

1986 Varmin Report

TABLE B-3: POWER COSTS AND CREDITS AND ANNUAL REPLACEMENT

(in

Calendar Year	NORTH BAY AQUEDUCT		SOUTH BAY AQUEDUCT	CALIFORNIA						Calendar Year
	Reach 1 Barker Slough Pumping Plant	Reach 3 Cordelia Pumping Plant (b)	Reach 1 South Bay and Del Valle Pumping Plants (c)	Reach 1 Harvey O. Banks Delta Pumping Plant	Reach 4 Dos Amigos Pumping Plant	Reach 14A Buena Vista Pumping Plant	Reach 15A Wheeler Ridge Pumping Plant	Reach 16A Wind Gap Pumping Plant	Reach 17E A.D. Edmonston Pumping Plant	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
1962	0	0	38,130	0	0	0	0	0	0	1962
1963	0	0	58,871	0	0	0	0	0	0	1963
1964	0	0	75,239	0	0	0	0	0	0	1964
1965	0	0	146,297	0	0	0	0	0	0	1965
1966	0	0	198,643	0	0	0	0	0	0	1966
1967	0	0	229,629	26,982	0	0	0	0	0	1967
1968	0	7,128	342,761	1,324,777	239,505	0	0	0	0	1968
1969	0	8,557	279,751	855,304	143,403	0	0	0	0	1969
1970	0	13,666	448,383	368,508	217,820	2,940	0	0	0	1970
1971	0	10,626	422,057	597,946	0	0	0	0	0	1971
1972	0	14,430	623,564	1,110,833	229,306	156,540	23,021	18,577	29,067	1972
1973	0	14,453	485,534	918,234	493,776	511,904	187,828	385,935	3,139,297	1973
1974	0	17,508	510,873	997,269	560,461	556,968	595,585	1,048,196	3,000,333	1974
1975	0	14,801	382,106	1,353,916	561,089	650,781	707,038	1,394,918	4,853,538	1975
1976	0	20,867	589,007	916,728	596,426	701,061	687,677	1,414,902	4,917,776	1976
1977	0	21,640	541,803	653,304	191,906	170,689	173,496	337,890	1,130,422	1977
1978	0	18,240	558,381	3,871,011	723,989	1,009,556	968,744	1,782,668	6,281,786	1978
1979	0	16,240	622,517	3,871,011	723,989	1,009,556	968,744	1,782,668	6,281,786	1979
1980	0	19,936	523,445	2,560,346	1,381,894	1,151,819	1,143,977	2,222,833	7,059,703	1980
1981	0	21,711	607,892	2,331,253	1,305,953	1,289,103	1,264,814	2,547,394	8,980,956	1981
1982	0	12,150	989,274	2,375,212	1,870,031	1,952,829	1,900,777	3,920,107	14,180,844	1982
1983	0	12,203	541,734	1,755,640	620,236	1,104,053	1,001,052	1,910,527	5,930,326	1983
1984	0	3,001	299,407	1,761,809	958,286	778,653	745,536	1,360,357	4,193,563	1984
1985	0	13,049	952,879	5,443,792	2,786,188	2,530,816	2,653,727	5,209,032	16,967,576	1985
1986	0	12,673	1,176,811	7,252,845	3,439,526	3,166,741	3,360,798	6,436,304	21,720,305	1986
1987	28,748	25,323	1,674,800	11,495,946	5,439,121	5,883,877	6,447,400	6,636,304	21,720,305	1987
1988	41,254	28,367	1,740,746	13,415,381	6,194,236	6,540,781	7,159,949	14,547,993	48,614,701	1988
1989	41,013	28,372	1,806,688	13,208,283	5,932,956	6,175,924	6,819,658	13,835,282	46,181,130	1989
1990	50,286	38,503	1,896,688	13,748,887	6,518,370	6,733,775	7,384,490	14,912,968	49,701,769	1990
1991	72,556	58,914	2,385,408	18,101,896	8,033,975	8,603,389	9,495,385	19,370,428	64,988,992	1991
1992	83,281	67,864	2,765,025	17,158,171	8,203,085	8,502,618	9,376,201	19,118,741	64,220,114	1992
1993	104,224	84,978	2,765,025	19,900,774	9,997,074	10,385,426	11,231,548	21,231,548	71,674,791	1993
1994	116,887	96,582	2,878,430	19,676,086	9,274,780	9,994,729	10,378,724	11,486,785	23,576,848	1994
1995	144,470	119,844	3,275,780	22,381,633	9,994,729	10,378,724	11,486,785	23,576,848	29,746,131	1995
1996	160,966	133,662	3,465,150	24,586,328	10,775,306	11,402,405	12,670,969	26,032,397	88,231,469	1996
1997	171,390	144,888	3,567,601	23,661,008	11,632,774	12,444,245	13,902,152	28,700,846	97,053,666	1997
1998	182,293	155,995	3,632,972	26,004,006	11,809,511	12,608,381	13,798,683	28,613,995	94,359,402	1998
1999	198,960	172,048	3,789,438	26,196,018	12,861,616	13,645,896	15,252,464	31,785,502	106,694,856	1999
2000	220,194	190,945	4,004,883	28,921,012	13,730,456	14,663,262	16,428,049	34,313,255	114,882,743	2000
