



**Federal Energy  
Regulatory  
Commission**

**Office of  
Energy  
Projects**

**November 2008**

**FERC/EIS-0225D**

**Draft Environmental Impact Statement**

**Appendix B**



**South Feather Power Project  
FERC Project No. 2088-068, California**

**Federal Energy Regulatory Commission  
888 First Street N.E.  
Washington, DC 20426**

**APPENDIX B**  
**CAPITAL AND ANNUAL COSTS OF MEASURES**  
**FOR THE SOUTH FORK POWER PROJECT**

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Table B-1. Estimated capital and O&M costs of measures proposed by South Feather and recommended by staff and agencies for the South Feather Power Project. (Source: Staff)

Measure	Entity and Measure No.	Staff recommend?	Capital Cost (2008 \$)	Annualized Capital Cost (2008 \$)	Annual O&M Cost (2008 \$)	Annual energy costs (2008 \$)	Total Annualized Cost (2008 \$)	Comments
Return LWD to SFFR and Lost Creek	South Feather (#56)	Adopt	\$0	\$0	\$5,300	\$0	\$5,300	
Provide supplemental streamflows in Lost Creek for geomorphic purposes	South Feather (#57)	Adopt	\$0	\$0	\$0	\$0	\$0	Continuing measure – no incremental cost.
Prepare a Slate Creek diversion dam sediment pass-through program status report	South Feather (#58)	Adopt	\$0	\$0	\$5,700	\$0	\$5,700	
Implement minimum flows proposed in FLA	South Feather (#39)	Do not adopt	\$0	\$0	\$10,500	\$576,700	\$587,200	
Implement CF&G's recommended	CF&G	Do not	\$0	\$0	\$10,500	\$2,421,800	\$2,432,300	

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<b>Measure</b>	<b>Entity and Measure No.</b>	<b>Staff recommend?</b>	<b>Capital Cost (2008 \$)</b>	<b>Annual-ized Capital Cost (2008 \$)</b>	<b>Annual O&amp;M Cost (2008 \$)</b>	<b>Annual energy costs (2008 \$)</b>	<b>Total Annualized Cost (2008 \$)</b>	<b>Comments</b>
minimum flows	(10(j) #1)	adopt						
Implement FS's 4(e) minimum flows	FS (4e #18, part 1)	Do not adopt	\$0	\$0	\$10,500	\$2,021,400	\$2,031,900	
Implement South Feather's alternative 4(e) flows	South Feather (Alternative to FS 4e 18, part 1)	Adopt	\$0	\$0	\$10,500	\$1,548,200	\$1,558,700	
Determine water year type	FS (revised 4e #18, part 2), South Feather	Adopt	\$0	\$0	\$5,000	\$0	\$5,000	
Develop operating plan to manage drought conditions	FS (revised 4e #18, part 3), South Feather	Adopt	\$0	\$0	\$1,600	\$0	\$1,600	
Cease diversions at Slate Creek if temperatures exceed 20°C	South Feather (#37)	Adopt	\$31,500	\$2,300	\$5,300	\$0	\$7,600	Although we are not able to estimate the generation that would be foregone due to cessation of diversions from Slate Creek, South Feather

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								stated that the volume of water diverted during the summer is small, and the amount of lost generation would be minor
B-3 Reserve authority to mitigate cumulative effects of the Yuba River Development Project	Yuba County Water Authority (10a)	Do not adopt	\$0	\$0	\$0	\$0	\$0	The cost of this measure could not be estimated based on the information provided
Implement ramping rate of 0.5 feet/hour	CF&G (10(j) #10)	Adopt	\$0	\$0	\$0	\$0	\$0	Loss of generation would be negligible because changes in flow release into the bypassed reaches are infrequent
Operate, maintain, and modify (if necessary) gages needed to determine river stage and minimum streamflows	FS (4e #18, part 4), CF&G (10(j) #7, part 6)	Adopt	\$0	\$0	\$20,000	\$0	\$20,000	

