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7.0 DEVELOPMENTAL ANALYSIS

SCE generally operates all seven of its FERC licensed hydroelectric Projects in the BCS from a watershed perspective, rather than on an individual Project basis. This is due, in part, to SCE's ability to move water through combinations of three different "chains" to maximize Project efficiency. Therefore, implementation of the proposed environmental measures at one or more of the four Big Creek ALP Projects may result in reduced flexibility and efficiency of operation of all seven Projects, resulting in a loss of power generation at one or more Project facilities. This developmental analysis identifies the combined power and economic benefits, and the cost of implementing the proposed environmental measures, for the four combined Big Creek ALP Projects and for each Project individually. A comparison of the results of the analysis is provided here for the No Action Alternative, Proposed Action, and the CDFG Alternative. Table 7.0-1 is comprised of the assumptions used to do the developmental analysis.

7.1 POWER AND ECONOMIC BENEFITS

Table 7.1-1 provides the cost details of implementing the recommended new environmental measures identified in the Proposed Action for the four Big Creek ALP Projects. The table provides cost information by individual Project and a total cost for all four of the Projects. Table 7.1-2 details the reduction in annual energy benefits and the loss in generation resulting from the implementation of MIF and CRMF under the Proposed Action per individual Project and combined Big Creek ALP Projects. The reduction in annual energy benefits associated with the CDFG Alternative includes the loss of generation from implementation of the MIF and the cost of implementing the recommended aquatic and terrestrial resource environmental measures in that proposal. Generation loss estimates for both the Proposed Action and the CDFG Alternative are based on the implementation of the recommended new instream measures over the existing conditions (No Action Alternative). These energy losses are projected over the requested 44 year term of the new licenses. A comparison between alternatives is also provided in Table 7.1-2.

7.1.1 No Action Alternative

The existing Project represents the No Action Alternative. Under this alternative, there would be no change in the current operation of the Projects or facilities. SCE would not provide any additional environmental or cultural measures above those provided in the existing licenses. There would be no additional costs under this alternative. The annual operating cost of the existing Project is approximately \$64,256,188 (Table 7.1-2). Under the No Action Alternative, the four Big Creek ALP Projects would generate an average of 3,366,594 MWh of electricity annually and have an annual power value of \$249,968,497. This results in a net annual benefit of \$185,712,309 to SCE's customers.

SCE's annual direct operation and maintenance cost for the four Big Creek ALP Projects is \$28,088,110 (Table 7.1-3). A breakdown of costs for Project operations and maintenance activities for the No Action Alternative, associated with the implementation

of existing environmental measures that would be continued into the future, as identified in Sections 3.1.5 and 3.1.6 of the APDEA, is provided in Table 7.1-4. The annualized cost for the implementation of these maintenance activities and measures is \$1,420,830. Table 7.1-4 provides the costs to implement existing environmental measures that would be continued into the future, as identified in Sections 3.1.5 and 3.1.6 of the APDEA, for the individual Projects and the total cost for all Big Creek ALP Projects combined.

7.1.2 Proposed Action

The Proposed Action includes implementation of new environmental measures described in Section 3.1.7 of the APDEA. The annualized cost to implement the new environmental measures for the four Big Creek ALP Projects is \$5,247,251 (Table 7.1-1). The Proposed Action results in an average generation of 3,179,190 MWh of electricity annually, an annual power value of \$240,044,271, and total annual costs of \$69,503,439 for all four Big Creek ALP Projects combined (Table 7.1-2). The resulting net annual benefit to SCE's customers is \$170,540,832. This represents an annual energy loss of about 187,404 MWh (5.89%) and an annual reduction in benefits to SCE customers of \$15,171,477 compared to the No Action Alternative. Only generation effects at the four Big Creek ALP Projects are included in these estimates. An additional 1,780 MWh and 167 MWh of generation is lost annually under the Proposed Action at the Portal Project and the Big Creek No. 4 Project, respectively. This represents an additional reduction in the annual benefits to SCE's customers of \$119,469 compared to the No Action Alternative.

Table 7.1-1 provides a breakdown of the costs for each of the four Big Creek ALP Projects to implement the new environmental measures under the Proposed Action as described in Section 3.1.7. Table 7.1-2 provides a comparison of the annual benefits and costs and net annual benefits of the No Action Alternative to the Proposed Action for each of the four Big Creek ALP Projects.

7.1.3 CDFG Alternative

The CDFG Alternative includes the implementation of new environmental measures described in Section 3.2. The annualized cost to implement the new environmental measures for the four Big Creek ALP Projects is \$1,783,152 (Table 7.1-5). Under the CDFG Alternative, the four Big Creek ALP Projects would generate an average of 3,197,105 MWh of electricity annually, have an annual power value of \$240,918,484 and total annual costs of \$66,039,340 resulting in a net annual benefit to SCE customers of \$174,879,144 (Table 7.1-2). This represents an energy loss of about 169,489 MWh (5.3%) and an annual reduction of \$10,833,165 in benefits to SCE customers compared to the No Action Alternative. An additional 1,845 MWh of generation is lost at the Portal Project, and 15 MWh of generation is gained at the Big Creek No. 4 Project under the CDFG Alternative, resulting in a net loss of 1,830 MWh of generation. This represents an additional reduction in the annual benefits to SCE's customers of \$112,290 compared to the No Action Alternative.

Table 7.1-5 provides the total annual cost of operation and maintenance for each of the four Big Creek ALP Projects to implement the new environmental measures under the CDFG Alternative. Table 7.1-2 also provides a comparison of the annual benefits and costs and net annual benefits of the No Action Alternative to the CDFG Alternative for each of the four Big Creek ALP Projects.

7.2 COMPARISON OF PROPOSED ACTION AND CDFG ALTERNATIVE

The generation loss under the CDFG Alternative is less than what would be incurred under the Proposed Action. However, the CDFG Alternative only recommends higher MIF releases into streams below Project impoundments and does not provide for CRMF releases, which are included within the Proposed Action. To fairly compare the CDFG Alternative to the Proposed Action, the loss of power generation resulting from only the implementation of MIF releases under the Proposed Action was determined. The comparison of lost generation at the four Big Creek ALP Projects due to only MIF releases in both the CDFG Alternative and the Proposed Action indicates that the CDFG Alternative has a greater reduction in annual energy production and net annual benefit, while providing minimal increases in environmental benefit. Implementation of the MIF releases under the CDFG Alternative results in an additional 11,775 MWh (or an additional 0.39%) of generation loss over the MIF releases under the Proposed Action, using the No Action Alternative as the baseline. This additional loss of generation in the CDFG Alternative results in a \$2,800,769 reduction in net annual benefits. Table 7.1-6 provides a comparison of the annual Project benefits and costs, and net annual benefits for the No Action Alternative, Proposed Action with MIF flow releases only, and the CDFG Alternative.

7.3 SETTLEMENT AGREEMENT APPENDIX B COSTS

Table 7.1-7 provides the cost of the Settlement Agreement Appendix B terms described in Section 3.1.8 of this APDEA for the four Big Creek Projects by resource area. The cumulative cost to implement these terms, which are not to be a part of the FERC license, includes one-time capitol costs of \$2,900,500 and an annualized contribution of \$2,127,103 for the term of the license, based on a 44 year license term.

