

**Boulder Canyon Project
Implementation Agreement
(Sections 6.2 and 6.3)**

FY 2012

**Replacement Capital Advances
Repayable Advances
Calculation**

Table 1

Summary

Of

Historical and Budgeted Replacements

ITEM NO.	DESCRIPTION	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004
		\$	\$	\$	\$	\$
1	Hoover-Mead Consolidation					
2	River Telemetry Upgrade/Sutron					
3	P/P Piping Replacement		150,000			
4	Jet Flow Gates-Install/Design					
5	Station/Domestic Water Systems					
6	Cooling Water Eductor System	250,416	251,321	292,064	254,488	63,529
7	Crane Modernization	1,005				
8	Thrust Bearing Cooler NV/AZ					
9	Unscheduled Powerplant Replacements					
10	Station Service Units-Recondition					
11	Station Service Air Compressors					
12	Jus System Upgrade					
13	Fire Alarm System					
14	Intake Emergency Generators					
15	Sewage Sludge Pumps					
16	Scheduled Communication Replacements	214,039	45,629	184,070	53,774	
17	Wicketgate Bushings/Wear Plate	234,364	67,274	78,654	155,526	511,159
18	Ground Switch - N4					
19	Scheduled Control System Replacements	91,535	287,854	392,305	128,085	170,770
20	Upgrade Machine Shop Equipment					
21	Central Section Replacements	122,739				
22	Sewage Plant					
23	Life Safety Code/ADA Compliance	90,564	653,405	260,732	125,143	134,089
24	Station Service Electrical					
25	Spare Unit Breaker	236,557	12,744	2,644		
26	Intake Gatehoist Starters					
27	Battery - Operated Forklifts					
28	Seal Rings - A3/A4					
29	Lighting Panels					
31	River Telemetry/MMI					
32	Paradox Gate Controls					
33	Butterfly Seats/Pivot Bearings					
34	Station Service Equipment					
35	General Piping Replacements					
36	2300V Station Service Cable					
37	Needle Valve Replacement Program					
38	460V Motor Control Centers					
39	Central Section Firelines					
40	Dam/Powerplant Elevator Controls/Elevator Motor&Controller Replc					
41	AZ/NV Valvehouse Elevators					
42	Flowmeter Record/Monitor Equipment					
43	Pre-88 Expense Water Piping (SCE)					
44	Pre-88 Expense A6 Windings (SCE)					
45	Temperature Monitoring Equipment					
46	Auto Grease System					
47	AZ Valve House Water Supply					
48	Central Section Sump Pumps					
49	125-250V DC Battery Charge System					
50	Fiber Optics Communications					
51	Central Section Ventilation					
52	Station Service Governors					
53	Unit CB's/N1-N7, A1-A2, 1B, SS					
54	M Distribution Board					
55	150-Ton Cableway Control Boards/Relays					
56	Penstock Tunnels-Lighting System	182,620	4,293	1,880	58,353	629,393
57	Communications Upgrade					
58	Vacuum Purification Units					
59	Uninterruptible Power Supply					
60	4th Floor Unit Controls/NV					
61	4th Floor Unit Controls/AZ					
62	Telephone Switch					
63	Station Service Controls/Relays					
64	Station Service Compressors					
65	Dewater Eductors/Water Pumps					
66	Miscellaneous/Minor Equipment	89,300	77,810	78,661	110,985	27,018
67	Sedans/Transportation Equipment (Rolling Stock)		68,835	23,050	153,580	67,409
68	Unscheduled General Project Replacements	4,952				
