

EXHIBIT D
STATEMENT OF PROJECT COSTS AND FINANCING

**CASCADE CREEK LLC
CASCADE CREEK HYDROELECTRIC PROJECT
(FERC NO. 12495)**

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1.0 STATEMENT OF ESTIMATED COSTS

1.1 Land and Water Rights

Cascade Creek LLC (Applicant) expects to be subject to a special-use permit that would include the 4(e) conditions provided in the FERC license for lands within the project boundary that occupy National Forest System lands (Tongass National Forest) administered by the US Forest Service (USFS).

The Applicant will apply for a right of way from the State of Alaska to cross lands owned by the State, including tidewater lands; will apply for a right of way from the City of Petersburg to cross lands owned by the City; will seek to acquire rights, through easement or lease, to occupy and use land where privately owned land is occupied by the Project transmission line; and, will apply for water rights from the State of Alaska pursuant to the Alaska Water Use Act to use the water originating in Swan Lake to generate energy.

The estimated cost to acquire the needed land and water rights is \$635,000. This cost is included in the indirect construction costs.

1.2 Direct Construction Costs

The estimated total direct construction cost of the Project is \$147,855,636 based on a year 2015 bid price level. Price escalation to the expected date of bidding for the construction contracts is based upon an assumed inflation rate of 1 percent annually from a 2011 pricing estimate. A detailed breakdown of the direct construction costs is presented in Table D-1 and includes contractor overhead and profit and insurance during construction prorated into the individual line items. The direct construction cost is based on quantity takeoffs developed from the feasibility-level drawings presented in Exhibit F.

The cost estimate is based on experience, data, and vendor quotations. The estimate reflects local conditions, the difficulty of access to the Project, and Alaska wage rates.

Table D-1. Direct Construction Costs

Account No.	Description	Total
331	Structures & Improvements	\$ 13,450,563
332	Reservoirs, Dams, & Waterways	\$ 51,047,962
333	Turbines & Generators	\$ 27,600,000
334	Accessory Electrical Equip.	\$ 2,645,000
335	Misc. Mechanical Equip.	\$ 632,500
353	PH Substation Equipment & Structures	\$ 1,840,000
356	Fixtures, Conductors & Devices	\$ 25,908,856
357	Housing	\$ 1,564,000
358	Other Miscellaneous	\$ 11,730,000
359	Mobilization and Demobilization	\$ 5,750,000
Direct Construction Cost		\$ 142,168,881
Escalated Direct Construction Cost @ 4%		\$ 5,686,755
TOTAL DIRECT CONSTRUCTION COST		\$ 147,855,636

1.3 Indirect Construction Costs

The estimated total indirect construction costs are \$26,223,577. A detailed breakdown of the indirect construction costs is presented in Table D-2. Indirect costs associated with the Project include licensing and permitting, design, construction management, land and water rights, contingency on the direct and indirect construction costs, and legal fees.

Table D-2. Indirect Construction Costs

Description	Total
Licensing, Design, & Construction Mgmt.	\$ 9,950,000
Land & Water Rights	\$ 635,000
Contingency on Direct Const. Cost @ 10%	\$ 14,216,888
Legal Fees @ 1%	\$ 1,421,689
TOTAL INDIRECT CONSTRUCTION COST	\$ 26,223,577

1.4 Interest During Construction

The estimated interest during construction expense is \$14,361,535. A breakdown of the interest expense is presented in Table D-3, and is based on the sum total of the direct and indirect construction costs. First year construction activity is estimated to be 10 percent of the total construction cost. Interest during construction during this first year is calculated at ½ of the construction activity cost times an interest rate of 7.5 percent. Interest during construction for the second year is calculated at the full first year cost, plus ½ of the second year cost, times an interest rate of 7.5 percent. Interest during construction for the third year is calculated at the full first and second year construction cost, plus ½ of the third year cost, times an interest rate of 7.5 percent.

