

**Table 20.** Annual costs of proposed and recommended protection, mitigation and enhancements for the Rocky Reach Hydroelectric Project

	Capital Cost	Annual Cost	Annual Lost Generation	Total Levelized Cost <sup>1</sup>
<b>Relicensing Costs</b>				
1) Planning and Administration.	\$2,000,000	\$0	\$0	\$144,278
2) Plan development (erosion management plan).	\$300,000	\$0	\$0	\$21,642
3) Plan development (fish management plans).	\$3,400,000	\$0	\$0	\$245,273
4) Plan development (cultural resources management plan).	\$450,000	\$0	\$0	\$32,463
5) Plan development (recreation management plan).	\$2,000,000	\$0	\$0	\$144,278
<b>Shoreline Erosion Management Plan</b>				
1) Erosion control demonstration projects.	\$200,000	\$0	\$0	\$13,058
2) Distribute erosion control information.	\$0	\$500	\$0	\$809
3) Monitor shoreline erosion.	\$0	\$3600	\$0	\$5,823
4) Erosion control work for BLM site.	\$200,000	\$0	\$0	\$13,058
<b>Water Quality</b>				
1) Manage spill to minimize TDG while meeting fish survival goals and monitor water temperatures in the Project. <sup>2</sup>	\$0	\$20,000	\$x	\$32,351
2) Continue to implement and revise the SPCC plan. <sup>2</sup>	\$0	\$100,000	\$0	\$161,755
<b>Anadromous Fish<sup>3</sup></b>				
1) Energy loss (spill). <sup>2,4</sup>	\$0	\$0	\$15,029,316	\$15,029,316
2) Studies.				
• 2003 FPE	\$1,065,200	\$0	\$0	\$76,842
• 2004 Acoustic	\$2,006,400	\$0	\$0	\$140,005
• 2004 PIT	\$1,285,500	\$0	\$0	\$89,701
• 2005 Acoustic	\$1,720,000	\$0	\$0	\$116,095
• 2005 PIT	1,285,500	\$0	\$0	\$86,767
• 2006 Acoustic	1,720,000	\$0	\$0	\$112,297
• 2006 PIT	1,678,300	\$0	\$0	\$109,575
• 2016 Acoustic	1,720,000	\$0	\$0	\$80,526
• 2026 Acoustic	1,720,000	\$0	\$0	\$57,743

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• 2036 Acoustic	1,720,000	\$0	\$0	\$41,406
• 2046 Acoustic	1,720,000	\$0	\$0	\$29,691
3) Research and development (years 1 - 10).	\$0	\$1,000,000	\$0	\$564,708
4) Pumping energy. <sup>2</sup>	\$0	\$0	\$147,098	\$147,098
5) Predator control - existing. <sup>2</sup>	\$0	\$150,000	\$0	\$242,632
6) Predator control - incremental.	\$0	\$100,000	\$0	\$161,755
7) Adult fish ladder O&M - existing. <sup>2</sup>	\$0	\$250,000	\$0	\$404,387
8) Fish counting. <sup>2</sup>	\$0	\$60,858	\$0	\$98,441
9) Juvenile bypass system construction. <sup>2</sup>	\$112,000,000	\$0	\$0	\$8,079,570
10) Bypass system flow. <sup>2</sup>	\$0	\$0	\$362,609	\$362,609
11) Bypass construction R&M (year 2017).	\$65,000,000	\$0	\$0	\$2,943,578
12) Bypass construction R&M (year 2032).	\$65,000,000	\$0	\$0	\$1,787,410
13) Bypass construction R&M (year 2047).	\$65,000,000	\$0	\$0	\$1,085,357
14) Bypass system O&M - incremental (years 1 - 5).	\$0	\$710,508	\$0	\$217,256
15) Bypass system O&M - incremental (years 6 - 50).	\$0	\$510,508	\$0	\$669,670
16) Ongoing bypass system O&M ( years 6 - 50).	\$0	489,492	\$0	\$791,777
17) Hatchery capital improvements.	\$4,000,000	\$0	\$0	\$261,156
18) Hatchery O&M - existing. <sup>2</sup>	\$0	\$841,700	\$0	\$1,361,491
19) Hatchery O&M - incremental.	\$0	\$558,300	\$0	\$903,077
20) Hatchery management committees (years 1 - 10).	\$0	\$250,000	\$0	\$141,177
21) Hatchery management consultants (years 1 - 10).	\$0	\$100,000	\$0	\$56,471
22) Hatchery management committees (years 11 - 50).	\$0	\$100,000	\$0	\$105,284
23) Tributary conservation fund. <sup>5</sup>	\$0	\$249,000	\$0	\$402,770
<b>Comprehensive Fish Management Plans</b>				
<i>Resident Fish Management Plan</i>				
1) Fish stocking (current rainbow trout program). <sup>2</sup>	\$0	\$100,000	\$0	\$161,755
2) Lake Chelan spawning channel program.	\$50,000	\$0	\$0	\$2,858
3) Resident fish monitoring and evaluation.	\$0	\$6,000	\$0	\$9,705

