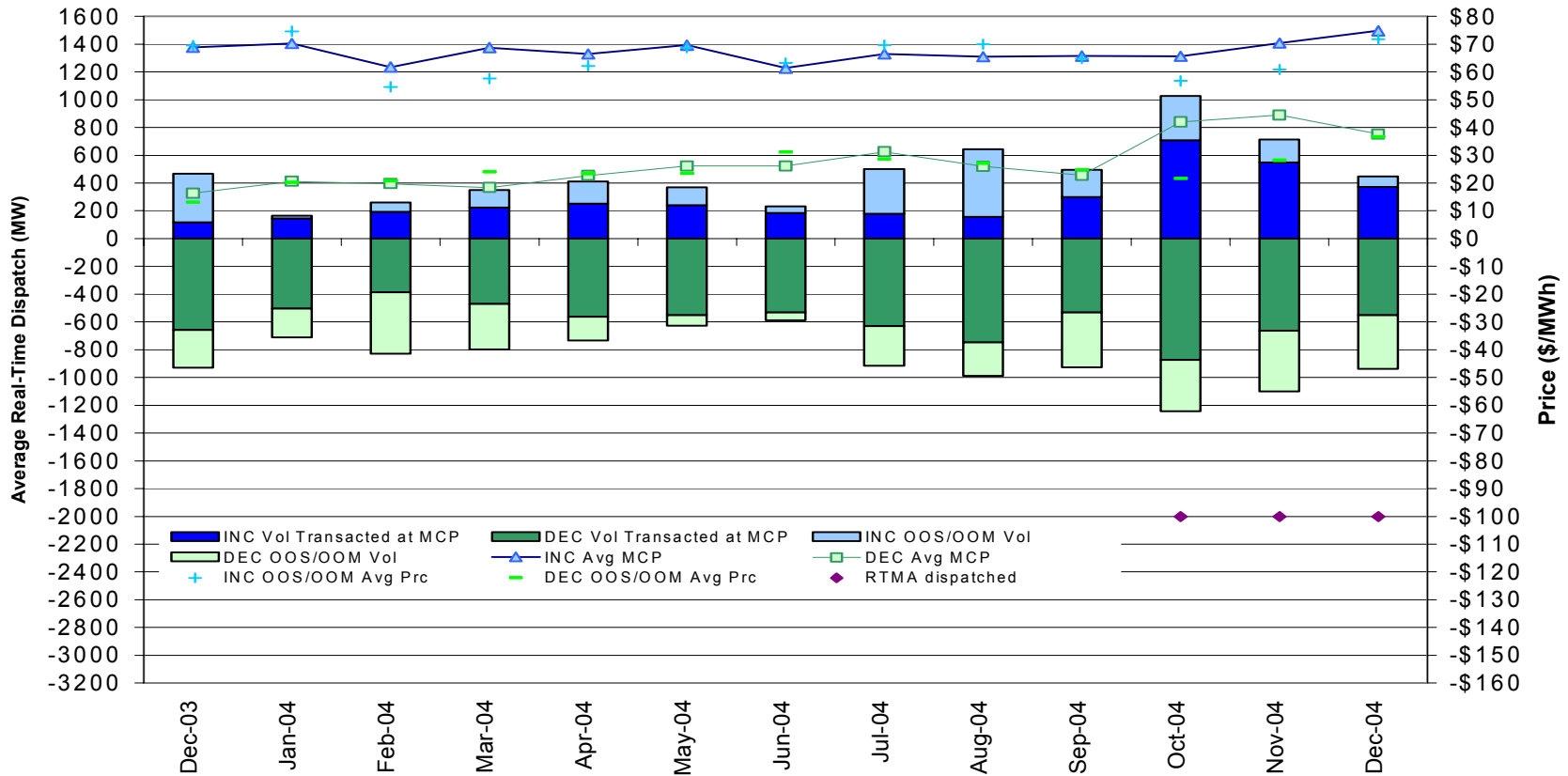
Total US natural gas in storage (bn ft³)





RTMA prices higher in December, due in part to lower volume, Market clearing, and resultant volatility

