COVER SHEET

FINAL ENVIRONMENTAL IMPACT STATEMENT
FOR THE UPPER AMERICAN RIVER AND CHILI BAR
HYDROELECTRIC PROJECTS
Docket Nos. P-2101-084 and P-2155-024

Section 4
Developmental Analysis
Pages 4-1 through 4-14

FEIS

4.0 DEVELOPMENTAL ANALYSIS

In this section, we analyze the Projects' use of the water resources of the Upper American River Basin to generate power, estimate the economic benefits of the SMUD and PG&E facilities, and estimate the cost of various environmental measures and the effects of these measures on Project operations.

4.1 POWER AND ECONOMIC BENEFITS OF THE PROJECTS

4.1.1 Economic Assumptions

Under its approach to evaluating the economics of hydropower projects, as articulated in Mead Corporation, Publishing Paper Division (72 FERC ¶61,027, July 13, 1995), the Commission employs an analysis that uses current costs to compare the costs of the Project and likely alternative power with no consideration for potential future inflation, escalation, or deflation beyond the license issuance date. The Commission's economic analysis provides a general estimate of the potential power benefits and costs of a project and reasonable alternatives to project-generated power. The estimate helps to support an informed decision concerning what is in the public interest with respect to a proposed license.

For our economic analysis of the UARP alternatives, we used the assumptions, values, and sources shown in table 4-1. Similar information for the Chili Bar Project is presented in table 4-2.

Table 4-1. Staff assumptions for economic analysis of SMUD's UARP Project.

Assumption	Value	Source
Base year for costs and benefits	2007	Staff
On-peak power value (mills/kWh)	$73.80	SMUD
Off-peak power value (mills/kWh)	$55.80	SMUD
Pump-back power cost (mills/kWh)	$55.80	SMUD
Dependable capacity value ($/MW)	$95,960	SMUD
Period of analysis	30 years	Staff
Term of financing	20 years	Staff
Federal and state tax rate	0 percent	SMUD
Local tax rate	0 percent	SMUD
Insurance rate[a]		Staff
Interest during construction rate	4.1%	SMUD
Discount rate	6.25%	SMUD

Assumption	Value	Source
Long-term bond interest rate	4.4%	SMUD
Return on Equity	6.6%	SMUD
Debt:equity ratio	80:20	SMUD

[a] Insurance is treated explicitly by SMUD, see table 4-3.

Table 4-2. Staff assumptions for economic analysis of PG&E's Chili Bar Project.

Assumption	Value	Source
Base year for costs and benefits	2007	Staff
On-peak power value (mills/kWh)[a]	$73.80	SMUD
Off-peak power value (mills/kWh)[a]	$55.80	SMUD
Dependable capacity value ($/MW) [a]	$95,960	SMUD
Period of analysis	30 years	Staff
Term of financing	20 years	Staff
Federal and state tax rate	34 percent	PG&E
Local tax rate[b]	3.18 percent	PG&E
Insurance rate	0.25%	Staff
Discount rate	8.0%	PG&E
Long-term interest rate	7.2%	PG&E
Return on equity rate	11.9%	PG&E
Debt equity ratio	55:45	PG&E

[a] We adopted the SMUD power value estimates because it provided both peak and off-peak values.

[b] Calculated based on PG&E local tax of $87,000 divided by book value of $2,734,000.

4.1.2 Current Annual Costs and Future Capital Costs for the UARP and Chili Bar Project under the No-action Alternative

Total annualized current costs for the SMUD No-action Alternative amount to $40,749,000 (see table 4-3); the total annualized current costs for the PG&E No-action Alternative amount to $2,170,000 (see table 4-4).

Table 4-3. Summary of current annual costs and future costs for SMUD's UARP under the No-action Alternative. (Source: SMUD and PG&E, 2007)

Cost	Capital and One-Time Costs	Annual Costs, Including O&M	Total Annualized Costs
Total original net investment	$182,000,000		$12,081,300
Total relicensing cost	$24,000,000		$1,593,100
Total net investment	$206,000,000		$13,674,400
Future costs		$6,758,600	$6,758,600
Plant operations and maintenance		$16,896,500	$16,896,500
Administrative and general		$1,761,900	$1,761,900
Insurance		$1,657,600	$1,657,600
Subtotal annual costs			$27,074,600
Total			$40,749,000

Table 4-4. Summary of current annual costs and future capital costs for PG&E's Chili Bar Project under the No-action Alternative. (Source: PG&E, 2005)

Cost	Capital and One-Time Costs	Annual Costs, Including O&M	Total Annualized Costs
Total original net investment	$2,734,000		$398,900
Total relicensing cost	$4,600,000		$671,100
Total net investment	$7,334,000		$1,070,000
Future costs[a]		$554,800	$554,800
Plant operations and maintenance[a]		$358,200	$358,200
FERC fees		$187,000	$187,000
Subtotal annual costs			$1,100,000
Total			$2,170,000

[a] These costs were adjusted by 2.8 percent per year to convert from 2005 to 2007 dollars.