Table D-3. Interest During Construction

Period	Construction Cost During Period	Interest Expense
First Year Construction Activity	\$ 17,407,921	\$ 652,797
Second Year Construction Activity	\$ 69,631,685	\$ 3,916,782
Third Year Construction Activity	\$ 87,039,607	\$ 9,791,956
TOTAL INTEREST DURING CONSTRUCTION		\$ 14,361,535

1.5 Total Capital Requirements

The estimated total capital requirement for the Project is \$188,440,748. This amount is the sum of the direct and indirect construction costs, plus interest during construction, estimated overhead including legal expenses, and contingencies. Project financing assumes 70 percent debt and 30 percent equity on the total capital requirements.

2.0 ***PREVIOUSLY CONSTRUCTED FACILITIES***

There are no previously constructed, unlicensed water power structures or facilities located at the Project site.

3.0 SECTION 14 TAKEOVER VALUE

The Applicant is applying for an original license, not a new license. Therefore, an estimate of the amount payable if the Project were taken over pursuant to Section 14 of the Federal Power Act, 16 U.S.C. 807 is not applicable.

4.0 ESTIMATED AVERAGE ANNUAL PROJECT COSTS

The estimated average annual cost of the Project is comprised of an annual fixed cost and annual variable costs. The fixed cost includes the cost of capital (equity and debt). The variable costs include annual operations and maintenance, general administration, insurance premiums, taxes and fees, depreciation, wheeling, transmission losses, and environmental measures. The average annual Project costs are provided in Table D-4.

Table D-4. Annual Project Costs

Fixed Cost		
	Cost of Capital	\$ 16,750,000
	Subtotal	\$ 16,750,000
Variable Costs		
	Transmission Wheeling & Losses	\$ 800,000
	Operation & Maintenance	\$ 2,055,700
	Environmental Measures	\$ 35,000
	Subtotal	\$ 2,890,700

Cost of Capital. The Applicant intends to obtain the total capital requirements through a 30 percent equity investment of its affiliate, Alaska Hydro Corporation, and 70 percent debt through a 30-year investment grade term loan. The Applicant expects the interest rate on the term loan will be 6 percent, and expects the equity portion to return a variable amount, averaging about 13 percent over the life of the Project. The weighted cost of capital (equity and debt) is 8.1 percent. The annual cost of capital is estimated to be \$16,750,000 per year for the initial 30 year operation of the Project.

Local, State, and Federal Taxes. The Project is not located within any city limits so no local sales tax is expected. The State of Alaska does not impose a sales tax. The Applicant expects that construction and operation of the Project may affect the amount of its federal tax

liability. However, the Applicant is a wholly owned subsidiary; therefore, federal taxes owed, if any, will flow to the Applicant’s affiliate, and are not considered as part of annual Project costs.

Depreciation or Amortization. Depreciation will be calculated using the rates for Accelerated Cost Recovery, but is not shown as a cash cost incurred by the Project. Provision is made for annual payments for amortization of the loan principal.

Operation and Maintenance. The annual operation and maintenance expenses (Table D-5) include labor and overhead for operation and administration, repairs and interim replacements, insurance, housing, transportation to and from the site, and other miscellaneous expenses. Estimated O&M expenses are expected to increase annually at 2 percent for the life of the Project.

Table D-5. Annual Operations and Maintenance Costs

Description	Annual Expense ¹
Plant Operators	\$ 400,000
Management & Administration	\$ 260,000
Repairs & Replacements	\$ 330,000
Insurance	\$ 650,000
Housing	\$ 137,700
Transportation	\$ 78,000
FERC fees	\$ 50,000
Miscellaneous	\$ 150,000
TOTAL	\$ 2,055,700
¹ Initial year of operation	

Environmental Measures. Various environmental measures have been proposed (Table D-6). The capital cost of these measures is included in the direct construction costs. The annual expense of these measures is included in the annual variable cost of the Project. Estimated environmental measure expenses are expected to increase annually at 2 percent.