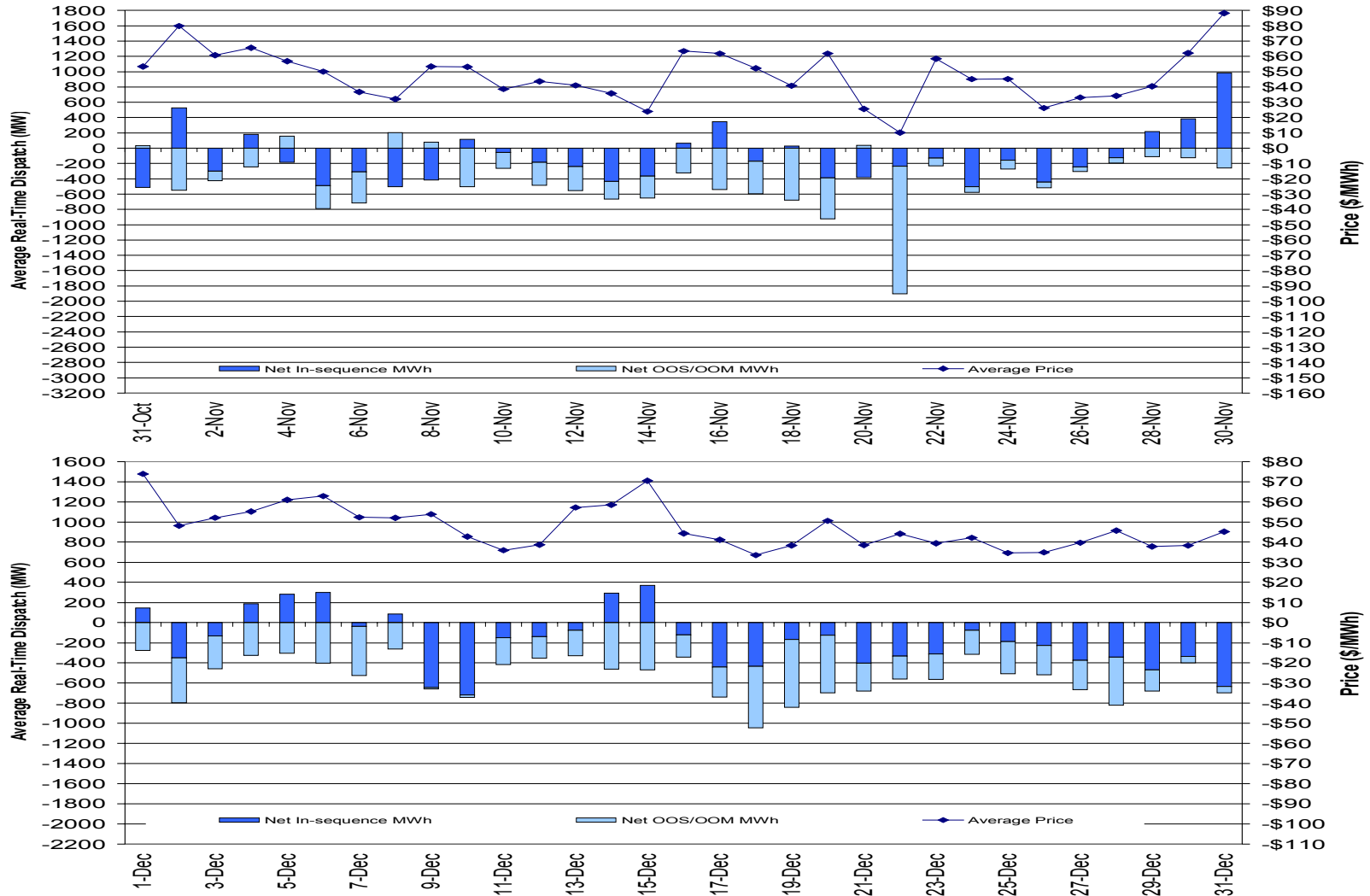
Weekly Average ISO RTMA In-Sequence and OOS/OOM Volumes and Prices: Dec-03 through Dec-04





Net real-time dispatch remains heavily decremental

Daily Average Net ISO RTMA In-Sequence and OOS/OOM Volumes and Average Prices: November (Top) and December (Bottom)