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Measure	Entity and Measure No.	Staff recommend?	Capital Cost (2008 \$)	Annualized Capital Cost (2008 \$)	Annual O&M Cost (2008 \$)	Annual energy costs (2008 \$)	Total Annualized Cost (2008 \$)	Comments
Maintain water levels in Little Grass Valley and Sly Creek reservoirs as high as possible while recognizing the need for protection of ecological resources, power production, and consumptive water supply	CF&G (10(j) #6)	Adopt	\$0	\$0	\$0	\$0	\$0	We consider South Feather's proposed operations to be consistent with this recommendation
Implement selective withdrawal at Little Grass Valley reservoir	CF&G (10(j) #2)	Do not adopt	\$1,000,000	\$65,800	\$8,000	\$0	\$73,800	
Avoid releasing water from the Kelly Ridge powerhouse that exceed specified temperatures when total releases from P-2100 are 2,000 cfs	DWR (10a)	Do not adopt	\$25,000	\$1,900	\$2,500	\$997,600	\$1,002,000	Assumes that Kelly Ridge powerhouse would need to be shutdown for an average of 60 days each year

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<b>Measure</b>	<b>Entity and Measure No.</b>	<b>Staff recommend?</b>	<b>Capital Cost (2008 \$)</b>	<b>Annualized Capital Cost (2008 \$)</b>	<b>Annual O&amp;M Cost (2008 \$)</b>	<b>Annual energy costs (2008 \$)</b>	<b>Total Annualized Cost (2008 \$)</b>	<b>Comments</b>
or lower or Lake Oroville is at or below 700 ft msl.								
Monitor water temperatures at three locations and limit Kelly Ridge powerhouse discharges to 100 cfs if water temperatures discharged from the powerhouse exceed specified temperatures	SWC/MWD (10a)	Do not adopt	\$50,000	\$3,700	\$5,000	\$606,400	\$615,100	Assumes that Kelly Ridge powerhouse would need to be limited to 100 cfs for an average of 60 days each year
Monitor water temperatures at the Kelly Ridge Power Plant intake and cease operation when temperatures exceed specified targets	NMFS (10(j))	Do not adopt	\$25,000	\$1,900	\$2,500	\$997,600	\$1,002,000	

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<b>Measure</b>	<b>Entity and Measure No.</b>	<b>Staff recommend?</b>	<b>Capital Cost (2008 \$)</b>	<b>Annual-ized Capital Cost (2008 \$)</b>	<b>Annual O&amp;M Cost (2008 \$)</b>	<b>Annual energy costs (2008 \$)</b>	<b>Total Annualized Cost (2008 \$)</b>	<b>Comments</b>
Monitor water temperatures at six locations and provide monitoring results in a technical report within 6 months following each monitoring season	CF&G (10(j) #7, part 5)	Do not adopt	\$50,000	\$3,700	\$5,000	\$0	\$8,700	
Take all reasonable actions to assure conformance with water temperatures specified in the Oroville Settlement Agreement	CF&G (10(j) #5)	Do not adopt	\$0	\$0	\$0	\$606,400	\$606,400	Assumes that Kelly Ridge powerhouse would need to be limited to 100 cfs for an average of 60 days each year
Develop and implement a water temperature monitoring plan in consultation with Cal Fish & Game, NMFS, and DWR	Staff	Adopt	\$50,000	\$3,700	\$5,000	\$0	\$8,700	

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<b>Measure</b>	<b>Entity and Measure No.</b>	<b>Staff recommend?</b>	<b>Capital Cost (2008 \$)</b>	<b>Annualized Capital Cost (2008 \$)</b>	<b>Annual O&amp;M Cost (2008 \$)</b>	<b>Annual energy costs (2008 \$)</b>	<b>Total Annualized Cost (2008 \$)</b>	<b>Comments</b>
Screen diversions at the South Fork diversion, Slate Creek diversion, and the Woodleaf powerhouse intake	CF&G (10(j) #4)	Do not adopt	\$45,000,000	\$2,960,900	\$80,200	\$0	\$3,041,100	
Develop and implement a wild fish supplementation program	FS (revised 4e #18, part 6), South Feather	Adopt	\$0	\$0	\$15,900	\$0	\$15,900	
Reserve authority to prescribe fishways	NMFS (Section 18)	Adopt	\$0	\$0	\$0	\$0	\$0	The cost of any fishways that may be prescribed in the future cannot be estimated at this time
Develop and implement a hazardous substance plan	South Feather (#38)	Adopt	\$0	\$0	\$1,100	\$0	\$1,100	

