

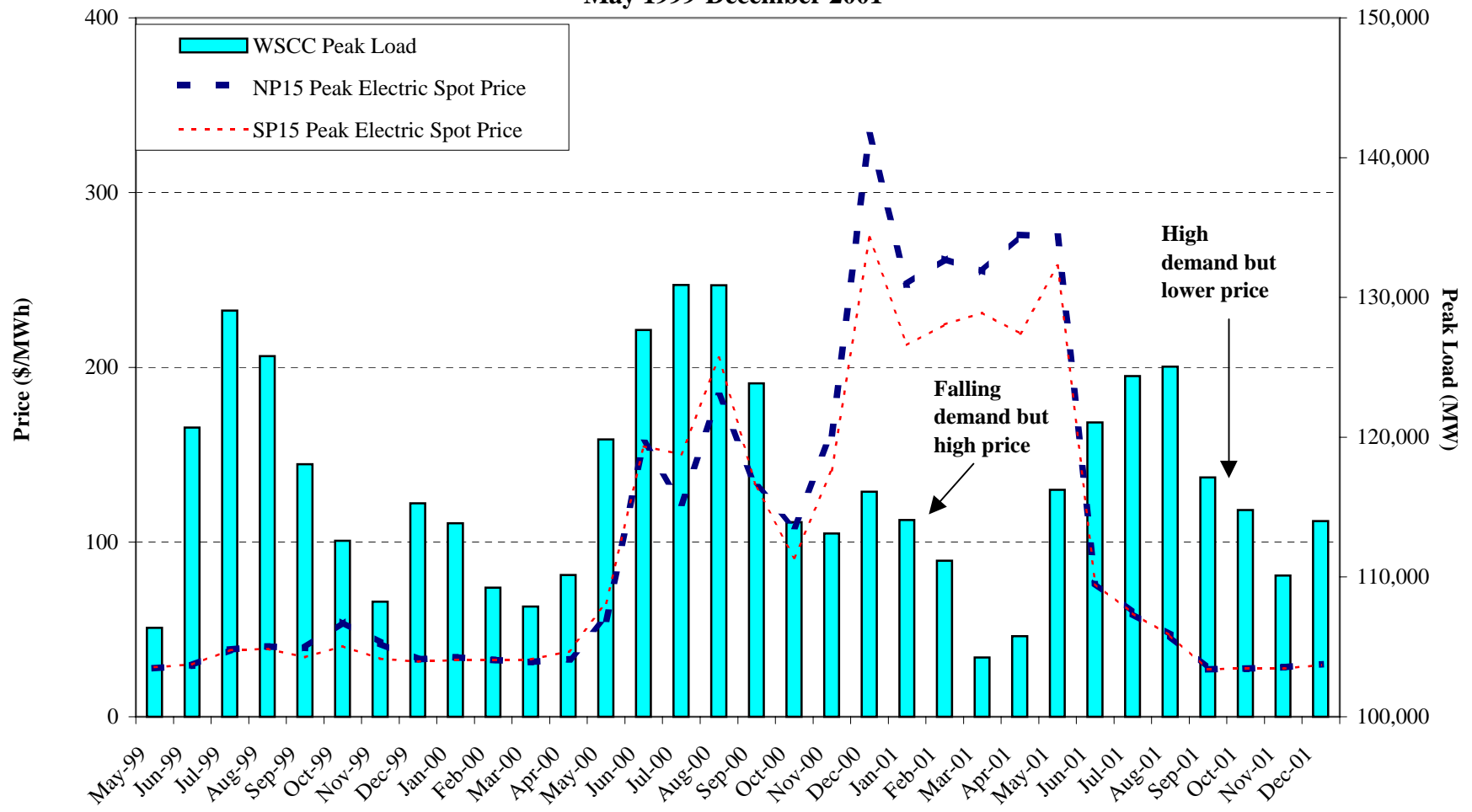
Index of Relevant Material

Submitter (Party Name)	California Parties
Index Exh. No.	CA-350
Privileged Info (Yes/No)	Yes
Document Title	Attachments to Prepared Rebuttal Testimony of Dr. Peter Fox-Penner on Behalf of the California Parties
Document Author	Dr. Peter Fox-Penner
Doc. Date (mm/dd/yyyy)	03/20/2003
Specific finding made or proposed	Market fundamentals do not explain the excessive prices charged by sellers in the ISO and PX markets during the period May 1, 2000 - June 20, 2001. Seller generated uninstructed to bypass organized markets. Seller submitted Bids in the ISO and PX Markets in order to exercise market power. Seller participated in collusive acts. Sellers participated in false load schedules. Sellers participated in Megawatt Laundering or "Ricochet". Sellers participated in "Death Star" or other Congestion Games. Sellers participated in the "Get Shorty" strategy of selling non-existent Ancillary Services to the ISO.
Time period at issue	a) before 10/2000; b) between 10/2000 and 6/2001
Docket No(s). and case(s) finding pertains to *	EL00-95-000, EL00-98-000 (including all subdockets)
Indicate if Material is New or from the Existing Record (include references to record material)	New
Explanation of what the evidence	Market fundamentals do not fully explain the price increases during the CA power crisis. Rather, market fundamentals and scarcity enabled and

purports to show	made profitable the exercise of market power and manipulation. Defining the entire WECC as a geographic market for the purpose of calculating market shares is flawed because it far exceeds the appropriate size of the market.
Party/Parties performing any alleged manipulation	Various suppliers including Avista, Enron, NCPA, Powerex, Puget Sound, and Reliant

* This entry is not limited to the California and Northwest Docket Numbers.

Figure II-1
Comparison of WSCC Actual Peak Load vs Peak California Electricity Spot Prices
May 1999-December 2001



Sources and Notes:

[1]: Source for WSCC Hourly Average Energy Demand Net Supply is Exhibit MIR-1, Table 5. Source for California Spot Electric Prices is Power Market's Week.

Figure II-2
Exhibit MIR-1, Figure 22 Reproduced
US and Canadian Hydro Generation Hourly Average Output (MW/hour)

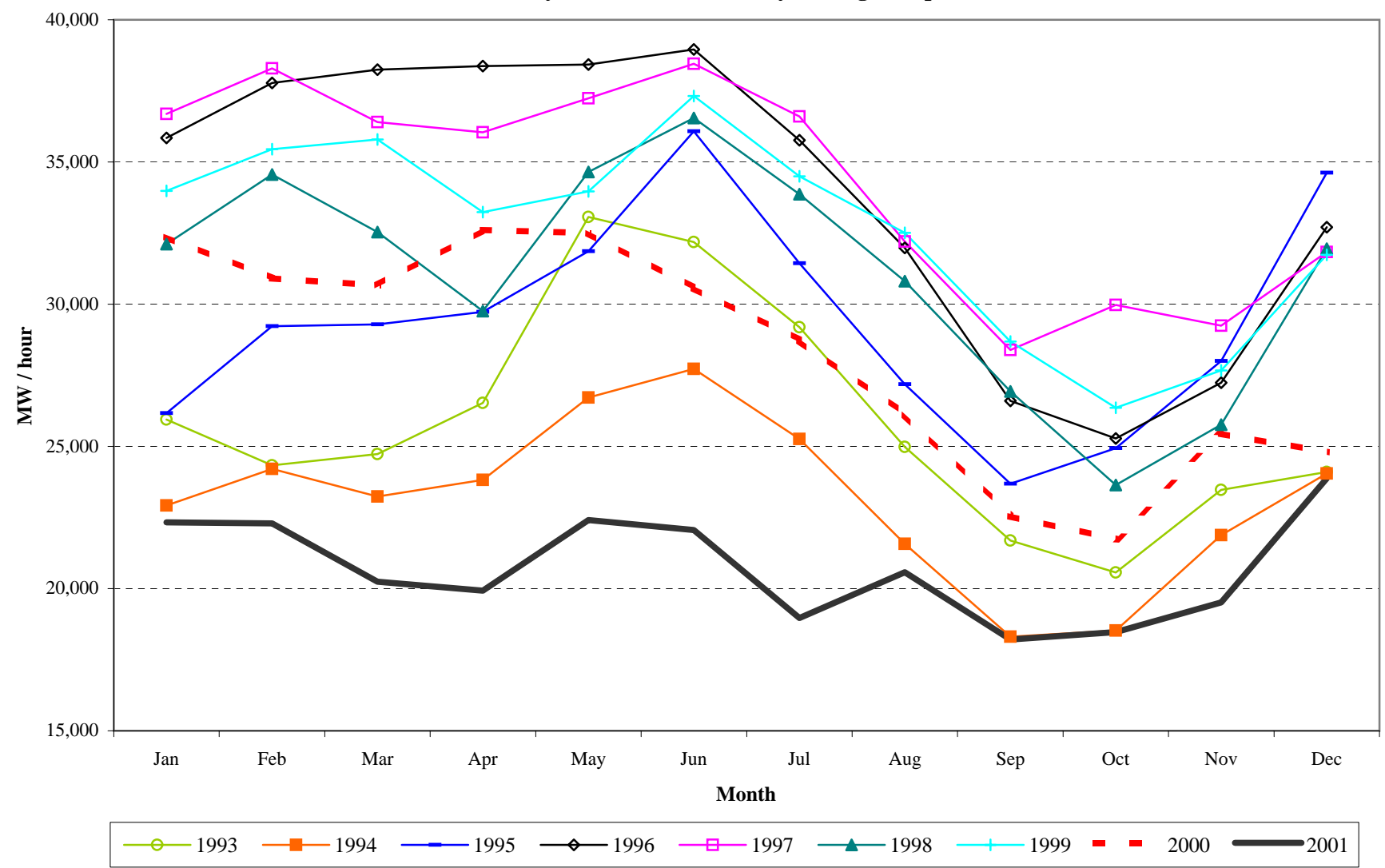
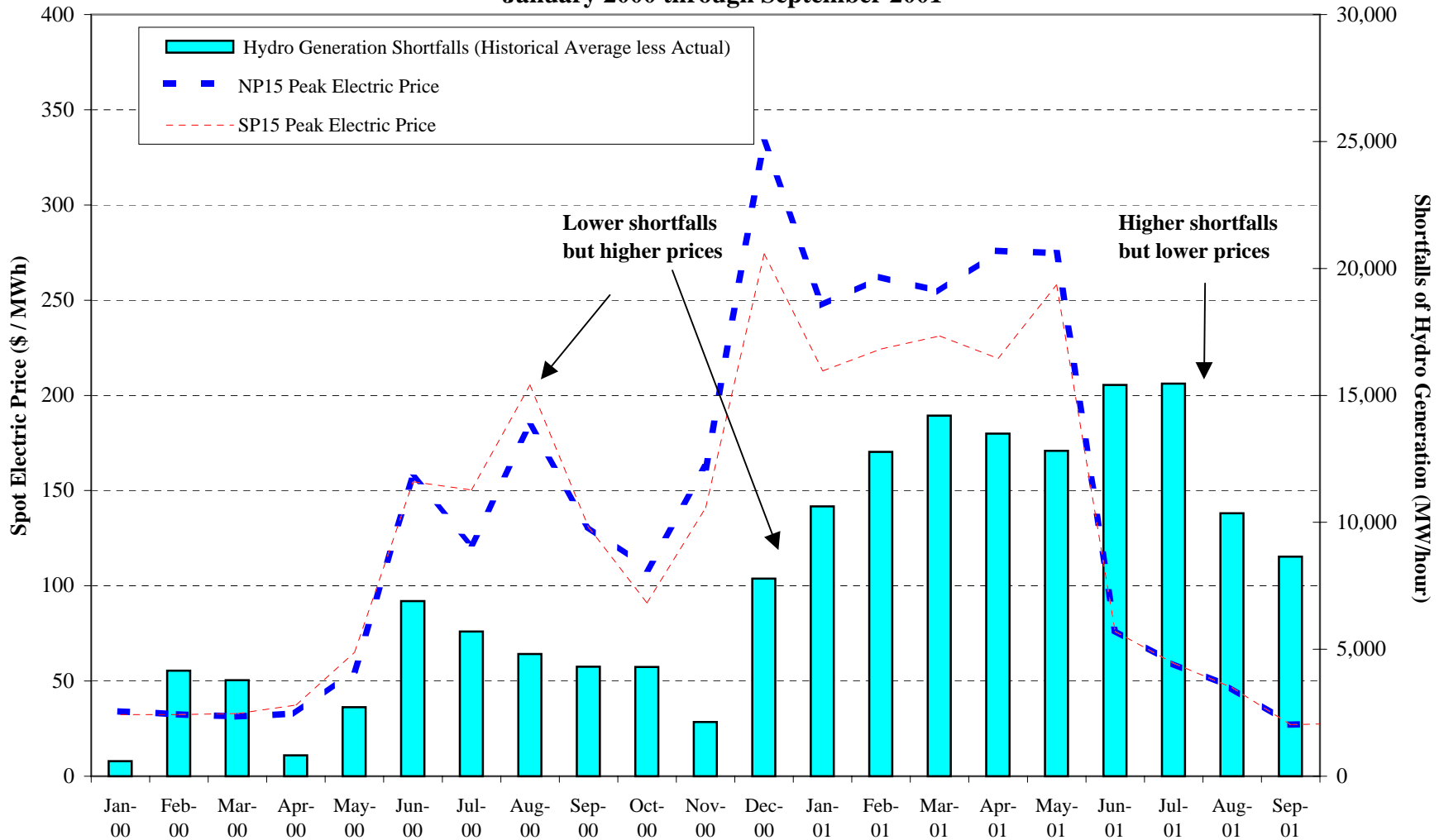