TABLES

Table 7.0-1. Summary of Assumptions Used in Development Analysis.

Assumption	Value
Base year for costs and benefits	2006
2006 Energy value (\$/MWh)	\$50.41
2006 Capacity value (\$/kW-year)	\$71.13
Period of analysis	44 years ¹
In-service period	2009 ¹
Federal tax method	150% DB 20 Years
State tax method	200% DB 50 Years
Incremental Cost of Capital	10.0%
Capitalized Interest rate for tax	7.64%
Escalation rates	GDP Index

¹ SCE is requesting a 44 year license term for the four projects. This assumes that the Commission will issue the license for the Mammoth Pool Project at the same time as the licenses are issued for the other three remaining Big Creek ALP Projects. SCE is requesting that all four projects have the same future license expiration date.

Table 7.1-1. Proposed Action - Cost of Recommended New Environmental Measures and Resulting Reduction in Annual Energy Benefits for the Four Big Creek ALP Projects.

Environmental Measures	Year(s) Implemented	Capital and One-Time Costs (2006\$)	Annual Costs Including O&M (2006\$)	Annualized Costs (2006\$)	Reduction in Energy Benefits Annualized (2006\$)
MAMMOTH POOL PROJECT (FERC Project No. 2085)					
WATER AND AQUATIC RESOURCES					
Implement New Minimum Instream Flow Releases	5-46 ⁷		\$3,000	\$2,295	\$692,000
Maintain Existing and New Gaging Stations	1-46		\$100,000	\$106,945	
Complete Required Infrastructure Modifications (MIF releases and gaging)					
Mammoth Pool Dam Fishwater Generator Upgrade	2-5	\$6,000,000		\$432,467	
Mammoth Pool Dam (install pipe, valve and AVM gage)	2-5	\$6,300,000		\$454,090	
Ross Creek Diversion (core dam and install new float gage)	2-5	\$350,000		\$25,227	
Rock Creek Diversion (core dam and install new AVM Gage)	2-5	\$350,000		\$25,227	
Implement Monitoring Program					
Temperature	6-10	\$100,000	\$50,000	\$19,240	
Temperature (telemetry)	11-15		\$25,000	\$4,716	
Flow	1-46		\$25,000	\$26,736	
Fish	1,8,18,28,38		\$50,000	\$8,504	
Implement Sediment Management Plan					
	Every 3rd year, beginning				
Small Diversion (pass through)	2009		\$5,000	\$1,634	
Attend Annual Consultation Meeting	1-46		\$500	\$535	
TERRESTRIAL RESOURCES					
Implement Wildlife Habitat Enhancement	1-46		\$2,000	\$2,139	
Implement Management Plans					
	Every 5 years, beginning 2009				
Bald Eagle			\$10,000	\$2,118	
VELB	1-46		\$13,000	\$13,903	
Vegetation and Integrated Pest	1-46		\$50,000	\$53,472	
Implement Proposed License Articles (Mule Deer, Special-status Species, Bats)	1-5	\$2,000	\$6,000	\$2,421	
Implement Proposed License Articles (Mule Deer, Special-status Species, Bats)	6-46		\$6,000	\$4,228	
Implement Environmental Programs (Environmental Training, ESAP, Avian, Noxious Weed, NHSSSIP, Environmental Compliance)	1-5	\$25,000	\$2,500	\$3,096	
Implement Environmental Programs (Environmental Training, ESAP, Avian, Noxious Weed, NHSSSIP, Environmental Compliance)	6-46		\$2,500	\$1,762	
Attend Annual Consultation Meeting	1-46		\$500	\$535	
RECREATION RESOURCES					
Implement Recreation Management Plan					
Rehabilitation of Existing Recreation Facilities	11-20	\$1,900,000		\$61,427	
Manage Reservoir WSE	1-46		\$2,000	\$2,139	
Fund Fish Stocking (50% cost share)	1-5		\$25,000	\$9,367	
Fund Fish Stocking (50% cost share)	6-46		\$25,000	\$17,618	
Dissemination of Flow Information (whitewater boating)					
	1-46		\$5,000	\$5,347	
Provide Pre-spill Whitewater Boating Releases (wet years only)	Every 3rd year, 2009		\$3,400	\$1,111	
Provide Pre-spill Whitewater Boating Releases (above normal years only)	Every 6th year, 2010		\$3,400	\$576	
Prepare Report on Recreation Resources (every 6 years)	Every 6th year, 2015		\$25,000	\$2,804	
Interpretive Signs	1,20	\$32,000		\$3,514	
Attend Annual Consultation Meeting	1-46		\$500	\$535	

Table 7.1-1. Proposed Action - Cost of Recommended New Environmental Measures and Resulting Reduction in Annual Energy Benefits for the Four Big Creek ALP Projects (continued).

Environmental Measures	Year(s) Implemented	Capital and One-Time Costs (2006\$)	Annual Costs Including O&M (2006\$)	Annualized Costs (2006\$)	Reduction in Energy Benefits Annualized (2006\$)
MAMMOTH POOL PROJECT (FERC Project No. 2085) (continued)					
LAND MANAGEMENT					
Implement Management Plans					
Visual Resources	20	\$800,000		\$18,747	
Transportation System Plan	1-46		\$20,000	\$24,801	
Fire Plan	1-46		\$500	\$535	
Spill Prevention Control and Countermeasure Plans	1-46		\$500	\$535	
Attend Annual Consultation Meeting	1-46		\$500	\$535	
Transportation System Plan Labor	3-46		\$277,500	\$250,620	
Transportation System Plan Equipment & Materials	3-46		\$72,800	\$65,748	
CULTURAL RESOURCES					
Implement a Historic Properties Management Plan	1-5	\$41,000	\$4,000	\$5,040	
Implement a Historic Properties Management Plan	6-46		\$4,000	\$2,819	
Implement Environmental Programs (Environmental, Cultural Awareness)	1-46		\$1,000	\$1,069	
Attend Annual Consultation Meeting	1-46		\$500	\$535	
TOTAL MAMMOTH POOL PROJECT COST		\$15,900,000	\$821,600	\$1,666,709	\$692,000
BIG CREEK NOS. 1 & 2 (FERC Project No. 2175)					
WATER AND AQUATIC RESOURCES					
Implement New Minimum Instream Flow and Channel Riparian Maintenance Flow Releases	3-46		\$2,000	\$1,806	\$5,683,000
Maintain Existing and New Gaging Stations	3-46		\$100,000	\$90,313	
Complete Required Infrastructure Modifications (MIF releases and gaging)					
Ely Creek Diversion (core dam install float gage)	4-7	\$350,000		\$21,903	
Balsam Creek Diversion Infrastructure Changes (core dam install float gage)	4-7	\$350,000		\$21,903	
Dam 4 Infrastructure Changes (core dam , install release structure and AVM gage)	4-7	\$2,500,000		\$156,450	
Implement Monitoring Programs					
Temperature	8-12		\$40,000	\$9,229	
Flow	3-46		\$50,000	\$45,157	
Fish	3,10,20,30,40		\$50,000	\$7,176	
Implement Sediment Management Plan					
Small Diversion (pass through)	Every 3rd year, beginning 2009		\$2,500	\$817	
Dam 4 (Flush) and V* Monitoring	Every 5th year, beginning 2012		\$25,000	\$4,148	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
TERRESTRIAL RESOURCES					
Implement Wildlife Habitat Enhancement	3-46		\$2,000	\$1,806	
Implement Management Plans					
Bald Eagle	Every 5 years, beginning 2009		\$10,000	\$2,118	
Vegetation and Integrated Pest	3-46		\$50,000	\$45,157	
Implement Proposed License Articles (Special-status Species, Bats, Bear-Human)	3-46	\$2,000	\$6,000	\$5,563	
Implement Environmental Programs (Environmental Training, ESAP, Avian, Noxious Weed, NHSSSIP, Environmental Compliance)	3-46	\$25,000	\$2,500	\$4,065	
Attend Annual Consultation Meeting	3-46		\$500	\$452	