Measure	Entity and Measure No.	Staff recommend?	Capital Cost (2008 \$)	Annualized Capital Cost (2008 \$)	Annual O&M Cost (2008 \$)	Annual energy costs (2008 \$)	Total Annualized Cost (2008 \$)	Comments
Monitor fish populations in two successive years every five years in all affected bypassed reaches	CF&G (10(j) #7, part 1)	Do not adopt	\$0	\$0	\$48,500	\$0	\$48,500	
Monitor benthic macroinvertebrates in affected bypassed reaches in years 1 through 4 and every 4 years thereafter	CF&G (10(j) #7, part 4)	Do not adopt	\$0	\$0	\$44,700	\$0	\$44,700	
Monitor fish populations in two successive years starting in the fifth full year of implementation of new streamflows; sampling may be postponed two years	FS (revised 4e #19, part 1), South Feather	Adopt	\$0	\$0	\$35,300	\$0	\$35,300	

Measure	Entity and Measure No.	Staff recommend?	Capital Cost (2008 \$)	Annualized Capital Cost (2008 \$)	Annual O&M Cost (2008 \$)	Annual energy costs (2008 \$)	Total Annualized Cost (2008 \$)	Comments
to avoid confounding effects of floods on fish populations								
Monitor benthic macroinvertebrates in project bypassed reaches in the same years as fish populations are monitored	FS (revised 4e #19, part 4), South Feather	Adopt	\$0	\$0	\$23,500	\$0	\$23,500	
Develop and implement an Aquatic Biological Monitoring plan	CF&G (10(j) #7)	Adopt	\$0	\$0	\$0	\$0	\$0	Costs included in FS revised 4(e) #3
Consult with the Forest Service annually to determine measures needed to ensure	FS (revised 4e #3), South Feather	Adopt	\$0	\$0	\$30,000	\$0	\$30,000	

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	<b>Measure</b>	<b>Entity and Measure No.</b>	<b>Staff recommend?</b>	<b>Capital Cost (2008 \$)</b>	<b>Annual-ized Capital Cost (2008 \$)</b>	<b>Annual O&amp;M Cost (2008 \$)</b>	<b>Annual energy costs (2008 \$)</b>	<b>Total Annualized Cost (2008 \$)</b>	<b>Comments</b>
	protection of Forest Service lands affected by the project								
B-10	Riparian vegetation monitoring and treatment	FS (4e #19, part 3), CF&G (10(j) #7, part 3)	Adopt	\$0	\$0	\$2,400	\$0	\$2,400	Treatment would be implemented only if warranted based on the results of FYLF monitoring
	Implement noxious weed plan	South Feather (#41)	Do not adopt	\$31,500	\$2,300	\$5,300	\$0	\$7,600	
	Develop and implement an invasive weed management plan	FS (4e #26)	Adopt	\$46,500	\$3,500	\$6,300	\$0	\$9,800	
	Train employees annually	South Feather (#33)	Adopt	\$0	\$0	\$21,000	\$0	\$21,000	

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Measure	Entity and Measure No.	Staff recommend?	Capital Cost (2008 \$)	Annualized Capital Cost (2008 \$)	Annual O&M Cost (2008 \$)	Annual energy costs (2008 \$)	Total Annualized Cost (2008 \$)	Comments
Review and assess new special-status species annually	South Feather (#35)	Adopt	\$0	\$0	\$21,600	\$0	\$21,600	
Annually review the current list of special status plant and wildlife species and conduct surveys for species determined to be likely to occur on National Forest System lands	FS (4e #24)	Adopt	\$0	\$0	\$0	\$0	\$0	Costs included in South Feather measure #35
Consult with CF&G prior to replacing or retrofitting wildlife crossing or escape facilities along the Miners Ranch conduit	South Feather (#43)	Do not adopt	\$0	\$0	\$1,900	\$0	\$1,900	
Maintain and operate all devices and measures for the protection of wildlife	CF&G (10(j) #9)	Adopt	\$0	\$0	\$10,500	\$0	\$10,500	