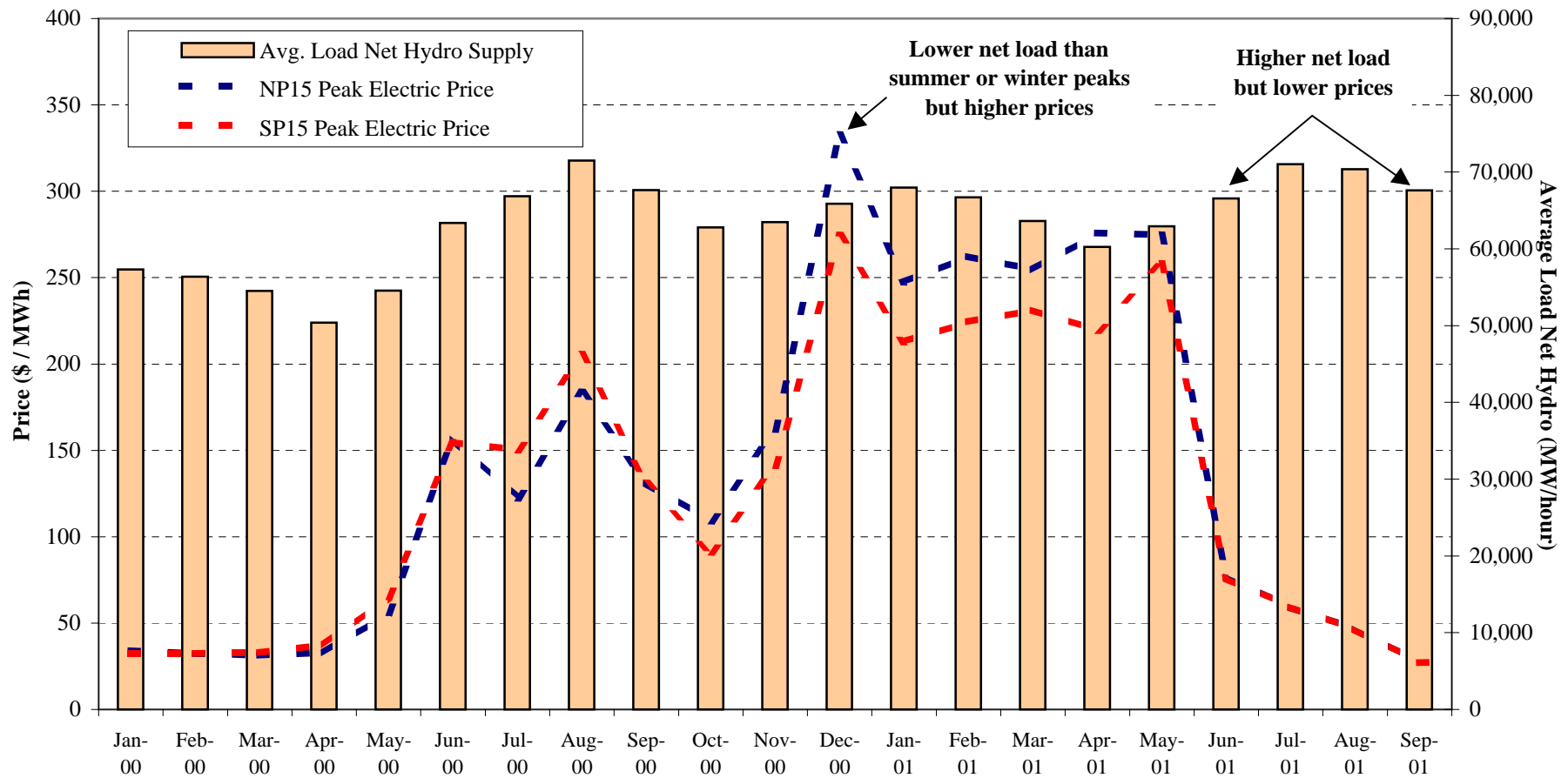
Figure II-3
Comparison of US and Canadian Hourly Average Hydro Generation Output Shortfalls
and California Monthly Average Electricity Spot Prices
January 2000 through September 2001



Sources and Notes:

- [1]: Average monthly hydro generation shortfalls are calculated as the 1995-1999 historical average generation minus the actual generation.
- [2]: Source for US and Canadian Hydro Generation Output is Exhibit MIR-1, Table 21. Source for NP15 and SP15 Peak Electric Price is Power Markets Week.

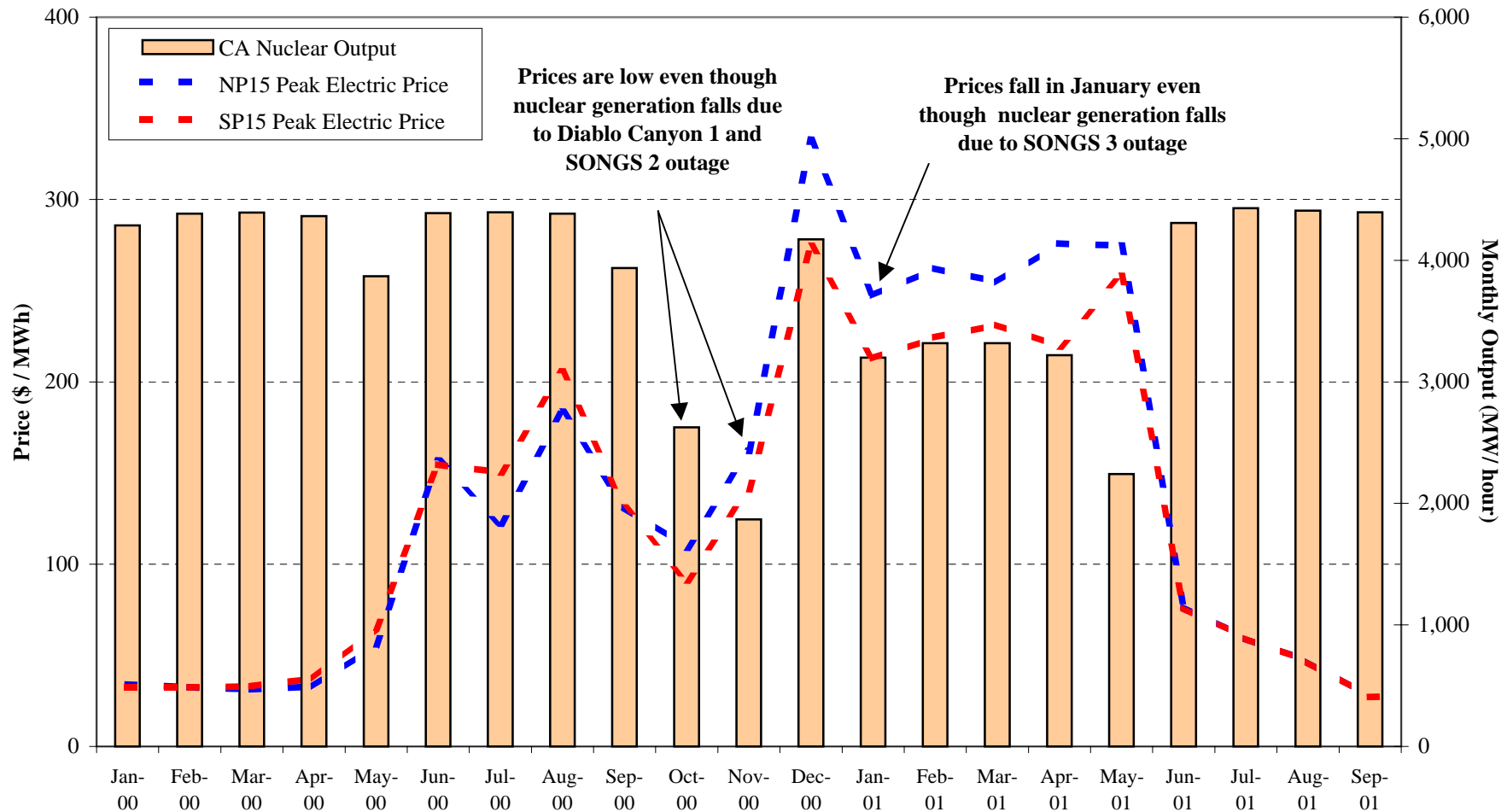
Figure II-4
Comparison of WSCC Hourly Average Energy Demand Net of Hydro Supply (MW / hour)
with California Spot Electric Prices (\$ / MWh)
January 2000 through September 2001



