

# **COVER SHEET**

FEDERAL ENERGY REGULATORY COMMISSION

DRAFT ENVIRONMENTAL IMPACT STATEMENT  
FOR THE KLAMATH HYDROELECTRIC PROJECT

Docket No. P-2082-027

Appendix A  
Pages A-1 to A-39  
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**APPENDIX A**

**COSTS OF PROPOSED, RECOMMENDED, PRESCRIBED, AND SPECIFIED  
ENVIRONMENTAL MEASURES FOR THE KLAMATH HYDROELECTRIC PROJECT**

1 Table A-1. Summary of capital costs, annual costs, annual energy costs, and total annualized costs of environmental measures  
 2 proposed by PacifiCorp and recommended by others and considered by staff for inclusion in the Staff Alternative for  
 3 the Klamath Hydroelectric Project. (Source: Staff)

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
<b>Geology and Soils Measures</b>							
1. Sediment and gravel resource management plan development	Oregon Fish & Wildlife, NMFS, FWS, Cal Fish & Game, Bureau of Land Management, Hoopa Valley Tribe	\$15,000	\$15,000	\$0	\$17,020	Yes	a
2. Gravel mapping and augmentation plan	Oregon Fish & Wildlife, NMFS, FWS, Cal Fish & Game, Bureau of Land Management, Hoopa Valley Tribe	\$79,070	\$0	\$0	\$10,670	Yes	a
3. Implement gravel augmentation in selected reaches	Oregon Fish & Wildlife, NMFS, FWS, Cal Fish & Game	\$190,370	\$93,040	\$0	\$118,740	Yes	a
4. Implement gravel augmentation in selected reaches	Bureau of Land Management	\$66,020	\$35,020	\$0	\$43,930	No	a
5. Implement gravel augmentation in selected reaches	None (Two dam alternative scenario)	\$38,940	\$5,030	\$0	\$10,290	No	a

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6. Place 100-200 cubic yards of spawning gravel in the J.C. Boyle bypassed reach and 1,800 to 3,500 cubic yards downstream of Iron Gate	PacifiCorp	\$428,340	\$0	\$0	\$57,820	No	b
7. Gravel monitoring after augmentation	PacifiCorp, Oregon Fish & Wildlife, NMFS, FWS, Cal Fish & Game, Bureau of Land Management	\$0	\$9,560	\$0	\$9,560	Yes	b
8. Remove and manage sediment in refuge areas downstream of Iron Gate, including sediment barriers to fish passage	Siskiyou Co.	\$0	\$229,920	\$0	\$229,920	No	a
9. Flow continuation provisions at J.C. Boyle powerhouse	PacifiCorp, Oregon Fish & Wildlife, Hoopa Valley Tribe, Interior	\$6,615,320	\$5,800	\$0	\$898,760	Yes	b
10. Monitoring and maintenance plan to reduce chances of water conveyance system failure and excess use of emergency overflow spillway	Oregon Fish & Wildlife	\$10,000	\$0	\$0	\$1,350	No	a
11. Plan for restoration of slope failures along J.C. Boyle bypassed reach	Oregon Fish & Wildlife, Interior	\$3,030,000	\$0	\$0	\$409,000	Yes	a
12. Development of an action plan that establishes protocols to be followed in the event of a water conveyance system failure	Oregon Fish & Wildlife, Bureau of Land Management, Interior	\$10,000	\$0	\$0	\$1,350	Yes	a

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13. Development of a plan to restore the river from J.C. Boyle dam to Copco reservoir to mitigate effects from use of the emergency spillway; and develop monitoring protocols based on channel cross sections to determine effectiveness of restoration activities.	Interior	\$800,000	\$0	\$0	\$107,990	No	a
<b>Water Quantity Measures</b>							
1. Project operation management plan and water quantity reporting	Oregon Fish & Wildlife, Hoopa Valley Tribe	\$10,000	\$10,000	\$0	\$11,350	Yes	a
2. Project-wide gage installation and reporting plan	Oregon Fish & Wildlife, Hoopa Valley Tribe, NMFS, Cal Fish & Game	\$25,000	\$0	\$0	\$3,370	Yes	a
3. Link River bypassed reach discharge gage	Oregon Fish & Wildlife, Cal Fish & Game, NMFS	\$64,420	\$10,740	\$0	\$19,440	No	b
4. J.C. Boyle bypassed reach discharge gage	PacifiCorp, Oregon Fish & Wildlife, Cal Fish & Game, NMFS, Bureau of Land Management	\$64,420	\$10,740	\$0	\$19,440	Yes	b
5. Shovel Creek discharge gage	Oregon Fish & Wildlife, Cal Fish & Game, NMFS, FWS	\$64,420	\$10,740	\$0	\$19,440	No	b

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6. Copco No. 2 bypassed reach discharge gage	Oregon Fish & Wildlife, Cal Fish & Game, FWS, NMFS, Hoopa Valley Tribe	\$64,420	\$10,740	\$0	\$19,440	Yes	a
7. Fall Creek discharge gages (upstream and downstream of diversion dam)	Oregon Fish & Wildlife, FWS, Cal Fish & Game, NMFS	\$64,420	\$10,740	\$0	\$19,440	No	b
8. Spring Creek discharge gages (upstream and downstream of diversion dam)	Oregon Fish & Wildlife, FWS, Cal Fish & Game, NMFS	\$78,320	\$7,580	\$0	\$18,150	No	a (d/s); b (u/s)
9. Install a Parshall flume at the Spring Creek diversion	PacifiCorp	\$48,320	\$2,580	\$0	\$9,100	Yes	b
10. Install a Parshall flume at the Fall Creek diversion	Staff	\$48,320	\$2,580	\$0	\$9,100	Yes	b
11. Ensure operation of continuously recording USGS gages at Keno, Spencer Creek, and downstream of J.C. Boyle powerhouse, and a new gage in the J.C. Boyle bypassed reach	Bureau of Land Management	\$128,850	\$21,480	\$0	\$38,870	No	b, c
12. Maintain the approach channel at the A canal to ensure of flow of at least 1,200 cfs into the canal with the water of Upper Klamath Lake at elevation 4,137 ft.	Reclamation	\$0	\$10,000	\$0	\$10,000	No	a
13. Provide Reclamation with real-time reservoir elevations and releases for project facilities	Reclamation	\$10,000	\$0	\$0	\$1,350	Yes	a