69	Communications Test Equipment	12,331	14,322		252	513
70	Controls System Test Equipment	2,323		7,058		25,000
72	BC Water System Modifications					
73	Breakers/Timing Tester					
74	Machine Shop Mill					
75	Roof Drainage System					
76	Other Noncontract Replacement Expense					
77	Transformer Warranty Work					
78	Generator Coolers	86,412	19,502	140,307	133,334	22,526
79	Misc NC Expense Paint Shop					
80	Air Compressor					
81	Power Saw					
82	Lathe					
83	Fork Lift					
84	A9 Seal Rings					
85	Auto Synchronizer					
86	Butterfly (Rubber) Valves (Seats and Seals (Reseating))	21,384	642,517	774,663	832,814	638,372
87	DSWR Warehouse (Western) **	4,778	38,541	4,932	20,378	
88	Remove & Dispose of Bushings at Hoover 69kV Yard **					
89	Air Compressors Overhaul					
90	Batteries - UPS					
91	Emergency Compressor Repair					
92	Vibration Test/Correct A5/N7	26,468				
93	Replace Station Service Tie Brkr w/Bus		8,457			
94	Service Air System Replacement		5,029			
95	Spare Turbine Seal Rings		10,398	182,541	2,799	140,825
96	VHF Radios (Western) **		10,269	61,343	88,634	(30,154)
97	Relay Replacements on Hoover-Mead Lines/Digital Vault Recorders **					
98	2300V Conduit & Power Cable (Warehouse) Replc					
99	Replace Wastewater Treatment Facility					
100	Drum Gate Hinge Pins Replacements					
101	Squibs on 17 Generator CO2 Sys					
102	Station Service 250V Batteries		71,200	37,379	(2,026)	
103	Incline Tunnel Piping		38,505	215,415	346	
104	Life Safety (Emergency Lighting)		31,154	33,660	275,710	
105	Relay Protection		73,252			
106	Servo Motor (N7)		6,708			
107	SF6 Breaker Mods			135,444		
108	Slot Line Piping Repair			47,065	267,418	
109	Replace/Upgrade Microwave Telemetry System					
110	Phasor Measurement Unit (PMU) Installation at Mead Substation **					
111	Drum Gate Control Valve Replacement					
112	Drum Gate Drain Hose Replacements					
113	Sump Pump - Lower Nevada					
114	Butterfly Valves Pumps/Bearings Assessment					
115	Drum Gate Seal Replacement					
116	HVAC (8th Floor)					
117	Lower Portal Tunnel Lighting refurbishment					
118	Surge Arrestors				17,150	
119	Wicketgate Replacements (Stainless)					
120	Station Service Transformers					520,035
121	Potable Water/Fire Protection System Upgrade					
122	Hoover SCADA Upgrade and Plant/Unit Control Modernization					
123	Station Service Pelton Turbine Replacement					
124	Electrical Panel replacement					
125	Replace 2300 Volt Switchgear					
126	Western Outyear Projects to be defined later **					
127	Low Head Turbine Runner					
128	Basier (BE1-50BF) Relay Repayments at Mead Substation **					
129	Redundant Hoover Dynamic Signal **					
130	JEMII Meter Replacements **					
131	Deltec UPS Equipment					
Total Replacements Cost Repayable to the U.S. Treasury		1,671,787	2,589,019	2,953,867	2,676,743	2,920,484
Total Replacements Cost Reported in PRS		1,667,009**	2,377,465*	2,886,712*	2,580,475*	2,937,415*
Prior Year Adj. of Replacements Cost Reported in PRS						
Total Replacements Cost Reported in PRS including PY Adjustment		1,667,009	2,377,465	2,886,712	2,580,475	2,937,415