Sources and Notes:

[1]: Source for WSCC Hourly Average Energy Demand Net of Hydro Supply is Exhibit MIR-1, Table 25. Source for Peak NP15 and SP15 Spot Electric Prices is Power Markets Week.

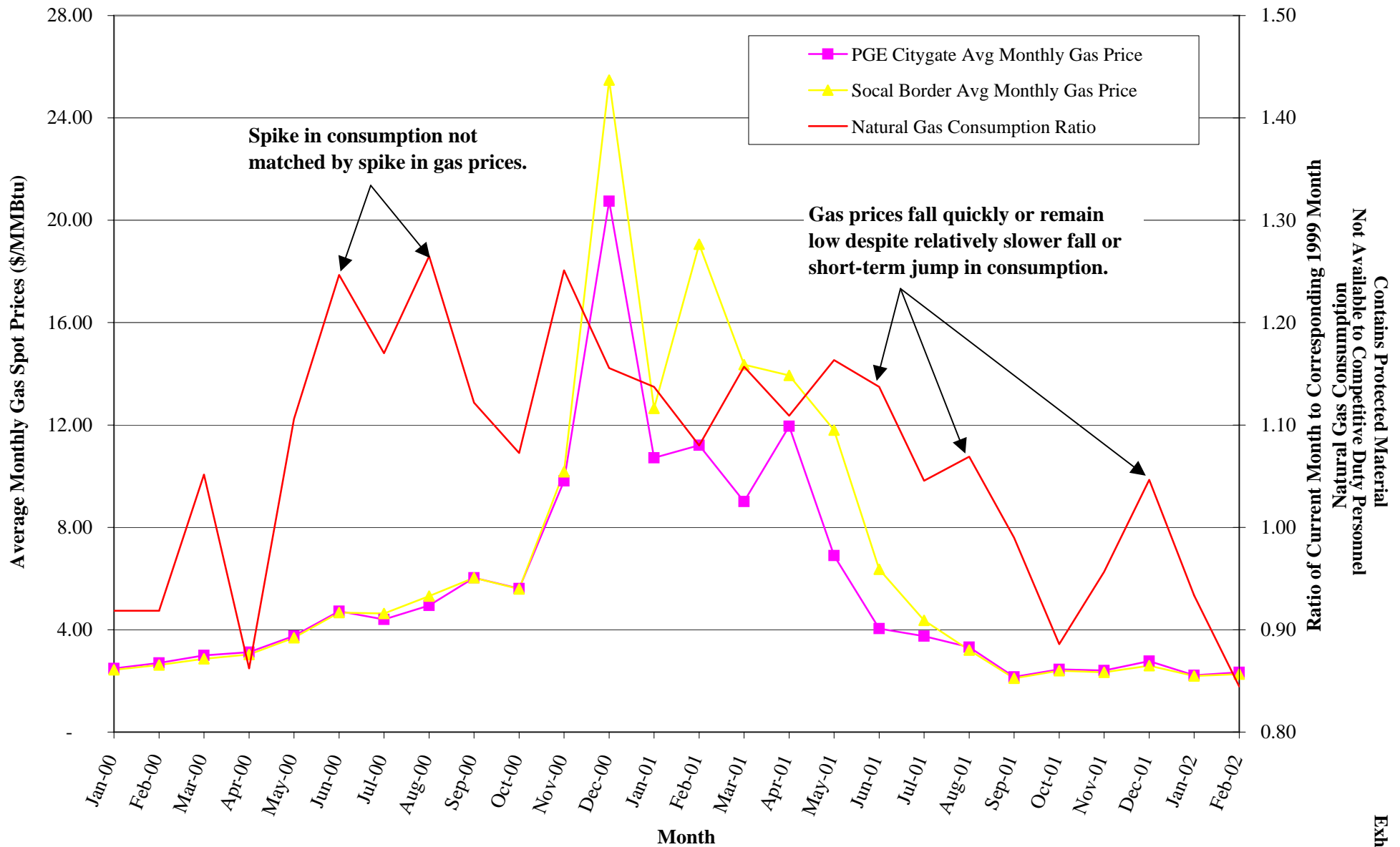
Figure II-5
Comparison of Hourly Average Output (MW/ hour) of California Nuclear Units
and California Monthly Average Electricity Spot Prices (\$/MWh)
January 2000 through September 2001



Sources and Notes:

- [1]: Source for Output of California Nuclear Units is Table 26, Exhibit MIR-1. Source for NP15 and SP15 Peak Spot Price is Power Markets Week.
 [2]: Diablo Canyon 1 outage from 5/15/00 to 5/29/00, Diablo Canyon 2 outage 9/5/00 to 9/18/00, SONGS 2 outage 10/8/00 to 11/19/00, Diablo Canyon 1 outage 10/8/00 to 11/25/00, SONGS 3 outage from 1/01 to 5/01, Diablo Canyon 2 outage from end of 4/01 through 5/01.

Figure II-6
Exhibit MIR-1, Figure 38 Reproduced



Sources: Ratio: http://www.eia.doe.gov/oil_gas/natural_gas/data_publications/natural_gas_monthly/ngm.html, Data from Table 37; Gas Prices: Gas Daily data

Table III-1
Hourly Occurrences of Congestion on ISO Paths in Hour-Ahead Markets
Peak and All Hours
January 1, 2000 through June 19, 2001

		Jan 1, 2000 - Apr 30, 2000				May 1, 2000 - Oct 1, 2000			
		All Hours		Peak Hours		All Hours		Peak Hours	
<i>Congestion Between Points</i>		<i>Hours</i>	<i>% of Hours</i>	<i>Hours</i>	<i>% of Hours</i>	<i>Hours</i>	<i>% of Hours</i>	<i>Hours</i>	<i>% of Hours</i>
NP15	NW	532	18%	468	29%	96	3%	88	4%
NP15	SP15	241	8%	122	7%	1,125	30%	403	20%
SP15	LA/IID	6	0%	4	0%	31	1%	13	1%
SP15	NW3	287	10%	267	16%	793	21%	500	24%
SP15	SW	673	23%	457	28%	253	7%	67	3%

		Oct 2, 2000 - Jan 18, 2001				Jan 19, 2001 - Jun 19, 2001			
		All Hours		Peak Hours		All Hours		Peak Hours	
<i>Congestion Between Points</i>		<i>Hours</i>	<i>% of Hours</i>	<i>Hours</i>	<i>% of Hours</i>	<i>Hours</i>	<i>% of Hours</i>	<i>Hours</i>	<i>% of Hours</i>
NP15	NW	217	8%	132	9%	173	5%	70	3%
NP15	SP15	1,525	59%	629	44%	1,601	44%	865	42%
SP15	LA/IID	56	2%	33	2%	102	3%	92	4%
SP15	NW3	890	34%	302	21%	1,346	37%	619	30%
SP15	SW	611	24%	308	21%	135	4%	48	2%

Sources and Notes:

- [1]: Source is response to Data Request CA-ISO-14.
- [2]: The Area / Zone combination NP15 / SP15 represents congestion of Path 15.
- [3]: The Area / Zone combination SP15 / NW3 represents congestion on NOB.
- [4]: Congestion Between NP15 and NW represents congestion between NP15 and ISO Control Zones NW1, NW2, and SR2.