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14. Add Spring Creek diversion to the project	PacifiCorp	\$52,610 (the net investment value was not included in the no action case)	\$71,940	-\$137,160 (gain of 3,305 MWh at Fall Creek powerhouse)	-\$58,120	Yes	d
<b>Water Quality Measures</b>							
1. Water quality resource management plan	PacifiCorp, Oregon Fish & Wildlife, Hoopa Valley Tribe, Forest Service	\$120,000	\$90,000	\$0	\$106,200	Yes	a
2. Water quality resource management plan	None (Two dam alternative scenario)	\$0	\$20,000	\$0	\$20,000	No	a
3. Implement turbine venting at Iron Gate	Staff	\$27,650	\$0	\$59,840	\$63,580	Yes	e
4. Temperature control feasibility plan	NMFS, FWS, Forest Service	\$75,000	\$0	\$0	\$10,120	Yes	a
5. Keno reservoir water quality plan	NMFS, FWS	\$20,000	\$20,000	\$0	\$22,700	No	a, f
6. Temperature monitoring	Conservation Groups	\$0	\$0	\$0	\$0	Yes	a, g
7. <i>Microcystis</i> monitoring in Copco and Iron Gate reservoirs and downstream to the ocean	Conservation Groups, FWS	\$20,000	\$66,000	\$0	\$68,700	No	a
8. <i>Microcystis</i> monitoring, project reservoirs and immediately downstream of Iron Gate dam	Staff	\$20,000	\$48,000	\$0	\$50,700	Yes	a

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9. <i>Microcystis</i> removal	Siskiyou Co.	\$0	\$20,000	\$0	\$20,000	No	a
10. Address licensee's share of TDML effects on Klamath River water quality in Keno reservoir	OWRD	\$0 (Unknown)	\$0 (Unknown)	\$0	\$0	No	a
11. Funding for measures to address Keno water quality problems	Klamath Tribes	\$60,000	\$15,000	\$0	\$23,100	No	a, h
12. Hypolimnetic oxygenation system	PacifiCorp	\$2,248,330	\$259,540	\$0	\$563,030	No	i, j
13 Hazardous substance material and cleanup equipment inventory and semi-annual reporting	Bureau of Land Management	\$0	\$5,000	\$0	\$5,000	No	a
<b>Aquatic Resource Measures</b>							
1. Funding of programs specified by the Shasta Valley and Siskiyou Resource Conservation districts to facilitate juvenile fish outmigration, habitat enhancements, riparian projects to increase shading, enhanced streamflows and monitoring	Siskiyou Co.	\$19,185,110	\$0	\$0	\$2,589,690	No	a
2. Provide minimum flows in the Keno reach within 10% of inflow	FWS, NMFS	\$0	\$0	\$0	\$0	Yes	a, k

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3. If inflows exceed 500 cfs, provide a total minimum flow of 500 cfs, or 70% of inflow; whichever is greater, from the Keno dam. If inflow is less than 500 cfs, provide all inflow. Provide a ramping rate of 0.1 foot per hour when salmonid fry and listed sucker juveniles are present. For the rest of the year, provide a ramping rate of 0.2 foot per hour	Hoopa Valley Tribe	\$0	\$0	\$0	\$0	No	a
4. Keno reach: minimum flow: 625 cfs or inflow as available; on a 24-hour basis, when inflow is greater than 625 cfs, flows must be maintained within 10% of inflow. Limit ramping to 1 inch per hour and up to 300 cfs per 24-hour period	Oregon Fish & Wildlife, Cal Fish & Game, Conservation Groups	\$0	\$0	\$0	\$0	No	a
5. Boyle bypassed reach minimum flow: increase minimum flow from 100 cfs to 200 cfs with a ramping rate limit of 150 cfs per hour	PacifiCorp	\$241,590	\$5,580	\$994,670 (loss of 23,968 MWh)	\$1,032,860	Yes	b
6 Boyle bypassed reach minimum flow: 470 cfs or 40% proportional inflow, whichever is greater. If 40% of inflow is greater than 470 cfs, provide the average of the previous 3 days. Limit ramping to 2 inches per hour, except during flushing flows	Bureau of Land Management	\$500,000	\$6,000	\$5,605,700 (loss of 135,077 MWh)	\$5,679,190	No	a

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7. If inflows exceed 500 cfs, provide a total minimum flow of 500 cfs, or 70% of inflow; whichever is greater, from the J.C. Boyle dam. If inflow is less than 500 cfs, provide all inflow. Provide a ramping rate of 0.1 foot per hour when salmonid fry and listed sucker juveniles are present. For the rest of the year, provide a ramping rate of 0.2 foot per hour	Hoopa Valley Tribe	\$500,000	\$6,000	\$9,442,740 (loss of 227,536 MWh)	\$9,516,240	No	a
8. Boyle bypassed reach minimum flow: 640 cfs or 40% proportional inflow, whichever is greater. If 40% of inflow is greater than 730 cfs, provide the average of the previous 3 days. Limit ramping rates to 1 inch per hour and 300 cfs per 24-hour period	Oregon Fish & Wildlife, NMFS, Cal Fish & Game	\$500,000	\$6,000	\$6,269,070 (loss of 151,062 MWh)	\$6,342,570	No	a
9. Maintain ROR conditions at JC Boyle dam	Oregon Fish & Wildlife, Cal Fish & Game	\$0	\$0	\$459,400 (loss in energy value due to shift from on-peak to off-peak generation)	\$459,400	No	a
10. Maintain ROR conditions in the J.C. Boyle peaking reach except for 1 day per week when peaking operations are allowed, preferably on a weekend. Limit ramping rate to 2 inches per hour, except during flushing flows	Bureau of Land Management	\$0	\$0	\$393,400 (loss in energy value due to shift from on-peak to off-peak generation)	\$393,400	No	a

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11. If inflows exceed 500 cfs, provide a total minimum flow of 500 cfs, or 70% of inflow; whichever is greater, in the J.C. Boyle peaking reach. If inflow is less than 500 cfs, provide all inflow. Provide a ramping rate of 0.1 foot per hour when salmonid fry and listed sucker juveniles are present. For the rest of the year, provide a ramping rate of 0.2 foot per hour	Hoopa Valley Tribe	\$0	\$0	\$0 (no additional loss over the bypass flow releases)	\$0	No	a
12. Provide a minimum flow of 720 cfs to the J.C. Boyle peaking reach with a ramping rate limit of 1 inch per hour and 300 cfs per 24-hours	Oregon Fish & Wildlife, Cal Fish & Game, Conservation Groups	\$0	\$0	\$0 (no additional loss over the bypass flow releases)	\$0	No	a
13. If inflows exceed 500 cfs, provide a total minimum flow of 500 cfs, or 70% of inflow; whichever is greater, from Copco No. 1 dam. If inflow is less than 500 cfs, provide all inflow. Provide a ramping rate of 0.1 foot per hour when salmonid fry and listed sucker juveniles are present. For the rest of the year, provide a ramping rate of 0.2 foot per hour	Hoopa Valley Tribe	\$0	\$0	\$0	\$0	No	a
14. Maintain ROR conditions at Copco No. 1 dam	Oregon Fish & Wildlife, Cal Fish & Game	\$0	\$0	\$146,710 (loss in energy value due to shift from on-peak to off-peak generation)	\$146,710	No	a