Table 7.1-1. Proposed Action - Cost of Recommended New Environmental Measures and Resulting Reduction in Annual Energy Benefits for the Four Big Creek ALP Projects (continued).

Environmental Measures	Year(s) Implemented	Capital and One-Time Costs (2006\$)	Annual Costs Including O&M (2006\$)	Annualized Costs (2006\$)	Reduction in Energy Benefits Annualized (2006\$)
BIG CREEK NOS. 1 & 2 (FERC Project No. 2175) (continued)					
RECREATION RESOURCES					
Implement Recreation Management Plan					
Rehabilitation of Existing Recreation Facilities	3-12 ⁴ ; 23-32 ⁵	\$6,800,000		\$283,082	
Enhancement New recreation facilities/Features (Dam 3 Day-Use Area and Accessible Fishing Platform)	3-7	\$1,500,000		\$97,418	
Manage Reservoir WSE	3-46		\$2,000	\$1,806	
Fund Fish Stocking (50% cost share)	3-7		\$50,000	\$16,236	
Fund Fish Stocking (50% cost share)	8-46		\$50,000	\$29,882	
Prepare Report on Recreation Resources (every 6 years)	Every 6th year, beginning 2015		\$100,000	\$11,216	
Interpretive Signs	3,22		\$192,000	\$20,177	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
LAND MANAGEMENT					
Implement Management Plans					
Visual Resources	4-7	\$10,000		\$626	
Transportation System	3-46		\$17,000	\$18,250	
Fire Plan	3-46		\$500	\$452	
Spill Prevention Control and Countermeasure Plans	3-46		\$500	\$452	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
Transportation System Plan Labor	3-46		\$277,500	\$250,620	
Transportation System Plan Equipment & Materials	3-46		\$72,800	\$65,748	
CULTURAL RESOURCES					
Implement a Historic Properties Management Plan	3-7	\$41,000	\$4,000	\$4,350	
Implement a Historic Properties Management Plan	8-46		\$4,000	\$2,391	
Implement Environmental Programs (Environmental, Cultural Awareness)	3-46		\$1,000	\$903	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
TOTAL BIG CREEK NOS. 1 AND 2 PROJECT COST		\$11,578,000	\$1,113,800	\$1,223,477	\$5,683,000
BIG CREEK NOS. 2A, 8, and Eastwood (FERC Project No. 67)					
WATER AND AQUATIC RESOURCES					
Implement New Minimum Instream Flow and Channel Riparian Maintenance Flow Releases	3-46 ⁶		\$8,000	\$7,225	\$2,509,000
Maintain Existing and New Gaging Stations	3-46		\$100,000	\$90,313	
Complete Required Infrastructure Modifications (MIF releases and gaging)					
Dam 5 (core dam, install release structure and AVM gage)	4-7	\$2,500,000		\$156,450	
Mono Creek Diversion (core dam, install release structure and AVM gage)	4-7	\$1,500,000		\$93,870	
Bolsillo Creek Diversion	4-7	\$100,000		\$6,258	
Camp 62 Creek Diversion	4-7	\$100,000		\$6,258	
Decommission Small Diversions					
Crater Creek Diversion	4	\$400,000		\$27,679	
Tombstone Creek Diversion	5	\$700,000		\$45,180	
North Slide Creek Diversion	6	\$25,000		\$1,508	
South Slide Creek Diversion	6	\$10,000		\$603	
Pitman Creek Domestic Diversion	7	\$25,000		\$1,407	
Snow Slide Creek Domestic Diversion	7	\$25,000		\$1,407	

Table 7.1-1. Proposed Action - Cost of Recommended New Environmental Measures and Resulting Reduction in Annual Energy Benefits for the Four Big Creek ALP Projects (continued).

Environmental Measures	Year(s) Implemented	Capital and One-Time Costs (2006\$)	Annual Costs Including O&M (2006\$)	Annualized Costs (2006\$)	Reduction in Energy Benefits Annualized (2006\$)
BIG CREEK NOS. 2A, 8, and Eastwood (FERC Project No. 67) (continued)					
WATER AND AQUATIC RESOURCES (continued)					
Implement Monitoring Programs					
Fish	3,10,20,30,40		\$72,000	\$10,334	
Temperature	8-12		\$140,000	\$32,301	
Flow	3-46		\$140,000	\$126,439	
Riparian	4,7,12,22,32,42		\$75,000	\$13,346	
Jackass Meadows	3,5,9,12		\$75,000	\$15,836	
Camp 61 Creek	4,7,12,22,32,42		\$40,000	\$7,118	
Implement Sediment Management Plan					
Small Diversion (pass through)	Every 3rd year, beginning 2009		\$15,000	\$4,901	
Dam 5 and Mono Creek (Flush)	Every 5th year, beginning 2012		\$25,000	\$4,148	
Dam 5, Mono Creek, and Balsam Meadows forebays (sediment removal)	Every 5th year, beginning 2012		\$150,000	\$24,887	
Implement Sediment Management Plan for Mono Creek	Every 2nd year, beginning 2014		\$50,000	\$15,587	
Implement Sediment Management Plan for Camp 61 Creek	Every 2nd year, beginning 2011		\$50,000	\$19,884	
Implement Large Woody Debris Measure Bear Creek Diversion	3-46		\$6,000	\$5,419	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
TERRESTRIAL RESOURCES					
Implement Wildlife Habitat Enhancement					
Implement Management Plans	3-46		\$2,000	\$1,806	
Bald Eagle	3, 7, 12, 17, 22, 27, 32, 37, 42		\$10,000	\$2,234	
VELB	3-46		\$13,000	\$11,741	
Vegetation and Integrated Pest	3-46		\$50,000	\$45,157	
Implement Proposed License Articles (Mule Deer, Special-status Species, Bats)	3-46	\$2,000	\$6,000	\$5,563	
Implement Environmental Programs (Environmental Training, ESAP, Avian Protection, Noxious Weeds, NHSSSIP, Environmental Compliance)	3-46	\$25,000	\$2,500	\$4,065	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
RECREATION RESOURCES					
Implement Recreation Management Plan					
Operation and Maintenance of Recreation Facilities	3-46		\$62,500	\$56,446	
Rehabilitation of Existing Recreation Facilities	4-9 ¹ ; 10-16 ² , 19-23 ³	\$9,200,000		\$354,228	
Enhancement New Recreation Facilities/Features (Accessible Fishing Platform Jackass Mdws, and Handicapped Boat Loading Platform)	3-7	\$250,000		\$16,779	
Maintenance of Accessible Fishing Platform	Every 3rd Year Beginning 2012		\$5,000	\$1,272	
Manage Reservoir WSE	3-46		\$2,000	\$1,806	
Fund Fish Stocking (50% cost share)	3-7		\$75,000	\$24,354	
Fund Fish Stocking (50% cost share)	8-46		\$75,000	\$44,823	
Dissemination of Flow Information (whitewater boating)	3-46		\$5,000	\$4,516	
Interpretive Signs	3	\$96,000		\$7,143	
Prepare Report on Recreation Resources (every 6 years)	8, 14, 20, 26, 38		\$100,000	\$11,143	
Attend Annual Consultation Meeting	3-46		\$500	\$452	

