Index of Relevant Material

Submitter (Party Name)	City of Seattle, Washington
Index Exh. No.	SEA-37
Privileged Info (Yes/No)	No
Document Title	Prepared Rebuttal Testimony of Robert McCullough
Document Author	Robert McCullough
Doc. Date (mm/dd/yyyy)	03/20/2003
Specific finding made or proposed	No new finding of fact is proposed. Seattle is rebutting the arguments in the brief filed by Powerex Corp. on March 3, 2003.
Time period at issue	a) before 10/2000 b) between 10/2000 and 6/2001 c) after 6/2001
Docket No(s). and case(s) finding pertains to	EL01-10. et al. EL00-95, et al. EL00-98, et al.
Indicate if Material is New or from the Existing Record (include references to record material)	New
Explanation of what the evidence purports to show	By means of comparison between the load/resource conditions in the WECC and California in 1994 and 2000, 2001, this evidence shows that the price increases in 2000 and 2001 in the WECC and California markets must be attributed to factors other than: (1) low energy reserves; (2) low capacity; or (3) a significant increase in peak loads. The evidence therefore shows that the dramatic price increases that occurred during the period May 2000 to June 2001 cannot be explained by a supply and demand imbalance caused by a hydroelectric power shortage coupled with increased demand.
Party/Parties performing any alleged manipulation	N/A

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Puget Sound Energy, Inc.,	)	
	)	
Complainant,	)	
	)	**Docket Nos. EL01-10-000, *et al*.**
v.	)	
	)	
All Jurisdictional Sellers of Energy and/or Capacity at Wholesale Into Electric Energy and/or Capacity Markets in the Pacific Northwest, Including Parties to the Western Systems Power Pool Agreement,	)	
Respondents.		

PREPARED REBUTTAL TESTIMONY OF ROBERT MCCULLOUGH ON BEHALF OF THE CITY OF SEATTLE, WASHINGTON

MARCH 20, 2003

Q: Please provide your name and address.

A: I am Robert McCullough, Managing Partner of McCullough Research, 6123 S.E. Reed College Place, Portland, Oregon 97202.

Q: Can you briefly summarize your qualifications?

A: My full qualifications were included in the testimony and exhibits I submitted in this proceeding on March 3, 2003 (*see* Exhibit SEATAC-401). Please refer to those materials for a detailed description of my qualifications.

Q: What is the purpose of your rebuttal testimony today?

A: My testimony rebuts the claims that Powerex Corp. set forth in the comments that it filed in this proceeding on March 3, 2003. In those comments, Powerex claims that there is no evidence in the record that supports findings other than the proposed findings recommended by Presiding Judge Cintron on September 24, 2001. The Presiding Judge proposed, in part, that the "parties have failed to show that market-based prices charged in the Pacific Northwest ("PNW") during the potential refund period were unjust and unreasonable"[1] and that instead the high prices in the West were caused in part by a supply/demand imbalance during the period May 2000 through June 2001, which in turn was caused in part by unusually warm weather and a hydroelectric power shortage.

[1] *Puget Sound Energy, Inc.*, 96 FERC ¶ 63,044 at 65,387 (2001).

Q: Did you study the issue of supply/demand imbalance in California and the rest of the West during the period May 2000 through June 2001?

A: Yes.

Q: Could you please describe the data you reviewed during your study?

A: I looked at a variety of data sources. I began by examining the data collected by the Western Electricity Coordinating Council ("WECC"), which was previously known as the Western Systems Coordinating Council ("WSCC"), concerning actual loads and resources available to serve those loads for calendar years 2000 and 2001. I also reviewed the Council's data for 1994, which was a severe drought year, so I could make certain comparisons between 1994 and 2000 as well as between 1994 and 2001.

In January of each year, the WECC publishes a report titled *WECC Summary of Estimated Loads and Resources*. That report collects and reports actual data on loads and resources for the prior year and estimated data on loads and resources for the following 10 years. In the late summer or early fall, the WECC also issues a 10-year coordinated plan summary titled *WECC 10-Year Coordinated Plan Summary – Planning and Operation for Electric System Reliability.* That report contains actual loads and resources for the prior year, summarized on a regional and subregional basis. That report reviews in detail the prospects for the coming 10 years.

Q: Please describe why the WECC collects that data.

A: The WECC is an organization that has had a detailed reliability planning process in place for the past 35 years. Reliability planning tests whether the balance between capacity

resources and capacity loads is sufficient. In the United States and Canada, reliability planning revolves around the operations of regional reliability organizations known as reliability councils. The western half of North America is the province of the WECC.

The whole idea of electric utility planning is based on providing sufficient capacity to meet customer needs in spite of warm (or cold) weather, hydroelectric variability, and plant or transmission outages. In order to deal with these risks, for many years the WECC has engaged in detailed planning, estimation of resources and loads, and collection of actual data. As a result, the question of whether or not there was a supply/demand imbalance in portions of 2000 and 2001 is not a matter of opinion, but can in fact be determined from the actual data collected by the WECC and published in its reports.

Q: Why is the WECC's reliability planning focused on capacity?

A: Capacity reflects the ability of each resource to meet peak loads in a reliable fashion. WECC rules make it clear that the reported capacity for each unit is actual, not nameplate. Since it is difficult to add capacity to the electric system and firm loads tend to be price-insensitive in the short run, periods when peak loads exceed capacity would lead to brownouts and, possibly, a system collapse.