4.2 COST OF IOWA HILL DEVELOPMENT

SMUD estimates the cost to build the Iowa Hill development could range from a low of $552,716,000 to a high of $855,362,000. Staff adopted the midpoint of the low-end and high-end cost estimates for use in the developmental analysis. Capital costs and annual costs for the Iowa Hill development are summarized by major construction area in tables 4-5 and 4-6.

Table 4-5. Summary of Iowa Hill development capital costs under the Proposed Action. (Source: SMUD and PG&E, 2007, Staff)

Cost	Mid-Point Estimate
Mobilization and water handling	$32,136,000
Permanent access road (lower)	$2,764,000
Upper reservoir	$113,878,000
Waterways and intakes	$95,480,500
Powerhouse and access tunnels	$109,727,500
Equipment (installed)	$174,978,500
Transmission line	$18,354,500
Subtotal	$547,319,000
Licensing, SMUD project management and Geotechnical Exploration	$64,509,000
Interest during construction (4.1% annually for 4 years)	$63,364,000
Sales tax on equipment (El Dorado County rate 7.25%)	$28,848,000
Total Construction cost with contingencies	$704,040,000

Table 4-6. Summary of Iowa Hill development annual costs under the Proposed Action. (Source: SMUD and PG&E, 2007, Staff)

	Capital Cost ($)	Annual Cost ($)	Annualized Cost ($)
Iowa Hill development	$704,040,000		$47,536,100
Additional future costs		$1,153,400	$1,153,400
Additional operations and maintenance costs		$2,883,400	$2,883,400
Additional administrative and general costs		$300,700	$300,700
Additional insurance costs		$641,200	$641,200
Subtotal additional future annual costs			$4,978,700
Total annual cost			$52,514,800

4.3 COST OF ENVIRONMENTAL MEASURES

As proposed under the Settlement Agreement and as recommended by staff, the environmental measures for the UARP and Chili Bar Project would both reduce generation and increase annual O&M costs and capital costs. No effect on dependable capacity is anticipated by either utility.

4.3.1 Cost of Environmental Measures for UARP

SMUD provided costs for environmental measures in current dollars. Costs are taken from the Settlement Plan filed in January 2007, and a cost update reflecting the Settlement Agreement submitted on April 11, 2007 (SMUD and PG&E, 2007). Where cost information was inconsistent, staff estimated costs. Table 4-7 summarizes the costs by major resource area for the UARP-only Alternative.[42] No staff modifications are included in this alternative. Our detailed costs and energy benefit reductions for SMUD's UARP-only Alternative environmental measures are provided in appendix C. Additionally, certain costs identified as resulting from SMUD's 90 percent contribution to the implementation of overlapping-issue measures contained in the Chili Bar Project, as described in appendix 2 of the Settlement Agreement are summarized in appendix C.

Table 4-7. Summary of annualized costs for measures included in the UARP-only Alternative. (Source: Staff)

Resource Area	Capital Cost	Annualized O&M Cost	Total Annualized Cost
Geology and soils	$758,600	$18,800	$69,100
Water quantity	$3,311,900	$94,700	$314,500
Water quality	$256,600	$272,200	$289,400
Aquatic resources	$429,100	$89,400	$118,000
Terrestrial resources	$423,800	$249,700	$277,800
Recreation	$37,827,700	$1,457,000	$3,967,900
Land use and aesthetics	$5,820,400	$332,500	$718,600
Cultural resources	$16,400	$5,500	$6,600
Multidisciplinary	$16,400	$486,200	$487,300
Total	$48,860,900	$3,006,000	$6,249,200

[42]Under the UARP-only Alternative, the Iowa Hill development would not be constructed.