2001	229,736	208,808	4,030,356	28,714,769	14,097,320	15,136,960	16,965,455	35,474,610	118,496,216	2001
2002	249,485	235,473	4,210,393	30,750,952	14,794,862	15,949,467	17,889,397	37,398,900	124,646,912	2002
2003	268,125	259,986	4,334,571	31,949,913	15,295,724	16,664,271	18,711,955	39,000,628	130,186,028	2003
2004	284,079	286,567	4,468,995	32,976,636	15,895,435	17,319,058	19,701,052	40,955,069	136,804,419	2004
2005	293,988	303,197	4,444,710	33,226,915	15,938,893	17,694,210	19,913,685	41,270,781	137,794,473	2005
2006	289,599	301,226	4,358,719	32,647,226	15,886,891	17,792,931	20,054,385	41,464,902	138,311,516	2006
2007	296,365	310,858	4,441,509	34,045,783	16,162,602	18,055,239	20,545,547	42,231,523	140,962,341	2007
2008	303,730	321,348	4,535,170	34,639,853	16,732,452	18,856,685	21,293,651	43,231,516	147,738,548	2008
2009	304,929	325,100	4,535,779	34,001,097	16,644,331	18,715,444	21,120,346	43,852,751	146,399,026	2009
2010	313,761	334,519	4,606,560	34,590,955	16,933,325	19,082,615	21,546,309	44,752,417	149,458,657	2010
2011	325,424	355,919	4,719,472	35,586,359	17,567,359	19,963,289	22,580,592	46,947,773	156,942,442	2011
2012	344,234	380,722	4,810,282	41,420,790	18,249,126	20,835,366	23,586,672	49,073,477	164,220,492	2012
2013	360,722	406,072	5,012,282	40,015,282	18,864,508	21,679,267	24,574,864	51,170,606	171,313,676	2013
2014	363,860	415,960	4,961,070	39,535,767	18,639,247	21,379,096	24,225,599	50,430,442	168,735,626	2014
2015	393,841	456,264	5,268,460	41,169,172	19,738,408	22,743,214	25,788,397	53,727,061	180,015,400	2015
2016	407,496	476,614	5,353,748	42,570,726	20,351,581	23,634,618	26,844,544	55,976,262	187,682,153	2016
2017	432,809	511,712	5,600,557	44,620,737	21,162,114	24,853,762	28,249,826	58,946,900	197,875,817	2017
2018	448,278	535,965	5,714,551	45,728,832	21,424,277	25,371,229	28,843,631	60,200,296	202,178,998	2018
2019	459,216	557,711	5,799,524	46,650,612	21,944,003	26,389,436	30,054,766	62,691,828	211,033,994	2019
2020	463,698	564,838	5,730,454	45,929,931	21,313,243	25,580,295	29,092,604	60,550,269	203,886,948	2020
2021	471,416	574,399	5,822,104	47,839,379	21,995,068	26,646,341	30,386,150	63,441,024	214,024,960	2021
2022	469,517	572,611	5,798,651	47,205,756	21,441,525	26,302,201	30,009,605	62,499,743	211,807,248	2022
2023	465,570	568,063	5,748,065	47,391,039	21,071,572	26,280,254	29,998,592	62,106,129	211,468,398	2023
2024	464,232	566,711	5,730,631	46,548,887	20,786,101	26,317,298	30,048,818	61,837,163	211,730,074	2024
2025	464,797	567,738	5,735,767	46,385,797	20,681,925	26,512,945	30,285,196	61,960,071	213,418,655	2025
2026	466,483	569,798	5,756,573	47,538,227	20,989,698	26,665,663	30,464,422	62,085,545	214,677,919	2026
2027	467,363	570,873	5,767,439	47,356,598	20,980,074	26,627,346	30,414,447	61,734,200	214,304,736	2027
2028	464,326	567,165	5,729,955	47,227,594	20,863,769	26,399,943	30,241,840	61,410,714	213,200,998	2028
2029	462,455	564,854	5,704,625	45,882,841	20,809,704	26,255,375	30,076,774	61,290,792	212,800,565	2029
2030	464,006	566,772	5,726,004	46,574,939	20,706,850	26,242,875	30,038,588	61,481,175	213,216,986	2030
2031	463,691	566,388	5,722,123	47,045,506	20,413,307	25,867,493	29,645,847	60,921,076	210,811,007	2031
2032	465,798	568,962	5,748,125	47,161,896	20,519,440	26,148,822	29,988,179	61,986,151	214,224,945	2032
2033	461,232	563,384	5,691,725	45,657,901	20,128,434	25,401,530	29,102,434	60,447,826	208,186,662	2033
2034	467,538	571,086	5,749,591	47,582,841	20,597,171	25,938,688	29,739,630	62,138,467	213,776,122	2034
2035	457,079	558,311	5,640,521	45,614,345	19,715,535	24,472,209	28,000,869	58,760,857	201,953,474	2035