There is no all-purpose reserve margin that would in all situations avoid the problems mentioned above, but the old engineering rule of thumb was five percent plus the single largest contingency. In the WECC, this would be approximately 10 percent, if the single largest contingency was assumed to be the California Oregon Intertie (4,300 megawatts). As a general rule, reserve margins before forced outages in the 15 percent range are

regarded as more than sufficient. A reserve margin after forced outages of 15 percent is considered excellent.

Q: Does the WECC consider hydroelectric variability in its reliability planning process?

A: Yes. WECC planning specifically assumes adverse hydro conditions, with capacity estimates based on a drought scenario. This is why all forecasts of future load/resource conditions by the WECC bear the legend "Adverse Hydro Conditions."

The methodology for rating capacity for the region's resources is set out in a policy that has been in place since June 20, 1974.[2] The important reason why participants in this debate should review the basic WECC documents is that the ratings for hydroelectric resources in those documents are made at adverse water – in other words, the capacity valuation already assumes drought.

Q: What other materials and data did you examine as part of your study?

A: In addition to the data on actual loads and resources that the WECC collected for 1994, 2000, and 2001, I examined the following data: (1) the actual reserve margins in California and the WECC in 1994 and 2000, including hydroelectric generation in the WECC in 1994 and 2000; (2) the forecasted and actual peak loads, looking closely at the California/Mexico subregion peak loads for 1993-2001; (3) information regarding the

[2] Western Electricity Coordinating Council Criteria for Uniform Reporting Of Generator Ratings, Approved June 20, 1974.

system operating conditions in the WECC in 1994 and 2000; and (4) the California and WECC reserve margins for the period 1993 to 2000.

Q: Based on your study, do you agree with Presiding Judge Cintron's proposed finding that the dramatic price increases experienced in the period of May 2000 to June 2001 in the PNW markets were caused in part by a supply/demand imbalance or capacity shortage coupled with higher than expected peak loads?

A: No. By any standard, the actual data on loads and resources that the WECC collected demonstrates that there was no region-wide capacity shortage during the period May 2000 to June 2001.

Q: Can you please explain your answer?

A: I have reproduced below, as Figures RM-1 and RM-2, the data collected by the WECC on actual loads and resources for 2000 and 2001. The data for 2000 is taken from the WECC report titled *Summary of Estimated Loads and Resources, Data as of January 1, 2001*, while the data for 2001 is taken from the WECC report titled *Summary of Estimated Loads and Resources, Data as of January 1, 2002*.

FIGURE RM-1

WESTERN SYSTEMS COORDINATING COUNCIL
SUMMARY OF ACTUAL LOADS AND RESOURCES
TOTAL WSCC REGION

ACTUAL YEAR 2000
ACTUAL HYDRO CONDITIONS

PEAK DEMAND - MEGAWATTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
LOADS - FIRM	110063	105410	104091	106299	115892	123799	129030	128696	121640	109886	109042	113525
INTERRUPTIBLE AND LOAD MGT	3779	3824	3800	3848	3957	3868	1862	2174	2214	4044	4065	2579
TOTAL LOAD	113842	109234	107891	110147	119849	127667	130892	130870	123854	113930	113107	116104
RESOURCES - HYDRO - CONVENTIONAL	59846	59474	59968	60390	60841	61404	61324	61140	61359	61213	60242	59927
HYDRO - PUMPED STORAGE	4426	4426	4426	4052	4052	4052	4052	4052	4052	4110	4426	4426
STEAM - COAL	36522	36522	36522	36522	36522	36503	36495	36495	36503	36522	36522	36522
STEAM - OIL	746	746	746	746	746	746	596	596	596	596	596	596
STEAM - GAS	23310	23310	23310	23303	23289	23280	23430	23430	23433	23456	23460	23460
NUCLEAR	9343	9343	9343	9343	9263	9263	9263	9263	9263	9263	9343	9343
COMBUSTION TURBINE	10594	10594	10568	10580	10342	10647	10673	10673	10771	10949	11164	11211
COMBINED CYCLE	7880	7873	8316	8192	8241	8371	8366	8364	8371	8569	8632	8708
GEOTHERMAL	2351	2351	2351	2319	2369	2419	2469	2469	2469	2501	2501	2501
INTERNAL COMBUSTION	272	272	272	273	273	273	281	281	281	280	288	288
OTHER	1771	1771	1771	1757	1751	1765	1766	1766	1766	1791	1791	1791
TOTAL RESOURCES	157061	156682	157593	157477	157689	158723	158715	158529	158864	159250	158965	158773
FORCED OUTAGES	3974	6363	5971	9888	8652	6892	5223	4613	4732	7864	7719	6335
INOPERABLE CAPABILITY	370	426	427	390	506	481	522	777	796	834	810	846
SCHEDULED MAINTENANCE	9056	10156	14337	16025	8891	7674	5045	7844	9705	12439	18309	13705
TOTAL UNAVAILABLE CAPABILITY	13400	16945	20735	26303	18049	15047	10790	13234	15233	21137	26838	20886
NET RESOURCES	143661	139737	136858	131174	139640	143676	147925	145295	143631	138113	132127	137887
FIRM/JOINT PART. IMPORTS - MAPP	-250	-320	-251	-146	-214	-415	-193	-488	-417	-603	-623	-630
SWPP	-225	-250	-250	-250	-300	-300	-290	-290	-290	-300	-200	-50
TOTAL IMPORT	-475	-570	-501	-396	-514	-715	-483	-778	-707	-903	-823	-680
FIRM/JOINT PART. EXPORTS - MAPP	0	0	1	58	51	56	31	12	0	2	2	1
TOTAL EXPORT	0	0	1	58	51	56	31	12	0	2	2	1
NET EXPORTS/IMPORTS	-475	-570	-500	-338	-463	-659	-452	-766	-707	-901	-821	-679
JOINT PARTICIPATION TRANSFERS	0	0	0	0	0	0	0	0	0	0	0	0
NET FIRM TRANSFERS*	-475	-570	-500	-338	-463	-659	-452	-766	-707	-901	-821	-679
NET RESOURCES AND NET TRANSFERS	144136	140307	137358	131512	140103	144335	148377	146061	144338	139014	132948	138566
MARGIN OVER FIRM LOAD - MW	34073	34897	33267	25213	24211	20536	19347	17365	22698	29128	23906	25041
MARGIN OVER FIRM LOAD - PERCENT	31.0	33.1	32.0	23.7	20.9	16.6	15.0	13.5	18.7	26.5	21.9	22.1