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<i>White Sturgeon Management Plan</i>				
1) Enhance white sturgeon populations through use of hatchery or other measures to achieve specific population goals.	\$768,000	\$100,000	\$0	\$211,897
2) A monitoring and evaluation program to evaluate plan effectiveness of the augmentation program and to adjust population targets (years 1 - 15).	\$0	\$50,000	\$0	\$39,199
3) Continued monitoring and evaluation (years 16 - 30).	\$0	\$20,000	\$0	\$9,521
4) Continued monitoring and evaluation (years 31 - 50).	\$0	\$10,000	\$0	\$3,575
<i>Bull Trout Management Plan</i>				
1) Expand video counts to off-season for an experimental period of one year to evaluate bull trout use of the fishway during periods outside the salmon migration.	\$0	\$12,800	\$0	\$2,426
2) Funding for bull trout monitoring and/or enhancements for 10 years.	\$0	\$20,000	\$0	\$11,294
3) Funding for periodic bull trout monitoring and evaluation after year 10.	\$0	\$5,000	\$0	\$5,264
<i>Pacific Lamprey Monitoring and Management Plan</i>				
1) Adult radio telemetry studies to identify upstream fishway success and upstream passage success of Pacific lamprey in the Project area (year 1);	\$100,000	\$0	\$0	\$6,529
2) Continued Pacific lamprey monitoring (years 2 - 10);	\$0	\$10,000	\$0	\$4,994
3) Investigation of fishway modifications for improving passage of Pacific lamprey, implementation of feasible measures, and continued monitoring of fishway effectiveness (years 1 and 2);	\$100,000	\$0	\$0	\$6,422
<b>Wildlife Habitat Plan</b>				
1) Funding to support a mule deer study. <sup>2</sup>	\$150,000	\$0	\$0	\$9,793

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2) Funding for a contractor selected to implement an integrated noxious weed control program (\$5,000 focusing specifically in areas where <i>Spiranthes diluvialis</i> occurs in public lands adjacent to the Rocky Reach reservoir);	\$0	\$15,000	\$0	\$24,263
3) Funding for conservation easements on private lands where <i>Spiranthes diluvialis</i> occurs.	\$xx	\$xx	\$0	\$xx
4) Implementation of a <i>S. diluvialis</i> monitoring program to evaluate the ongoing status of the populations.	\$0	\$3,000	\$0	\$4,853
5) Conduct wildlife surveys similar to those conducted during the first FERC license for the Project for Bald eagles and goose nesting. <sup>2</sup>	\$0	\$7,500	\$0	\$12,132
6) Funding for operation and maintenance of wildlife mitigation lands;	\$0	\$60,000	\$0	\$97,053
<b>Cultural Resources Management Plan</b>				
1) Cultural Resources Management Plan implementation	\$0	\$20,000	\$0	\$32,351
2) Cultural Education and Interpretation	\$0	\$1,000	\$0	\$1,618
<b>Recreation Resources Management Plan</b>				
1) Continued ownership, operation and maintenance of Rocky Reach Reservoir park system. <sup>2</sup>	\$0	\$1,700,000	\$0	\$2,749,833
2) Updating and implementing an Entiat Park Master plan (PUD expenditures for upgrades and enhancements).	\$6,000,000	\$0	\$0	\$379,060
3) Sale of 22 shoreline acres owned by Chelan PUD to address community concerns about loss of local property tax and development opportunities.	TBD	\$0	\$0	TBD
4) Expanded facilities at Lincoln Rock State Park to include group camping.	\$2,000,000	\$0	\$0	\$106,997
5) Expanded facilities at Daroga State Park to include convenience camping.	\$3,500,000	\$0	\$0	\$153,485