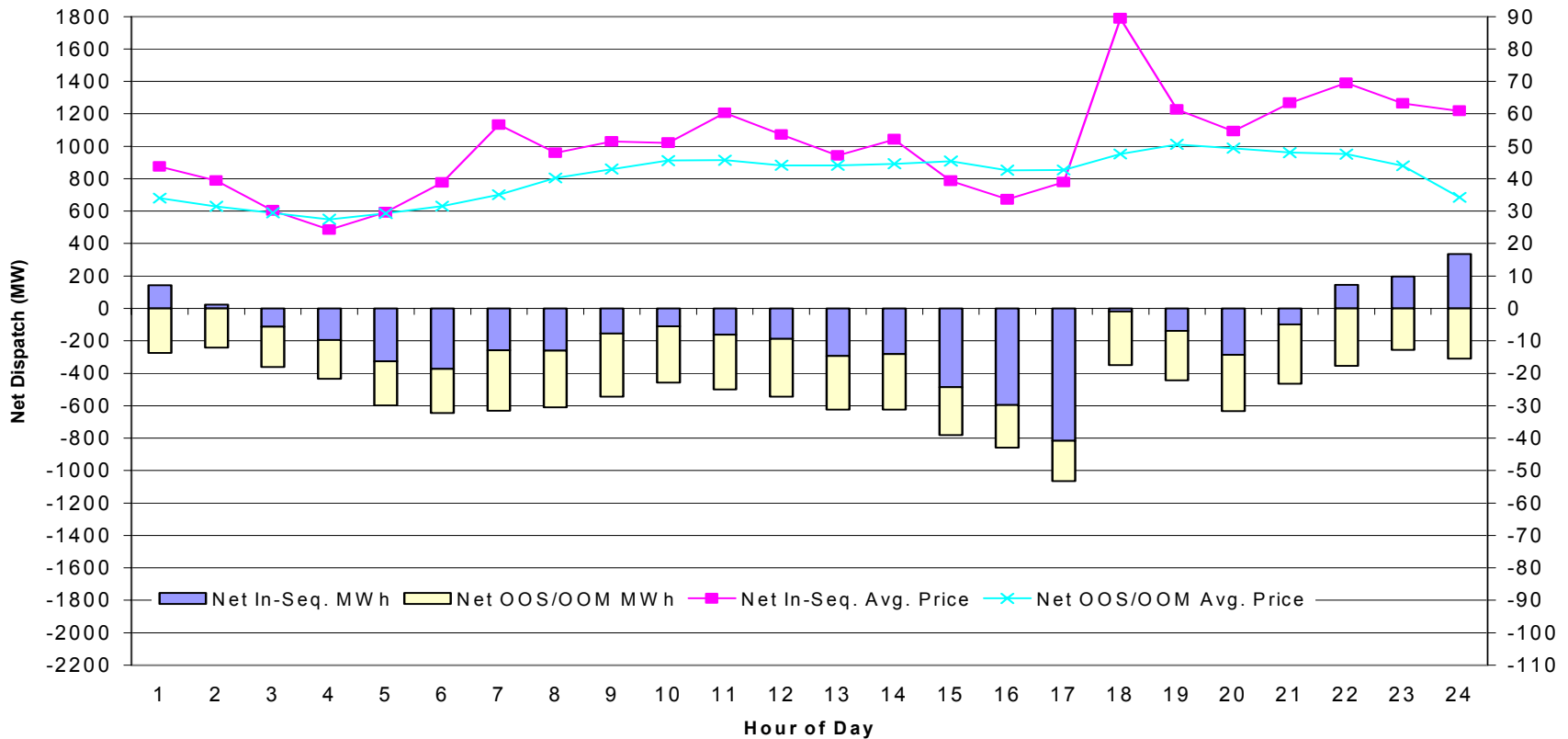
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Average prices highest during evening ramp