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Measure	Entity and Measure No.	Staff recommend?	Capital Cost (2008 \$)	Annualized Capital Cost (2008 \$)	Annual O&M Cost (2008 \$)	Annual energy costs (2008 \$)	Total Annualized Cost (2008 \$)	Comments
along the Miners Ranch Conduit that are deemed necessary by CF&G and other interested agencies								
Retain a qualified specialist to replace or retrofit bat exclusion devices	South Feather (#42)	Adopt	\$10,500	\$800	\$1,100	\$0	\$1,900	
Prepare BE before taking actions that may affect FS special status species on National Forest System lands, update the Bald Eagle Management Plan and develop a bat management plan	FS (4e #25)	Adopt	\$20,000	\$1,500	\$0	\$0	\$1,500	

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Measure	Entity and Measure No.	Staff recommend?	Capital Cost (2008 \$)	Annualized Capital Cost (2008 \$)	Annual O&M Cost (2008 \$)	Annual energy costs (2008 \$)	Total Annualized Cost (2008 \$)	Comments
Develop and implement a bat management plan	CF&G (10(j) #8)	Adopt	\$0	\$0	\$0	\$0	\$0	Costs included in FS 4e #25
Conduct reach level surveys for FYLF every 10 years starting in year 1	South Feather (Alternative to FS 4e 19, part 2)	Do not adopt	\$10,000	\$700	\$24,200	\$0	\$24,900	
Conduct reach level surveys for FYLF in years 1-5 and every 10 years thereafter supplemented by representative surveys in years 6-10 and every 10 years thereafter	CF&G (10(j) #7, part 2), FS (4e #19, part 2.1)	Adopt	\$0	\$0	\$66,900	\$0	\$66,900	
Development of FYLF population, population viability, and 2-D habitat models, and	FS (4e #19, parts 2.2 through 2.4)	Do not adopt	\$0	\$0	\$157,900	\$0	\$157,900	

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Measure	Entity and Measure No.	Staff recommend?	Capital Cost (2008 \$)	Annualized Capital Cost (2008 \$)	Annual O&M Cost (2008 \$)	Annual energy costs (2008 \$)	Total Annualized Cost (2008 \$)	Comments
implementation of temperature, geomorphology, and riparian encroachment monitoring protocols								
Avoid high flow pulses to protect FYLF from April 15 or when temperatures reach 13C (whichever is later) until October 31. <i>This measure is modified to require that supplemental streamflows be discontinued if the water temperature reaches 12°C.</i>	South Feather (#40)	Adopt	\$0	\$0	\$0	\$0	\$0	South Feather indicates that there would likely be no costs associated with this measure
Develop ramping rates to protect FYLF within 5 years after license issuance	CF&G (10(j) #3)	Adopt	\$0	\$0	\$0	\$0	\$0	Costs included within FS revised 4e #18, part 5

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Measure	Entity and Measure No.	Staff recommend?	Capital Cost (2008 \$)	Annualized Capital Cost (2008 \$)	Annual O&M Cost (2008 \$)	Annual energy costs (2008 \$)	Total Annualized Cost (2008 \$)	Comments
Map FYLF habitat and develop stage-discharge curves for each reach and develop ramping rates for each reach that would meet the stage and velocity requirements set by the FS	FS (revised 4e #18, part 5), South Feather	Adopt	\$0	\$0	\$10,200	\$0	\$10,200	
Prepare facility master plans and individual site development plans to replace or rehabilitate existing recreation facilities	South Feather (#45)	Adopt	\$5,000,000	\$78,000	\$0	\$0	\$78,000	
Prepare a recreation facility master plan	FS (4e #20, part 1)	Adopt	\$0	\$0	\$0	\$0	\$0	Costs included in South Feather measure #45
Maintain and operate recreation facilities	South Feather (#46)	Adopt	\$0	\$0	\$278,700	\$0	\$278,700	