Table 4-8 summarizes the costs of the environmental measures by major resource area for the Proposed Action (with Iowa Hill development) and Proposed Action with Staff Modifications. Because we recommend only minor modifications to several proposed environmental measures, the cost of the Proposed Action with Staff Modifications for the UARP is similar to the Proposed Action (with Iowa Hill development).

Table 4-8. Summary of annualized costs for measures included in the Proposed Action (with Iowa Hill development) and the Proposed Action with Staff Modifications.[a] (Source: Staff).

	Proposed Action (with Iowa Hill Development)			Proposed Action with Staff Modifications		
Resource Area	**Capital Cost**	**Annualized O&M Cost**	**Total Annualized Cost**	**Capital Cost**	**Annualized O&M Cost**	**Total Annualized Cost**
Geology and soils	$758,600	$18,800	$69,100	$758,600	$18,800	$69,100
Water quantity	$3,311,900	$94,700	$314,500	$3,038,600	$94,700	$296,400
Water quality	$256,600	$272,200	$289,400	$256,600	$272,200	$289,400
Aquatic resources	$429,100	$89,400	$118,000	$429,100	$89,400	$118,000
Terrestrial resources	$423,800	$249,700	$277,800	$423,800	$280,000	$308,100
Recreation	$26,897,700	$1,457,000	$3,242,400	$26,897,700	$1,457,000	$3,242,400
Land use and aesthetics	$5,820,400	$332,500	$718,600	$5,820,400	$332,500	$718,600
Cultural resources	$16,400	$5,500	$6,600	$16,400	$5,500	$6,600
Multidisciplinary	$16,400	$486,200	$487,300	$16,400	$486,200	$487,300
Total	$37,930,900	$3,006,000	$5,523,700	$37,657,600	$3,036,300	$5,535,900

[a] The costs for the Proposed Action (with Iowa Hill development) and the Proposed Action with Staff Modifications are very similar. Although costs are similar, certain reservoir level constraints at small reservoirs with no costs are not endorsed by staff as described in section 5.1.3, Rationale for Staff Recommendations in Comprehensive Development.

Table 4-9 summarizes the costs of the environmental measures by major resource area for the Iowa Hill development component of the Proposed Action. Again, the costs associated with the Iowa Hill development component of the Proposed Action with Staff Modifications for the UARP is similar to the Proposed Action (with Iowa Hill development). Our detailed costs for SMUD's Iowa Hill environmental measures are also provided in the last section of appendix C.

PG&E provided costs for environmental measures in current dollars. Costs are taken from the Settlement Agreement filed in January 2007, and a cost update reflecting the Settlement Agreement submitted on May 16, 2007 (SMUD and PG&E, 2007). Table 4-10 summarizes the costs by major resource area for both the Proposed Action

(with Iowa Hill development) and the Proposed Action with Staff Modifications for the Chili Bar Project. Our detailed costs and energy benefit reductions for PG&E's Chili Bar Project are provided in appendix B and include a single staff-recommended additional measure providing for a recreation plan.

Table 4-9. Summary of annualized costs for measures associated with the Iowa Hill component of the Proposed Action and Proposed Action with Staff Modifications.[a] (Source: Staff)

	Proposed Action (with Iowa Hill Development)			Proposed Action with Staff Modifications		
Resource Area	**Capital Cost**	**Annualized O&M Cost**	**Total Annualized Cost**	**Capital Cost**	**Annualized O&M Cost**	**Total Annualized Cost**
Geology and soils	$0	$0	$0	$0	$0	$0
Water quantity	$54,700	$0	$3,600	$54,700	$0	$3,600
Water quality	$54,700	$2,600	$6,200	$54,700	$2,600	$6,200
Aquatic resources	$382,600	$16,400	$41,800	$382,600	$16,400	$41,800
Terrestrial resources	$546,500	$0	$36,300	$566,500	$0	$37,600
Recreation	$27,300	$0	$1,800	$27,300	$0	$1,800
Land use and aesthetics	$112,000	$3,900	$11,300	$112,000	$3,900	$11,300
Multidisciplinary	$0	$0	$0	$0	$0	$0
Socioeconomics	$0	$0	$0	$0	$0	$0
Total	$1,177,800	$22,900	$101,000	$1,197,800	$22,900	$102,300

[a] Staff adopted all Iowa Hill development measures and added one measure, so the two alternatives are very similar.