*NET EXPORTS/IMPORTS LESS JOINT PARTICIPATION TRANSFERS (MINUS SIGN INDICATES PURCHASE).
JOINT PARTICIPATION GENERATION IS INCLUDED BY TYPE UNDER "RESOURCES" IN EACH PARTICIPANT'S AREA.

FIGURE RM-2

WESTERN ELECTRICITY COORDINATING COUNCIL
SUMMARY OF ACTUAL LOADS AND RESOURCES
TOTAL WECC REGION

ACTUAL YEAR 2001
ACTUAL HYDRO CONDITIONS

PEAK DEMAND - MEGAWATTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
LOADS - FIRM	112506	110086	102906	104421	115715	119199	122501	123193	115235	113564	108803	112716
INTERRUPTIBLE AND LOAD MGT	1571	1084	1332	1336	529	1862	1877	1847	1883	1219	1297	1288
TOTAL LOAD	114077	111170	104238	105757	116244	121061	124378	125040	117118	114783	110100	114004
RESOURCES - HYDRO - CONVENTIONAL	57395	56879	56906	57176	57939	58230	56512	56153	55916	55678	55235	57460
HYDRO - PUMPED STORAGE	4386	4386	4386	4076	4076	4076	4076	4076	4076	4070	4386	4386
STEAM - COAL	36617	36617	36617	36617	36617	36598	36590	36590	36598	36617	36617	36636
STEAM - OIL	564	564	414	414	414	414	414	414	414	414	414	414
STEAM - GAS	23298	23298	23448	23441	23436	23526	23526	23526	23526	23544	23535	23617
NUCLEAR	9302	9302	9302	9302	9263	9263	9263	9263	9263	9263	9302	9302
COMBUSTION TURBINE	10358	10383	10361	10182	10401	10608	11279	11495	12085	12501	12686	13278
COMBINED CYCLE	10012	10005	9999	10037	9971	11793	13421	13419	13508	14313	14667	14781
GEOTHERMAL	2605	2605	2605	2618	2618	2618	2618	2618	2618	2605	2605	2605
INTERNAL COMBUSTION	261	261	261	261	261	261	261	297	297	297	297	315
OTHER	2964	2963	3014	3027	3075	3103	3122	3185	3258	3266	3267	3117
TOTAL RESOURCES	157762	157263	157313	157151	158071	160490	161082	161036	161559	162568	163011	165911
FORCED OUTAGES	5765	6475	7800	6674	8573	5463	8302	3452	5300	6387	9213	7878
INOPERABLE CAPABILITY	5038	4064	4015	5334	2772	2669	3463	4128	4668	3980	3823	3580
SCHEDULED MAINTENANCE	15297	12626	16605	18467	15462	8546	7297	7945	10664	15242	16929	16131
TOTAL UNAVAILABLE CAPABILITY	26100	23165	28420	30475	26807	16678	19062	15525	20632	25609	29965	27589
NET RESOURCES	131662	134098	128893	126676	131264	143812	142020	145511	140927	136959	133046	138322
FIRM/JOINT PART. IMPORTS - MAPP	-234	-129	-174	-174	-148	-193	-132	-157	-46	-88	-285	-143
SWPP	-303	-318	-303	-303	-200	-303	-153	-278	-303	-200	-303	-232
TOTAL IMPORT	-537	-447	-477	-477	-348	-496	-285	-435	-349	-288	-588	-375
FIRM/JOINT PART. EXPORTS - MAPP	45	40	34	35	36	33	50	48	62	33	39	118
TOTAL EXPORT	45	40	34	35	36	33	50	48	62	33	39	118
NET EXPORTS/IMPORTS	-492	-407	-443	-442	-312	-463	-235	-387	-287	-255	-549	-257
JOINT PARTICIPATION TRANSFERS	0	0	0	0	0	0	0	0	0	0	0	0
NET FIRM TRANSFERS*	-492	-407	-443	-442	-312	-463	-235	-387	-287	-255	-549	-257
NET RESOURCES AND NET TRANSFERS	132154	134505	129336	127118	131576	144275	142255	145898	141214	137214	133595	138579
MARGIN OVER FIRM LOAD - MW	19648	24419	26430	22697	15861	25076	19754	22705	25979	23650	24792	25863
MARGIN OVER FIRM LOAD - PERCENT	17.5	22.2	25.7	21.7	13.7	21.0	16.1	18.4	22.5	20.8	22.8	22.9

*NET EXPORTS/IMPORTS LESS JOINT PARTICIPATION TRANSFERS (MINUS SIGN INDICATES PURCHASE).
JOINT PARTICIPATION GENERATION IS INCLUDED BY TYPE UNDER "RESOURCES" IN EACH PARTICIPANT'S AREA.