Table 1
Historical Summary of Boulder Canyon Project Replacements
For The Period June 1, 1987 Through September 30, 2012.

Plus
Summary of Budgeted Boulder Canyon Project Replacements
For The Period October 1, 2013 Through September 30, 2022.

ITEM NO.	DESCRIPTION	AMORT. CLASS	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY	FY
			1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
			\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1	Hoover-Mead Consolidation	Multi-Yr		758,109	3,433,253	482,973	1,361,537	2,018,337	2,952,402	499,202	57,274			
2	River Telemetry Upgrade/Sutron	Annual			313,083	255,317	52,412	217,691	142,969	39,189	31,340	18,037		
3	P/P Piping Replacement	Annual					40,623	249,923	214,208	212,840	158,184	81,755	134,248	8,862
4	Jet Flow Gates-Install/Design	Multi-Yr					109,273	71,399	24,301	934,294	203,274	681,007	1,801,733	23,946
5	Station/Domestic Water Systems	Multi-Yr		35,770	1,916	113,998	127,573	1,034,419	432,474	104,900				
6	Cooling Water Educator System	Annual					46,301	58,594	696,195	16,932	241,717	368,181	274,444	258,798
7	Crane Modernization	Multi-Yr						92,519	287,216	157,774	4,623	23,629	1,789	
8	Thrust Bearing Cooler NV/AZ	Annual						3,071	105,545	2,213	36,976	239,369		
9	Unscheduled Powerplant Replacements	Annual			331,455	(228,839)	96,178	180,705	847,127	556,462	621,686	5,637	22,316	14,375
10	Station Service Units-Recondition	Multi-Yr			29,594	5,491	179	71,389	851,321	1,215,620	360,235			
11	Station Service Air Compressors	Multi-Ann	268,046	61,570	14,746						3,800			
12	Jus System Upgrade	Multi-Yr								173,817	550,971	469,855		
13	Fire Alarm System	Multi-Yr								26,495	15,756	75,280	484,118	16,401
14	Intake Emergency Generators	Multi-Yr									329,182	58,354	345,696	84,047
15	Sewage Sludge Pumps	Multi-Yr									80,300	25,533		
16	Scheduled Communication Replacements	Annual									288,676	270,328	289,404	189,939
17	Wicketgate Bushings/Wear Plate	Annual												6,766
18	Ground Switch - N4	Annual									4,369			
19	Scheduled Control System Replacements	Annual									324,242	437,984	527,495	252,011
20	Upgrade Machine Shop Equipment	Multi-Yr								571	412,312	389,403		
21	Central Section Replacements	Multi-Yr											102,710	922,843
22	Sewage Plant	Annual										269,966		
23	Life Safety Code/ADA Compliance	Annual										44,679	111,716	464,688
24	Station Service Electrical	Multi-Yr						42,135	249	867				
25	Spare Unit Breaker	Multi-Yr												14,226
26	Intake Gatehoist Starters	Annual												8,887
27	Battery - Operated Forklifts	Annual												22,041
28	Seal Rings - A3/A4	Annual												16,398
29	Lighting Panels	Multi-Yr												
31	River Telemetry/MMI	Annual		628	19,037	50,133	25,394	2,025	103,488	20,785				
32	Paradox Gate Controls	Multi-Yr							4,987	48,619				
33	Butterfly Seals/Pivot Bearings	Annual								9,737				
34	Station Service Equipment	Multi-Yr	168,891	38,062										
35	General Piping Replacements	Annual	18,649											
36	2300V Station Service Cable	Annual	168,693											
37	Needle Valve Replacement Program	Multi-Yr	31,789	47,197	379,212	1,936,298	454,350	4,034						
38	460V Motor Control Centers	Multi-Yr	190,250	5,149										
39	Central Section Firelines	Multi-Yr	276,879	45,965										
40	Dam/Powerplant Elevator Controls/ElevatorMotor&Controller Replc	Multi-Yr-Ann	613,879	77,665										
41	AZ/NV Valvehouse Elevators	Multi-Yr	247,645	336,495	96,290									
42	Flowmeter Record/Monitor Equipment	Multi-Yr	145,763	283										
43	Pre-88 Expense Water Piping (SCE)	Annual	403,501											
44	Pre-88 Expense A6 Windings (SCE)	Annual	98,835											
45	Temperature Monitoring Equipment	Multi-Yr	353,769	105,562										
46	Auto Grease System	Multi-Yr	47,695	11,665										