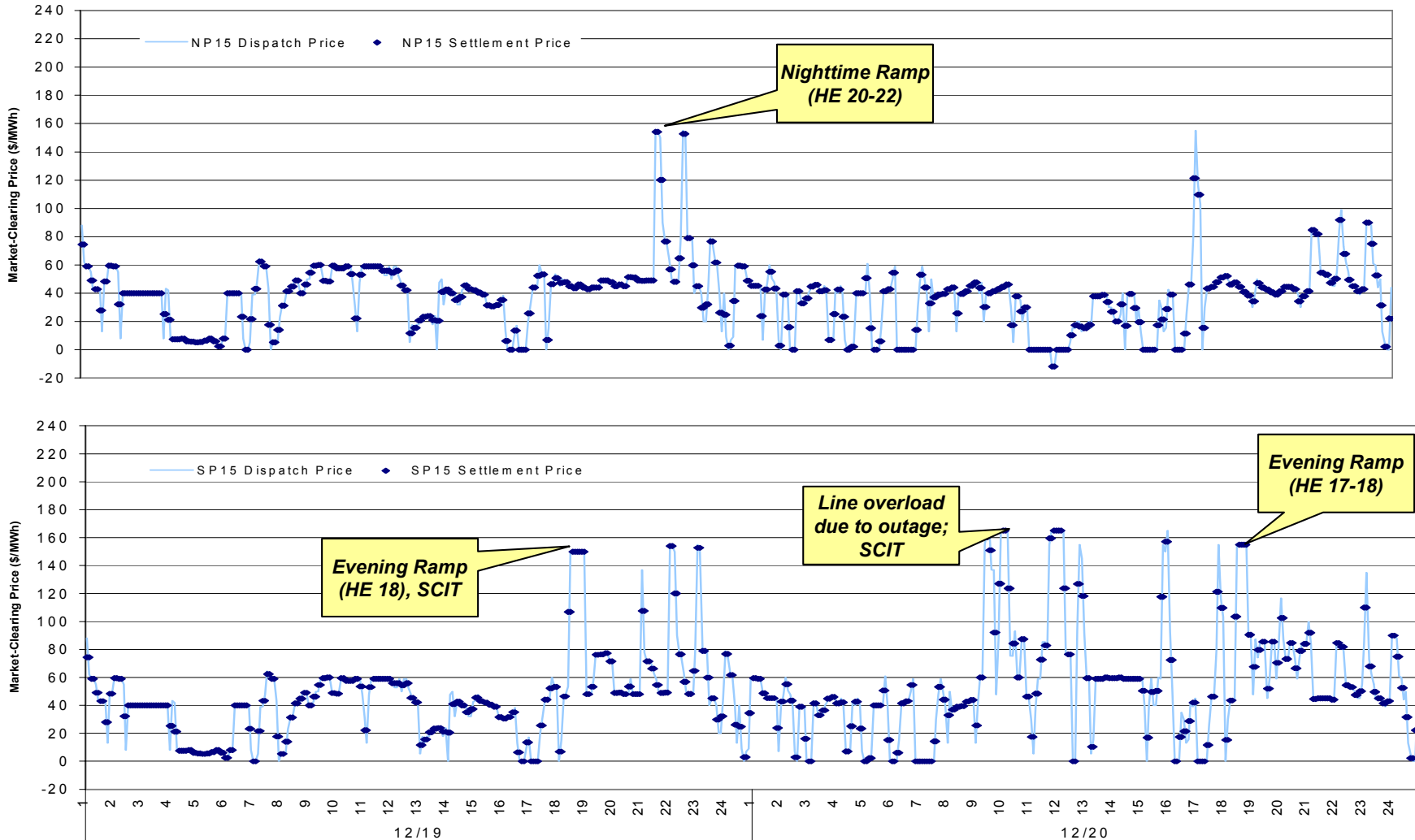
Net real-time dispatch heavily decremental throughout peak hours