Table 4-10. Summary of annualized costs for measures included in the Proposed Action and Proposed Action with Staff Modifications for the Chili Bar Project. (Source: Staff)

	Proposed Action			Proposed Action with Staff Modifications		
Resource Area	**Capital Cost**	**Annualized O&M Cost**	**Total Annualized Cost**	**Capital Cost**	**Annualized O&M Cost**	**Total Annualized Cost**
Geology and soils	$1,100	$600	$800	$1,100	$600	$800
Water quantity	$40,000	$30,000	$35,900	$40,000	$30,000	$35,900
Water quality	$5,500	$6,600	$7,600	$5,500	$6,600	$7,600
Aquatic resources	$2,200	$11,500	$11,900	$2,200	$11,500	$11,900

Resource Area	Proposed Action			Proposed Action with Staff Modifications		
	Capital Cost	Annualized O&M Cost	Total Annualized Cost	Capital Cost	Annualized O&M Cost	Total Annualized Cost
Terrestrial resources	$12,200	$22,800	$24,700	$12,200	$22,800	$24,700
Recreation	$71,100	$8,500	$18,900	$71,100	$11,200	$21,600
Land use and aesthetics	$0	$0	$0	$0	$0	$0
Cultural Resources	$10,000	$2,000	$3,500	$10,000	$2,000	$3,500
Multidisciplinary	$25,000	$30,000	$33,600	$25,000	$30,000	$33,600
Total	$167,100	$112,000	$136,900	$167,100	$114,700	$139,600

4.3.2 Effect of Proposed Operations on UARP and Chili Bar Project

Several measures affect energy generation. Estimates were made of the effect of environmental measures and the Iowa Hill development by applying the CHEOPs operations model to optimize and simulate the system. Pulse flows are presented in section 3.3.1, *Geology and Soils*. The minimum instream flows, ramping rates and required reservoir levels are presented in section 3.3.3, *Aquatic Resources*. Recreational flows and levels are presented in section 3.3.6, *Recreational Resources*.

Staff notes that a reduction of 136,000 MWh[43] would result from flows needed for environmental and recreational flow requirements at the UARP as shown in table 4-11 and detailed in appendix C. The Iowa Hill development would add 931,000 MWh of super peak energy and 43,000 MWh of off-peak energy as compared to the UARP-only Alternative. Staff does not recommend measures beyond the Proposed Action that would affect energy generation. SMUD also computed the effect on pump-back energy, resulting in a loss of 1,230,000 MWh of off-peak energy. The development would therefore result in an incremental gross energy decrease of 256,000 MWh when compared to the UARP-only Alternative. This pumped-storage facility would be about 79 percent efficient and its value is in the ability to move blocks of off-peak energy into the on peak period along with other ancillary benefits described in section 4.4.

Under the UARP-only Alternative, PG&E estimates an energy reduction of about 709 MWh that would result from flows needed for environmental and recreational flow requirements at the Chili Bar Project relative to no action, as shown in table 4-12. If SMUD were to build the Iowa Hill development, energy generation would decrease by 1,000 MWh at Chili Bar relative to no action.

[43]SMUD estimated 136,000 MWh, including 70,000 MWh of lost on-peak generation and 66,000 MWh of lost off-peak generation.

Table 4-11. Summary of the energy and capacity effect[a] of environmental and engineering measures on the No-action, UARP-only Alternative, Proposed Action (with Iowa Hill development), and Proposed Action with Staff Modifications for SMUD's UARP. (Source: Staff)

UARP Power Benefits Effects	No Action	UARP-only Alternative	Proposed Action (with Iowa Hill Development)	Proposed Action with Staff Modifications
Change in dependable capacity (MW)	0	0	400	400
Change in super peak gross energy generation (MWh)	0	0	931,000	931,000
Change in on-peak gross energy generation (MWh)	0	–70,000	–70,000	–70,000
Change in off-peak gross energy generation (MWh)	0	–66,000	–23,000[b]	–23,000[b]
Total change in gross energy generation (MWh)	0	–136,000	838,000	838,000
Total change in net energy generation (MWh)[c]	0	–136,000[d]	–392,000	–392,000

[a] Increases are shown as positive and decreases as negative.

[b] Computed as –66,000 MWh in previous column plus 43,000 MWh of new off-peak energy associated with the Iowa Hill development.

[c] Net energy change is computed by subtracting the pumping requirements from gross generation.