As the WECC data in Figures RM-1 and RM-2 show, for the period May 2000 to June 2001, the reserve margin after forced outages for the entire WECC region was over 15 percent in every month, except the month of August 2000, when it was 13.5 percent, and the month of May 2001, when it was 13.7 percent. In every other month of that period, the reliability margin before forced outages always exceeded 15 percent. In short, the reserve margins during this period were well within the acceptable range, and resources were in fact available to serve both firm and interruptible loads.

Q: Were there higher than expected peak loads during this period?

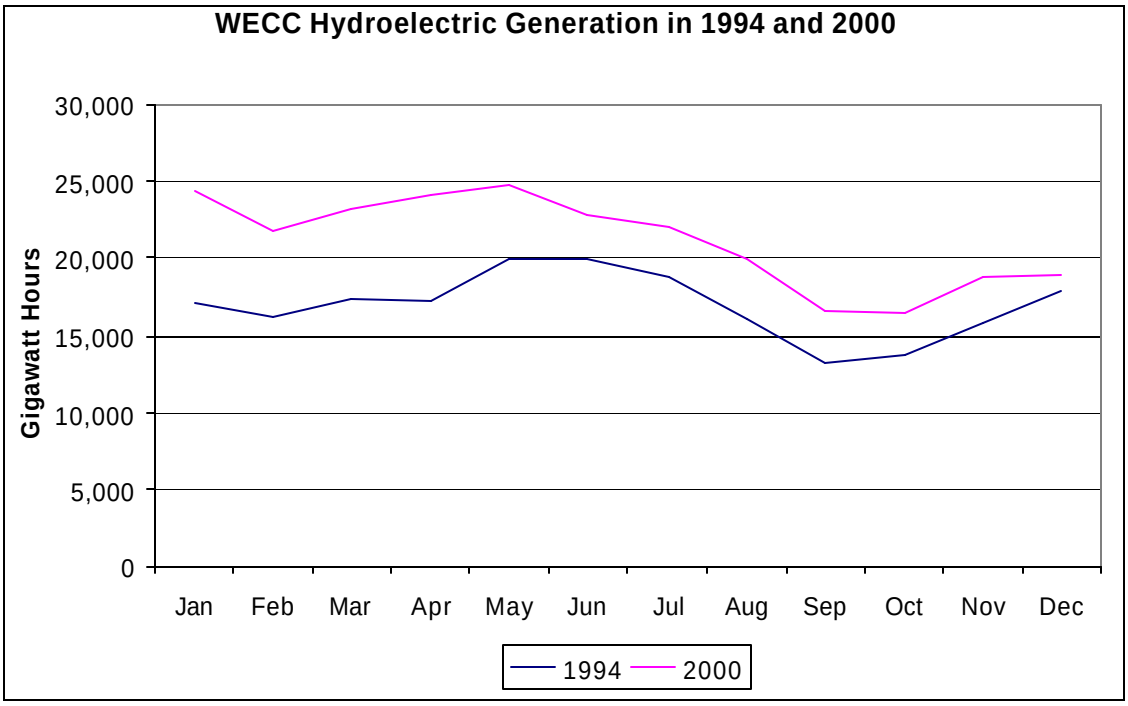
A: No. As shown by the data in Figures RM-1 and RM-2, overall peak loads were lower than forecast across the summer and winter peaks. The major change from forecast resulted from the massive level of outages throughout the forecast. Even given these outages, overall reserves during the system peaks were quite high.

Q: Was a hydroelectric power shortage a significant cause of the high prices in the PNW during this period?

A: No. Hydroelectric shortage was not a significant cause of the high prices in the PNW during the period May 2000 to June 2001. In Figure RM-3 below I have reproduced data collected by the Energy Information Administration and StatsCan that compare the hydroelectric generation in the WECC in 1994, which was a severe drought year, and

2000.[3] As Figure RM-3 shows, hydroelectric generation in the WECC region during 1994 was actually considerably lower than such generation in that region during 2000.

FIGURE RM-3



In addition, while reserve margins for the entire WECC region for 1994 and 2000 were roughly comparable, reserve margins within California were actually better in June 2000 than in June 1994. In Figures RM-4 and RM-5 below, I have reproduced data collected by the WECC. [4]

[3] United States Department of Energy, Energy Information Administration, Electric Power Monthly, Table 11 Electric Utility Hydroelectric Net Generation by Census Division and State, http://www.eia.doe.gov/cneaf/electricity/epm/matrix96_2000.html; and Stats Canada Table 127-0001 from http://cansim2.statcan.ca.

[4] Western Electricity Coordinating Council: Summary of Estimated Loads and Resources, Data as of January 1, 2002, and Western Electricity Coordinating Council: Summary of Estimated Loads and Resources, Data as of January 1995; Western Systems Coordinating Council: 10-Year Coordinated Plan Summary: 1995-2004, Table 3 WECC Actual Loads and Resources for 1994.