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15. Copco No. 2 bypassed reach minimum flow: 10 cfs, improve release gate at the dam. Limit ramping rate to 125 cfs per hour (2 inches/hr)	PacifiCorp	\$80,530	\$0	\$0	\$10,870	No	b
16. Copco No. 2 bypassed reach minimum flow: 70 cfs, improve release gate at the dam. Limit ramping rate to 125 cfs per hour (2 inches/hr)	Staff	\$80,530	\$0	\$177,620 (loss of 4,280 MWh)	\$188,490	Yes	b
17. If inflows exceed 500 cfs, provide a total minimum flow of 500 cfs, or 70% of inflow; whichever is greater, in the Copco No. 2 bypass reach. If inflow is less than 500 cfs, provide all inflow. Provide a ramping rate of 0.1 foot per hour when salmonid fry and listed sucker juveniles are present. For the rest of the year, provide a ramping rate of 0.2 foot per hour	Hoop Valley Tribe	\$500,000	\$6,000	\$2,622,390 (loss of 63,190 MWh)	\$2,695,880	No	a
18. Copco No. 2 bypassed reach minimum flow: 730 cfs or 40% inflow, whichever is greater. When flows are greater than 730 cfs, provide the average of the previous 3 days. When flows are less than 730 cfs, provide all inflow. Limit ramping rates to 1 inch per hour and 300 cfs per 24-hours	Oregon Fish & Wildlife, NMFS, FWS, Cal Fish & Game, Hoopa Valley Tribe	\$500,000	\$6,000	\$3,966,820 (loss of 95,586 MWh)	\$4,040,310	No	a
19. Maintain ROR conditions at Copco No. 2 dam	Oregon Fish & Wildlife, Cal Fish & Game	\$0	\$0	\$165,760 (loss in energy value due to shift from on-peak to off-peak generation)	\$165,760	No	a

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20. Fall Creek bypassed reach continuous minimum flow of 5 cfs	PacifiCorp	\$0	\$0	\$24,610 (loss of 593 MWh)	\$24,610	Yes	a
21. Fall Creek bypassed reach continuous minimum flow of 40% of inflow	Oregon Fish & Wildlife, FWS, Cal Fish & Game	\$100,000	\$0	\$210,030 (loss of 5,061 MWh)	\$223,530	No	a
22. Spring Creek minimum flow of 100% from July 1 to August 31 and 1 cfs, or inflow, if less, for the rest of the year	PacifiCorp	\$0	\$0	\$12,570 (loss of 303 MWh)	\$12,570	No	a
23. Spring Creek minimum flow of 100% from June 1 to September 15 and 50% for the rest of the year	Oregon Fish & Wildlife, FWS, Cal Fish & Game	\$100,000	\$0	\$83,830 (loss of 2,020 MWh)	\$97,330	No	a
24. Spring Creek minimum flow of 100% from June 1 to September 15 and 1 cfs for the rest of the year	Staff	\$0	\$0	\$66,360 (loss of 1,599 MWh)	\$66,360	Yes	a
25. Run-of-river at Iron Gate with ramping rate limits of 125 cfs/hr (2 inches per hour) and 300 cfs per day.	FWS, NMFS	\$0	\$0	\$0	\$0	No	a
26. Run-of-river at Iron Gate with ramping rate limits of 125 cfs/hr (2 inches per hour) and 300 cfs per day for inflows greater than 1,750 cfs and 50 cfs per hour and 150 cfs per day when inflows are less than 1,750 cfs.	Oregon Fish & Wildlife	\$0	\$0	\$0	\$0	No	a
27. Variable minimum flows downstream of Iron Gate dam. Provide a ramping rate of 0.1 foot per hour when salmonid fry and listed sucker juveniles are present. For the rest of the year, provide a ramping rate of 0.2 foot per hour.	Hoopa Valley Tribe	\$0	\$0	\$0	\$0	No	a

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28. Variable minimum flows downstream of Iron Gate dam with a ramping rate of 1 inch per hour and 300 cfs per day.	Cal Fish & Game	\$0	\$0	\$0	\$0	No	a
29. ROR downstream of Iron Gate dam when storage is deleted with 1 inch/hr and 300 cfs per day	Cal Fish & Game	\$0	\$0	\$0	\$0	No	a
30. Variable minimum flows downstream of Iron Gate dam with a ramping rate limit of 1 inch per hour	Forest Service	\$0	\$0	\$0	\$0	No	a
31. Flushing flows in Boyle bypassed reach, with a down-ramp rate of 2 inches an hour and 300 cfs per 24 hours	Oregon Fish & Wildlife, Bureau of Land Management, Cal Fish & Game	\$0	\$0	\$724,840 (loss of 17,466 MWh)	\$724,840	No	a
32. Flushing flows in Copco No. 2 bypassed reach, with a down-ramp rate of 2 inches an hour and 300 cfs per 24 hours	Oregon Fish & Wildlife, FWS, Cal Fish & Game	\$0	\$0	\$305,770 (loss of 7,368 MWh)	\$305,770	No	a
33. Develop a plan to provide temporary enhanced flows on an emergency basis (feasibility of implementing this plan would be addressed in Water Quality 6)	Oregon Fish & Wildlife, NMFS, FWS, Cal Fish & Game	\$20,000	\$3,340	\$0 (Unable to quantify)	\$6,040	Yes	a
34. Fish passage resource management plan	Oregon Fish & Wildlife	\$30,000	\$10,000	\$0	\$14,050	Yes	a
35. Determine if anadromous fish passage is feasible and if so, design a permanent smolt collection facility at or upstream of J.C. Boyle dam, modify adult collection facilities at Iron Gate, and implement a trap and haul reintroduction	PacifiCorp (alternative prescription - not proposed)	\$10,000	\$0	\$0	\$1,350	No	a, l