Hourly Average Prices and Net Dispatch Volumes December 2004





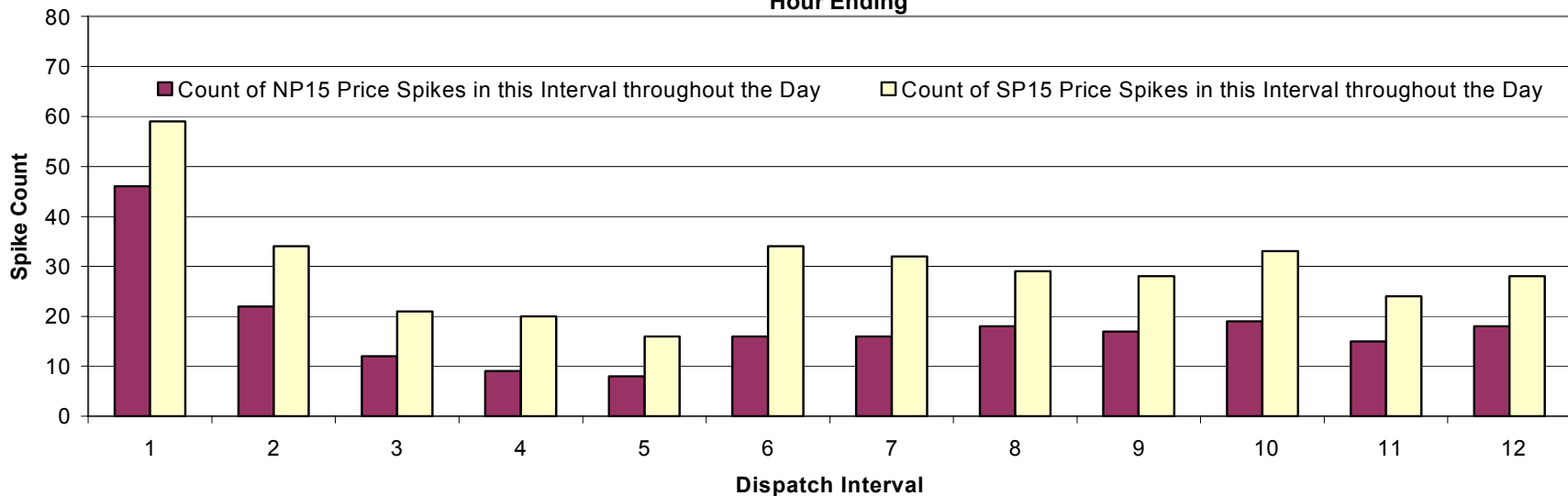
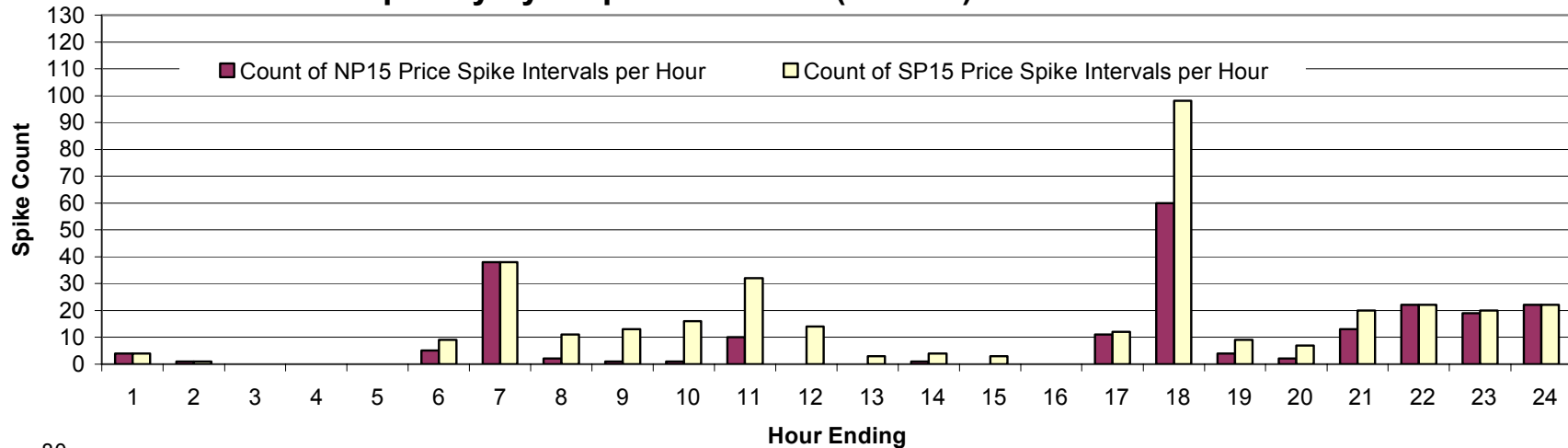
Five-Minute NP15 (Top) and SP15 (Bottom) RTMA In-Sequence Prices: Dec 19 and 20