Figure III-1
NP-15 Absolute Price Differentials (Peak Strips)
Period A: 3/15/99 - 4/30/00

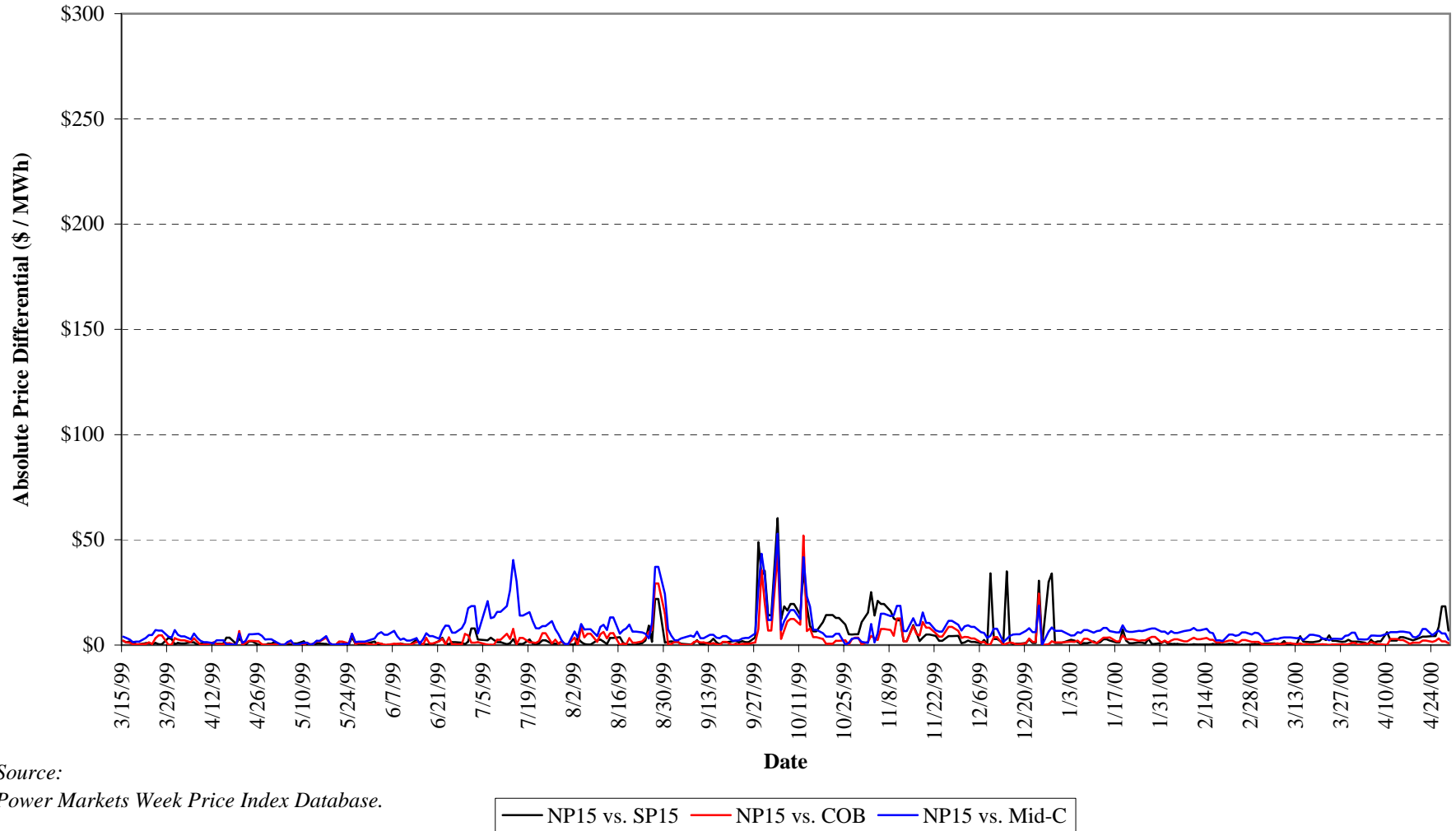
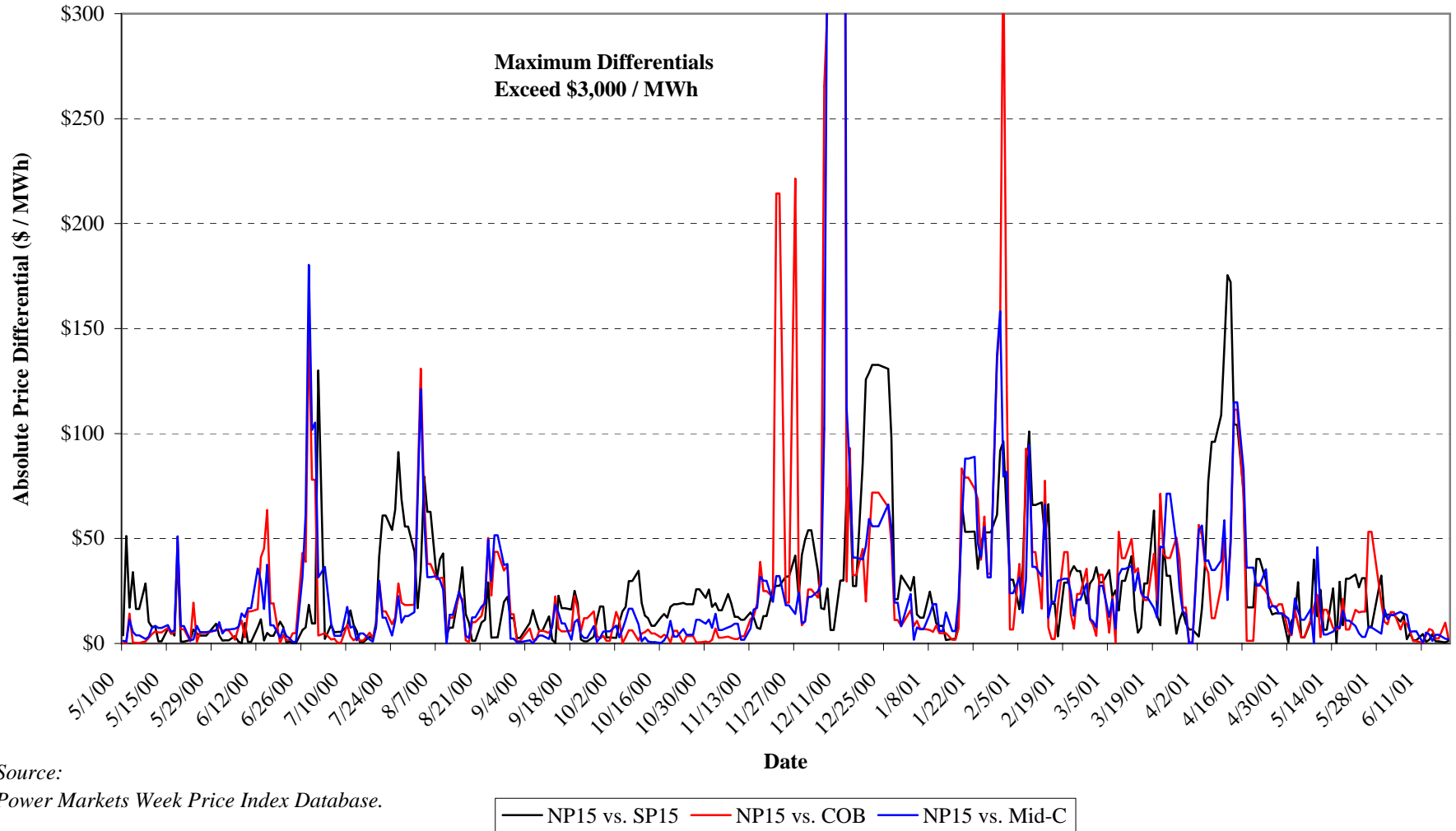
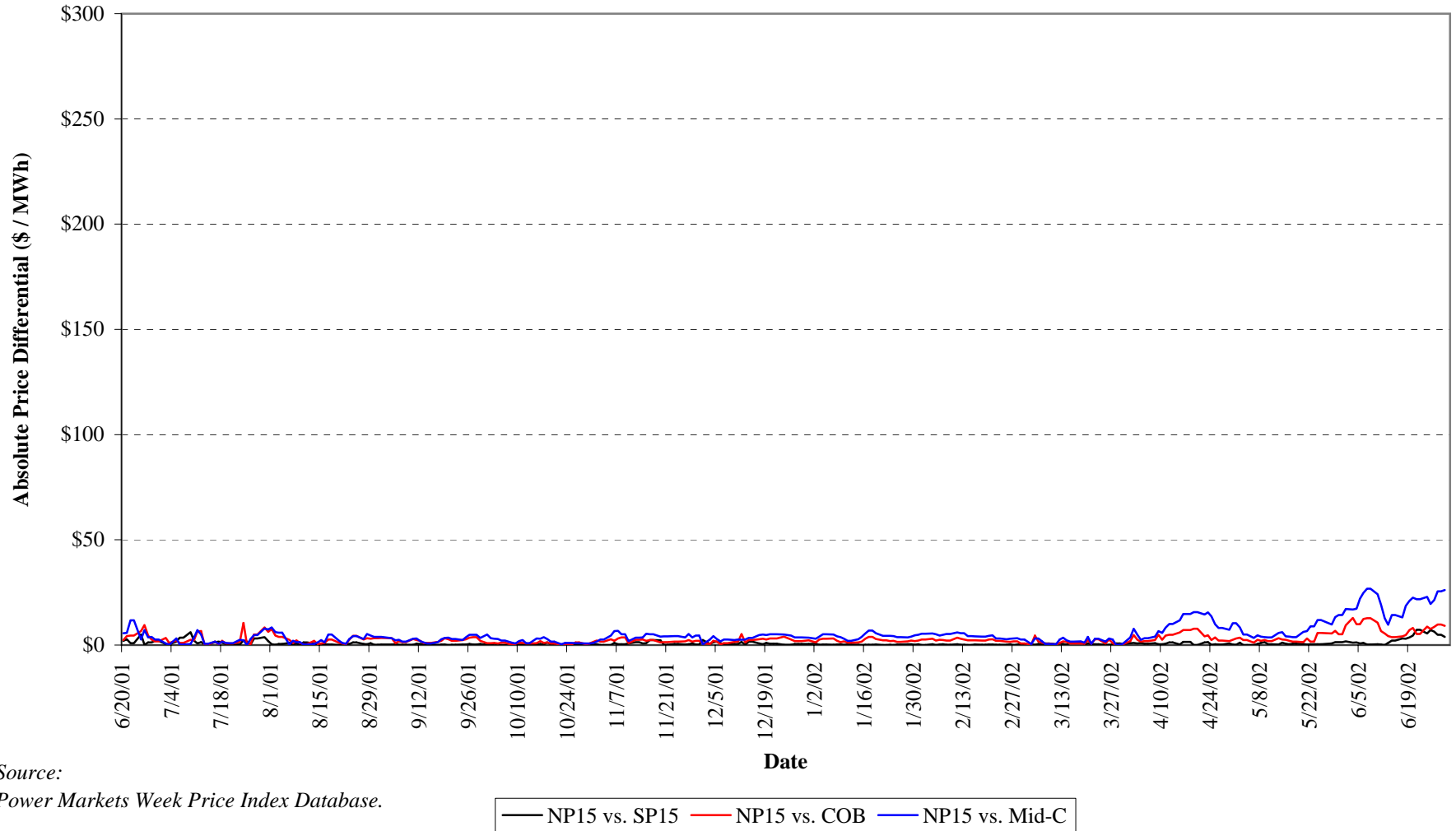