[d] SMUD identifies some level of uncertainty associated with the effect of environmental measures. The actual loss of energy generation could range from 127,000 to 136,000 MWh.

Table 4-12. Summary of the effect of environmental measures on energy[a] and capacity for the No-action, UARP-only, Proposed Action (with Iowa Hill development), and Proposed Action with Staff Modifications for the Chili Bar Project. (Source: Staff)

Chili Bar Power Benefits Effects	No Action	UARP-only Alternative	Proposed Action (with Iowa Hill Development)	Proposed Action with Staff Modifications
Lost dependable capacity (MW)	0	0	0	0
Lost on-peak energy generation (MWh)[a]	0	–666	–28	–28
Lost off peak energy generation (MWh)[a]	0	–43	–972	–972
Total lost energy generation (MWh)	0	–709	–1,000	–1,000

[a] PG&E has not revised its modeling of the energy effects since the draft EIS. These values are staff estimates as detailed in appendix C and are based on presently available information.

4.4 COMPARISON OF ALTERNATIVES

Table 4-13 compares the power value, annual costs, and net benefits of the No-action Alternative, UARP-only Alternative, Proposed Action (with Iowa Hill development), and the Proposed Action with Staff Modifications for the UARP. In section 5, *Comprehensive Development and Recommended Alternative*, we discuss our reasons for recommending the Proposed Action with Staff Modifications, and explain why we conclude the environmental benefits are worth these costs. The decrease in net benefits from $67.14/MWh to $41.45/MWh for the Proposed Action represents a decrease of 38.3 percent relative to the unit cost of the No-action Alternative. The decrease in net benefits from $67.14/MWh to $41.45/MWh for the Proposed Action with Staff Modifications represents a decrease of 38.3 percent relative to the unit cost of the No-action Alternative. There is a small difference in net benefit between the Proposed Action (with Iowa Hill development) and Proposed Action with Staff Modifications.

If we look at the incremental effect of building the Iowa Hill development by subtracting the UARP-only Alternative from the Proposed Action with Staff Modifications, we find that the $123,232,800 power benefits slightly exceed the $120,537,800 cost resulting in a net benefit of $2,695,000. Although the economic benefit of the Iowa Hill development may appear marginal, we agree with SMUD that the operational flexibility of pumped-storage projects provides an advantage compared to other types of generators that compete in the ancillary services market. This flexibility includes the ability for pumped-storage projects to start up quickly, rapidly increase load, switch from pumping to generating, and shape the Project's output to meet load requirements. These benefits take on increased importance given SMUD's role as a control area. Without the 400-MW of capacity from the Iowa Hill development, SMUD would have to meet future peak generation needs with simple cycle peaking plants or than power purchased from the energy market.

Costs associated with unanticipated geotechnical conditions, higher construction costs due to inflation or uncertainties associated with estimated quantities could all affect project economics. Similarly, on the benefits side, it is difficult to forecast energy prices and capacity values in the year 2015; however, our economic analysis is based on current power values. Although our estimate shows that the Iowa Hill development has a small positive net benefit, under the policies set relating to Mead Corporation, Publishing Paper Division (72 FERC ¶61,027, July 13, 1995), the utility takes on any financial risk, and the Commission Staff make no representation as to the Projects' ultimate economic viability.

Table 4-14 compares the power value, annual costs, and net benefits for the Chili Bar Project under of the No-action Alternative, UARP-only Alternative, the Proposed Action (with Iowa Hill development), and the Proposed Action with Staff Modifications. In section 5, *Comprehensive Development and Recommended Alternative*, we discuss our reasons for recommending the Proposed Action, as well as

any staff modifications, and explain why we conclude the environmental benefits are worth these costs. The decrease in net benefits from $20.97/MWh to $15.38/MWh for the Proposed Action with Staff Modifications represents a decrease of 26.66 percent relative to the unit cost of the No-action Alternative. However, the Proposed Action with Staff Modifications for the Chili Bar Project has minimal effects (about $0.01/MWh) on net benefits when compared to the Proposed Action because staff modifications result in only a modest increase in Project costs associated with a single new environmental measure. If the Iowa Hill development were not constructed, net benefits for the Chili Bar Project would rise to $15.47/MWh or about $0.08/Mwh more than if it were constructed, excluding the effect of staff modifications.

4.5 OTHER ECONOMIC CONSIDERATIONS

In addition to the cost evaluated in sections 4.2 and 4.3, the applicants would incur costs associated with measures that are not part of a potential Commission license. Costs associated with these measures are external to our developmental analysis.

