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11.0 ECONOMIC ANALYSIS

As specified in the Federal Energy Regulatory Commission's (FERC or Commission) content requirements at 18 CFR § 5.18(b)(5)(ii)(E), this section compares costs associated with the No-Action Alternative (existing condition) with costs associated with the Proposed Action for the Middle Fork American River Project (MFP or Project). This analysis includes a comparison of economic benefits; costs of new environmental programs, measures, and facilities; and power generation. All costs are provided in 2010 United States dollars and all analyses are predicated on a new license with a 50-year term being granted. Table 11-1 provides a summary of the assumptions used to prepare this economic analysis.

11.1 NO-ACTION ALTERNATIVE COSTS

The No-Action Alternative represents the existing condition. The No-Action Alternative is described in Section 3.0. Under this alternative, there will be no change in the current operation or maintenance of the MFP. Placer County Water Agency (PCWA) will not provide any additional environmental programs, measures, or facilities above those provided in the existing license. The annualized operating cost of the existing MFP is approximately \$25,985,000 (Table 11-2).

11.2 PROPOSED ACTION COSTS

The Proposed Action includes modification of existing and construction of new Project facilities (capital costs) and implementation of new environmental programs, measures, and facilities, as described in Section 4.0 – Proposed Action. The annualized operating costs associated with the Proposed Action are \$28,125,700 (Table 11-3).

11.2.1 Capital Improvements

Under the Proposed Action, several construction projects will be implemented to improve operations and maintenance of the MFP, enhance environmental resources, and/or meet the requirements specified in new environmental programs and measures. These projects include:

- Hell Hole Reservoir Seasonal Storage Increase Improvement;
- Modification of Duncan Creek, North Fork Long Canyon, and South Fork Long Canyon diversion dams;
- Outlet works modifications at French Meadows, Hell Hole, and Middle Fork Interbay dams; and
- Construction of new gages.

Total and annualized capital costs associated with Hell Hole Reservoir Seasonal Storage Increase Improvement and the small diversion modifications, including permitting, are \$11,980,000 and \$239,600, respectively (Table 11-3). Capital costs

associated with outlet works modifications and construction of new gages are captured within new environmental programs, measures, and facilities, as described below. As a result of MFP capital improvements, depreciation costs increase by \$291,600 annually over the term of the new license, as shown on Table 11-3.

11.2.2 New Environmental Programs, Measures, and Facilities

Under the Proposed Action, new environmental programs, measures, and facilities will be implemented, which are designed to protect or enhance environmental and cultural resources over the term of the new license. The annualized costs associated with implementation of the new environmental programs, measures, and facilities are \$1,609,500. This includes additional operation and maintenance costs and capital and one-time costs associated with implementation of new environmental programs, measures, and facilities. A summary of these costs is included in Table 11-4.

11.3 COMPARISON OF GENERATION PRODUCTION AND BENEFIT

Under the No-Action Alternative, the MFP will continue to generate an annual average of 1,039,078 megawatt hours (MWh) of electricity, which results in a gross annual benefit of \$47,548,964 and a net annual benefit of \$21,563,964 (Table 11-5).

Measures included in the Proposed Action result in a 4.59% loss of generation. As a result, the Proposed Action will produce an annual average of 991,384 MWh of electricity (an annual average energy generation loss of 47,694 MWh compared to the No-Action Alternative) (Table 11-5). This results in a gross annual benefit of \$45,736,604 and a net annual benefit of \$17,610,904. Compared to the No-Action Alternative, this represents an annual reduction in net annual benefit of \$3,953,060.

TABLES

Table 11-1. Summary of Assumptions Used in the Economic Analysis.

Assumption	Value
Base Year for Costs and Benefits	2010
2009 Energy Value (\$/MWh) ¹	\$38/MWh
2010 Capacity Value (\$/kW-year) ²	\$36/kW-year
Period of Analysis ³	50 Years
In-Service Period	2013
Incremental Cost of Capital	4.8%
Capitalized Interest Rate	6.2%

¹The energy price Cal-ISO reported in its Annual Report on Market Issues and Performance for 2009 is \$37.69 (rounded to \$38/MWh). Refer to Table 3.1 - Monthly Wholesale Costs: 2009, page 3.4, Total 2009 Average Cost of Energy (\$/MWh load), 2009 Annual Report on Market Issues and Performance, California Independent System Operator (Cal-ISO), Department of Market Monitoring, Folsom, CA, April 2010.

²Verbal communication between PCWA and staff of the Northern California Power Agency, 651 Commerce Drive, Roseville, CA. August 5, 2010.

³PCWA is requesting a 50-year license term for the Middle Fork American River Project. Assuming a March 2013 in-service period, this results in a new license expiration of February 28, 2063.

Table 11-2. No-Action Alternative – Costs Associated with the Middle Fork American River Project (2010 Dollars).

Cost Component	Middle Fork American River Project
	Annualized Cost (2010\$)
Relicensing Costs	\$725,000
Capital Costs ¹	\$0
New Environmental Measures ²	\$0
Operations and Maintenance	\$14,040,000
Depreciation ³	\$10,000,000
Interest Expense Paid ⁴	\$220,000
Insurance	\$1,000,000
Total Expenses	\$25,985,000

¹Any capital costs associated with existing MFP facilities are included in Operations and Maintenance.