FIGURE RM-4

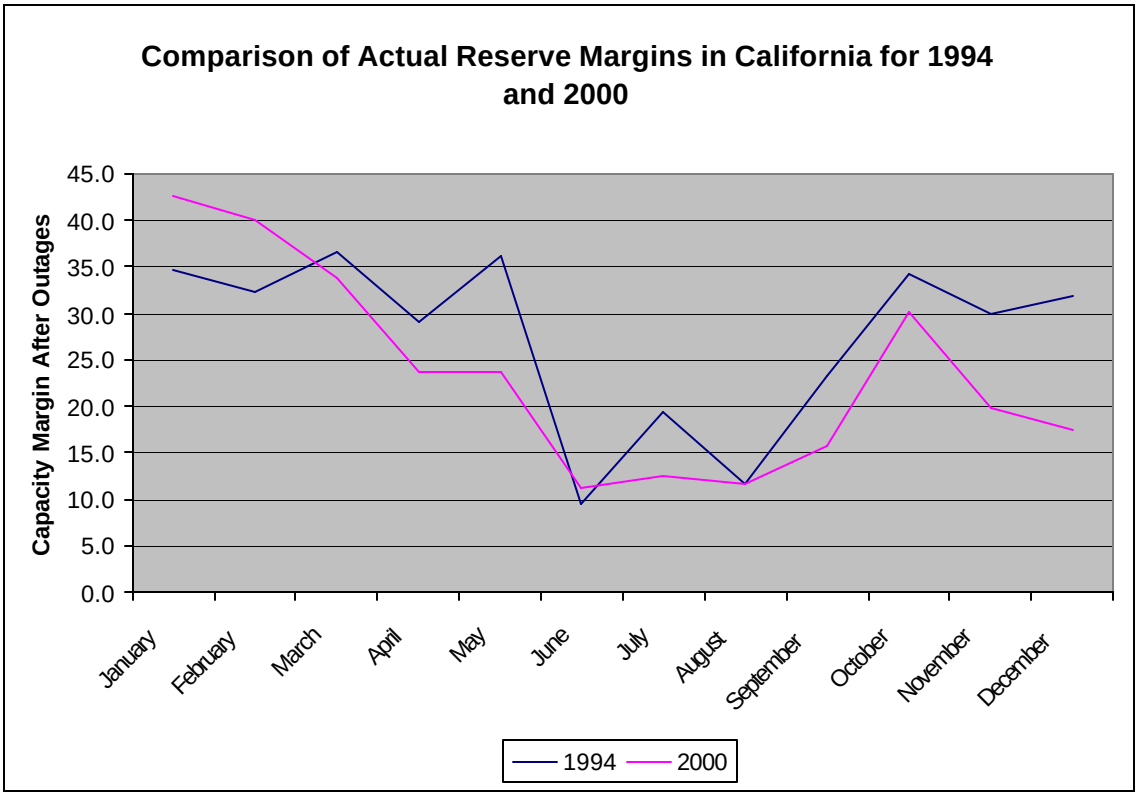
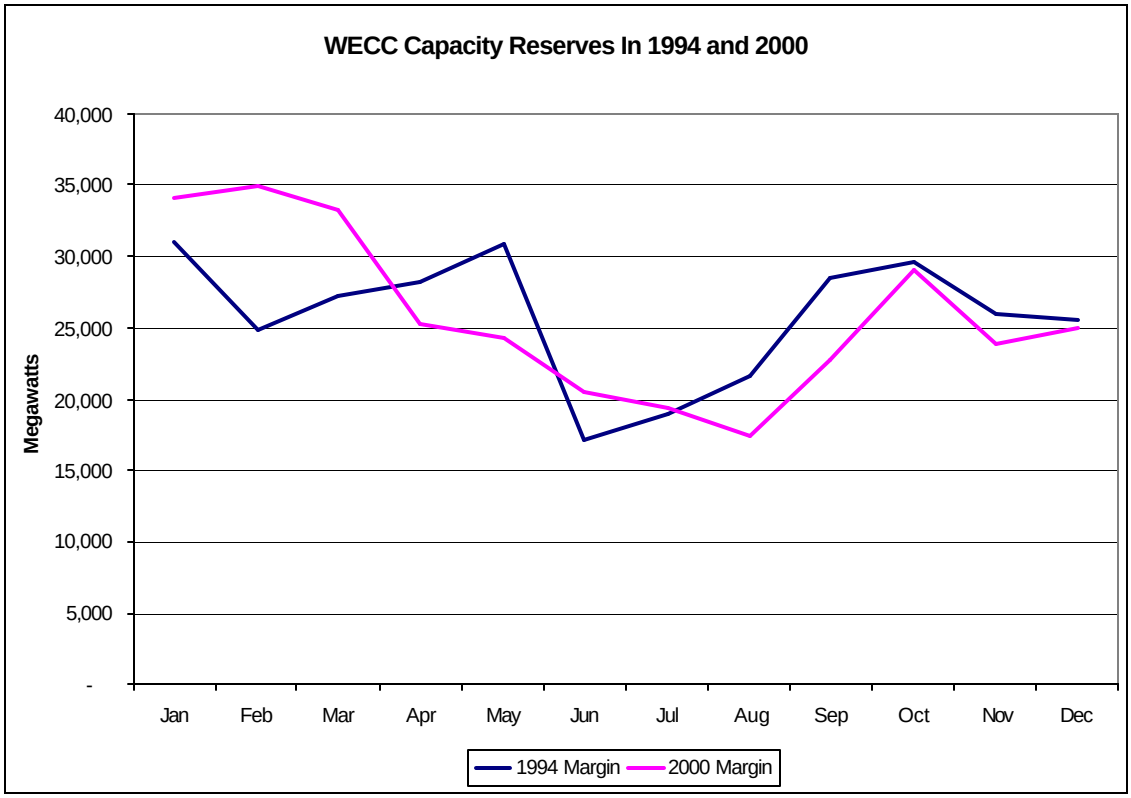