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6) Provide opportunities for interpretive/nature trails on lands adjacent to Project waters,	\$1,500,000	\$0	\$0	\$91,733
7) Working with state parks on a trail link to Lincoln Rock State Park.	\$500,000	\$0	\$0	\$32,644
8) Milfoil harvesting. <sup>2</sup>	\$0	\$2,600	\$0	\$4,206
9) Recreation fund to provide public access, recreational enhancements, and educational/interpretive opportunities along Project lands and waters. <sup>6</sup>	\$1,000,000	\$85,000	\$0	\$197,231
10) Dispersed site enforcement funding.	\$0	\$x	\$0	\$x
11) Conduct a Recreation Use Study beginning in year 20 to define the existing recreational use in the Rocky Reach Project Reservoir.	\$100,000	\$0	\$0	\$3,357
<b>TOTAL</b>	<b>\$352,958,900</b>	<b>\$7,722,366</b>	<b>\$15,539,023</b>	<b>\$41,948,474</b>
<b>TOTAL - Less existing costs and energy costs</b>	<b>\$240,808,900</b>	<b>\$4,489,708</b>	<b>\$0</b>	<b>\$13,091,106</b>

<sup>1</sup> The constant stream of values, using the 7% discount rate, that produces the same NPV as the projected costs for the noted PME (non-constant stream of values) spread out over the same time period).

<sup>2</sup> Existing costs or energy costs.

<sup>3</sup> Anadromous fish costs are estimates. The Rocky Reach HCP is based on an outcome-based standard of 100% no-net-impact. The numbers included here are Chelan PUD's current estimate of the cost of implementing tools it chooses to meet the standard.

<sup>4</sup> Based on 2003 spill amount; subject to change based results of on monitoring and evaluation program.

<sup>5</sup> 1998\$

<sup>6</sup> Estimated average \$85,000 annually, based on wet, dry or average water years, with dollars distributed every third year.

**Table 21.** Cumulative effects of proposed and recommended enhancements on power generation and benefits for the Rocky Reach Hydroelectric Project

Recommendation	Entity	Annual Energy (MWh)	Dependable Capacity (MW)	Annual Power Benefit (\$)	Annual Power Benefit (\$)
No action		5,806,000	1225 <sup>1</sup>	\$229,337,000	\$0
Proposed 50-year alternative		5,793,096	1225	\$228,827,293	(\$509,707)

<sup>1</sup> Dependable capacity for 4 hours.

**Table 22.** Cumulative summary of costs, power benefits, and net benefits for the Rocky Reach Hydroelectric Project alternatives

	Levelized Costs [(\$)/ mills/kWh]	Annual Power Benefit [(\$)/ mills/kWh]	Annual Net Benefit [(\$)/ mills/kWh]
No-action (5,806,000 MWh) <sup>1</sup>	\$132,533,440 [22.8]	\$229,337,000 [39.5]	\$96,803,560 [16.7]
Proposed 50-year alternative (5,793,096 MWh) <sup>2</sup>	\$145,624,546 [25.1]	\$228,827,293 [39.5]	\$83,202,747 [14.4]

<sup>1</sup> Assumes current levels of spill.

<sup>2</sup> Assumes 2003 spill levels for the purposes of this table plus energy costs of related to pumping for the surface collector and flows in the bypass conduit. Terms of the HCP and progress toward the “no-net-impact” standard will determine future spill, including potential reductions.