a) Includes: the costs of electric capacity and energy used by pumping plants, exclusive of associated power transmission and station service charges; the value of electric capacity and energy produced by power recovery plants (treated as negative costs); the payments to sinking fund reserves that will finance periodic replacement of electro-mechanical equipment; and the plant capacity and energy costs associated with surplus water service prior to May 1, 1973.

DEPOSITS FOR EACH AQUEDUCT PUMPING AND POWER RECOVERY PLANT

(dollars)

Calendar Year	AQUEDUCT								GRAND TOTAL	Calendar Year
	Reach 18A Alamo Powerplant	Reach 22B Pear-blossom Pumping Plant	Reach 25A Devil Canyon Powerplant	Reach 29A Oso Pumping Plant	Reach 29G William E. Warne (Pyramid) Powerplant	Reach 29J Castaic Powerplant	Reach 31A Las Perillas and Badger Hill Pumping Plants	Reach 33A Devil's Den Sawtooth and Polonio PP's and San Luis Obispo Pwp.		
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
1962	0	0	0	0	0	0	0	0	38,130	1962
1963	0	0	0	0	0	0	0	0	58,871	1963
1964	0	0	0	0	0	0	0	0	75,239	1964
1965	0	0	0	0	0	0	0	0	146,297	1965
1966	0	0	0	0	0	0	0	0	198,643	1966
1967	0	0	0	0	0	0	0	0	229,629	1967
1968	0	0	0	0	0	0	0	0	342,761	1968
1969	0	0	0	0	0	0	0	0	448,383	1969
1970	0	0	0	0	0	0	0	0	597,946	1970
1971	0	0	0	0	0	0	0	0	623,564	1971
1972	0	0	0	0	0	0	0	0	918,234	1972
1973	0	0	0	0	0	0	0	0	997,269	1973
1974	0	0	0	0	0	0	0	0	1,35	

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Viju Patel, Chief
Division of Energy

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L. E. Swenson, Chief
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J. W.

Power Resources and Costs for Bulletin 132-86

This is a request for information regarding power resources and transmission facilities necessary for Bulletin 132-86 preparation. This information will be used to prepare loads and resources studies and power cost analysis. As stated in the Work Program Memorandum this information is to be approved by your Deputy Director. In order to meet Bulletin deadlines, we would appreciate a response by January 31, 1986.

Power resources that will be used in Bulletin 132-86 to meet SWP power requirements from 1986-2035 include:

Existing Resources

- Hyatt-Thermalito
- Devil Canyon Phase I
- San Luis Phase I
- Castaic
- William E. Warne Phase I (Units 1 and 2)
- Metropolitan Water District Hydro Phase I
- TERA
- Northwest Power
- SCE - DWR Power Contract
- SCE - DWR Capacity Exchange Agreement
- Reid Gardner Unit No. 4
- Pine Flat
- Bottle Rock

Resources Under Construction

- South Geysers
- Thermalito Diversion Dam
- Alamo Phase I

Viju Patel, chief
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As with Bulletin 132-85, if the aforementioned resources are not sufficient to meet all the power requirements of the State Water Project, additional energy and capacity purchases (from the Northwest and other unspecified resources) will be used to balance SWP power requirements on an annual basis. Monthly energy and capacity deficits will be met by load management and/or exchanges with utilities. Please advise if there are other resources that should be considered or if any of the above resources should be deleted.

Attachment I is a summary of the data used in last year's Bulletin that we would like you to verify or update for Bulletin 132-86. Part A consists of monthly operation data for the following resources--South Geysers, TERA, Thermalito Diversion Dam, MWDSC hydro plants, Pine Flat and Northwest power. Part A also contains information needed for determining the additional energy from SCE resulting from the DWR-SCE Power Contract and Capacity Exchange Agreement. Operation data for the remaining resources will be obtained from Operations & Maintenance Division or other sources. Part B contains cost data for Pine Flat, TERA and Northwest power. Cost data for the remaining resources will be obtained from other sources. Part C contains transmission cost data. If any transmission costs have been left out, please identify those costs.