Table D-6. Cost of Environmental Measures

Environmental Measure	Capital Cost	Annual Expense
New USFS Recreation Cabin (1 ea)	\$ 90,000	\$ -
USFS Cabin Maintenance (2 ea)	\$ -	\$ 8,000
Trail Maintenance (Cascade Creek)	\$ -	\$ 7,500
Post Construction Fish Monitoring	\$ -	\$ 15,000
Avian Protection (T-line)	\$ 28,000	\$ 1,500
Erosion & Sediment Control	\$ 190,000	\$ 2,000
Revegetation	\$ 50,000	\$ 500
Tailrace Bridge	\$ 75,000	\$ 500
TOTAL	\$ 433,000	\$ 35,000

5.0 ANNUAL VALUE OF PROJECT POWER

The value of Project energy was analyzed for a 20-year period based on producing an equivalent amount of diesel generation, the lowest cost alternative, for the same period. The resulting benefit/cost ratio for the Project is 3.82. This represents the ratio of the total net-present value of the diesel generation cost stream (\$735,842,197) to the total net-present value of the Project generation cost stream (\$192,867,669), as shown in Table D-7.

Table D-7. Present-Worth Analysis of Diesel Generation vs. Project Generation

Operating Year	Load¹ (MWh)	Diesel Generation²	Project Generation	Net Cashflow
1	132,530	\$ 46,385,500	\$ 19,640,000	\$ 26,745,500
2	150,044	\$ 53,565,708	\$ 19,698,000	\$ 33,867,708
3	167,672	\$ 61,056,082	\$ 19,757,000	\$ 41,299,082
4	185,416	\$ 68,867,730	\$ 19,817,000	\$ 49,050,730
5	199,690	\$ 75,652,807	\$ 19,878,000	\$ 55,774,807
6	204,600	\$ 79,063,226	\$ 19,941,000	\$ 59,122,226
7	204,600	\$ 80,644,491	\$ 20,005,000	\$ 60,639,491
8	204,600	\$ 82,257,381	\$ 20,070,000	\$ 62,187,381
9	204,600	\$ 83,902,528	\$ 20,136,000	\$ 63,766,528
10	204,600	\$ 85,580,579	\$ 20,204,000	\$ 65,376,579
11	204,600	\$ 87,292,190	\$ 20,273,000	\$ 67,019,190
12	204,600	\$ 89,038,034	\$ 20,343,000	\$ 68,695,034
13	204,600	\$ 90,818,795	\$ 20,415,000	\$ 70,403,795
14	204,600	\$ 92,635,171	\$ 20,489,000	\$ 72,146,171
15	204,600	\$ 94,487,874	\$ 20,563,000	\$ 73,924,874
16	204,600	\$ 96,377,632	\$ 20,640,000	\$ 75,737,632
17	204,600	\$ 98,305,184	\$ 20,717,000	\$ 77,588,184
18	204,600	\$ 100,271,288	\$ 20,797,000	\$ 79,474,288
19	204,600	\$ 102,276,714	\$ 20,878,000	\$ 81,398,714
20	204,600	\$ 104,322,248	\$ 20,960,000	\$ 83,362,248
NET PRESENT VALUE³		\$735,842,197	\$192,867,669	\$542,974,528
¹ Load based on the expected need for power in the region up to the average annual output of the plant. ² The cost of diesel generation was assumed to be \$35/MWh in the first year of operation and escalates annually at 2%. ³ The discount rate was assumed to be 8% annually.				

Table D-8 includes the Project’s cost of service during operating years 1 through 20. The expected 50 year levelized energy cost (LEC) from the Project, based on an 8 percent discount rate, would be \$102.94/MWh. The LEC is the price at which electricity must be generated from a specific source to break even. It is an economic assessment of the cost of the energy-generating system including all the costs over its lifetime. A net present value calculation is performed and solved in such a way that for the value of the LEC chosen, the project’s net

present value becomes zero. This means the LEC is the minimum price at which energy must be sold for an energy project to break even.