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36. Keno fish ladder modifications	NMFS, Interior, Cal Fish & Game	\$5,771,770	\$333,850	\$0	\$1,113,220	No	m
37. Develop a plan to evaluate the need for a listed sucker fish ladder at Keno	FWS	\$10,000	\$0	\$0	\$1,350	No	a
38. Keno fish ladder to accommodate listed sucker	Oregon Fish & Wildlife, Hoopa Valley Tribe	\$11,552,190	\$423,980	\$0	\$1,983,340	No	a
39. Keno spillway evaluation and modification for downstream fish passage	Oregon Fish & Wildlife, NMFS, Interior, Cal Fish & Game	\$179,990	\$47,690	\$0	\$71,990	Yes	k, m
40. Improve the existing fish ladder at Boyle dam	PacifiCorp	\$1,938,600	\$0	\$0	\$261,680	Yes	m
41. J.C. Boyle fish ladder	NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$13,962,790	\$41,450	\$0	\$1,926,210	No	m
42. Construct, operate year-round, maintain, and evaluate a fish screen at Boyle dam	Oregon Fish & Wildlife, NMFS, Interior, Cal Fish & Game	\$36,653,020	\$51,810	\$9,460 (loss of 227,894 kWh)	\$5,008,850	No	m
43. J.C. Boyle gulper to protect fish from entrainment and facilitate downstream passage	PacifiCorp	\$4,773,950	\$106,310	\$0	\$750,720	No	m
44. J.C. Boyle spillway modification for fish passage	NMFS, Interior, Cal Fish & Game	\$3,879,070	\$10,360	\$0	\$533,970	No	m

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45. J.C. Boyle tailrace barrier	NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$8,601,810	\$21,930	\$3,150 (loss of 75,965 kWh)	\$1,186,190	No	m
46. Juvenile trap and haul facility at J.C. Boyle dam if agencies determine that self-sustaining runs of anadromous fish can be established upstream	PacifiCorp (alternative prescription- not proposed)	\$21,916,770	\$213,990	\$9,460 (loss of 227,894 kWh)	\$3,181,870	Yes	m, n
47. Copco No. 1 fish ladder	NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$20,837,550	\$29,580	\$386,120 (loss of 9,304,419 kWh)	\$3,228,430	No	m
48. Copco No. 1 fish screen and bypass	NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$27,445,800	\$36,980	\$11,250 (loss of 271,032 kWh)	\$3,752,970	No	m
49. Copco No. 1 spillway modification for fish passage	NMFS, Interior, Cal Fish & Game	\$2,904,650	\$7,400	\$0	\$399,480	No	m
50. Copco No. 1 tailrace barrier	NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$7,385,560	\$15,510	\$3,740 (90,344 loss of kWh)	\$1,016,180	No	m
51. Copco No. 2 fish ladder	NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$4,384,840	\$29,580	\$0	\$621,460	No	m
52. Copco No. 2 fish screen and bypass	NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$25,253,040	\$36,980	\$11,620 (loss of 280,285 kWh)	\$3,457,360	No	m

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53. Copco No. 2 spillway modification for fish passage	NMFS, Interior, Cal Fish & Game	\$289,770	\$3,700	\$0	\$42,810	No	m
54. Copco No. 2 tailrace barrier	NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$6,866,580	\$15,510	\$3,860 (loss of 93,428 kWh)	\$946,250	No	m
55. Natural bedrock sill removal at Copco No. 2 bypassed reach	NMFS, Interior	\$193,490	\$5,180	\$0	\$31,300	No	m
56. Fall Creek fish ladder	PacifiCorp, NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$89,990	\$14,310	\$0	\$26,460	No	m
57. Fall Creek fish screen and bypass	PacifiCorp, NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$643,810	\$23,850	\$250 (loss of 5,624 kWh)	\$111,000	No	m
58. Fall Creek tailrace barrier	NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$132,540	\$12,090	\$0	\$29,980	No	m
59. Spring Creek fish ladder	PacifiCorp, NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$269,980	\$14,310	\$0	\$50,750	No	m

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
60. Spring Creek fish screen and bypass	PacifiCorp, NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$261,330	\$20,150	\$0	\$55,430	No	m
61. Iron Gate fish ladder	NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$28,909,690	\$112,820	\$392,670 (loss of 9,462,014 kWh)	\$4,407,840	No	m
62. Iron Gate fish screen and bypass	NMFS, Interior, Oregon Fish & Wildlife, Cal Fish & Game	\$19,037,500	\$40,290	\$9,420 (loss of 226,840 kWh)	\$2,619,470	No	m
63. Iron Gate spillway modification for fish passage	NMFS, Interior, Cal Fish & Game	\$780,250	\$8,060	\$0	\$113,380	No	m
64. Tailrace barrier at Iron Gate	Oregon Fish & Wildlife, Cal Fish & Game	\$7,939,470	\$16,950	\$0	\$1,088,650	No	a, o
65. Trap and haul facility at Iron Gate	PacifiCorp (alternative prescription- not proposed)	\$1,696,150	\$91,550	\$0	\$320,500	Yes	m
66. Pacific lamprey management plan	FWS	\$829,180	\$0	\$0	\$111,930	No	a
67. Evaluate juvenile salmonid passage through lakes and reservoirs	PacifiCorp (alternative prescription- not proposed)	\$807,950	\$0	\$0	\$109,060	No	p

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
68. Evaluate juvenile salmonid survival during hauling	PacifiCorp (alternative prescription- not proposed)	\$820,950	\$0	\$0	\$110,820	No	p
69. Evaluate adult salmonid spawning success at targeted areas and survival during hauling	PacifiCorp (alternative prescription- not proposed)	\$579,800	\$0	\$0	\$78,260	No	p
70. Evaluate smolt to adult return of fish released downstream of Iron Gate dam	PacifiCorp (alternative prescription- not proposed)	\$219,310	\$0	\$0	\$29,600	No	p
71. Monitor young salmonids in upper tributaries to assess survival rates and outmigration timing	PacifiCorp (alternative prescription- not proposed)	\$400,730	\$0	\$0	\$54,090	No	p
72. Develop and implement a plan to assess the restoration potential of project reaches upstream of Iron Gate, Copco No. 1, and J.C. Boyle dams	Staff	\$302,560	\$0	\$0	\$40,840	Yes	a
73. Evaluate juvenile fall Chinook production in spawning and rearing areas	Staff	\$494,090	\$0	\$0	\$66,690	Yes	a
74. Evaluate fish passage options at reaches deemed feasible for restoration based on study results and select a reach for full scale restoration of anadromous fish	Staff	\$74,880	\$0	\$0	\$10,110	Yes	a
75. Develop an anadromous fish restoration plan for the selected reach	Staff	\$17,410	\$0	\$0	\$2,350	Yes	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
76. Implement habitat enhancement measures in the selected reach	Staff	\$161,990	\$0	\$0	\$21,870	Yes	a
77. Develop a fish passage plan	Siskiyou Co.	\$0 Too general to estimate	\$0	\$0	\$0	No	a
78. Fishway O&M plan	NMFS, Interior	\$10,000	\$0	\$0	\$1,350	Yes	a, q
79. Transfer operational responsibilities for facilities at Link River dam to Reclamation	PacifiCorp	-\$3,540,210	-\$26,840	\$0	-\$504,710	No	b, r, s
80. Remove Keno from the licensed project	PacifiCorp	-\$3,935,470	-\$57,980	\$0	-\$589,210	Yes	b, r
81. Removal of Keno dam (in some cases, only if meeting water quality standards and/or if fish passage is not feasible)	IFR/PCFFA, Resighini Rancheria, Hoopa Valley Tribe, Oregon Fish & Wildlife, Cal Fish & Game	\$2,679,680	\$0	\$0	\$361,710	No	a
82. Decommissioning plan for Keno development	IFR/PCFFA, Resighini Rancheria, Hoopa Valley Tribe, Oregon Fish & Wildlife, Cal Fish & Game	\$75,000	\$0	\$0	\$10,120	No	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
83. Remove J.C. Boyle development from the licensed project	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	-\$10,284,780	-\$1,250,910	\$13,653,500 (Loss of 329,000 MWh)	\$11,014,310	No	b, r
84. Removal of J.C. Boyle dam (in some cases, only if meeting water quality standards and/or if fish passage is not feasible)	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	\$13,950,560	\$0	\$0	\$1,883,100	No	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
85. Decommissioning plan for J.C. Boyle development	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	\$150,000	\$0	\$0	\$20,250	No	a
86. Remove Copco No. 1 development from the licensed project	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	-\$4,335,030	-\$828,930	\$4,399,000 (Loss of 106,000 MWh)	\$2,984,910	No	b, r