Table 7.1-1. Proposed Action - Cost of Recommended New Environmental Measures and Resulting Reduction in Annual Energy Benefits for the Four Big Creek ALP Projects (continued).

Environmental Measures	Year(s) Implemented	Capital and One-Time Costs (2006\$)	Annual Costs Including O&M (2006\$)	Annualized Costs (2006\$)	Reduction in Energy Benefits Annualized (2006\$)
BIG CREEK NOS. 2A, 8, and Eastwood (FERC Project No. 67) (continued)					
LAND MANAGEMENT					
Implement Management Plans					
Transportation System Plan	3-46		\$40,000	\$42,941	
Fire Plan	3-46		\$500	\$452	
Spill Prevention Control and Countermeasure Plans	3-46		\$500	\$452	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
Transportation System Plan Labor	3-46		\$277,500	\$250,620	
Transportation System Plan Equipment & Materials	3-46		\$72,800	\$65,748	
CULTURAL RESOURCES					
Implement a Historic Properties Management Plan	3-7	\$243,000	\$30,000	\$27,823	
Implement a Historic Properties Management Plan	8-46		\$30,000	\$17,929	
Implement Environmental Programs (Environmental, Cultural Awareness)	3-46		\$1,000	\$903	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
TOTAL BIG CREEK NOS. 2A, 8 AND EASTWOOD PROJECT COST		\$15,201,000	\$1,808,800	\$1,720,558	\$2,509,000
BIG CREEK NO. 3 (FERC Project No. 120)					
WATER AND AQUATIC RESOURCES					
Implement New Minimum Instream Flow Releases	3-46		\$3,000	\$414	\$1,040,000
Maintain Existing and New Gaging Stations	3-46		\$100,000	\$13,802	
Complete Required Infrastructure Modifications (MIF releases and gaging)					
Dam 6 Infrastructure Modifications	4-7	\$2,500,000		\$156,450	
Implement Monitoring Program					
Temperature	8-12	\$100,000	\$40,000	\$12,380	
Temperature (telemetry)	13-17		\$25,000	\$4,121	
Temperature (Hardhead and DO Study)	5,7		\$50,000	\$5,589	
Flow	3-46		\$25,000	\$22,578	
Fish	3,10,20,30,40		\$50,000	\$7,176	
Implement Sediment Management Plan					
Dam 6 (Flush) and V* monitoring	Every 5th year, beginning 2012		\$10,000	\$2,208	
Dam 6 (sediment removal)	Every 10th year, beginning 2012		\$100,000	\$22,083	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
TERRESTRIAL RESOURCES					
Implement Wildlife Habitat Enhancement	3-46		\$2,000	\$1,806	
Implement Management Plans					
Bald Eagle	3, 7, 12, 17, 22, 27, 32, 37, 42		\$10,000	\$2,234	
VELB	3-46		\$13,000	\$11,741	
Vegetation and Integrated Pest	3-46		\$20,000	\$18,063	
Implement Proposed License Articles (Special-status Species, Bats)	3-46		\$6,000	\$5,419	
Implement Environmental Programs (Environmental Training, ESAP, Avian, Noxious Weed, NHSSIP, Environmental Compliance)	3-46	\$25,000	\$2,500	\$4,065	
Attend Annual Consultation Meeting	3-46		\$500	\$452	

Table 7.1-1. Proposed Action - Cost of Recommended New Environmental Measures and Resulting Reduction in Annual Energy Benefits for the Four Big Creek ALP Projects (continued).

Environmental Measures	Year(s) Implemented	Capital and One-Time Costs (2006\$)	Annual Costs Including O&M (2006\$)	Annualized Costs (2006\$)	Reduction in Energy Benefits Annualized (2006\$)
BIG CREEK NO. 3 (FERC Project No. 120) (continued)					
RECREATION RESOURCES					
Implement Recreation Management Plan					
Rehabilitation of Existing Recreation Facilities	13-22	\$50,000		\$1,413	
Prepare Report on Recreation Resources (every 6 years)	8, 14, 20, 26, 38		\$5,000	\$557	
Dissemination of Flow Information (whitewater boating)	3-46		\$5,000	\$4,516	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
LAND MANAGEMENT					
Implement Management Plans					
Transportation System Plan	3-46		\$12,000	\$12,882	
Fire Plan	3-46		\$500	\$452	
Spill Prevention Control and Countermeasure Plans	3-46		\$500	\$452	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
Transportation System Plan Labor	3-46		\$277,500	\$250,620	
Transportation System Plan Equipment & Materials	3-46		\$72,800	\$65,748	
CULTURAL RESOURCES					
Implement a Historic Properties Management Plan	3-46	\$41,000	\$4,000	\$6,577	
Implement Environmental Programs (Environmental, Cultural Awareness)	3-46		\$1,000	\$903	
Attend Annual Consultation Meeting	3-46		\$500	\$452	
TOTAL BIG CREEK NO. 3 PROJECT COST		\$2,716,000	\$837,300	\$636,506	\$1,040,000
TOTAL COST FOUR BIG CREEK ALP PROJECTS		\$45,395,000	\$4,581,500	\$5,247,251	\$9,924,000

¹Years 4-9 cost = \$1,800,000

²Years 10-16 cost = \$5,400,000

³Years 19-23 cost = \$2,000,000

⁴Years 1-10 cost = \$4,500,000

⁵Years 21-30 cost = \$2,300,000

⁶Assumes that geomorphic flows will only occur during wet years

⁷Assumes that pre-spill releases only occur during wet years

Table 7.1-2. Comparison of Annual Project Benefits and Costs, and Net Annual Benefits for the No Action Alternative, Proposed Action and the CDFG Alternative for the Four Big Creek ALP Projects.