Figure III-2
NP-15 Absolute Price Differentials (Peak Strips)
 Period B: 5/1/00 - 6/19/01



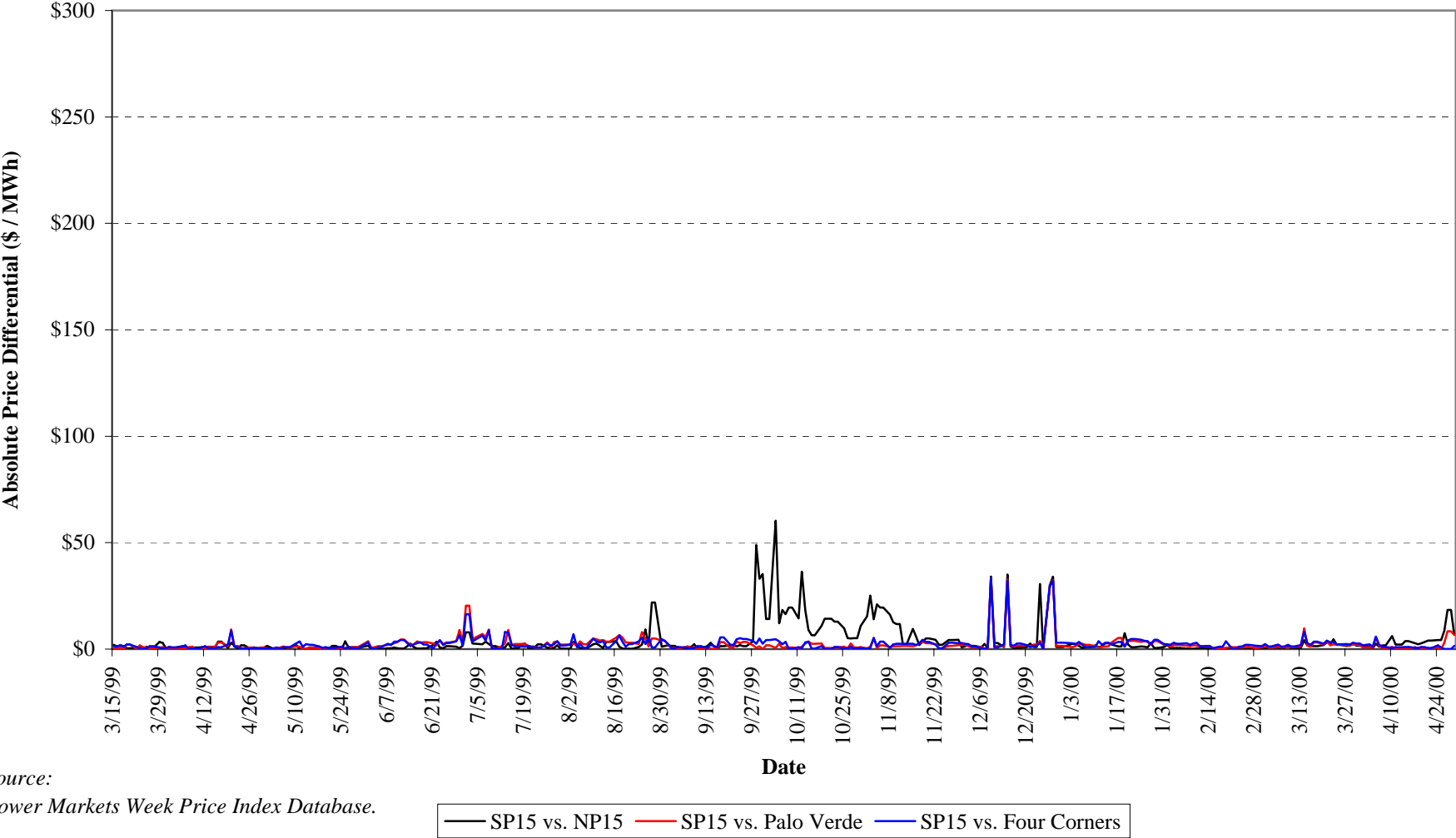
Source:
 Power Markets Week Price Index Database.

Figure III-3
NP-15 Absolute Price Differentials (Peak Strips)
 Period C: 6/20/01 - 6/30/02



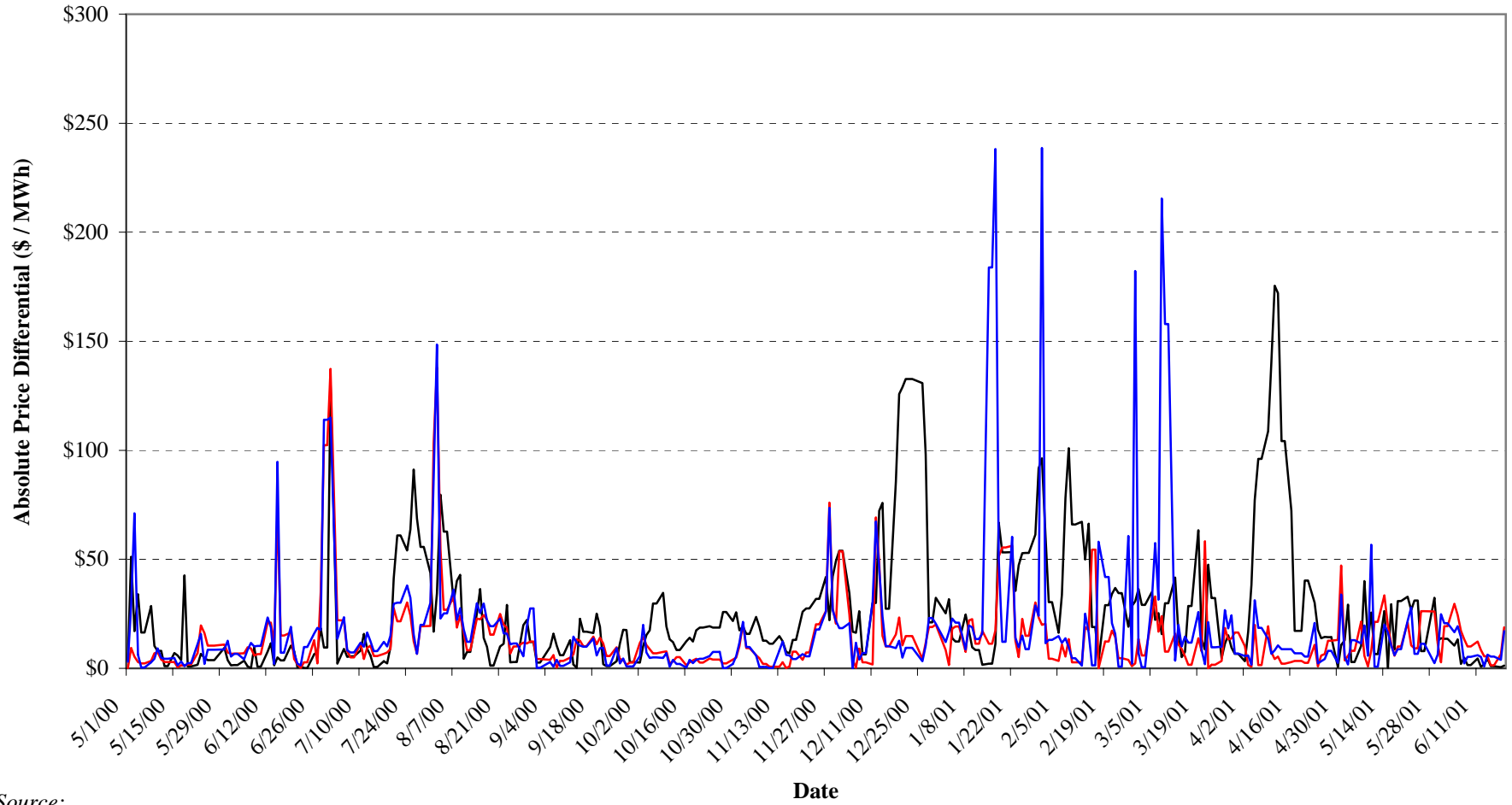
Source:
 Power Markets Week Price Index Database.

Figure III-4
SP-15 Absolute Price Differentials (Peak Strips)
Period A: 3/15/99 - 4/30/00



Source:
Power Markets Week Price Index Database.

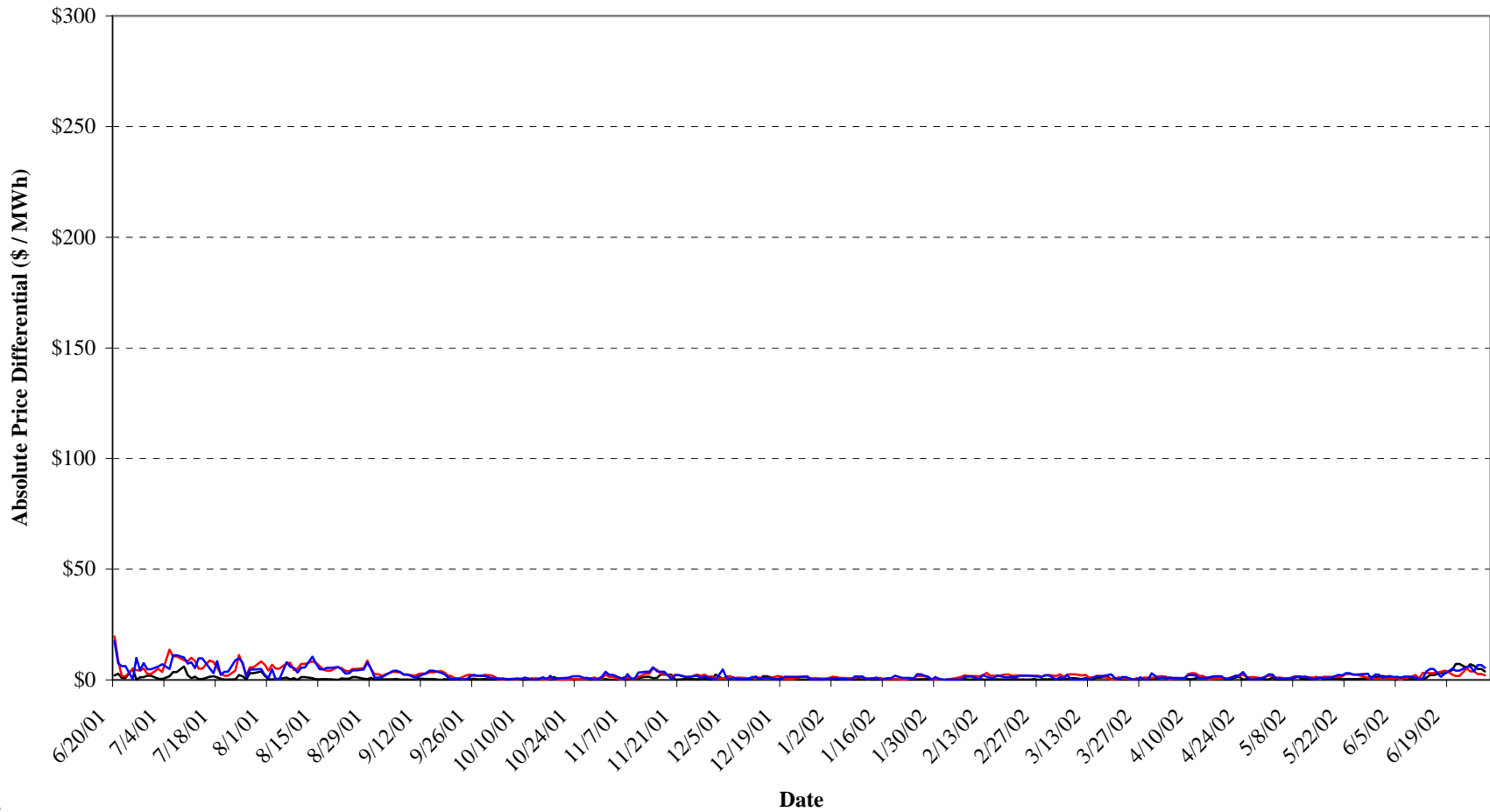
Figure III-5
SP-15 Absolute Price Differentials (Peak Strips)
 Period B: 5/1/00 - 6/19/01