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
87. Removal of Copco No. 1 dam (in some cases, only if meeting water quality standards and/or if fish passage is not feasible)	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	\$10,986,430	\$0	\$0	\$1,482,990	No	a
88. Decommissioning plan for Copco No. 1 development	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	\$250,000	\$0	\$0	\$33,750	No	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
891. Remove Copco No. 2 development from the licensed project	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	-\$4,006,850	-\$1,072,670	\$5,602,500 (Loss of 135,000 MWh)	\$3,988,970	No	b, r
90. Removal of Copco No. 2 dam (in some cases, only if meeting water quality standards and/or if fish passage is not feasible)	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	\$2,381,280	\$0	\$0	\$321,440	No	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
91. Decommissioning plan for Copco No. 2 development	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	\$75,000	\$0	\$0	\$10,120	No	a
92. Remove Fall Creek development from the licensed project	IFR/PCFFA, Resighini Rancheria and Hoopa Valley Tribe, Oregon Fish & Wildlife, Cal Fish & Game	-\$87,670	-\$215,820	\$654,540 (Loss of 15,772 MWh)	\$426,880	No	b, r
93. Removal of Fall Creek and Spring Creek diversion dams (in some cases, only if fish passage is not feasible)	IFR/PCFFA, Resighini Rancheria and Hoopa Valley Tribe, Oregon Fish & Wildlife, Cal Fish & Game	\$1,183,400	\$0	\$0	\$159,740	No	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
94. Decommissioning plan for Fall Creek development, including Spring Creek diversion	IFR/PCFFA, Resighini Rancheria and Hoopa Valley Tribe, Oregon Fish & Wildlife, Cal Fish & Game	\$50,000	\$0	\$0	\$6,750	No	a
95. Remove Iron Gate development from the licensed project	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	-\$7,462,480	-\$715,110 )	\$4,814,000 (Loss of 116,000 MWh)	\$3,091,570	No	b, r
96. Removal of Iron Gate dam (in some cases, only if meeting water quality standards and/or if fish passage is not feasible)	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	\$49,863,720	\$0	\$0	\$6,730,810	No	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
97. Decommissioning plan for Iron Gate development	IFR/PCFFA, Resighini Rancheria, Quartz Valley Indian Community, Klamath, Karuk, Hoopa Valley and Yurok tribes, Conservation Groups, NMFS, PFMC, Oregon Fish & Wildlife, Cal Fish & Game	\$250,000	\$0	\$0	\$33,750	No	a
98. Remove East Side and West Side developments from the project	PacifiCorp, Oregon Fish and Wildlife, NMFS, FWS	-\$588,980	-\$353,260	\$780,200 (loss of 18,800 MWh)	\$347,440	Yes	b, r
99. East Side and West Side decommissioning plan and implementation	PacifiCorp, Oregon Fish & Wildlife, NMFS, FWS	\$906,240	\$0	\$0	\$122,330	Yes	b
100. East Side and West Side operation conditions if not decommissioned (no operation of powerhouses if flows are less than 500 cfs)	Oregon Fish & Wildlife	\$0	\$0	\$2,660 (loss of 64 MWh)	\$2,660	No	a
101. If East Side and West Side not decommissioned, consult with NMFS regarding operating conditions	NMFS	\$10,000	\$0	\$0	\$1,350	No	a

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102. East Side and West Side fish screen and bypass	NMFS, Interior	\$30,370,580	\$333,850	\$5,310 (loss of 127,558 kWh)	\$4,438,710	No	m
103. East Side and West Side tailrace barriers	NMFS, Interior	\$5,709,460	\$47,690	\$1,910 (loss of 42,520 kWh)	\$820,290	No	m
104. Fish passage implementation committee formation	Oregon Fish & Wildlife, Hoopa Valley Tribe	\$0	\$10,000	\$0	\$10,000	Yes	a, t
105. Conduct a limiting factors study	PacifiCorp (alternative prescription- not proposed)	\$34,830	\$0	\$0	\$4,700	No	a
106. Anadromous fish restoration funding	Klamath Tribes	\$0	\$0	\$0	\$0	Yes	a, l
107. Fish and wildlife habitat restoration plan	Oregon Fish & Wildlife	\$15,000	\$20,000	\$0	\$22,020	No	a
108. Hatchery technical advisory group formation	Klamath tribes, Interior	\$0	\$0	\$0	\$0	Yes	a, u, v
109. Fishery technical advisory group formation	Interior	\$0	\$0	\$0	\$0	Yes	a, u
110. Hatchery stakeholders consultation if project decommissioned	Yurok Tribe	\$0	\$4,400	\$0	\$4,400	No	a
111. Continue current funding level for Iron Gate hatchery	PacifiCorp	\$0	\$0	\$0	\$0	Yes	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
112. Discontinue current funding of Iron Gate hatchery		\$0	-\$500,000	\$0	-\$500,000	No	a
113. Fully fund Iron Gate hatchery operations	NMFS, FWS, Cal Fish & Game, Forest Service	\$0	\$125,000	\$0	\$125,000	Yes	a
114. Construct a facility at Iron Gate Hatchery for marking 25% of released fall Chinook	PacifiCorp, Forest Service, FWS, Cal Fish & Game	\$853,620	\$118,650	\$0	\$233,880	No	b
115. Construct a facility at Iron Gate Hatchery for marking 100% of released Chinook	NMFS, Cal Fish & Game	\$1,707,240	\$474,590	\$0	\$705,040	Yes	a
116. Mark 100% of released coho	FWS	\$0	\$4,750	\$0	\$4,750	Yes	a
117. Develop a hatchery and genetics management plan for Iron Gate hatchery	NMFS	\$25,000	\$500,000	\$0	\$503,370	No	a
118. Minor upgrades at Iron Gate hatchery	PacifiCorp	\$0	\$107,370	\$0	\$107,370	Yes	b
119. Rehabilitate the Fall Creek rearing ponds and fund 100% of the operation and maintenance costs for this facility	Cal Fish & Game	\$200,000	\$150,000	\$0	\$177,000	Yes	a
120. Fish disease risk monitoring and management plan	Oregon Fish & Wildlife, NMFS, FWS, Siskiyou Co., Cal Fish & Game	\$20,000	\$350,000	\$0	\$352,700	Yes	a