Spikes occur regularly during ramp hours, especially HE 18 (evening ramp)

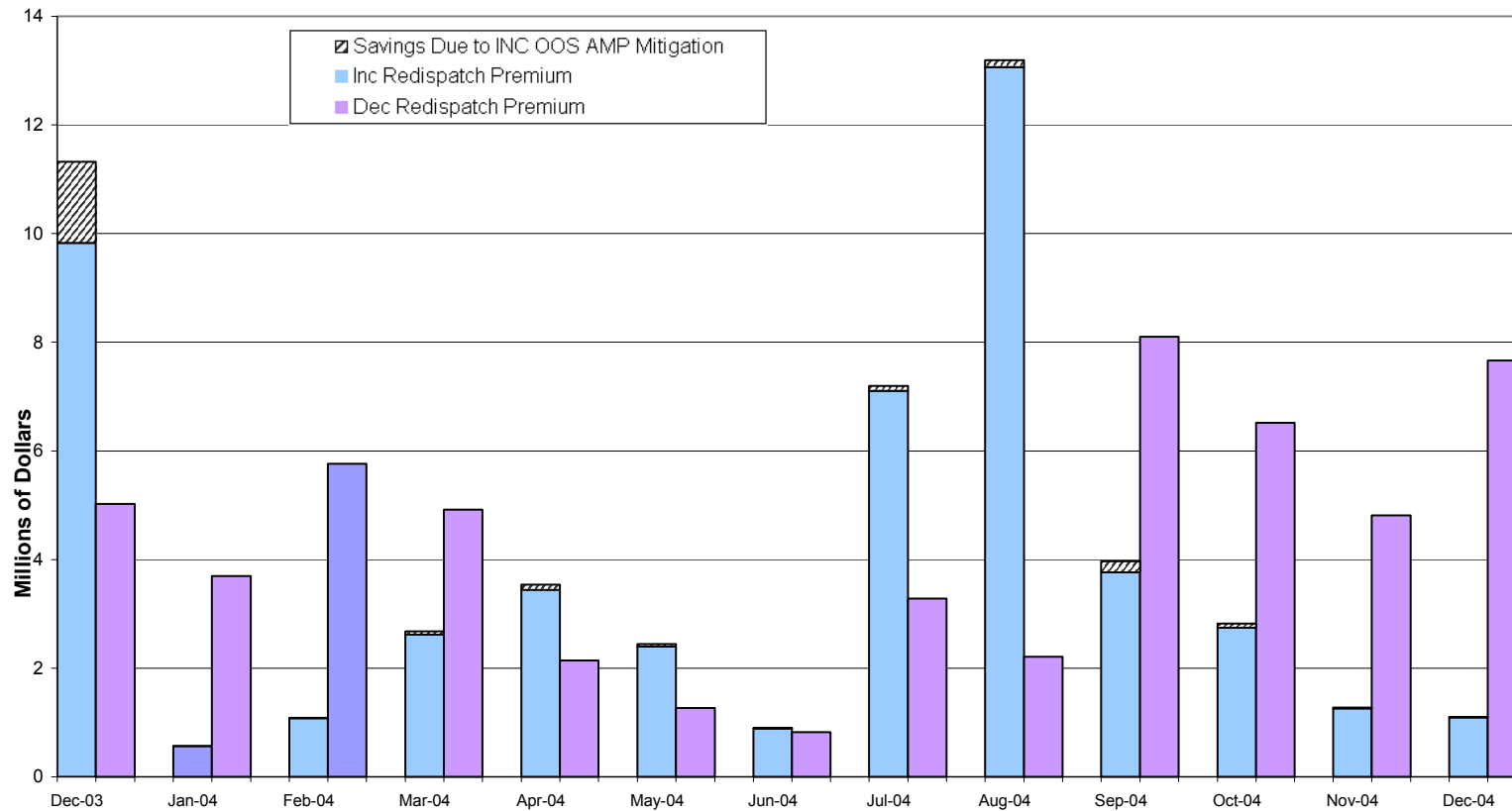
Count of Price Spikes in Dispatch Intervals per Hour (top) and Frequency by Dispatch Interval (bottom): December 2004