Source:
 Power Markets Week Price Index Database.

— SP15 vs. NP15 — SP15 vs. Palo Verde — SP15 vs. Four Corners

Figure III-6
SP-15 Absolute Price Differentials (Peak Strips)
Period C: 6/20/01 - 6/30/02



Source:
Power Markets Week Price Index Database.

— SP15 vs. NP15 — SP15 vs. Palo Verde — SP15 vs. Four Corners

Figure III-7
NP-15 Absolute Price Differentials (Off-Peak Strips)
Period A: 3/15/99 - 4/30/00

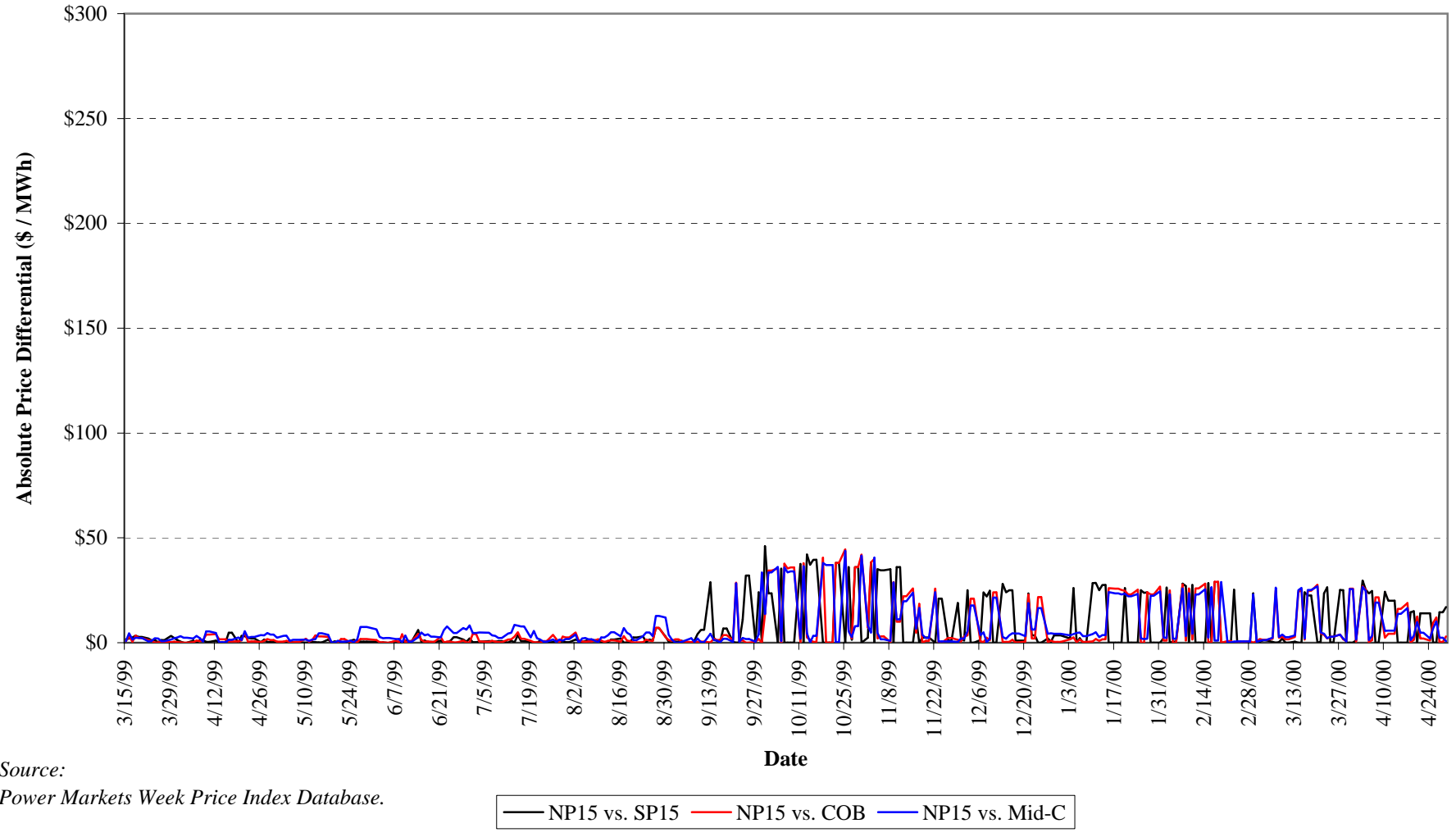
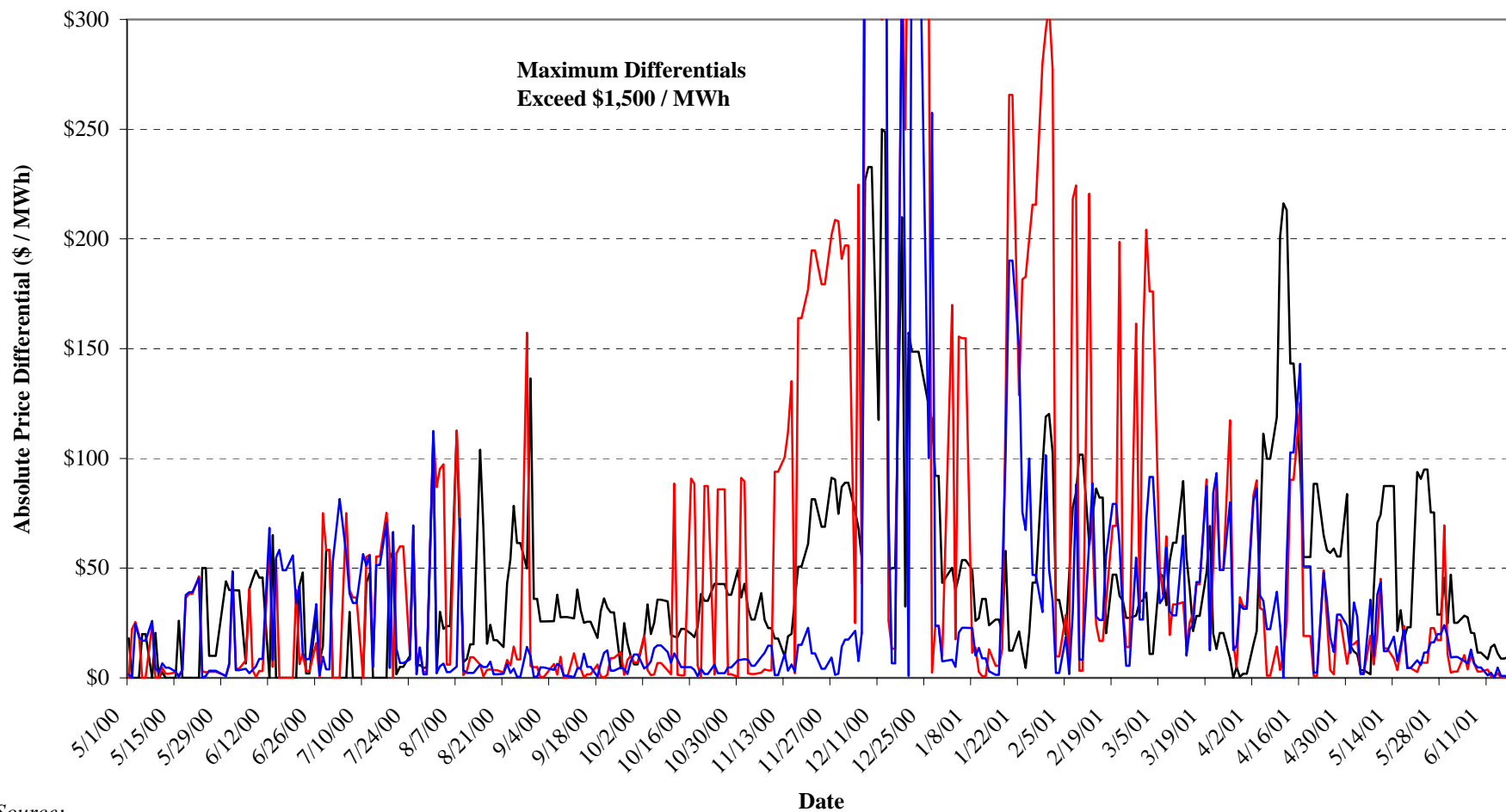
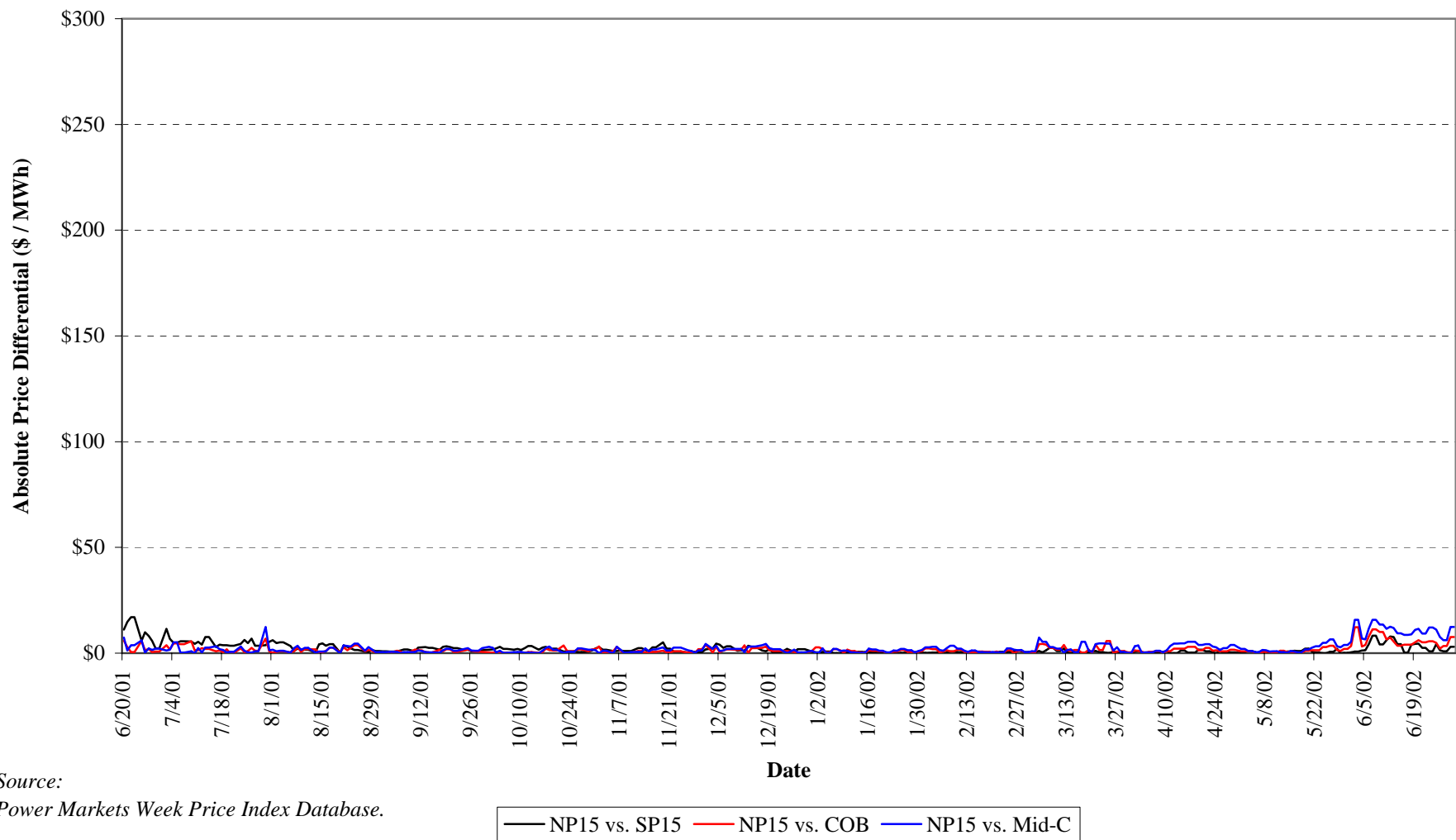