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121. Identify, in consultation with agencies, and fund instream flow and habitat enhancements in mainstem reaches and tributaries with native fish and wildlife, within and above the project, including flow restoration, land acquisition, and working with other cooperative landowners on land and water management improvement projects to improve instream habitat	Oregon Fish & Wildlife	\$0	\$0	\$0	\$0	No	a, w
122. J.C. Boyle bypassed reach sidecast material removal	NMFS, Interior	\$2,084,000	\$5,620	\$0	\$286,930	Yes	m
123. Upstream and downstream fish passage habitat protection and enhancement plan	NMFS, FWS	\$34,830	\$30,130	\$0	\$34,830	No	a
124. Plan for restoring fish habitat upstream and downstream of project	NMFS, FWS	\$20,000	\$50,000	\$0	\$52,700	No	a
127. Aquatic monitoring resource management plan	Oregon Fish & Wildlife	\$30,000	\$120,000	\$0	\$124,050	No	a
126. Aquatic monitoring resource management plan	Bureau of Land Management	\$30,000	\$100,000	\$0	\$104,050	No	a
127. Aquatic monitoring resource management plan	FWS	\$30,000	\$92,860	\$0	\$96,610	No	a
128. Aquatic monitoring resource management plan	Staff	\$30,000	\$50,790	\$0	\$54,840	Yes	a
129. Shovel and Negro creeks flow enhancements by eliminating irrigation diversions	PacifiCorp	\$579,820	\$8,910	\$0	\$87,180	Yes	b

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
130. Agency notification of unanticipated harm to non-federally listed fish and wildlife	Oregon Fish & Wildlife	\$0	\$5,000	\$0	\$5,000	Yes	a
131. Develop an anadromous fish monitoring plan for fish returning to Iron Gate dam, spawning populations in tributaries, and outmigrating smolts from those tributaries	FWS, NMFS	\$50,000	\$322,430	\$0	\$329,180	No	a
132. Monitor introduced and resident salmonids for disease	PacifiCorp (alternative prescription- not proposed)	\$219,310	\$0	\$0	\$29,600	Yes	a, p
133. Use monitoring and modeling to assess project effects on anadromous fish downstream of Iron Gate dam	Forest Service	\$50,000	\$1,720	\$0	\$8,470	Yes	a
<b>Terrestrial Resources Measures</b>							
1. Vegetation management plan	PacifiCorp, Oregon Fish & Wildlife, Bureau of Land Management, Hoopa Valley Tribe	\$64,420	\$27,810	\$0	\$36,510	Yes	b
2. Upland vegetation management plan	PacifiCorp, Interior	\$0	\$0	\$0	\$0	Yes	a, x
3. Vegetation management plan to re-establish ethnobotanical resources	PacifiCorp, Interior	\$0	\$0	\$0	\$0	Yes	a, x
4. Use native plants for screening purposes at selected recreational sites	PacifiCorp	\$10,740	\$220	\$0	\$1,670	Yes	b

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
5. Control noxious weeds	PacifiCorp, Bureau of Land Management, Oregon Fish & Wildlife	\$0	\$15,680	\$0	\$15,680	Yes	b
6. Protective measures for sensitive plants along transmission-line rights-of-way	PacifiCorp	\$7,520	\$860	\$0	\$1,880	Yes	b
7. Riparian habitat monitoring plan	PacifiCorp, FWS	\$0	\$0	\$0	\$0	Yes	a, x
8. Restore and protect riparian and wetland habitats	PacifiCorp, FWS	\$216,900	\$8,160	\$0	\$37,440	Yes	b
9. Develop a wildlife resource management plan	PacifiCorp, Oregon Fish & Wildlife, Bureau of Land Management, Cal Fish & Game	\$53,690	\$21,480	\$0	\$28,730	Yes	b
10. Install wildlife crossings along J.C. Boyle intake canal	PacifiCorp, Oregon Fish & Wildlife, Bureau of Land Management	\$322,120	\$1,930	\$0	\$45,410	Yes	b
11. Develop a wildlife crossing inspection and maintenance plan	Oregon Fish & Wildlife	\$10,000	\$0	\$0	\$1,350	Yes	a, y
12. Avian collision and electrocution protection plan	PacifiCorp, Oregon Fish & Wildlife, FWS	\$0	\$0	\$0	\$0	Yes	a, y
13. Install bat roosting structures near project facilities	PacifiCorp	\$21,470	\$430	\$0	\$3,330	Yes	b