Item	Combined Total for the Four Big Creek ALP Projects			Mammoth Pool Project FERC Project No. 2085			Big Creek Nos. 1 and 2 Project FERC Project No. 2175			Big Creek Nos. 2A, 8 and Eastwood Project FERC Project No. 67			Big Creek No. 3 FERC Project No. 120		
	No Action	Proposed Action	CDFG Alternative	No Action	Proposed Action	CDFG Alternative	No Action	Proposed Action	CDFG Alternative	No Action	Proposed Action	CDFG Alternative	No Action	Proposed Action	CDFG Alternative
Dependable Operating Capacity (MW)	888.9	888.9	888.9	187	187	187	150	150	150	370	370	370	181.9	181.9	181.9
Average annual energy (MWh) ¹	3,366,594	3,179,190	3,197,105	603,734	592,449	585,196	765,483	657,072	683,974	1,173,296	1,125,429	1,126,057	824,081	804,240	801,878
Annual benefit (\$)	249,968,497	240,044,271	240,918,484	53,234,107	52,541,666	52,096,626	51,218,697	45,536,022	46,946,168	88,866,152	86,357,066	86,389,984	56,649,540	55,609,517	55,485,706
Annual cost (\$)	64,256,188	69,503,439	66,039,340	9,709,280	11,375,989	10,296,949	14,024,345	15,247,822	14,348,279	27,307,190	29,027,748	28,012,509	13,215,373	13,851,879	13,381,610
Net annual benefit (\$)	185,712,309	170,540,832	174,879,144	43,524,827	41,165,677	41,799,677	37,194,352	30,288,200	32,597,889	61,558,962	57,329,318	58,377,475	43,434,167	41,757,638	42,104,096
Change in net annual benefit from No-action Alternative (\$) ²		15,171,477	10,833,165		2,359,150	1,725,150		6,906,152	4,596,463		4,229,644	3,181,487		1,676,529	1,330,071
Reduction in Annual Energy (MWh) ³		187,404	169,489		11,285	18,538		108,411	81,501		47,867	47,239		19,841	22,203
Percent Reduction of Annual Energy Benefits (%)		5.89%	5.30%		1.90%	3.17%		16.50%	11.92%		4.25%	4.20%		2.47%	2.77%

¹The average annual energy for the No Action Alternative is a 15-year average from (1991 to 2005) calculated from the actual generation for the four Big Creek ALP Projects. The average annual energy for the Proposed Action and CDFG Alternative reflects the reduced generation that we assume would have occurred during that 15-year period if the proposed MIFs and CRMFs had been in effect.

²The change in annual energy benefits is calculated by subtracting the annual energy generation in the Proposed Action and CDFG Alternative from the average annual energy produced under the No Action Alternative.

³The reduction in annual energy is calculated by subtracting the annual energy generation in the Proposed Action and the CDFG from the average annual energy produced under the No Action Alternative.

Table 7.1-3. Costs Associated with the Four Big Creek ALP Projects.

Cost Component	Combined Total for the Four Big Creek ALP Projects		Mammoth Pool Project FERC Project No. 2085		Big Creek Nos. 1 and 2 Project FERC Project No. 2175		Big Creek Nos. 2A, 8 and Eastwood Project FERC Project No. 2175		Big Creek No. 3 FERC Project No. 120	
	Capital Cost (2006 \$)	Annual Cost (2006 \$)	Capital Cost (2006 \$)	Annual Cost (2006 \$)	Capital Cost (2006 \$)	Annual Cost (2006 \$)	Capital Cost (2006 \$)	Annual Cost (2006 \$)	Capital Cost (2006 \$)	Annual Cost (2006 \$)
Core Capital	177,756,026	18,000,100	31,372,551	3,176,877	44,979,681	4,554,775	58,680,893	5,942,200	42,722,901	4,326,247
New Environmental Measures	45,395,000	5,247,251 ¹	15,900,000	1,666,709 ¹	11,578,000	1,223,477 ¹	15,201,000	1,720,558 ¹	2,716,000	636,506 ¹
O&M		28,088,110 ²		4,957,332 ²		7,107,462 ²		9,272,458 ²		6,750,857 ²
Depreciation		10,654,303 ³		954,959 ³		1,441,469 ³		6,965,129 ³		1,292,746 ³
Property Tax		3,484,606 ⁴		291,084 ⁴		425,702 ⁴		2,386,974 ⁴		380,846 ⁴
A&G		4,029,069 ⁵		329,028 ⁵		494,936 ⁵		2,740,428 ⁵		464,677 ⁵
Total		69,503,438		11,375,989		15,247,822		29,027,748		13,851,879

¹This amount represents the New Environmental Measures Capital and O&M costs annualized over the term of the new licenses.

²This amount is an annualized value, which was forecasted for the term of the license.

³This amount represents the actual depreciation for the year 2005.

⁴The amount is based on a prorata allocation of costs from 2005 data for all SCE-owned Hydro Generation.

⁵The amount is based on an estimate calculated from the Project's Net Investment Value.

Table 7.1-4. No Action Alternative - Cost of Existing Environmental Measures for the Four Big Creek ALP Projects

Environmental Measure	Year(s) Implemented	Annual O&M Costs (2006\$)	Annualized Costs (2006\$)
MAMMOTH POOL PROJECT (FERC Project No. 2085)			
Operation and Maintenance			
WATER AND AQUATIC RESOURCES			
Sediment Management			
Physical Removal by Hand	1-46	\$1,000	\$1,069
Physical Removal with Equipment (Rock and Ross Creek Diversions)	20, 40 ¹	\$25,000	\$557
High Flow Releases (Mammoth Pool Dam HB Valve)	20, 40 ¹	\$3,400	\$76
Gate and Valve Testing (Rock and Ross Creek Diversions)	1-46	\$1,000	\$1,069
Large Woody Debris Management	1-46	\$3,000	\$3,208
TERRESTRIAL RESOURCES			
Vegetation Management (Manual, Mechanical, and Chemical)	1-46 ²	\$15,000	\$16,042
Rodent Control (Mammoth Pool Spillway)	1-46	\$500	\$535
Rodent Control (Powerhouses)	1-46	\$500	\$535
LAND MANAGEMENT			
Road Maintenance	1-46 ²	\$7,500	\$8,021
Existing Environmental Measures			
WATER AND AQUATIC RESOURCES			
Maintain Gaging Stations and provide MIF	1-46	\$40,000	\$42,778
TERRESTRIAL RESOURCES			
Implement Measures to Protect Deer Migration			
Annual inspection of measures, (soil on bridge, fencing, bridge crossing)	1-46	\$1,000	\$1,069
Place soil on spillway bridge and repair fencing at spillway	Every 5 years	\$5,000	\$898
Repair/rehabilitation Dalton Creek Bridge Crossing	20, 40	\$30,000	
Continue to Protect Special Status Species	1-46	\$2,500	\$2,674
Implement Environmental Programs (Environmental, ESAP, Avian)	1-46	\$5,000	\$5,347
LAND MANAGEMENT			
Implement Fire Plan	1-46	\$1,000	\$1,069
Implement Spill Prevention Control and Counter Measure Plan	1-46	\$1,000	\$1,069
CULTURAL RESOURCES			
Implement Environmental Training Sessions	1-46	\$2,500	\$2,674
EXISTING MEASURES THAT APPLY TO MULTIPLE RESOURCE CATEGORIES			
Attend Annual Consultation Meeting (Agencies and Tribes)	1-46	\$2,000	\$2,139
Mammoth Pool Project Total		\$146,900	\$90,829

Table 7.1-4. No Action Alternative - Cost of Existing Environmental Measures for the Four Big Creek ALP Projects