Attachment II contains specific requests for updating each portion of the data contained in Attachment I. In your response, please try to use the same format provided in the attachments as much as possible. Also, please provide any letters or other references used in developing the data.

Attachment III contains operation data for Bottle Rock, Hyatt-Thermalito and Reid Gardner that we plan to use for Bulletin 132-86. Please let me know if you have any problems with any of the data or assumptions used.

If you have any questions, please call Linda Quok at 3-4046.

Attachments

bcc: D. Long
D. Hitzeman
S. Macaulay
L. Brown
G. Hargan
B. Zarghami

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ATTACHMENT I
RESOURCES AND COSTS USED FOR BULLETIN 132-85

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SECTION A
MONTHLY OPERATING DATA

C-111376

TABLE A-1

SOUTH GEYSERS

Year	Capacity (kW)		Energy (MWh)		Total
	On	Off	On	Off	
1989 And All Odd Years Thereafter					
Jan	51,500	51,500	16,599	16,599	33,198
Feb	51,500	51,500	14,993	14,993	29,986
Mar	0	0	1,606	1,606	3,212
Apr	51,500	51,500	16,064	16,064	32,128
May	51,500	51,500	16,599	16,599	33,198
Jun	51,500	51,500	16,064	16,064	32,128
Jul	51,500	51,500	16,599	16,599	33,198
Aug	51,500	51,500	16,599	16,599	33,198
Sep	51,500	51,500	16,064	16,064	32,128
Oct	51,500	51,500	16,599	16,599	33,198
Nov	51,500	51,500	16,064	16,064	32,128
Dec	51,500	51,500	16,599	16,599	33,198
Total			180,449	180,449	360,898

Year	On	Off	On	Off	Total
1990 And All Even Years Thereafter					
Jan	51,500	51,500	16,599	16,599	33,198
Feb	0	0	9,103	9,103	18,206
Mar	0	0	0	0	0
Apr	51,500	51,500	16,064	16,064	32,128
May	51,500	51,500	16,599	16,599	33,198
Jun	51,500	51,500	16,064	16,064	32,128
Jul	51,500	51,500	16,599	16,599	33,198
Aug	51,500	51,500	16,599	16,599	33,198
Sep	51,500	51,500	16,064	16,064	32,128
Oct	51,500	51,500	16,599	16,599	33,198
Nov	51,500	51,500	16,064	16,064	33,128
Dec	51,500	51,500	16,599	16,599	33,198
Total			172,953	172,953	346,906

- Notes:
1. Date of commercial operation January 1989.
 2. Capacity reduced by station service of 3,500 kW.
 3. Four week normal maintenance outage every other year beginning 1989.
 4. Six week extended maintenance outage every other year beginning 1990.
 5. Capacity factor for 1989 and thereafter is 80 percent.

TABLE A-2

TERA - BETHANY WIND

1986 and Thereafter	Energy (MWh)		Total
	On	Off	
Jan	66	66	132
Feb	60	60	120
Mar	750	750	1,500
Apr	1,082	1,082	2,164
May	1,280	1,280	2,560
Jun	1,541	1,541	3,082
Jul	1,477	1,477	2,954
Aug	1,748	1,748	3,496
Sep	1,251	1,251	2,502
Oct	1,062	1,062	2,124
Nov	121	121	242
Dec	63	63	126
Total	10,501	10,501	21,002

- Notes:
1. Two hundred units in operation by 1986 (10 MW).
 2. Annual capacity factor of 24 percent.
 3. Contract term of 20 years.
 4. No capacity shown due to nature of wind generation.

TABLE A-3

THERMALITO DIVERSION DAM

Year	Capacity (kW)		Energy (MWh)		
	On	Off	On	Off	Total
1987					
Jan	0	0	0	0	0
Feb	0	0	0	0	0
Mar	2,000	2,000	744	744	1,488
Apr	2,000	2,000	720	720	1,440
May	2,000	2,000	744	744	1,488
Jun	2,000	2,000	720	720	1,440
Jul	2,000	2,000	744	744	1,488
Aug	2,000	2,000	744	744	1,488
Sep	2,000	2,000	720	720	1,440
Oct	2,175	2,175	810	810	1,620
Nov	2,000	2,000	720	720	1,440
Dec	2,350	2,350	874	874	1,748
Total			<u>7,540</u>	<u>7,540</u>	<u>15,080</u>

Year 1988 and Thereafter	Capacity (kW)		Energy (MWh)		
	On	Off	On	Off	Total
Jan	2,057	2,057	765	765	1,530
Feb	2,000	2,000	672	672	1,344
Mar	2,000	2,000	744	744	1,488
Apr	2,000	2,000	720	720	1,440
May	2,000	2,000	744	744	1,488
Jun	2,000	2,000	720	720	1,440
Jul	2,000	2,000	744	744	1,488
Aug	2,000	2,000	744	744	1,488
Sep	2,000	2,000	720	720	1,440
Oct	2,175	2,175	810	810	1,620
Nov	2,000	2,000	720	720	1,440
Dec	2,350	2,350	874	874	1,748
Total			<u>8,977</u>	<u>8,977</u>	<u>17,954</u>

Annual capacity factor of 68.3% based on installed capacity of 3 MW.