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14. Construct backwater areas for amphibian habitat	PacifiCorp	\$12,880	\$320	\$0	\$2,060	Yes	b
15. Wetland protection measures at Copco Village	PacifiCorp	\$0	\$110	\$0	\$110	Yes	b
16. Install pond turtle basking structures	PacifiCorp, Bureau of Land Management	\$16,110	\$320	\$0	\$2,490	Yes	b
17. Protective measures for unique habitat at Shovel Creek Meadow	PacifiCorp	\$0	\$110	\$0	\$110	Yes	b
18. Develop a road access plan and close non-essential roads	PacifiCorp	\$107,370	\$5,370	\$0	\$19,860	Yes	b
<b>Threatened and Endangered Species Measures</b>							
1. Monitor project waters for federally listed suckers every 3 years	FWS	\$0	\$23,220	\$0	\$23,220	No	a
2. Agency notification of unanticipated harm to state or federally listed fish and wildlife	Oregon Fish & Wildlife	\$5,000	\$0	\$0	\$670	Yes	a
3. Develop a bald eagle management plan for the project	FWS	\$15,000	\$10,000	\$0	\$12,020	Yes	a
4. Annual monitoring of bald eagle nest occupancy	PacifiCorp, FWS	\$0	\$5,370	\$0	\$5,370	Yes	b
<b>Recreational Resources Measures</b>							
1. Link River trail enhancements	Interior	\$10,000	\$1,000	\$0	\$2,350	No	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
2. Upper Boyle reservoir car-top boater access	PacifiCorp	\$150,320	\$540	\$0	\$20,830	Yes	z
3. Construct a Boyle reservoir loop trail that also links Topsy recreation area, Sportsman's Park and Pioneer Park	PacifiCorp, Interior	\$107,370	\$540	\$0	\$15,030	Yes	z
4. Pioneer Park recreation area	PacifiCorp	\$762,360	\$5,370	\$0	\$108,280	Yes	z
5. Boyle Bluffs recreation area	PacifiCorp	\$1,115,840	\$1,070	\$0	\$151,700	Yes	a
6. Boyle reservoir dispersed recreation site management	PacifiCorp	\$75,160	\$2,150	\$0	\$12,300	Yes	a
7. Acquisition and development of a potable water system and assistance in overall O&M of Topsy Grade Campground	Oregon Parks & Rec, Bureau of Land Management	\$100,000	\$10,000	\$0	\$23,500	Yes	a
8. Provide law enforcement and O&M at Frain Ranch boater campground and day use area	Oregon Parks & Rec	\$0	\$10,000	\$0	\$10,000	No	a
9. Improve scouting trails at the Caldera and Hell's Corner rapids	Interior, Oregon Parks & Rec, Bureau of Land Management	\$5,000	\$3,000	\$0	\$3,670	No	a
10. Develop an off-highway vehicle management program	Interior	\$10,000	\$5,000	\$0	\$6,350	Yes	a
11. Design and construct a hiking trail from J.C. Boyle powerhouse to Copco	Oregon Parks & Rec, Interior	\$200,000	\$10,000	\$0	\$37,000	No	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
12. Enhancements and O&M at Klamath River Campground	Bureau of Land Management	\$10,000	\$10,000	\$0	\$11,350		a
13. O&M of the Spring Island boater access site	Bureau of Land Management	\$0	\$10,000	\$0	\$10,000		a
14. Replace the bridge over the Klamath River in the upper Frain Ranch area	Interior	\$100,000	\$0	\$0	\$13,500	No	a
15. Design a non-motorized trail to connect with the new Upper Boyle boat access and the existing non-motorized trail that provides access to the Keno reach	Interior	\$5,000	\$3,000	\$0	\$3,670	No	a
16. Boyle bypassed reach angler and boater access	PacifiCorp, Interior, Bureau of Land Management	\$85,900	\$540	\$0	\$12,140	Yes	z
17. Boyle bypassed reach boating flow release	OPRD	\$0	\$0	\$724,840	\$724,840	No	a
18. Old foundations day use area on the Boyle peaking reach	PacifiCorp	\$71,130	\$0	\$0	\$9,600	Yes	z, aa
19. O&M cost for old foundations day use area on the Boyle peaking reach	Staff	\$0	\$500	\$0	\$500	Yes	a
20. Boyle peaking reach fishing access enhancements	PacifiCorp	\$370,440	\$2,150	\$0	\$52,150	Yes	z
21. Project patrols of dispersed sites in the Boyle peaking reach	PacifiCorp	\$0	\$540	\$0	\$540	Yes	z
22. Stateline takeout enhancements	PacifiCorp, Bureau of Land Management	\$89,120	\$2,150	\$0	\$14,180	Yes	z

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
23. Mallard Cove enhancements	PacifiCorp	\$257,700	\$6,440	\$0	\$41,230	Yes	z
24. Copco Cove enhancements	PacifiCorp	\$57,980	\$2,150	\$0	\$9,980	Yes	z
25. Closure of dispersed sites on Copco Reservoir and Iron Gate Reservoir for overnight camping	PacifiCorp	\$0	\$430	\$0	\$430	Yes	z
26. Fall Creek trail enhancements	PacifiCorp	\$37,580	\$500	\$0	\$5,570	Yes	z
27. Fall Creek recreation area modifications	PacifiCorp	\$40,800	\$270	\$0	\$5,780	Yes	z
28. Jenny Creek recreation area modifications	PacifiCorp	\$71,940	\$1,070	\$0	\$10,780	Yes	z
29. Wanaka Springs enhancements	PacifiCorp	\$214,980	\$5,370	\$0	\$34,390	Yes	z
30. Camp Creek enhancements	PacifiCorp	\$3,890,900	\$16,110	\$0	\$541,320	Yes	z
31. Juniper Point enhancements	PacifiCorp	\$180,390	\$5,370	\$0	\$29,720	Yes	z
32. Mirror Cove enhancements	PacifiCorp	\$360,360	\$10,740	\$0	\$59,380	Yes	z
33. Overlook Point recreational modifications	PacifiCorp	\$50,400	\$900	\$0	\$7,700	Yes	z
34. Long Gulch boat launch enhancements	PacifiCorp	\$213,610	\$4,300	\$0	\$33,130	Yes	z

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
35. Long Gulch bluff recreation area	PacifiCorp	\$1,727,250	\$6,750	\$0	\$239,900	Yes	z
36. Long Gulch to Iron Gate hatchery and Bogus Creek trails	PacifiCorp	\$8,400	\$230	\$0	\$1,360	Yes	z
37. Iron Gate hatchery recreation area enhancements	PacifiCorp	\$35,010	\$0	\$0	\$4,730	Yes	z
38. O&M of Iron Gate hatchery recreation area	Staff	\$0	\$2,000	\$0	\$2,000	Yes	z
39. Public access at Happy Camp	Forest Service	\$150,320	\$540	\$0	\$20,830	No	z
40. Finalization and implementation of programmatic elements of RRMP	PacifiCorp, Bureau of Land Management, Oregon Parks & Rec	\$21,470	\$37,180	\$0	\$40,080	Yes	z
41. Supplemental O&M to account for replacement of recreation facilities, as needed	Staff	\$1,201,820	\$0	\$0	\$162,240	Yes	a
42. Flow information plan	Oregon Fish & Wildlife	\$10,000	\$0	\$0	\$1,350	Yes	a
43. Recreation stakeholder group information	Oregon Fish & Wildlife	\$0	\$5,000	\$0	\$5,000	No	a
44. Project patrols on project lands and waters by PacifiCorp personnel	PacifiCorp, Interior	\$0	\$32,210	\$0	\$32,210	Yes	z
45. Project patrols on project lands and waters by Siskiyou and Klamath county law enforcement	PacifiCorp	\$0	\$42,950	\$0	\$42,950	No	z