Intrazonal dispatches primarily decremental for mitigation Miguel congestion, often concurrent with counterbalancing INC dispatches and price spikes

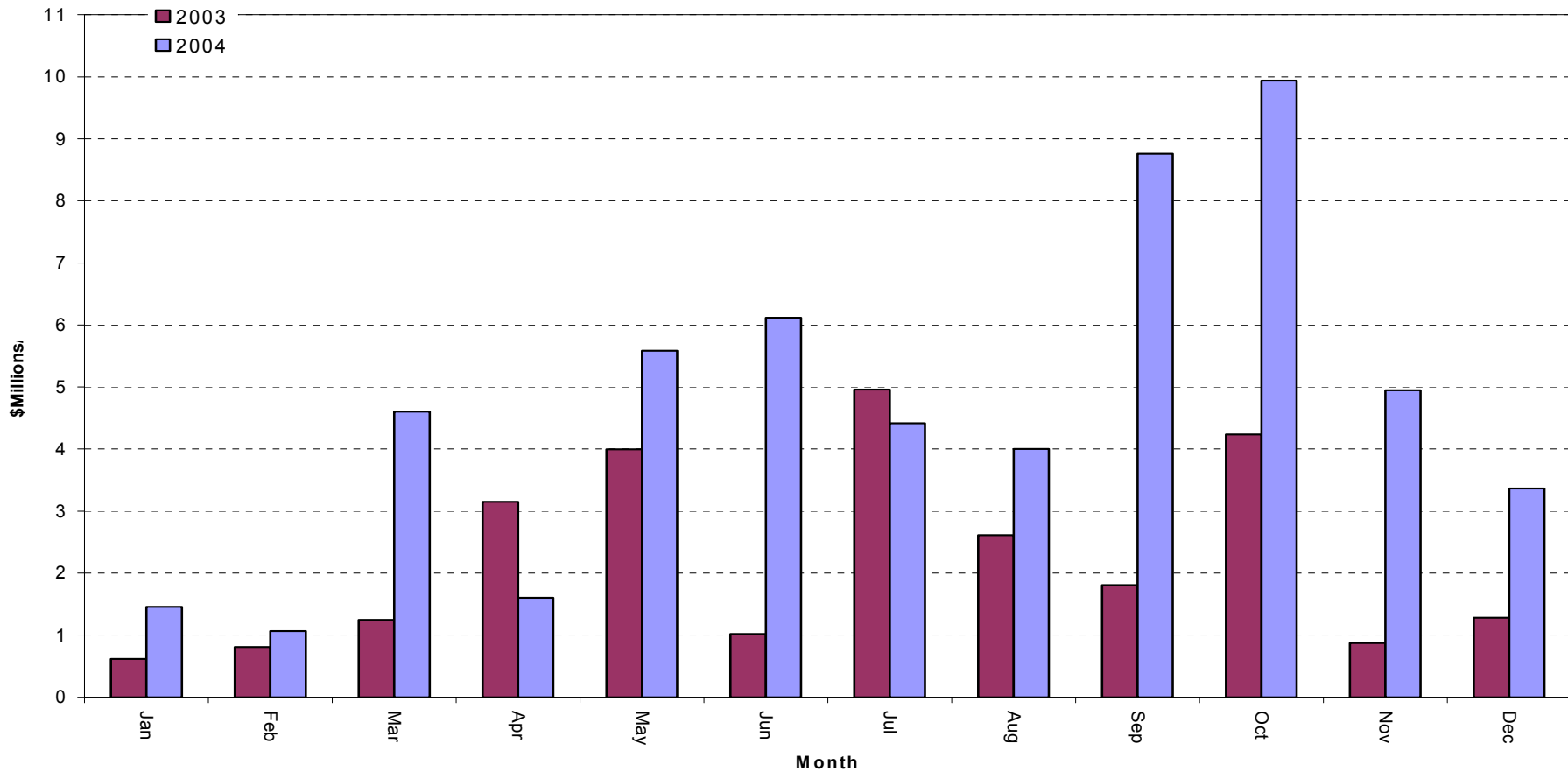
Monthly redispatch costs through December