²Any existing environmental measures are included in Operations and Maintenance.

³Refer to Exhibit D for a description of the method used for determining depreciation.

⁴Interest expense incurred to complete relicensing process.

Table 11-3. Proposed Action – Costs Associated with the Middle Fork American River Project (2010 Dollars).

Cost Component	Middle Fork American River Project
	Annualized Cost (2010\$)
Relicensing Costs	\$725,000
Capital Costs (modified/new facilities) ¹	\$239,600
New Environmental Measures ²	\$1,609,500
Operations and Maintenance	\$14,040,000
Depreciation ³	\$10,291,600
Interest Expense Paid ⁴	\$220,000
Insurance	\$1,000,000
Total Expenses	\$28,125,700

¹Includes one-time capital costs for Hell Hole Reservoir Seasonal Storage Increase Improvement, small diversion dam modifications, and permitting costs. Total capital costs for these construction projects are \$11,980,000.

²Cost of additional operation and maintenance and one-time capital costs associated with new environmental measures.

³Depreciation increases under the Proposed Action to account for new capital improvements. Refer to Exhibit D for a description of the method used for determining depreciation.

⁴Interest expense incurred to complete relicensing process. Capital improvements in the Proposed Action are expected to be funded from power sales revenue, therefore, no additional interest expenses will be incurred.

Table 11-4. Proposed Action – Cost of Environmental Programs, Measures, and Facilities for the Middle Fork American River Project (2010 Dollars).

Environmental Program, Measure, or Facility	Total Capital and One-time Costs (2010\$)	Annual O&M Costs ¹ (2010\$)	Total Annualized Costs ² (2010\$)
Compliance			
Additional PCWA Compliance Staff	–	\$420,000	\$420,000
Water and Aquatic Resources			
Implement Instream Flow and Reservoir Minimum Pool Measure ³	\$2,500,000	\$60,000	\$110,000
Implement Flow and Reservoir Monitoring Plan ⁴	\$100,000	\$120,000	\$122,000
Implement Aquatic Monitoring Plans	\$115,000	\$281,000	\$284,000
Implement Sediment Management Plan	\$5,500	(\$39,000)	(\$39,000)
Terrestrial Resources			
Implement Bald Eagle Management Plan	\$33,000	\$33,000	\$34,000
Implement Vegetation and Integrated Pest Management Plan	–	\$160,000	\$160,000
Recreation Resources			
Implement Recreation Plan	\$1,222,000	\$319,000	\$343,000
Implement Visual Resource Management Plan	–	\$9,500	\$9,500
Land Management			
Implement Transportation System Management Plan	\$2,100,000	\$77,000	\$119,000
Implement Fire Suppression and Prevention Plan	–	\$9,000	\$9,000
Cultural Resources			
Implement Historic Properties Management Plan	–	\$38,000	\$38,000
TOTAL	\$6,075,500	\$1,487,500	\$1,609,500

¹Operation and maintenance costs annualized over the term of the new license (50 years).

²Total one-time capital costs plus total operation and maintenance costs annualized over the term of the new license (50 years).

³Capital costs associated with infrastructure modifications necessary to implement new instream flow measures (i.e., outlet works modifications).

⁴Capital costs associated with infrastructure modifications necessary to implement Flow and Reservoir Monitoring Plan (i.e., installation of four new gages).

Table 11-5. Comparison of Annual Project Benefits and Costs for the No-Action Alternative and Proposed Action.

Item	No-Action Alternative (2010\$)	Proposed Action (2010\$)
Dependable Operating Capacity (MW)	224	224
Average Annual Energy Production (MWh) ¹	1,039,078	991,384
Annual Energy Production Benefit (\$)	\$39,484,964	\$37,672,604
Annual Capacity Benefit (\$)	\$8,064,000	\$8,064,000
Gross Annual Benefit (\$)	\$47,548,964	\$45,736,604
Annual Cost (\$)	\$25,985,000	\$28,125,700
Net Annual Benefit (\$)	\$21,563,964	\$17,610,904
Change in Net Annual Benefit from No-Action Alternative (\$) ²		\$3,953,060
Reduction in Annual Energy Production (MWh) ³		47,694
Percent Reduction of Annual Energy Production (%) ⁴		4.59%

¹Generation from French Meadows, Middle Fork, Ralston, and Oxbow powerhouses is averaged over a 40-year period of record (1967–2006). Hell Hole Powerhouse began operation in 1983; therefore, annual net generation is averaged over a 24-year period of record (1983–2006). The average annual energy production under the No-Action Alternative represents the sum of the average net generation for the five Project powerhouses based on their respective period of record. The average annual energy for the Proposed Action reflects the reduced generation that would have occurred if the new measures were in effect.

²The change in net annual energy benefits is calculated by subtracting the net annual benefit under the Proposed Action from the net annual benefit under the No-Action Alternative.

³The reduction in annual energy is calculated by subtracting the average annual energy production under the Proposed Action from the average annual energy production under the No-Action Alternative.

⁴The percent reduction of annual energy is calculated by dividing the reduction in annual energy produced under the Proposed Action by the average annual energy produced under the No-Action Alternative.