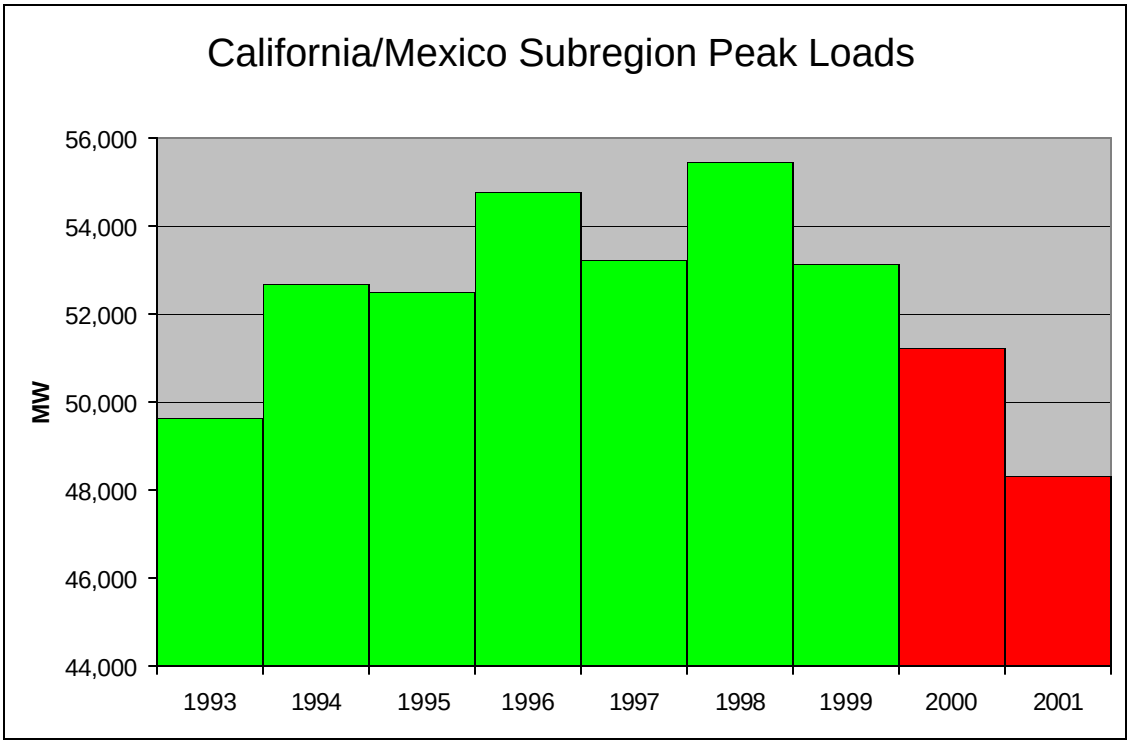
FIGURE RM-5



As shown by the data in those figures, the reserve margin for California, prior to outages, was 5,312 megawatts for June 2000 as opposed to only 4,773 megawatts for June 1994. As can also be seen in those figures, the reserve margin for California, after outages, was 9.5 percent in June 1994 versus 11.1 percent in June 2000. The capacity margin for the rest of the WECC was 15.4 percent in June 1994 versus 16.6 percent in June 2000.

In addition, as shown in Figure RM-6 below, which reproduces data collected by the WECC, peak loads in California were significantly lower in 2000 than in 1994.[5]

FIGURE RM-6



[5] Western Systems Coordinating Council: 10-Year Coordinated Plan Summaries: 1994-2001 (1993-2000).

Q: Based on your study, should emergency declarations have been necessary in California in 2000 and 2001?

A: No. The WECC data discussed above always show a level of reserves significantly above the loads that were served. California reserve margins were always higher than the levels that would have triggered an emergency declaration by the California ISO ("ISO").

Q: Were there any system emergencies called during 1994?

A: No. In Figure RM-7 below, I have reproduced the data collected by the WECC on actual loads and resources for the WECC region for 1994.