Table D-8. Project Cost of Service

Operating Year	Load (MWh)	Fixed Cost (\$,000)	Variable Cost (\$,000)	Total Cost (\$,000)	Cost of Service (\$/MWh)
1	132,530	\$ 16,750	\$ 2,890	\$ 19,640	\$ 148.2
2	150,044	\$ 16,750	\$ 2,948	\$ 19,698	\$ 131.3
3	167,672	\$ 16,750	\$ 3,007	\$ 19,757	\$ 117.8
4	185,416	\$ 16,750	\$ 3,067	\$ 19,817	\$ 106.9
5	199,690	\$ 16,750	\$ 3,128	\$ 19,878	\$ 99.5
6	204,600	\$ 16,750	\$ 3,191	\$ 19,941	\$ 97.5
7	204,600	\$ 16,750	\$ 3,255	\$ 20,005	\$ 97.8
8	204,600	\$ 16,750	\$ 3,320	\$ 20,070	\$ 98.1
9	204,600	\$ 16,750	\$ 3,386	\$ 20,136	\$ 98.4
10	204,600	\$ 16,750	\$ 3,454	\$ 20,204	\$ 98.7
11	204,600	\$ 16,750	\$ 3,523	\$ 20,273	\$ 99.1
12	204,600	\$ 16,750	\$ 3,593	\$ 20,343	\$ 99.4
13	204,600	\$ 16,750	\$ 3,665	\$ 20,415	\$ 99.8
14	204,600	\$ 16,750	\$ 3,739	\$ 20,489	\$ 100.1
15	204,600	\$ 16,750	\$ 3,813	\$ 20,563	\$ 100.5
16	204,600	\$ 16,750	\$ 3,890	\$ 20,640	\$ 100.9
17	204,600	\$ 16,750	\$ 3,967	\$ 20,717	\$ 101.3
18	204,600	\$ 16,750	\$ 4,047	\$ 20,797	\$ 101.6
19	204,600	\$ 16,750	\$ 4,128	\$ 20,878	\$ 102.0
20	204,600	\$ 16,750	\$ 4,210	\$ 20,960	\$ 102.4

6.0 OTHER ENERGY ALTERNATIVES

Other electric energy alternative sources to Project generation in the Southeast Alaska region include diesel generation, wind, other hydroelectric, and conservation. One of the Project objectives is to provide an alternative to fossil fuel generation, on which local and regional communities are currently dependent. Not only would diesel generation be a more expensive option to operate and maintain, their emissions would be detrimental to the environment. Other forms of clean energy generation technology (*i.e.* solar, tidal, biomass) have advanced in recent years due to an overwhelming public desire for clean energy, but are still not an economic alternative.

The Applicant examined Ruth Lake and Scenery Creek, two potential, alternative hydroelectric projects in Thomas Bay, adjacent to the proposed Project. Based on results of an economic review and environmental impact analysis, the proposed Project was selected for further investigation and development.

7.0 CONSEQUENCES OF APPLICATION DENIAL

The consequence of license denial would be the loss of valuable renewable electrical energy generation. Hydropower is a proven technology for reliable, renewable, and economical energy production. If the application were denied, then other, more expensive, energy generating alternatives would have to be developed to meet the projected load growth. Presently, this would take the form of additional new base load diesel-fueled generation. Diesel fuel would have to be transported and stored, with related hazards, to meet the load demands. Diesel generation has the additional negative impact on air quality.

The USFS has identified portions of the Tongass National Forest as appropriate for hydroelectric development; specifically, the Cascade Creek drainage, within which the proposed Project will occur. The proposed Project conforms to this designation, while also providing options for the production of clean, renewable energy while maintaining natural lake fluctuations. If the license were denied, this would be severely detrimental to the Applicant, as they have already invested an estimated \$2,900,000 in site investigations, stakeholder outreach, and application development.

8.0 SOURCES OF FINANCING

The Applicant intends to obtain the total capital requirements for Project construction through a 30 percent equity investment by Applicant's affiliate, Alaska Hydro Corporation, and 70 percent debt through a long-term investment grade loan. In addition, there are Federal and State grant opportunities for development of renewable energy projects, and the Applicant intends to pursue these opportunities to supplement Project funding.

9.0 COST TO DEVELOP LICENSE APPLICATION

The Applicant estimates that the cost to develop this license application has been about \$2,900,000.

10.0 ON-PEAK AND OFF-PEAK VALUE OF POWER

The Project as proposed, would allow short term storage and shaping, generally on a daily or weekly basis, allowing the Project to deliver up to an estimated 60 percent of its total power generated during the on-peak time period.

Currently, there is no appreciable difference in the value of power between on-peak and off-peak power in the Southeast Alaska region. However, should any surplus Project power be marketed to the North American grid, the value of on-peak power is estimated to be as much as double the value of off-peak power.