Table 4-13. Summary of annual net benefits for the No-action, UARP-only Alternative, Proposed Action (with Iowa Hill development), and Proposed Action with Staff Modifications for SMUD's UARP. (Source: Staff)

	No Action	UARP-only Alternative	Proposed Action (with Iowa Hill Development)	Proposed Action with Staff Modifications
Dependable capacity (MW)	400.0	400.0	800.0	800.0
Value of dependable capacity ($)	$38,384,000	$38,384,000	$76,768,000	$76,768,000
Super peak generation (MWh)	0	0	931,000	931,000
On-peak generation (MWh)	1,287,000	1,217,000	1,217,000	1,217,000
Off-peak generation (MWh)	548,000	482,000	525,000	525,000
Generation (MWh)	1,835,000	1,699,000	2,673,000	2,673,000
Value super peak generation ($)	--	--	$82,449,400	$82,449,400
Value on-peak generation ($)	$94,980,600	$89,814,600	$89,814,600	$89,814,600
Value off-peak generation ($)	$30,578,400	$26,895,600	$29,295,000	$29,295,000
Value of generation ($)	$125,559,000	$116,710,200	$201,559,000	$201,559,000
Annual power value ($)	$163,943,000	$155,094,200	$278,327,000	$278,327,000

	No Action	UARP-only Alternative	Proposed Action (with Iowa Hill Development)	Proposed Action with Staff Modifications
Annual power value ($/MWh)	$89.34	$91.29	$104.13	$104.13
Pump-back energy requirements (MWh)	--	--	1,230,000	1,230,000
Annual cost pump-back energy ($)	$0	$0	$68,634,000	$68,634,000
Annualized cost of plant and current environmental measures	$40,749,000	$40,749,000	$40,749,000	$40,749,000
Annualized cost of new Iowa Hill development ($)[a]	$0	$0	$52,514,800	$52,514,800
Annualized cost of new environmental measures ($)[b]	$0	$6,249,200	$5,624,700	$5,638,200
Annual cost ($)	$40,749,000	$46,998,200	$167,522,500	$167,536,000
Annual cost ($/MWh)	$22.21	$27.66	$62.67	$62.68
Annual net benefit ($)	$123,194,000	$108,096,000	$110,804,500	$110,791,000
Annual net benefit ($/MWh)	$67.14	$63.62	$41.45	$41.45

[a] Excluding environmental measures.

[b] Note that SMUD incorrectly includes the cost of Iowa Hill development environmental measures in table 1 of its April 11, 2007, submittal for the UARP-only Alternative, thus our environmental mitigation costs are lower. Other minor differences are explained in appendix C.

Table 4-14. Summary of annual net benefits for the Chili Bar Project under the No-action, UARP-only Alternative, Proposed Action, and Proposed Action with Staff Modifications. (Source: Staff)

	No Action	UARP-only Alternative	Proposed Action (with Iowa Hill Development)	Proposed Action with Staff Modifications
Dependable capacity (MW)	7.0	7.0	7.0	7.0
Value of dependable capacity ($)	$672,000	$672,000	$672,000	$672,000
Generation				
On-peak generation (MWh)	20,736	20,070	20,708	20,708
Off-peak generation (MWh)	11,555	11,512	10,583	10,583
Generation (MWh)	32,291	31,582	31,291	31,291
Value on-peak generation ($)	1,530,300	1,481,200	1,528,300	1,528,300
Value off-peak generation ($)	644,800	642,400	590,500	590,500
Value of generation ($)	$2,175,100	$2,123,600	$2,118,800	$2,118,800
Annual power value ($)	$2,847,100	$2,795,600	$2,790,800	$2,790,800
Annual power value ($/MWh)	$88.17	$88.52	$89.19	$89.19
Annualized cost of plant and current environmental measures	$2,170,000	$2,170,000	$2,170,000	$2,170,000
Annualized cost of new environmental measures ($)	$0	$136,900	$136,900	$139,600
Annual cost ($)	$2,170,000	$2,306,900	$2,306,900	$2,309,600
Annual cost ($/MWh)	$67.20	$73.04	$73.72	$73.81
Annual net benefit ($)	$677,100	$488,700	$483,900	$481,200
Annual net benefit ($/MWh)	$20.97	$15.47	$15.46	$15.38

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