Environmental Measure	Year(s) Implemented	Annual O&M Costs (2006\$)	Annualized Costs (2006\$)
BIG CREEK NOS. 1 AND 2 PROJECT (FERC Project No. 2175)			
Operation and Maintenance			
WATER AND AQUATIC RESOURCES			
Sediment Management			
Physical Removal by Hand (Balsam and Ely Diversion)	3-46	\$1,000	\$903
Physical Removal with Equipment (Ely Diversion)	20, 40 ¹	\$10,000	\$223
Gate and Valve Testing	3-46	\$3,000	\$2,709
Large Woody Debris Management	3-46	\$2,000	\$1,806
TERRESTRIAL RESOURCES			
Vegetation Management (Manual, Mechanical, and Chemical)	3-46	\$25,000	\$22,578
Rodent Control (Powerhouses)	3-46	\$1,000	\$903
LAND MANAGEMENT			
Road Maintenance	3-46 ²	\$100,000	\$90,313
Existing Environmental Measures			
WATER AND AQUATIC RESOURCES			
Maintain Gaging Stations and provide MIF	3-46	\$60,000	\$54,188
TERRESTRIAL RESOURCES			
Continue to Protect Special Status Species	3-46	\$2,500	\$2,258
Implement Environmental Programs (Environmental, ESAP, Avian)	3-46	\$5,000	\$4,516
LAND MANAGEMENT			
Implement Fire Plan	3-46	\$1,000	\$903
Implement Spill Prevention Control and Counter Measure Plan	3-46	\$1,000	\$903
CULTURAL RESOURCES			
Implement Environmental Training Sessions	3-46	\$2,500	\$2,258
EXISTING MEASURES THAT APPLY TO MULTIPLE RESOURCE CATEGORIES			
Attend Annual Consultation Meeting (Agencies and Tribes)	3-46	\$2,000	\$1,806
Big Creek No. 1 and 2 Project Total		\$216,000	\$186,268

Table 7.1-4. No Action Alternative - Cost of Existing Environmental Measures for the Four Big Creek ALP Projects

Environmental Measure	Year(s) Implemented	Annual O&M Costs (2006\$)	Annualized Costs (2006\$)
BIG CREEK NOS. 2A, 8 AND EASTWOOD PROJECT (FERC Project No. 67)			
Operation and Maintenance			
WATER AND AQUATIC RESOURCES			
Sediment Management			
Physical Removal by Hand	3-46	\$5,000	\$4,516
Physical Removal with Equipment (Mono, Bear, and Hooper)	3-46	\$50,000	\$45,157
Physical Removal with Equipment (Mono, Pitman, Dam 5)	20, 40 ¹	\$150,000	\$3,686
Gate and Valve Testing	3-46	\$5,000	\$4,516
Large Woody Debris Management	3-46	\$15,000	\$13,547
TERRESTRIAL RESOURCES			
Vegetation Management (Manual, Mechanical, and Chemical)	3-46 ²	\$40,000	\$36,125
Rodent Control (Balsam Dam)	3-46	\$500	\$452
Rodent Control (Powerhouses)	3-46	\$1,500	\$1,355
LAND MANAGEMENT			
Road Maintenance	3-46 ²	\$65,000	\$58,704
Existing Environmental Measures			
WATER AND AQUATIC RESOURCES			
Maintain Gaging Stations and provide MIF	3-46	\$200,000	\$180,627
TERRESTRIAL RESOURCES			
Implement Measures to Protect Deer Migration	3-46	\$500	\$452
Continue to Protect Special Status Species	3-46	\$2,500	\$2,258
Implement Environmental Programs (Environmental, ESAP, Avian)	3-46	\$5,000	\$4,516
RECREATION RESOURCES			
Maintain SCE Owned and Operated Developed Recreation Facilities	3-46	\$745,000	\$672,835
LAND MANAGEMENT			
Implement Fire Plan	3-46	\$1,000	\$903
Implement Spill Prevention Control and Counter Measure Plan	3-46	\$1,000	\$903
CULTURAL RESOURCES			
Implement Environmental Training Sessions	3-46	\$2,500	\$2,258
EXISTING MEASURES THAT APPLY TO MULTIPLE RESOURCE CATEGORIES			
Attend Annual Consultation Meeting (Agencies and Tribes)	3-46	\$2,000	\$1,806
Big Creek Nos. 2A, 8 and Eastwood Project Total		\$1,291,500	\$1,034,614

Table 7.1-4. No Action Alternative - Cost of Existing Environmental Measures for the Four Big Creek ALP Projects

Environmental Measure	Year(s) Implemented	Annual O&M Costs (2006\$)	Annualized Costs (2006\$)
BIG CREEK NOS. 3 PROJECT (FERC Project No. 120)			
WATER AND AQUATIC RESOURCES			
Sediment Management			
Physical Removal with Equipment (Dam 6)	20, 40 ¹	\$150,000	\$3,340
High Flow Releases	20, 40 ¹	\$5,000	\$111
Gate and Valve Testing	3-46	\$2,000	\$1,806
Large Woody Debris Management			
TERRESTRIAL RESOURCES			
Vegetation Management (Manual, Mechanical, and Chemical)	3-46 ²	\$40,000	\$36,125
Rodent Control (Powerhouses)		\$500	\$452
LAND MANAGEMENT			
Road Maintenance	3-46 ²	\$20,000	\$18,063
Existing Environmental Measures			
WATER AND AQUATIC RESOURCES			
Maintain Gaging Stations and provide MIF	3-46	\$40,000	\$36,125
TERRESTRIAL RESOURCES			
Continue to Protect Special Status Species	3-46	\$2,500	\$2,258
Implement Environmental Programs (Environmental, ESAP, Avian)	3-46	\$5,000	\$4,516
RECREATION RESOURCES			
Maintain Angler Stairway	3-46	\$500	\$452
LAND MANAGEMENT			
Implement Fire Plan	3-46	\$1,000	\$903
Implement Spill Prevention Control and Counter Measure Plan	3-46	\$1,000	\$903
CULTURAL RESOURCES			
Implement Environmental Training Sessions	3-46	\$2,500	\$2,258
EXISTING MEASURES THAT APPLY TO MULTIPLE RESOURCE CATEGORIES			
Attend Annual Consultation Meeting (Agencies and Tribes)	3-46	\$2,000	\$1,806
Big Creek No. 3 Project Total		\$272,000	\$109,118
Combined Total for the Four Big Creek ALP Projects			\$1,420,830

¹ Activity occurs once every 20 years but less than once every five years

² Annual cost represents an estimated average annual cost.

Table 7.1-5. CDFG Alternative - Total Annual Cost of Operation and Maintenance of the Four Big Creek ALP Projects.