Figure III-8
NP-15 Absolute Price Differentials (Off-Peak Strips)
 Period B: 5/1/00 - 6/19/01



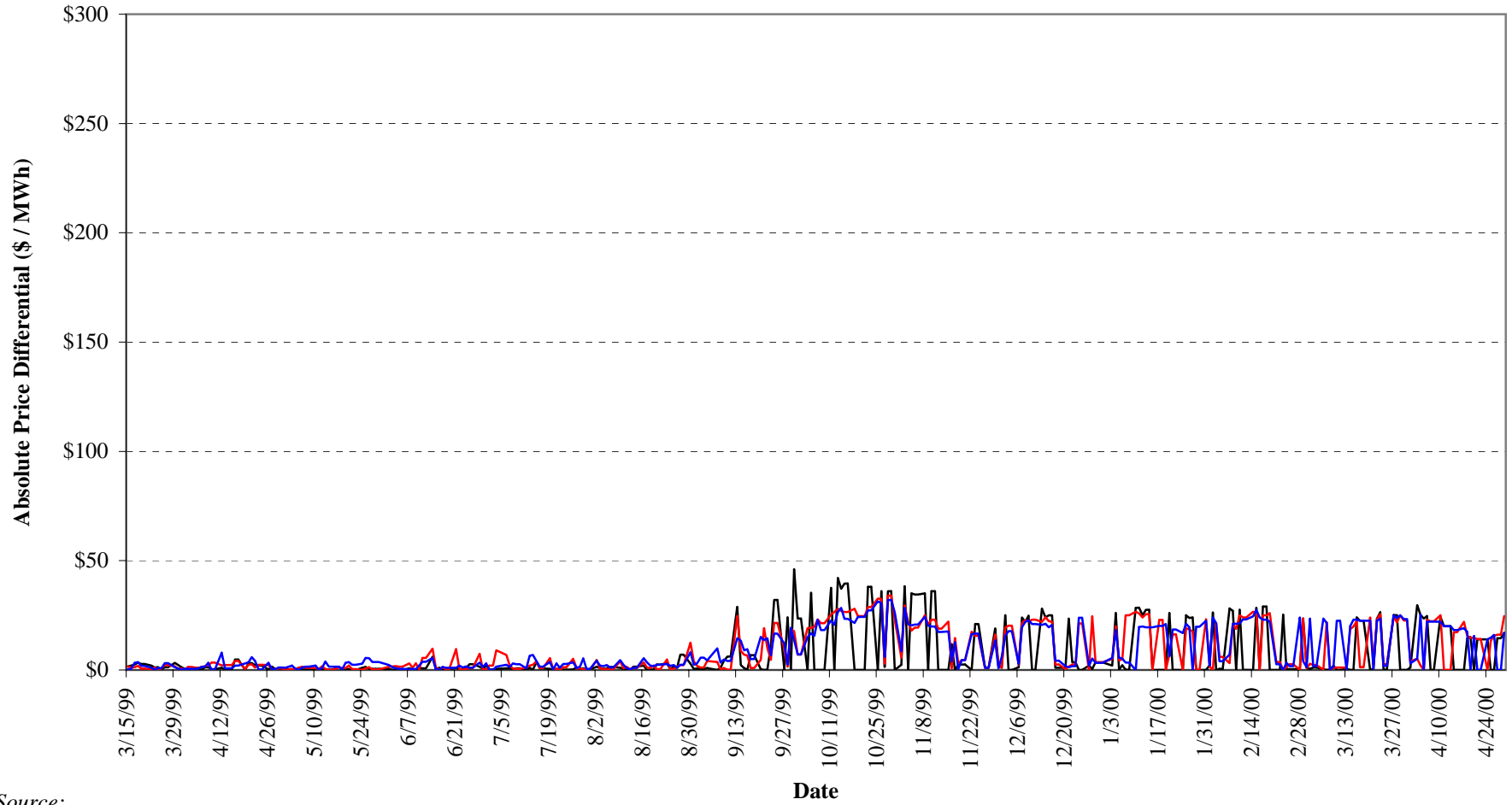
Source:
 Power Markets Week Price Index Database.

Figure III-9
NP-15 Absolute Price Differentials (Off-Peak Strips)
 Period C: 6/20/01 - 6/30/02



Source:
 Power Markets Week Price Index Database.

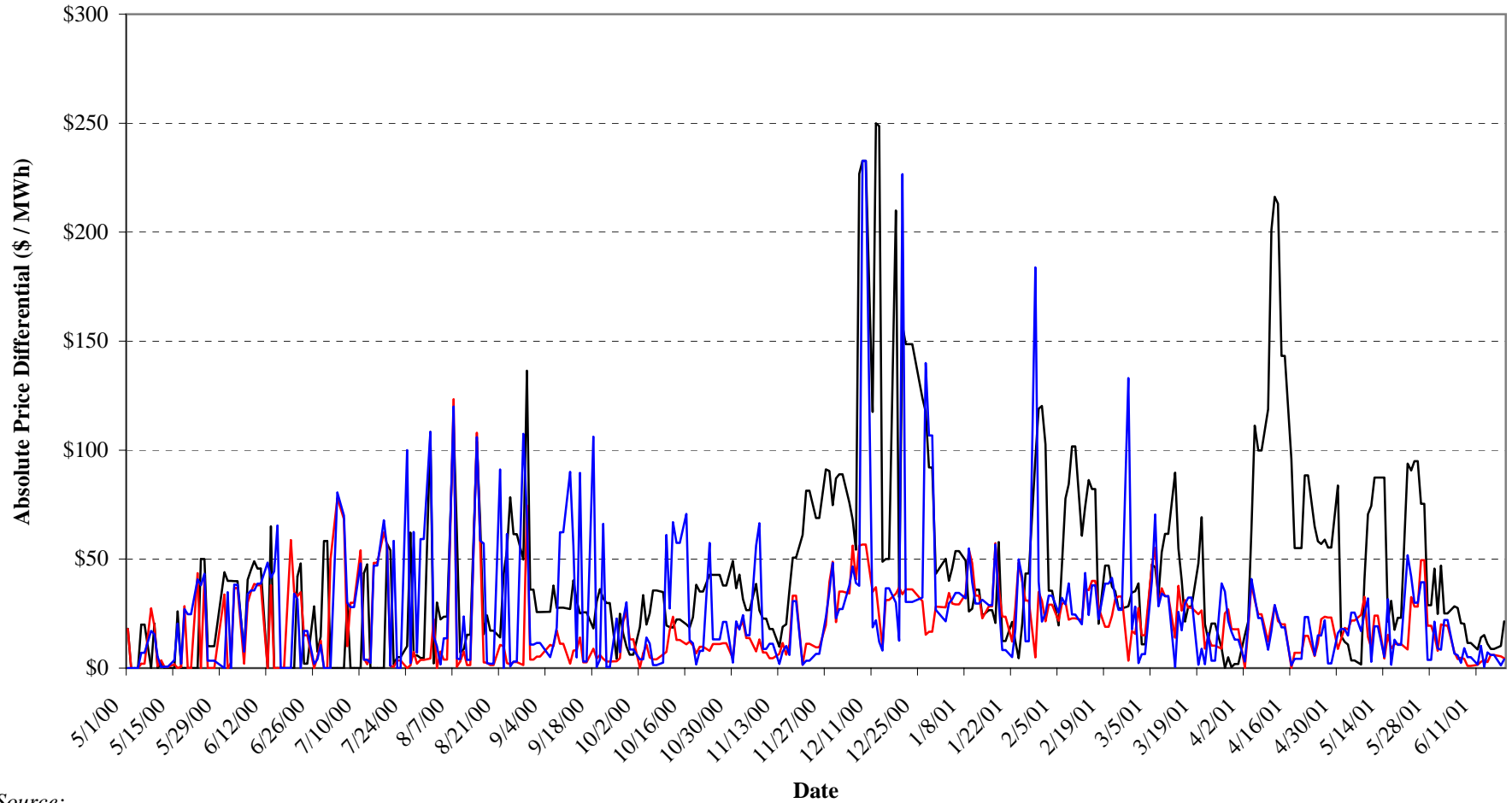
Figure III-10
SP-15 Absolute Price Differentials (Off-Peak Strips)
 Period A: 3/15/99 - 4/30/00