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<b>Measure</b>	<b>Entity and Measure No.</b>	<b>Staff recommend?</b>	<b>Capital Cost (2008 \$)</b>	<b>Annualized Capital Cost (2008 \$)</b>	<b>Annual O&amp;M Cost (2008 \$)</b>	<b>Annual energy costs (2008 \$)</b>	<b>Total Annualized Cost (2008 \$)</b>	<b>Comments</b>
Consult with Forest Service annually regarding planned operation and maintenance activities on National Forest System lands	South Feather (#34)	Do not adopt	\$0	\$0	\$15,800	\$0	\$15,800	
Operate and maintain recreation facilities, support reservoir-based recreation, collaborate on current and future interpretive programs, and consult to ensure consistency with other FERC-approved management plans and protection of cultural resources	FS (4e #20, part 2)	Adopt	\$0	\$0	\$50,000	\$0	\$50,000	

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Measure	Entity and Measure No.	Staff recommend?	Capital Cost (2008 \$)	Annualized Capital Cost (2008 \$)	Annual O&M Cost (2008 \$)	Annual energy costs (2008 \$)	Total Annualized Cost (2008 \$)	Comments
File form 80 recreation report every 6 years and expand recreation facilities if warranted	South Feather (#47)	Adopt	\$0	\$0	\$10,000	\$0	\$10,000	
Prepare and file recreation use survey report and provide out-of-kind recreation facilities	South Feather (#48)	Adopt	\$0	\$0	\$5,600	\$0	\$5,600	
Maintain Little Grass Valley reservoir water levels no lower than 5022 feet msl through September 15 for use of boat launch facilities	South Feather (#49)	Adopt	\$0	\$0	\$0	\$0	\$0	South Feather indicates that there would likely be no costs associated with this measure
Provide whitewater recreation flows in the LGVD reach	South Feather (#50)	Adopt	\$5,000	\$400	\$12,600	\$0	\$13,000	

<b>Measure</b>	<b>Entity and Measure No.</b>	<b>Staff recommend?</b>	<b>Capital Cost (2008 \$)</b>	<b>Annualized Capital Cost (2008 \$)</b>	<b>Annual O&amp;M Cost (2008 \$)</b>	<b>Annual energy costs (2008 \$)</b>	<b>Total Annualized Cost (2008 \$)</b>	<b>Comments</b>
Provide whitewater recreation flows in the South Fork diversion dam reach	South Feather (#51)	Adopt	\$30,000	\$2,200	\$10,500	\$41,600	\$54,300	Assumes shutdown of Sly Creek and Woodleaf powerhouses would be required for 2 days every 6 years
Provide whitewater recreation flows in the Forbestown diversion dam reach	South Feather (#52)	Adopt	\$30,000	\$2,200	\$10,500	\$21,900	\$34,600	Assumes shutdown of Forbestown powerhouse would be required for 2 days every 6 years
Make streamflow information available on the internet including daily flows and anticipated date and magnitude of whitewater releases	South Feather (#53)	Adopt	\$0	\$0	\$2,500	\$0	\$2,500	
Install and maintain public safety buoys	South Feather (#54)	Adopt	\$0	\$0	\$11,600	\$0	\$11,600	

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	South Feather (#44)	Adopt	\$0	\$0	\$20,300	\$0	\$20,300	
	Additional measures likely to be required in an HPMP approved by the Forest Service	FS (4e #23)	Adopt	\$0	\$0	\$59,100	\$0	\$59,100
B-19	Develop and implement a fire prevention and response plan	South Feather (#55) and FS (4e #21)	Adopt	\$0	\$0	\$1,100	\$0	\$1,100
	Develop and implement a fuel treatment/vegetation management plan	FS (4e #22)	Adopt	\$0	\$0	\$2,100	\$0	\$2,100
	Develop and implement a road management plan	FS (4e #28)	Adopt	\$0	\$0	\$3,500	\$0	\$3,500
	Develop and implement a visual	FS (4e #27)	Adopt	\$30,000	\$2,200	\$0	\$0	\$2,200

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management plan								
Total Applicant's Proposal			\$5,138,500	\$ 88,200	\$638,600	\$640,200	\$1,367,000	
Staff Alternative			\$5,253,500	\$ 96,800	\$782,300	\$1,611,700	\$2,490,800	
Staff Alternative with 4(e) Mandatory Conditions			\$5,253,500	\$ 96,800	\$940,200	\$2,084,900	\$3,121,900	

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