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
46. Increased on-river patrols	Forest Service	\$0	\$20,000	\$0	\$20,000	No	a
47. Fund a Klamath County Sheriff's Department land-based deputy to patrol project roads	Interior	\$0	\$40,000	\$0	\$40,000	No	a
48. Fund a Klamath County Sheriff's Department water-based deputy to patrol J.C. Boyle and Keno reservoirs	Interior	\$0	\$40,000	\$0	\$40,000	No	a
49. Fund a communications firm to analyze the feasibility of establishing and improving an emergency/early warning system	Interior	\$20,000	\$0	\$0	\$2,700	Yes	a
50. Increase on-river patrols and management presence and improving three river access sites (below IG dam, near Interstate 5, and the Indian Creek site) in the Middle Klamath Reach (between Iron Gate dam and Happy Camp).	Interior	\$150,320	\$41,000	\$0	\$61,290	No	a
51. Interpretation and education program	PacifiCorp, Interior	\$316,750	\$2,680	\$0	\$45,440	Yes	z
<b>Land Use and Aesthetic Resources Measures</b>							
1. Develop a cooperative management agreement with Bureau of Land Management	Interior	\$5,000	\$0	\$0	\$670	No	a
2. Site specific plans for activities that could affect Bureau of Land Management-managed that are not analyzed in the FERC NEPA document	Bureau of Land Management	\$0	\$0	\$0	\$0	No	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
3. NEPA analysis for activities not included in FERC NEPA document	Bureau of Land Management	\$0	\$0	\$0	\$0	No	a
4. Annual consultation with Bureau of Land Management	PacifiCorp, Bureau of Land Management	\$0	\$2,000	\$0	\$2,000	No	a
5. Finalization of road management plan	PacifiCorp, Bureau of Land Management	\$10,000	\$20,000	\$0	\$21,350	Yes	a
6. Implementation of the visual resource management plan	PacifiCorp, Bureau of Land Management	\$378,240	\$0	\$0	\$51,060	Yes	a
7. Include Fall Creek and Copco No. 2 powerhouses in the visual resource management plan	Staff	\$50,000	\$0	\$0	\$6,750	Yes	a
<b>Cultural Resources Measures</b>							
1. Develop an MOA prior to capping of archaeological sites	Oregon SHPO	\$3,000	\$0	\$0	\$400	No	a
2. Survey of Bureau of Land Management lands	Bureau of Land Management	\$15,000	\$0	\$0	\$2,020	Yes	a, bb
3. Treatment of sites on Bureau of Land Management lands	Bureau of Land Management	\$10,000	\$0	\$0	\$1,350	Yes	a, bb
4. Finalize the HPMP and evaluate annually	Interior	\$20,000	\$7,000	\$0	\$9,700	Yes	a, cc
5. Develop vandalism awareness program	Interior	\$0	\$0	\$0	\$0	Yes	a

<b>Environmental Measures</b>	<b>Recommending Entity</b>	<b>Capital Costs (2006\$)</b>	<b>Annual Costs (2006\$)</b>	<b>Annual Energy Costs (2006\$)</b>	<b>Total Annualized Cost (2006\$)</b>	<b>Adopted by Staff?</b>	<b>Notes (listed at end of table)</b>
6. Develop an erosion protection program for cultural sites	Interior	\$0	\$0	\$0	\$0	No	a
7. Develop monitoring program for sensitive cultural sites with surveillance cameras and patrols	Interior	\$100,000	\$100,000	\$0	\$113,500	No	a
8. Tribal access to traditional gathering sites	Interior	\$10,000	\$0	\$0	\$1,350	Yes	a
9. Financial support of tribal participation in mitigation programs	Interior	\$0	\$5,000	\$0	\$5,000	No	a
10. Protection of cultural sites at Boyle development	PacifiCorp	\$5,153,960	\$112,740	\$0	\$808,440	Yes	b
11. Protection of cultural sites at Copco No. 1 development	PacifiCorp	\$966,370	\$0	\$0	\$130,440	Yes	b
12. Protection of cultural sites at Iron Gate development	PacifiCorp	\$798,860	\$5,370	\$0	\$113,200	Yes	b

- 1  
2 <sup>a</sup> Cost estimate by staff.  
3 <sup>b</sup> Cost estimate from PacifiCorp 7/21/04 application deficiency response.  
4 <sup>c</sup> Not adopted unless flow regime specified in the license requires measurement of J.C. Boyle reservoir inflow.  
5 <sup>d</sup> Cost estimate from PacifiCorp license application.  
6 <sup>e</sup> Cost estimate from PacifiCorp AIR AR-1 response 5/16/05.  
7 <sup>f</sup> Not adopted unless Keno is determined to be jurisdictional. If so, then the measure would be included in the cost of the water quality management plan  
8 <sup>g</sup> Cost for this measure would be included in the cost for the water quality management plan.  
9 <sup>h</sup> Not adopted unless Keno is determined to be jurisdictional. If so, then the measure could be included in the cost of the water quality management plan.  
10 <sup>i</sup> Cost estimate from PacifiCorp AIR AR-1(b) response filed 10/17/05.  
11 <sup>j</sup> Not adopted, but could be implemented later after evaluation of potential adverse effects.  
12 <sup>k</sup> This would be adopted if Keno is determined to be jurisdictional.  
13 <sup>l</sup> Implementation costs for this measure would be covered by other measures.  
14 <sup>m</sup> Cost estimate from PacifiCorp 4/25/06 Attachment E – CH2M Hill cost estimates.  
15 <sup>n</sup> The location of this facility would be dependent on the study results.

- 1    <sup>o</sup>    Cannot estimate potential energy loss.
- 2    <sup>p</sup>    Cost estimate from PacifiCorp 4/25/06 adaptive reintroduction plan, April 2006.
- 3    <sup>q</sup>    The annual cost of this measure would be included in the O&M cost of the facilities.
- 4    <sup>r</sup>    Under this measure, we remove the net investment, the O&M cost, and the annual average generation of the development from the licensed project.
- 5    <sup>s</sup>    Operation of Link River dam is not within the Commission's jurisdiction.
- 6    <sup>t</sup>    The fish passage implementation committee would be combined into a fishery advisory committee.
- 7    <sup>u</sup>    Annual cost would be included in the fish passage implementation committee.
- 8    <sup>v</sup>    The hatchery technical advisory group would be combined into a fishery advisory committee.
- 9    <sup>w</sup>    All elements of this plan are included in other recommendations of the Oregon Department of Fish and Wildlife.
- 10   <sup>x</sup>    Cost included under the vegetation management plan.
- 11   <sup>y</sup>    Cost included under the wildlife management plan.
- 12   <sup>z</sup>    Cost estimate from PacifiCorp revised Recreational Resource Management Plan 9/29/04, Exhibit D.
- 13   <sup>aa</sup>   We would not include construction of the trail between this day use area and the Spring Island Boater access site in our recommended measure.
- 14   <sup>bb</sup>   This measure would be adopted, but would be limited to sites on BLM lands within the APE for the project as defined in the new project license.
- 15   <sup>cc</sup>   This measure would be adopted, although we would modify it to be consistent with PacifiCorp's proposed 3-year evaluation frequency.
- 16
- 17