	Year(s) Implemented	Capital and One-Time Costs (2006\$)	Annual O&M Costs (2006\$)	Annualized Costs (2006\$)	Reduction in Energy Benefits Annualized (2006\$)
MAMMOTH POOL PROJECT (FERC Project No. 2085)					
WATER AND AQUATIC RESOURCES					
Implementation of MIF Measures	1-46				\$1,137,481
Complete Required Infrastructure Modifications (MIF releases and gaging)					
Mammoth Pool Dam (install pipe, valve and AVM gage)	2-5	\$6,300,000		\$454,090	
Ross Creek Diversion (core dam and install new float gage)	2-5	\$350,000		\$25,227	
Rock Creek Diversion (core dam and install new AVM Gage)	2-5	\$350,000		\$25,227	
Conduct Reservoir Fish Monitoring Program and Silver Monitoring	Year 1, 8, 18, 28, 38		\$48,100	\$8,181	
Hatchery Support for Fish Stocking ²	1-46		\$56,331	\$60,243	
Obtain Section 1600 Permit for Sediment Removal Activities	Every 5 years, 2009		\$2,500	\$530	
TERRESTRIAL RESOURCES					
Mammoth Pool Deer Protection Measures	1-46		\$3,000	\$3,208	
Wildlife Mortality Program ³	1-46		\$10,000	\$10,694	
Provide CDFG Access to FERC Project Areas	1-46		\$250	\$267	
Mammoth Pool Project Total		\$7,000,000	\$120,181	\$587,669	\$1,137,481
BIG CREEK NOS. 1 AND 2 (FERC Project No. 2175)					
WATER AND AQUATIC RESOURCES					
Implementation of MIF Measures	3-46				\$4,272,529
Complete Required Infrastructure Modifications (MIF releases and gaging)					
Ely Creek Diversion (core dam install float gage)	4-7	\$350,000		\$21,903	
Balsam Creek Diversion Infrastructure Changes (core dam install float gage)	4-7	\$350,000		\$21,903	
Dam 4 Infrastructure Changes (core dam , install release structure and AVM gage)	4-7	\$2,500,000		\$156,450	
Conduct Reservoir Fish Monitoring Program and Silver Monitoring	Year 3, 10, 20, 30, 40		\$50,000	\$7,176	
Hatchery Support for Fish Stocking ²	3-46		\$88,155	\$79,616	
Obtain Section 1600 Permit for Sediment Removal Activities	Every 5 years, 2009		\$2,500	\$530	
TERRESTRIAL RESOURCES					
Wildlife Mortality Program ³	3-46		\$10,000	\$9,031	
Bear Mitigation - Install and Maintain Bear Proof Dumpsters (at Florence Work Camp)	3-46		\$30,000	\$27,094	
Provide CDFG Access to FERC Project Areas	3-46		\$250	\$226	
Big Creek Nos. 1 and 2 Project Total		\$3,200,000	\$180,905	\$323,929	\$4,272,529

Table 7.1-5. CDFG Alternative - Total Annual Cost of Operation and Maintenance of the Four Big Creek ALP Projects.

	Year(s) Implemented	Capital and One-Time Costs (2006\$)	Annual O&M Costs (2006\$)	Annualized Costs (2006\$)	Reduction in Energy Benefits Annualized (2006\$)
BIG CREEK NOS. 2A, 8 AND EASTWOOD (FERC Project No. 67)					
WATER AND AQUATIC RESOURCES					
Implementation of MIF Measures	3-46				\$2,476,168
Complete Required Infrastructure Modifications (MIF releases and gaging)					
Dam 5 (core dam, install release structure and AVM gage)	4-7	\$2,500,000		\$156,450	
Mono Creek Diversion (core dam, install release structure and AVM gage)	4-7	\$1,500,000		\$93,870	
Bolsillo Creek Diversion	4-7	\$100,000		\$6,258	
Camp 62 Creek Diversion	4-7	\$100,000		\$6,258	
Chinquapin Creek Diversion	4-7	\$100,000		\$6,258	
Crater Creek Diversion	4-7	\$500,000		\$31,290	
North Slide Creek Diversion	4-7	\$200,000		\$12,516	
South Slide Creek Diversion	4-7	\$200,000		\$12,516	
Tombstone Creek Diversion	4-7	\$500,000		\$31,290	
Pitman Creek Diversion	4-7	\$250,000		\$15,645	
North Fork Stevenson Creek	4-7	\$500,000		\$31,290	
Conduct Reservoir Fish Monitoring Program and Silver Monitoring (Lake Edison) ⁴	Year 3,10, 20, 20,40		\$44,461	\$6,381	
Conduct Reservoir Fish Monitoring Program (Florence, Balsam, and Shaver lakes)	Year 3,10, 20, 30,40		\$106,561	\$15,294	
Install Fish Screens at Drop Tube Intakes at Bolsillo, Chinquapin ,Camp 62, and Pitman diversions (1994\$- High Cost) ⁵	3	\$640,000		\$47,620	
Maintain Fish Screens at Drop Tube Intakes at Bolsillo, Chinquapin ,Camp 62, and Pitman diversions	4-46		\$88,000	\$73,114	
Hatchery Support for Fish Stocking ²	3-46		\$155,515	\$140,451	
Obtain Section 1600 Permit for Sediment Removal Activities	Every 5 years, 2009		\$2,500	\$530	
TERRESTRIAL RESOURCES					
Wildlife Mortality Program ³	3-46		\$10,000	\$9,031	
Bear Mitigation - Install and Maintain Bear Proof Dumpsters (at Florence Work Camp)	3-46		\$10,000	\$9,031	
Provide CDFG Access to FERC Project Areas	3-46		\$250	\$226	
Big Creek Nos. 2A, 8 and Eastwood Project Total		\$7,090,000	\$417,287	\$705,319	\$2,476,168

Table 7.1-5. CDFG Alternative - Total Annual Cost of Operation and Maintenance of the Four Big Creek ALP Projects.

	Year(s) Implemented	Capital and One-Time Costs (2006\$)	Annual O&M Costs (2006\$)	Annualized Costs (2006\$)	Reduction in Energy Benefits Annualized (2006\$)
BIG CREEK NO. 3 (FERC Project No. 120)					
WATER AND AQUATIC RESOURCES					
Implementation of MIF Measures	3-46				\$1,163,834
Complete Required Infrastructure Modifications (MIF releases and gaging)					
Dam 6 Infrastructure Modifications	4-7	\$2,500,000		\$156,450	
Obtain Section 1600 Permit for Sediment Removal Activities	Every 5 years, 2009		\$2,500	\$530	
TERRESTRIAL RESOURCES					
Wildlife Mortality Program ³	3-46		\$10,000	\$9,031	
Provide CDFG Access to FERC Project Areas	3-46		\$250	\$226	
Big Creek No. 3 Project Total		\$2,500,000	\$12,750	\$166,237	\$1,163,834
Total Combined Cost for the Four Big Creek ALP Projects		\$19,790,000	\$731,123	\$1,783,152	\$9,050,012

- 1- Reservoir and Fish Monitoring locations and frequencies is based on June 15, 2006 discussion with CDFG.
- 2- Hatchery costs assigned on the basis of percentage of hatchery costs spent during 1998-2004 by Project.
- 3- Wildlife Mortality Program is undefined as such the cost is assumed to be \$10,000 per Project.
- 4- Lake Edison is part of the Vermilion Project, but is included here since it was identified in discussions with CDFG for silver tissue monitoring.
- 5- Screens may not be operated under freezing conditions or high debris load

Table 7.1-6. Comparison of Annual Project Benefits and Costs, and Net Annual Benefits for the No Action Alternative, Proposed Action (without CRMF) and the CDFG Alternative for the Four Big Creek ALP Projects.