FIGURE RM-7

WESTERN SYSTEMS COORDINATING COUNCIL
SUMMARY OF ACTUAL LOADS AND RESOURCES

TOTAL WSCC REGION — ACTUAL YEAR 1994 ACTUAL HYDRO CONDITIONS

PEAK DEMAND - MEGAWATTS	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
LOADS - FIRM	100174	102422	93224	93183	93353	111516	109934	112812	104338	95948	102387	105844
INTERRUPTIBLE AND LOAD MGT	1501	1560	1631	1759	1699	3092	3128	3014	3023	1647	1726	1698
TOTAL LOAD	101675	103982	94855	94942	95052	114608	113062	115826	107361	97595	104113	107542
RESOURCES - HYDRO - CONVENTIONAL	56056	53846	53554	54406	57194	54945	52317	53046	52329	53818	52048	53867
HYDRO - PUMPED STORAGE	4048	4048	4248	3904	3896	3861	3860	3796	3733	3799	4048	4048
STEAM - COAL	35601	35601	35601	35601	35601	35556	35552	35552	35556	35962	35962	35962
STEAM - OIL	672	672	672	672	672	672	672	672	672	672	672	672
STEAM - GAS	23822	23822	23822	23815	23805	23827	23827	23827	23829	23854	23859	23859
NUCLEAR	9220	9220	9220	9220	9220	9220	9220	9220	9220	9220	9220	9220
COMBUSTION TURBINE	6304	6288	6236	6135	5887	5609	5743	5752	5858	6055	6266	6548
COMBINED CYCLE	3262	3257	3251	3234	3160	3376	3369	3369	3376	3416	3520	3526
GEOTHERMAL	3191	3191	3191	3167	3159	3159	3191	3191	3191	3215	3223	3223
INTERNAL COMBUSTION	262	262	262	256	259	259	263	263	263	266	266	266
COGENERATION	5697	5634	5402	5364	5881	6249	6233	6179	6280	6314	6292	6267
OTHER	1763	1753	1941	1878	2104	1813	1963	1936	1929	1731	1675	1761
TOTAL RESOURCES	149898	147594	147400	147652	150838	148546	146210	146803	146236	148322	147051	149219
FORCED OUTAGES	6465	7912	8213	6652	6895	5699	6973	4136	5437	6408	6260	7556
INOPERABLE CAPABILITY	354	292	285	293	271	241	116	90	99	81	80	80
SCHEDULED MAINTENANCE	12004	12253	18544	19452	19373	14047	10396	8231	7899	16296	12474	10258
TOTAL UNAVAILABLE CAPABILITY	18823	20457	27042	26397	26539	19987	17485	12457	13435	22785	18814	17894
NET RESOURCES	131075	127137	120358	121255	124299	128559	128725	134346	132801	125537	128237	131325
FIRM/JOINT PART. IMPORTS - MAPP	-235	-320	-220	-291	-75	-220	-355	-195	-120	-145	-286	-220
SWPP	-40	-40	-40	-40	-40	-40	-40	-40	-40	-40	-40	-40
TOTAL IMPORT	-275	-360	-260	-331	-115	-260	-395	-235	-160	-185	-326	-260
FIRM/JOINT PART. EXPORTS - CPE EAST	120	120	120	150	150	150	150	150	150	120	120	120
MAPP	23	24	22	22	28	33	35	35	34	37	37	40
TOTAL EXPORT	143	144	142	172	178	183	185	185	184	157	157	160
NET EXPORTS/IMPORTS	-132	-216	-118	-159	63	-77	-210	-50	24	-28	-169	-100
JOINT PARTICIPATION TRANSFERS	0	0	0	0	0	0	0	0	0	0	0	0
NET FIRM TRANSFERS*	-132	-216	-118	-159	63	-77	-210	-50	24	-28	-169	-100
NET RESOURCES AND NET TRANSFERS	131207	127353	120476	121414	124236	128636	128935	134396	132777	125565	128406	131425
MARGIN OVER FIRM LOAD - MW	31033	24931	27252	28231	30883	17120	19001	21584	28439	29617	26019	25581
MARGIN OVER FIRM LOAD - PERCENT	31.0	24.3	29.2	30.3	33.1	15.4	17.3	19.1	27.3	30.9	25.4	24.2

*NET EXPORTS/IMPORTS LESS JOINT PARTICIPATION TRANSFERS (MINUS SIGN INDICATES PURCHASE).
JOINT PARTICIPATION GENERATION IS INCLUDED BY TYPE UNDER "RESOURCES" IN EACH PARTICIPANT'S AREA.

As can be seen by the data in Figure RM-7, in 1994 California and WECC reserve margins stayed above levels that would have constituted an emergency, even though they were lower than the levels observed in 2000, thanks to traditional utility reliability planning methods.

Q: Why did you choose to study 1994 as well as 2000-2001?

A: As I mentioned earlier in my testimony, 1994 was a severe drought year in the WECC. If, as suggested by the Presiding Judge, a hydroelectric power shortage coupled with higher than normal demand was a substantial cause of the increase in prices in the West during the crisis, load/resource conditions in 2000-2001 should have been significantly worse than in 1994.

Q: Did you find this to be the case?