MWDSC HYDRO PHASE I

Operating data for MWDSC Hydro Phase I were from the following letters from Robert Thompson of MWDSC to Frank Hahn regarding District-State Hydroelectric Power Sale contract:

1985-1992 Operating Data	Letter dated November 15, 1984
1993-2002 Operating Data	Letter dated April 1, 1982
2003-2035 Operating Data	Assumed same data as 2002

DWR has entered into an agreement with LADWP whereby LADWP receives and utilizes the energy generated at the Greg Avenue Powerplant. In return, LADWP provides to DWR during off-peak periods 98.8 percent of the energy it received from the power plant. Section 12 of the Power Contract between SCE and DWR remains applicable to the other four facilities.

TABLE A-4

PINE FLAT

Year 1986 and Thereafter	Capacity (kW)		Energy (MWh)		
	On	Off	On	Off	Total
Jan	0	0	3,650	3,650	7,300
Feb	44,792	44,792	15,050	15,050	30,100
Mar	31,183	31,183	11,600	11,600	23,200
Apr	50,833	50,833	18,300	18,300	36,600
May	80,242	80,242	29,850	29,850	59,700
Jun	120,555	120,555	43,400	43,400	86,800
Jul	108,602	108,602	40,400	40,400	80,800
Aug	78,629	78,629	29,250	29,250	58,500
Sep	41,944	41,944	15,100	15,100	30,200
Oct	0	0	0	0	0
Nov	0	0	1,850	1,850	3,700
Dec	0	0	3,050	3,050	6,100
Total			<u>211,500</u>	<u>211,500</u>	<u>423,000</u>

- Notes:
1. Annual capacity factor of 29.3 percent based on installed capacity of 165 MW.
 2. Continuous capacity for January, November, and December 1986 and thereafter is below minimum output rating of a single unit.
 3. The year 1986 and thereafter based on median water year.

TABLE A-5

NORTHWEST POWER (NON-FIRM ENERGY)

Year	On-Peak	Off-Peak	Total
<u>1986-2004</u>			
Jan	0	0	0
Feb	0	0	0
Mar	0	0	0
Apr	97,200	97,200	194,400
May	100,440	100,440	200,880
Jun	97,200	97,200	194,400
Jul	0	0	0
Aug	0	0	0
Sep	0	0	0
Oct	0	0	0
Nov	0	0	0
Dec	0	0	0
Total	<u>294,840</u>	<u>294,840</u>	<u>589,680</u>
 <u>2005 and</u> Thereafter			
Jan	0	0	0
Feb	0	0	0
Mar	0	0	0
Apr	129,600	129,600	259,200
May	267,840	133,920	267,840
Jun	259,200	129,600	129,600
Jul	0	0	0
Aug	0	0	0
Sep	0	0	0
Oct	0	0	0
Nov	0	0	0
Dec	0	0	0
Total	<u>786,240</u>	<u>393,120</u>	<u>786,240</u>

- Notes: 1. Total EHV line capacity reduced in April, May, and June by 10 percent due to loop flow.
2. The existing 300 MW intertie is included from 1986-2004. The Third Intertie (additional 100 MW) is included in 2005 and thereafter.

TABLE A-6

SOUTHERN CALIFORNIA EDISON COMPANY
POWER CONTRACT
EXCHANGE FORMULA FOR ADDITIONAL ENERGY

	PPI	C?	C	D	F
1986	346.200	5.770	0.075	0.063	0.055
1987	364.500	6.190	0.079	0.066	0.058
1988	383.500	6.660	0.084	0.071	0.061
1989	404.900	7.160	0.088	0.074	0.064
1990	430.100	7.700	0.093	0.078	0.068
1991	458.000	8.300	0.099	0.084	0.073
1992	487.800	8.940	0.108	0.091	0.079
1993	519.000	9.620	0.119	0.100	0.087
1994	549.600	10.360	0.129	0.109	0.094
1995	581.500	11.160	0.139	0.117	0.102
1996	616.900	12.030	0.152	0.128	0.111
1997	656.400	12.970	0.166	0.140	0.122
1998	697.100	14.000	0.179	0.151	0.131
1999	739.700	15.070	0.196	0.165	0.143
2000	782.600	16.250	0.214	0.180	0.156
2001	828.000	17.520	0.232	0.196	0.169
2002	874.300	18.880	0.254	0.214	0.186
2003	921.500	20.350	0.276	0.233	0.202
2004	969.500	21.950	0.301	0.253	0.220