Item	Combined Total for the Four Big Creek ALP Projects			Mammoth Pool Project FERC Project No. 2085			Big Creek Nos. 1 and 2 Project FERC Project No. 2175			Big Creek Nos. 2A, 8 and Eastwood Project FERC Project No. 67			Big Creek No. 3 FERC Project No. 120		
	No Action	Proposed Action (No CRMF)	CDFG Alternative	No Action	Proposed Action (No CRMF)	CDFG Alternative	No Action	Proposed Action (No CRMF)	CDFG Alternative	No Action	Proposed Action (No CRMF)	CDFG Alternative	No Action	Proposed Action (No CRMF)	CDFG Alternative
Dependable Operating Capacity (MW)	888.9	888.9	888.9	187	187	187	150	150	150	370	370	370	181.9	181.9	181.9
Average annual energy (MWh) ¹	3,366,594	3,208,880	3,197,105	603,734	590,352	585,196	765,483	682,563	683,974	1,173,296	1,131,303	1,126,057	824,081	804,662	801,878
Annual benefit (\$)	249,968,497	241,581,808	240,918,484	53,234,107	52,412,995	52,096,626	51,218,697	46,872,206	46,946,168	88,866,152	86,664,969	86,389,984	56,649,540	55,631,638	55,485,706
Annual cost (\$)	64,256,188	69,503,435	66,039,342	9,709,280	11,375,989	10,296,949	14,024,345	15,247,822	14,348,279	27,307,190	29,027,748	28,012,509	13,215,373	13,851,879	13,381,610
Net annual benefit (\$)	185,712,309	172,078,373	174,879,142	43,524,827	41,037,006	41,799,677	37,194,352	31,624,384	32,597,889	61,558,962	57,637,221	58,377,475	43,434,167	41,779,759	42,104,096
Change in net annual benefit from No-action Alternative (\$) ²		13,633,936	10,833,167		2,487,821	1,725,150		5,569,968	4,596,463		3,921,741	3,181,487		1,654,408	1,330,071
Reduction in Annual Energy (MWh) ³		157,714	169,489		13,382	18,538		82,920	81,501		41,993	47,239		19,419	22,203
Percent Reduction of Annual Energy Benefits (%)		4.91%	5.30%		2.27%	3.17%		12.15%	11.92%		3.71%	4.20%		2.41%	2.77%

¹The average annual energy for the No Action Alternative is a 15-year average from (1991 to 2005) calculated from the actual generation for the four Big Creek ALP Projects. The average annual energy for the Proposed Action and CDFG Alternative reflects the reduced generation that we assume would have occurred during that 15-year period if the proposed MIFs and CRMFs had been in effect.

²The change in annual energy benefits is calculated by subtracting the annual energy generation in the Proposed Action and CDFG Alternative from the average annual energy produced under the No Action Alternative.

³The reduction in annual energy is calculated by subtracting the annual energy generation in the Proposed Action and the CDFG from the average annual energy produced under the No Action Alternative.

Table 7.1-7. Cost of Non-FERC Settlement Agreements for the Four Big Creek Projects.

Environmental Measures	Year(s) Implemented	Capital and One-Time Costs (2006\$)	Annual Costs Including O&M (2006\$)	Annualized Costs (2006\$)
WATER AND AQUATIC RESOURCES				
Gravel Augmentation	Every 2nd Year, beginning 2012		\$12,000	\$4,409
Macroinvertebrate Monitoring - Vermilion Leakage Channel	3		\$25,000	\$1,860
RECREATION RESOURCES				
Huntington Lake Big Creek Historical Conservancy - Housing for Bull Mack Truck, and Ward Tunnel Pipe	3	\$100,000		\$7,441
Huntington Lake Big Creek Historical Conservancy - Educational and interpretive programs	3	\$25,000		\$1,860
Forest Service - Asset Management and Concentrated Use Maintenance	3-46		\$49,000	\$52,602
Forest Service - Boat and trailer to accomplish the responsibilities associated with the management of the dispersed concentrated use recreation areas	3,24	\$25,000		\$2,308
Forest Service - Provide annual funding for minor rehabilitation activities at the Forest Service owned and operated recreation facilities	3-46		\$145,000	\$155,660
Forest Service - Provide annual funding for the administration of interpretive programs	3-46		\$13,000	\$13,956
Forest Service - Portal Campground water system	3	\$100,000		\$7,441
Shaver Crossing Railroad Group - A \$25,000 as a one-time donation to the Shaver Crossing Railroad Station Museum	3	\$25,000		\$1,860
Huntington Lake Association - Billy Creek Museum	3	\$125,000		\$9,301
Huntington Lake Association - Boat Dock Assistance Program	3	\$100,000		\$7,441
Huntington Lake Association - Reservoir water surface elevation posting on a website.	3-46		\$1,000	\$903
Huntington Lake Volunteer Fire Department - Fire Tender	3	\$100,000		\$7,441
Fresno County Sheriffs Department - Snow CAT	3	\$100,000		\$7,441
San Joaquin River Trail Council - San Joaquin River Trail support.	3	\$40,000		\$2,976
LAND MANAGEMENT				
Forest Service Road Use Permit				
Road Rehabilitation Project on Non-FERC Forest Service Roads	3	\$1,500,000		\$111,610
SCE perform maintenance of Forest Service Non-FERC Project roads	3-46		\$100,000	\$90,313
Provide commensurate share funding for SCE use on non-Project roads.	3-46		\$16,000	\$14,450
Transportation Signage Fund	3-46		\$5,000	\$4,516
Snow Removal Kaiser Pass road	3-46		\$35,000	\$31,610
SCE Labor for Land Management Activities Above	3-46		\$1,110,000	\$1,002,479
SCE Equipment & Materials for Land Management Activities	3-46		\$582,500	\$526,076
CULTURAL RESOURCES				
Native American Advisory Group	3-46		\$5,000	\$4,516
Native American Use Area near Shaver Lake	3	\$250,000		\$18,602
Ceremonial Use Area	3-46		\$1,000	\$903
Lands for Reburial	3	\$500		\$37
Native American Scholarship Fund	3	\$200,000		\$14,881
Improve Pedestrian Access and Protection of Cultural Resource at Mono Hot Springs	3	\$10,000		\$744
Improve Pedestrian Access and Protection of Cultural Resource at Mono Hot Springs	4	\$50,000		\$3,460
Support to Sierra Mono Museum	3	\$150,000		\$11,161
Training for Native American Monitors	3-46		\$5,000	\$4,516
Additions to the Cultural and Environmental Awareness Program for SCE Northern Hydro Employees	Every 2nd year, beginning 2009		\$500	\$235
Annotated Bibliography of reports from SCE Projects within Big Creek Area	3		\$20,000	\$1,488
Access to SCE Lands for Plant Gathering Purposes	3-46		\$150	\$135
Plant Gathering and Tending Garden	3,4		\$1,000	\$138
Jackass Meadow Sedge Bed Restoration	3		\$4,500	\$335
TOTAL NON-FERC SETTLEMENT AGREEMENTS COST		\$2,900,500	\$2,130,650	\$2,127,103