Congestion costs high due to transmission derates and strong imports

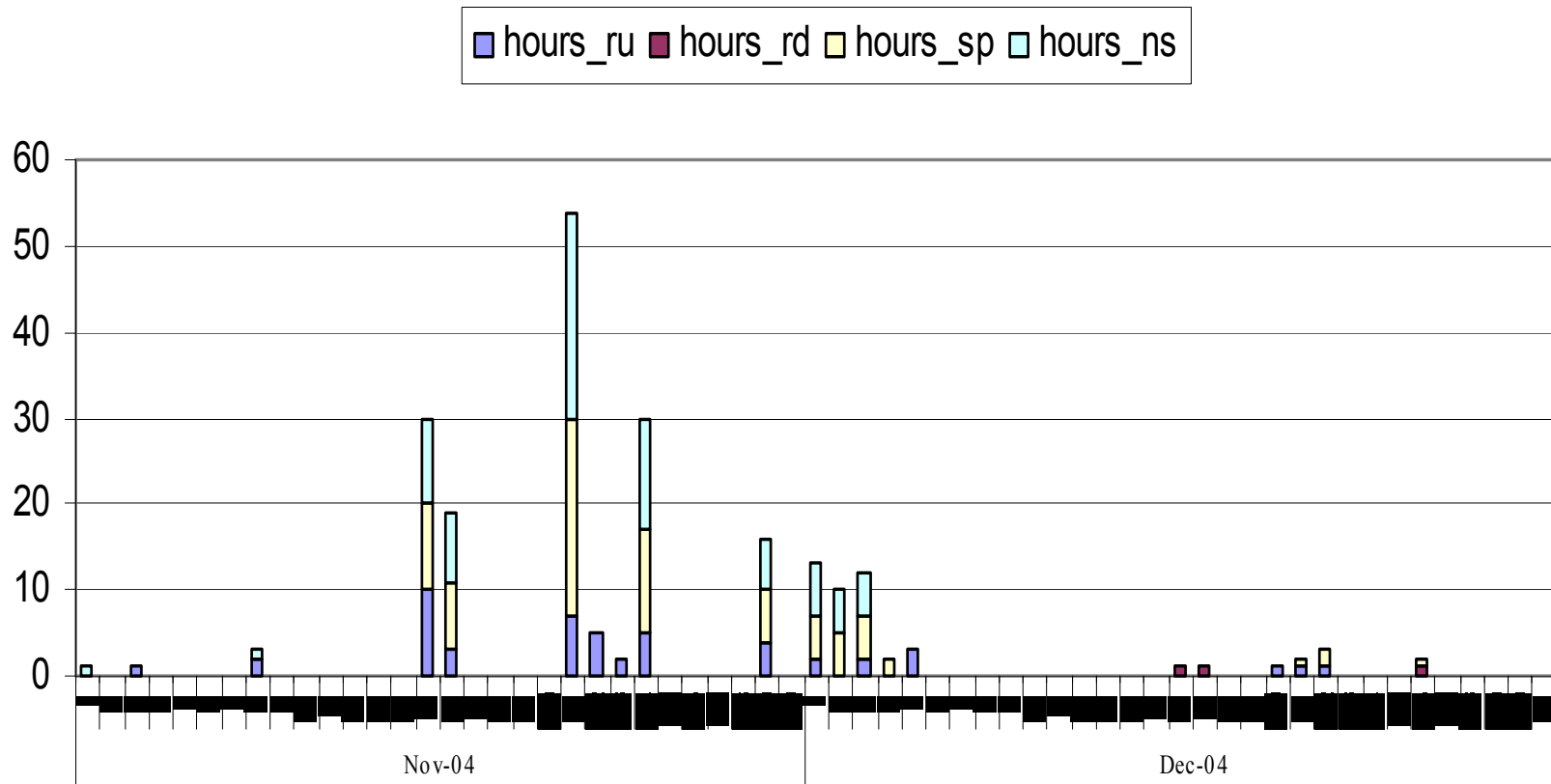
Monthly Interzonal Congestion Costs: 2004 vs 2003





Insufficient Ancillary Service Market bids continued to be problematic in November

Count of Hours with Bid Insufficiency in November and December





Ancillary Service market bid insufficiency and price spikes down in December

Weekly Weighted Average Ancillary Service Prices