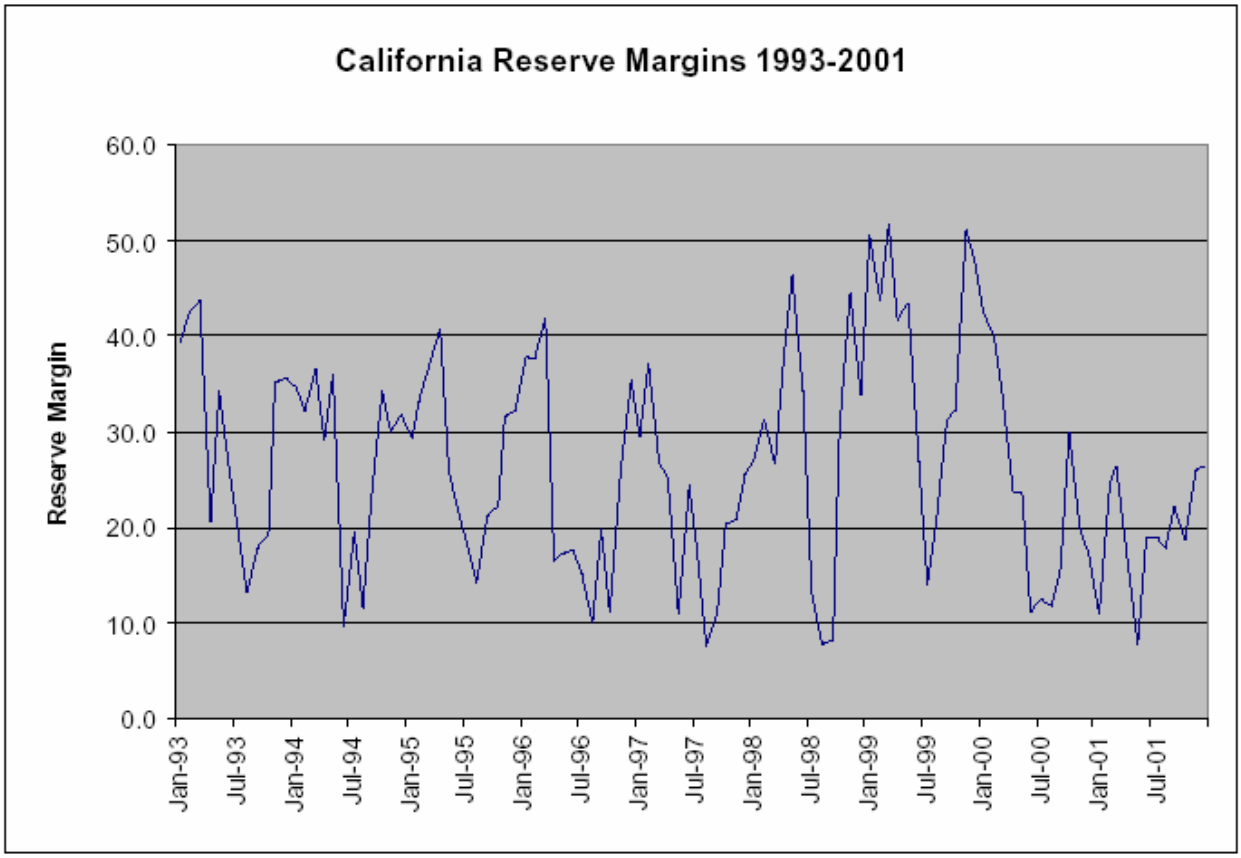
A: No. California and the rest of WECC had lower reserve margins in 1994, when hydroelectric generation was much lower than it was in 2000. In addition, peak loads in California and the WECC were lower in 2000 than in 1994. This comparison of data for 1994 and 2000 suggests to me that the price increases experienced in 2000 in the PNW were not caused by a supply shortage coupled with an increase in demand. Nonetheless, the ISO declared emergencies on 55 days in 2000 while considerably worse conditions did not cause significant problems in 1994.

Q: Is there any other data that supports this conclusion?

A: Yes. I studied information regarding the system operating conditions in the WECC in 1994 and 2000 and California's and the WECC's actual load/resource balance from 1993

to 2001. This data was compiled by the WECC and is reproduced in Figure RM-8, below.[6]

FIGURE RM-8



Q: How did system operating conditions in the WECC in 1994 compare with those in 2000?

A: The system operating conditions in the WECC in 1994 were vastly worse than in 2000. Operations within the WECC were challenged by a major earthquake that put the DC intertie out of service for a substantial portion of the year. At 4:30 a.m. on January

[6] Western Electricity Coordinating Council: Summaries of Estimated Loads and Resources: 1994-2002.

17, 1994, a 6.6 Richter scale earthquake hit near the Sylmar converter station for the DC intertie from California to Oregon. The southern terminus of the DC intertie was extensively damaged. Repairs to the DC intertie took more than a year. DC capacity was reduced to zero during the earthquake and returned to full operation only at the end of 1995.[7]

Q: Has California's or the WECC's actual load/resource balance changed over the past decade?

A: Yes, but far less than would be necessary to explain the dramatic price increases experienced during the crisis. While the years prior to 1998 are not completely comparable (the WECC changed the definition of California from California and Southern Nevada in 1998), Figure RM-8 clearly shows that the actual reserve margins in the state have not changed markedly over this period.

Q: What do you conclude from the above data and materials you have examined?

A: I conclude that the price increases in 2000 and 2001 in the WECC and California must be attributed to something other than low reserves, low capacity, or a significant increase in peak loads since 1994. In short, neither increased load nor the weather explains the stunning price increases that occurred during the period May 2000 to June 2001 before price caps were imposed by the Commission.

[7] *Key Electric Transmission Line Re-Opens In Western U.S.*, DOW JONES, Nov. 29, 1995; *Extra L.A. Earthquake Wreaks Havoc on Western Electric Power Grid*, ELECTRIC UTILITY WEEK, Jan. 18, 1994.

Q: Does this conclude your rebuttal testimony?

A: Yes.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Puget Sound Energy, Inc.	)	
	)	
Complainant.	)	
	)	**Docket Nos. EL01-10-000, *et al.***
v.	)	
	)	
All Jurisdictional Sellers of Energy and/or Capacity at Wholesale Into Electric Energy and/or Capacity Markets in the Pacific Northwest, Including Parties to the Western Systems Power Pool Agreement,	)	
Respondents.		

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information and belief.

Robert McCullough

Subscribed and sworn to before me on this 18th day of March, 2003.

Marina A Mitchell
Notary Public

My commission expires: 9/23/05