47	AZ Valve House Water Supply	Multi-Yr	212,470	53,404										
48	Central Section Sump Pumps	Multi-Yr	240,952	28,479										
49	125-250V DC Battery Charge System	Annual	371,186											
50	Fiber Optics Communications	Multi-Yr	98,136	226,454	89,557									
51	Central Section Ventilation	Ann-Multi	973		1,542		59,188	1,285,442	79,483					
52	Station Service Governors	Ann-Multi		25,040		2,207	407,788							
53	Unit CB's/N1-N7, A1-A2, 1B, SS	Multi-Yr	10,997	50,761										
54	M Distribution Board	Multi-Yr			419	942,160	687,861							
55	150-Ton Cableway Control Boards/Relays	Ann-Multi		65,048		69,041	667,923	110,590	305					
56	Penstock Tunnels-Lighting System	Multi-Ann			36	63,096	172,089	17,086	55				3,706	16,327
57	Communications Upgrade	Multi-Yr					985,207	85,088						
58	Vacuum Purification Units	Multi-Yr					2,147	8,858						
59	Uninterruptible Power Supply	Annual					218,394							
60	4th Floor Unit Controls/NV	Multi-Yr					71,592	115,321						
61	4th Floor Unit Controls/AZ	Multi-Yr					130,920	105,203						
62	Telephone Switch	Multi-Yr						317,984	35,609					
63	Station Service Controls/Relays	Multi-Yr					223,442	601						
64	Station Service Compressors	Multi-Yr						30,664	775,767					
65	Dewater Eductors/Water Pumps	Annual						4,970						
66	Miscellaneous/Minor Equipment	Annual	142,516	203,260		15,031	32,668	33,703	127,056	129,370	109,324	104,818	106,463	
67	Sedans/Transportation Equipment (Rolling Stock)	Annual	72,919	195,972		60,000	91,288	108,403	105,800	58,996	46,691	54,389	(17,760)	
68	Unscheduled General Project Replacements	Annual							2,428			3,205	98,265	7,785
69	Communications Test Equipment	Annual							104,958	86,838	11,359	18,251	27,364	5,785
70	Controls System Test Equipment	Annual							6,158	8,747	19,940	31,825	25,811	549
72	BC Water System Modifications	Annual	138,220	4,404										
73	Breakers/Timing Tester	Annual				30,000								
74	Machine Shop Mill	Multi-Yr					43,676	722						
75	Roof Drainage System	Annual	43,155											
76	Other Noncontract Replacement Expense	Annual	202,568											
77	Transformer Warranty Work	Multi-Yr										331,953	100,000	182,349
78	Generator Coolers	Annual											78,759	
79	Misc NC Expense Paint Shop	Annual	14,846											
80	Air Compressor	Annual	2,760											
81	Power Saw	Annual	13,642											
82	Lathe	Annual	80,997											
83	Fork Lift	Annual	44,115											
84	A9 Seal Rings	Annual											10,200	
85	Auto Synchronizer	Annual											8,083	
86	Butterfly (Rubber) Values (Seats and Seals (Reseating)	Annual												
87	DSWR Warehouse (Western) **	Annual												183
88	Remove & Dispose of Bushings at Hoover 69kV Yard **	Annual												
89	Air Compressors Overhaul	Annual												47,854
90	Batteries - UPS	Annual												81,161
91	Emergency Compressor Repair	Annual												30,468
92	Vibration Test/Correct A5/N7	Annual												165,038
93	Replace Station Service Tie Brkr w/Bus	Annual												
94	Service Air System Replacement	Annual												
95	Spare Turbine Seal Rings	Annual												
96	VHF Radios (Western) **	Annual												(338)
97	Relay Replacements on Hoover-Mead Lines/Digital VaultRecorders **	Annual												
98	2300V Conduit & Power Cable (Warehouse) Replc	Annual												
99	Replace Wastewater Treatment Facility	Annual												
100	Drum Gate Hinge Pins Replacements	Annual												
101	Squibs on 17 Generator CO2 Sys	Annual												
102	Station Service 250V Batteries	Annual												
103	Incline Tunnel Piping	Annual												
104	Life Safety (Emergency Lighting)	Annual												
105	Relay Protection	Annual												
106	Servo Motor (N7)	Annual												
107	SF6 Breaker Mods	Annual												