Source:
 Power Markets Week Price Index Database.

— SP15 vs. NP15 — SP15 vs. Palo Verde — SP15 vs. Four Corners

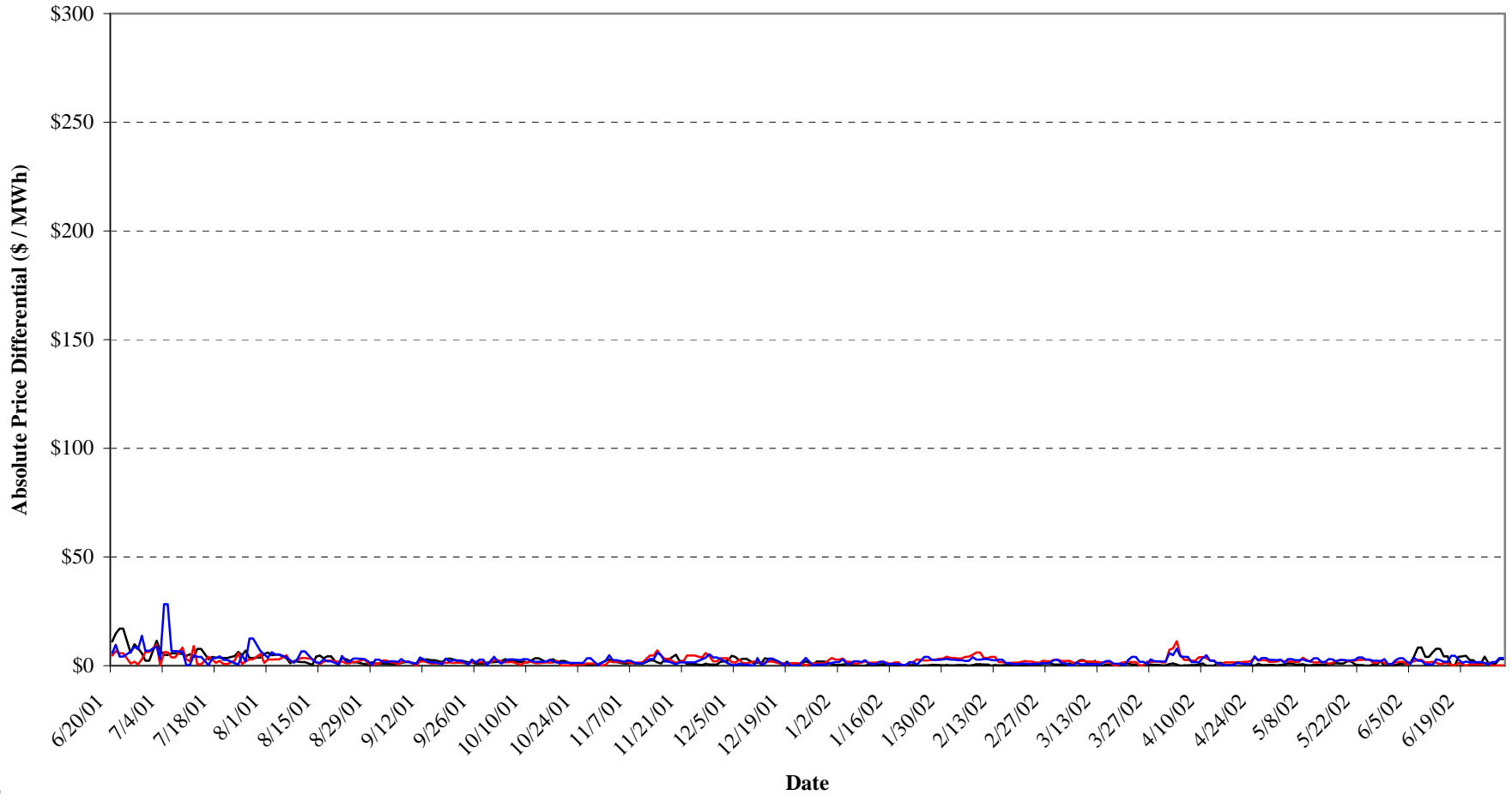
Figure III-11
SP-15 Absolute Price Differentials (Off-Peak Strips)
 Period B: 5/1/00 - 6/19/01



Source:
 Power Markets Week Price Index Database.

— SP15 vs. NP15 — SP15 vs. Palo Verde — SP15 vs. Four Corners

Figure III-12
SP-15 Absolute Price Differentials (Off-Peak Strips)
Period C: 6/20/01 - 6/30/02



Source:
Power Markets Week Price Index Database.

— SP15 vs. NP15 — SP15 vs. Palo Verde — SP15 vs. Four Corners

**Table I-1 (Amended)
(Replacing Table I-1 in Exh. No. CA-2 at 167-168)
Scheduling of False Load
Average Metered and Scheduled Load (MW) during On-Peak Hours
by Period for the Most Active Schedule Coordinators**

<i>Schedule Coordinator</i>	January 1, 2000 - April 30, 2000				
	<i>Average Metered Load</i>	<i>Average Scheduled Load</i>	<i>Difference</i>	<i>Number of Hours with False Load</i>	<i>Percent of Hours with False Load</i>
	[1]	[2]	[3]	[4]	[5]
Southern Company Energy Marketing, L.P.	0	94	94	549	53.72%
ENRON Power Marketing, Inc.	538	724	187	874	53.55%
PG&E Energy Services Corporation	465	616	150	786	48.16%
California Polar Power Brokers, L.L.C.	1	124	124	1134	77.88%
NewEnergy Inc.	700	803	103	443	37.93%
Sempra Energy Trading Corporation	35	136	101	1052	64.46%
Idaho Power Company	11	26	15	564	34.90%
Salt River Project	461	535	75	546	33.46%

<i>Schedule Coordinator</i>	May 1, 2000 - October 1, 2000				
	<i>Average Metered Load</i>	<i>Average Scheduled Load</i>	<i>Difference</i>	<i>Number of Hours with False Load</i>	<i>Percent of Hours with False Load</i>
	[1]	[2]	[3]	[4]	[5]
Southern Company Energy Marketing, L.P.	0	217	217	1216	63.17%
City of Riverside	272	347	74	585	28.34%
ENRON Power Marketing, Inc.	919	1,330	411	1898	91.96%
British Columbia Power Exchange Corporation	255	613	358	1255	60.80%
Hafslund Energy Trading L.L.C.	0	223	223	674	48.98%
Sempra Energy Trading Corporation	46	231	184	1473	71.57%
California Polar Power Brokers, L.L.C.	0	162	162	426	21.65%
PG&E Energy Trading Power, L.P.	0	155	155	1131	77.68%
Coral Power, L.L.C.	33	124	91	647	39.02%

<i>Schedule Coordinator</i>	October 2, 2000 - January 17, 2001				
	<i>Average Metered Load</i>	<i>Average Scheduled Load</i>	<i>Difference</i>	<i>Number of Hours with False Load</i>	<i>Percent of Hours with False Load</i>
	[1]	[2]	[3]	[4]	[5]
Southern Company Energy Marketing, L.P.	0	242	242	716	61.56%
Dynegy/Electric Clearinghouse	48	141	93	472	32.78%
British Columbia Power Exchange Corporation	212	720	508	736	51.11%
ENRON Power Marketing, Inc.	948	1,368	420	1077	74.79%
Sempra Energy Trading Corporation	0	262	262	746	75.35%
Hafslund Energy Trading L.L.C.	0	232	232	418	56.79%
PG&E Energy Trading Power, L.P.	0	230	230	710	75.53%
Coral Power, L.L.C.	16	71	55	658	45.69%
Salt River Project	539	613	75	379	26.32%
Northern California Power Agency	36	103	68	356	24.72%

Notes:

- [1] Average hourly MW of metered load during hours in which SC scheduled false load. Source: Response to CAL-ISO-28.
- [2] Average hourly MW of scheduled load during hours in which SC scheduled false load. Source: Response to CAL-ISO-4.
- [3] [2] - [1]
- [4] Number of hours false load was scheduled.
- [5] [4] as a proportion of hours in which either scheduled or metered load were greater than zero.

A scheduling coordinator was considered to have scheduled false load in an hour if scheduled load exceeded metered load by at least 50 MW or if scheduled load was at least twice metered load and scheduled load was greater than 10 MW.

Scheduling coordinators listed above scheduled false load in at least 20% of the on-peak hours during which they had either positive scheduled or metered load.