- Notes:
1. The PPI index for 1983 is 299.9 (letter from Donald H. Coltrain to Thomas F. Crampton, dated November 7, 1983).
 2. Exchange rates based on information provided by SCE in November 1984.
 3. C1 = \$90/kW-year

TABLE A-7

SOUTHERN CALIFORNIA EDISON COMPANY
EXCHANGE AGREEMENT
RETURN AND ADDITIONAL ENERGY

Month	ENERGY TO SCE (MWh)	
	1987	1988 and thereafter
Jan	--	39,600
Feb	--	27,395
Mar	--	30,135
Apr	27,968	29,450
May	28,619	30,135
Jun	38,700	38,700
Jul	39,600	39,600
Aug	39,600	39,600
Sep	38,700	38,700
Oct	28,619	30,135
Nov	27,968	29,450
Dec	<u>39,600</u>	<u>39,600</u>
Total	309,374	412,500

Year	ENERGY FROM SCE (MWh)	
	Annual Return	Annual Addition
1987	309,374	23,798
1988 and thereafter	412,500	31,730

- Notes: 1. Amounts shown are available to State at Midway Vincent Substation
2. The energy to SCE for 1987 assumes 100 percent capacity factor eight hours per day, five days per week for June, July, August, September, and December with remaining energy of SCE 309,375 MWh distributed based on 72.3 percent Capacity Factor in each of the other months.

For 1988 and thereafter assume 100 percent capacity factor eight hours per day, five days per week for January, June, July, August, September, and December with remaining energy of SCE 412,500 MWh distributed based on 76.1 percent capacity factor in each of the other months.

SECTION B
RESOURCE COST DATA

TABLE B-1

PINE FLAT
 CONTRACTUAL COST
 (Nominal Dollars)

<u>Year</u>	<u>mills/kWh</u>
1986	29.5
1987	30.0
1988	31.0
1989	31.5
1990	32.0
1991	33.0
1992	33.5
1993	34.5
1994	35.5
1995	36.5
1996	37.5
1997	39.0
1998	40.0
1999	41.0
2000	42.5
2001	44.0
2002	45.5
2003	47.0
2004	48.5

Note: Revised mill rate includes annual fixed charge required to return to KRCD the cost repayment (for both Series A and Series B), plus a royalty payment of 7.6 mills/kWh in 1984, the first full year of operation (escalated at a rate equal to one-half the increase in SCE fuel cost index), plus all O&M costs estimated by KRCD (escalated at six percent and an annual FERC charge based on the FERC decision of May 23, 1984. For all years with estimated generation of 423.0 GWh, the FERC charge will be \$786,000. Cost does not include interconnection cost.

TABLE B-2

TERA WJND EFFECTIVE COSTS
(Nominal Dollars)

85.0 mills/kWh	--	first 10 years
68.0 mills/kWh	--	second 10 years
68.0 mills/kWh or 80 percent of DWR's Avoided Cost	--	third 10 years

Notes: Under an agreement between TERA and DWR, DWR would pay TERA 87.5 mills/kWh for 97.5 percent of the net energy output for the first 10 years and at least 70 mills/kWh for 97.5 percent of the net energy output for the second 10 years.

TABLE B-3

NORTHWEST POWER COSTS
(Nominal Dollars)

Year	Non-Firm Mills/kWh
1986	20.14
1987	21.35
1988	22.63
1989	23.99
1990	25.43
1991	26.95
1992	28.57
1993	30.28
1994	32.10
1995	34.03
1996	36.07
1997	38.23
1998	40.53
1999	42.96
2000	45.53
2001	48.27
2002	51.16
2003	54.23
2004	57.49

Notes: Average costs for Northwest dump energy for 1985 as of 7/24/85 was 19 mills/kwh. Cost for other years were calculated using 1985 value escalated at 6 percent per year.

SECTION C
TRANSMISSION DATA

TABLE C-1

TRANSMISSION COSTS

PG&E SERVICE AREA

<u>Existing Services</u>	<u>Dollars/Year</u> <u>For 1986</u>
Buena Vista	\$
Wheeler Ridge	150,000 ⁽¹⁾
Wind Gap	
Las Perillas	3,276
Badger Hill	
Cordelia	5,520
Del Valle	7,824
Banks	0
Dos Amigos	0
South Bay	50,844
San Luis	57,984
Pine Flat	446,893 ⁽²⁾
Backbone	10,084,500 ⁽³⁾
Bottle Rock Tie Line O & M	39,000 ⁽⁴⁾
Castle Rock to Lakeville Line O & M	76,000 ⁽⁴⁾
EHV	1,500,000
EHV Penalty	varies

<u>Future Services</u>	<u>Dollars/Year</u>	
South Geysers Tie Line O & M	\$58,152 ⁽⁴⁾	(Starts 1989)
Barker Slough	2,016	(Starts 1987)
Devil's Den	6,000	(Starts 1992)
Sawtooth	8,004	(Starts 1992)
Polonia	16,992	(Starts 1992)

- Notes:
- 1) DWR has agreed to pay PG&E \$10,665,750 to purchase the transmission facilities serving Buena Vista, Wheeler Ridge, and Wind Gap pumping plants. Upon transfer of ownership (expected in 1/86), DWR will pay \$150,000 for operations and maintenance costs.
 - 2) \$439,920 is for transmission service from Pine Flat to backbone; \$6,973 is O&M cost for Pine Flat Tie Line.
 - 3) Backbone costs will increase by \$34,375 per month when South Geysers comes online on January 1989.
 - 4) DWR has elected to participate as cotenant in the Castle Rock-Lakeville 230 kV transmission line and associated facilities by making a capital contribution \$6,825,817. The amount paid in 1984 was \$6,389,000. The remaining \$436,817 is expected to be paid by 1985. This entitles DWR to transmit up to 165 MW of generation from the Geysers over the Castle Rock-Lakeville line to PG&E backbone. Capital costs for the Bottle Rock and South Geysers tie lines are \$628,130 and \$931,910, respectively.

TABLE C-2

TRANSMISSION COSTS

SOUTHERN CALIFORNIA EDISON SERVICE AREA

<u>Existing Services</u>	<u>Dollars/Year</u> <u>1986</u>	(1)(2)
Edmonston	\$6,376,344	
Oso	755,640	
Pear Blossom	344,796	
Warne	564,996	
Castaic - Sylmar To Vincent	414,264	
Backbone - Vincent to Midway	1,401,540	
Reid Gardner - El Dorado to Vincent	2,284,200	
Alamo - Made Available to SCE	0	
Devil Canyon - Made Available to SCE	0	
Firm Dispatching	79,380	
Interruptible Transmission Dispatching	Varies	
Interruptible Transmission Service	Varies	
EHV Penalty	Varies	
<u>Future Services</u>	<u>Dollars/Year</u>	
San Luis Obispo	\$ 2,004	(Starts 1992)

- Notes:
- 1) Based on SCE's filing of November 10, 1983 with FERC for a change of rates for transmission service according to contract provisions.
 - 2) SCE will waive 75 percent of these transmission service charges after the SCE-DWR Capacity Exchange Agreement becomes operational.

TABLE C-3

TRANSMISSION COSTS

OTHER SERVICE AREAS

<u>Existing Services</u>	<u>Dollars/Year For 1986</u>
NPC - Reid Gardner to El Dorado	\$1,031,388
LADWP - Castaic to Slymar	106,647
LADWP - Greg Ave Scheduling	1,150
WAPA	0

Notes: WAPA payment of \$94,500/month stops after PGandE upgrades the 500 kV backbone between Table Mountain and Tesla becomes operable and the emergency interconnection with WAPA's Cottonwood-Everta 230 kV line is disconnected (estimated for January, 1986).

ATTACHMENT II

SPECIFIC REQUESTS FOR UPDATE OF DATA
BULLETIN 132-86

SPECIFIC REQUESTS FOR UPDATE OF DATA
BULLETIN 132-86

1. Operating data for South Geysers, TERA, and Thermalito Diversion Dam (Tables A-1 through A-3)

Please update Tables A-1 through A-3.

2. MWD Hydro Phase I Operating Data

If MWD has provided any updated operating data for the hydro plants, please provide a copy of the letter(s) containing the new data.

3. Pine Flat Operating Data and Northwest Dump Energy (Tables A-4 through A-5)

Please update Tables A-4 through A-5.

4. SCE Power Contract and Capacity Exchange Agreement (Tables A-6 through A-7)

Please update the exchange values in Tables A-6 through A-7 and provide a copy of any references from SCE used in updating the data. According to Table A-6, the additional energy from SCE varies from year to year for the Power Contract according to the variables provided. However, according to Table A-7, the additional energy for the Capacity Exchange Agreement remains the same for 1988 and each year thereafter even though SCE's oil costs estimates vary from year to year. Please explain.

5. Pine Flat Contractual Costs (Table B-1)

Please provide the following components of Pine Flat costs:

Year	FERC Charge \$/yr	Increase in SCE Fuel Cost Index
1986		
.		
.	Please complete this table	
.		
2004		

Also, please provide copies of any references used in developing SCE fuel cost index, and FERC charges. Bond repayment costs and O&M costs will be obtained from other sources; the royalty charges will be calculated using the above SCE fuel cost index.

6. TERA Contractual Costs and Northwest Power Costs (Tables B-2 through B-3)

Please update Tables B-2 through B-3.

7. Transmission Costs for PG&E, SCE and Other Service Areas
(Tables C-1 through C-3)

Please update Tables C1 through C3 and include any additional transmission costs that have been left out of the Tables. Also, please provide a copy of any SCE filings and the recent PG&E filing with FERC used in updating the data.

ATTACHMENT III

OPERATING DATA FOR BOTTLE ROCK,
HYATT-THERMALITO AND REID GARDNER

TABLE 1

BOTTLE ROCK

Assumptions used in developing Bottle Rock B-132-86 numbers:

1. Capacity reduced by 3,500 kW for station service.
2. Annual capacity factor for 1986 and thereafter is 80 percent. See also Assumption numbers 4 and 5 for annual capacity factor adjustments for years with extended maintenance outage.
3. Two weeks normal maintenance outage in September every other year beginning 1987.
4. Scheduled maintenance for 1986 is from May 19 through June 20. Due to extended maintenance, the annual capacity factor has been reduced from 80 to 76 percent.
5. Five weeks extended maintenance outage from September through October every other year beginning 1988. Due to extended maintenance, the annual capacity factor has been reduced from 80 to 76 percent.

TABLE 2

HYATT-THERMALITE

	TOTAL				EDISON EXCHANGE	
	On (kW)	Off (kW)	On (MWh)	Off (MWh) ⁽¹⁾	Capacity (kW)	Energy (MWh) ⁽²⁾
1987-2004						
Jan	668,000	668,000	100,758	3,720	298,000	41,791
Feb	898,000	898,000	292,423	3,360	350,000	118,317
Mar	898,000	898,000	266,595	3,720	350,000	108,126
Apr	898,000	898,000	146,995	3,600	350,000	60,238
May	898,000	898,000	225,601	3,720	350,000	91,728
Jun	898,000	898,000	180,254	3,600	350,000	73,542
Jul	898,000	898,000	263,488	3,720	350,000	106,883
Aug	898,000	898,000	268,782	3,720	350,000	109,001
Sep	898,000	898,000	199,326	3,600	350,000	81,170
Oct	668,000	668,000	126,411	3,720	298,000	52,052
Nov	668,000	668,000	117,733	3,600	298,000	48,533
Dec	668,000	668,000	82,220	3,720	298,000	34,376
Total			2,270,596	43,800		925,757

- Notes: 1) Assumes 50 MW with 20 percent off-peak capacity factor to be used for regulation
- 2) Assumes no pumpback, with 40 percent energy to SCE each month. Edison Exchange is the amount of energy measured at Table Mountain for SCE under the Power Contract
- 3) Assumes maintenance occurs in January, October, November and December.
- 4) Capacity reduced by 2,000 kW for station service.

TABLE 3

REID GARDNER

Assumptions used in developing Reid Gardner E-122-86 numbers:

1. Annual capacity factors:

1986	80 percent	1991	70 percent
1987	78 percent	1992	68 percent
1988	76 percent	1993	66 percent
1989	74 percent	1994-2013	55 percent
1990	72 percent		

See also Assumption number 6.

2. DWR's share of Reid Gardner Unit No. 4 generation is 239 MW.
3. Interruptions by Nevada Power Company (NPC) are based on DWR's full generation entitlement of 239 MW. The 225 hours of NPC interruption used for 1986 are based on historical 1984 and 1985 data. An escalation rate of 5 percent per year is used in determining future hours of NPC interruption. Months in which interruption is expected to occur are based on evaluating NPC's historical load curves.
4. NPC capacity buy-back begins in August 1, 1998. Buy-back at rate of six percent of original amount of 226 MW per year ($226 \text{ MW} \times .06 = 13.56 \text{ MW}$ per year).
5. No on-peak capacity shown since NPC can interrupt DWR Entitlement Capacity at any time
6. Maintenance Schedule is two weeks in March and two weeks in October for normal maintenance. Starting in 1989 and every five years thereafter, there is an extended maintenance of eight weeks from February through March and two weeks in October. Due to this longer maintenance, annual capacity factors for 1989, 1994, 1999, 2004, and 2009 will be lower than that stated in Assumption number 1. The revised annual capacity factor after adjustment for the longer maintenance are:

1989	65 percent instead of 74 percent
1994, 1999, 2004 and 2009	58 percent instead of 65 percent