



Appendix A. Preliminary Decommissioning Plan

Preliminary Decommissioning Plan

Cascade Renewable Transmission, LLC

The Dalles to Portland
August 28, 2024

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1 Introduction

Cascade Renewable Transmission, LLC (CRT; Applicant) proposes to construct and operate a high-voltage direct current (HVDC) (320- or 400-kilovolt [kV]), 1,100-megawatt (MW) electric transmission facility interconnecting the existing Bonneville Power Administration (BPA) Big Eddy 500-kV alternating current (AC) substation, located near The Dalles, Wasco County, Oregon (Eastern Interconnection), and the existing Portland General Electric (PGE) Harborton 230-kV AC substation, located in Portland, Multnomah County, Oregon (Western Interconnection). The Cascade Renewable Transmission project (Project) would be constructed in both Oregon and Washington. This preliminary decommissioning plan (Plan) describes the decommissioning and restoration phase of the Project.

For financial and engineering purposes, the Project is estimated to have a useful life of at least 50 years. The Project may be renovated or upgraded during or after that period to extend its lifespan. Once the Project has met its full design life and is not renovated or upgraded, it will need to be decommissioned. The following sections provide an overview of the decommissioning work. The Project described in this plan may be updated to reflect current best practices at the time decommissioning takes place but will comply with requirements of the Project's Site Certification Agreement and relevant Washington Administrative Code (WAC).

2 Decommissioning Plan Objective

At the end of the Project's useful life, the Applicant will decommission the Project, provided it is not renovated or upgraded in accordance with applicable state and local regulations.

The purpose of this Plan is to establish the protocols for disassembling the facility at the end of its useful life and financially guaranteeing funding of the decommissioning process so that there is assurance that the site can be restored to a condition as close to a pre-construction state as is feasible.

Prior to construction, the Applicant will furnish a financial surety, bond, or other financial instrument in a form and an amount sufficient to ensure Project decommissioning. That financial surety will ensure that in the unlikely event the Applicant is unable to adequately manage the decommissioning process in a timely manner, adequate funds will be available to the Washington Energy Facility Site Evaluation Council (WA EFSEC) for administering and financing the decommissioning and reclamation process.

Prior to decommissioning the Project, the Applicant would obtain the necessary authorization from the appropriate regulatory agencies and landowners. This would include, but is not limited to, the following:

- Preparing the site and obtaining necessary permits required for the structural dismantling activities;
- Installing soil erosion and sedimentation control according to best management practices (BMPs) during and after decommissioning;
- Scarifying and reseeded disturbed areas and establishing vegetation, where applicable, in accordance with the Project revegetation and noxious weed management plan.

When the Project has reached the end of its useful life and no further infrastructure replacements or upgrades are warranted, a detailed decommissioning plan will be prepared. This Plan is intended as a preliminary guide to the steps that will be followed.

Decommissioning the Project, including removing all components, would consist of the following steps:

- Dismantle both converter stations; remove and sell for use or scrap, where possible.
- Remove 500 feet of 500kV overhead transmission line from the eastern converter station to Big Eddy substation.
- Remove underground and in-water HVDC cable; recycle materials (e.g., copper), as possible.
- Remove underground high-voltage alternating current (HVAC) cable; recycle materials (e.g., copper), as possible.
- Restore road rights-of-way (ROW) to original condition or as agreed with owner.

The Oregon Department of Energy (ODOE) requested the Applicant, in its Application for Site Certificate to EFSC, also address the cost and feasibility of abandoning the HVDC cable in place while removing the remaining components; that information is provided here for consistency.

Decommissioning the Project, while leaving the HVDC cables in place would consist of the following steps:

- Dismantle both converter stations; remove and sell for use or scrap, where possible.
- Remove 500 feet of 500kV overhead transmission line from the eastern converter station to Big Eddy substation.
- Remove underground HVAC cable; recycle materials (e.g., copper), as possible.
- Restore road ROW to original condition or as agreed with owner.

The converter stations would be dismantled and removed, including concrete foundations. Metal and electrical components, including precious metals (e.g., copper) would have scrap value and would be separated from non-metal components to be sold for re-use or scrap. Non-metal components would be recycled to the extent practicable or disposed of at authorized sites.

The transmission lines would be dismantled and removed for off-site disposal. The battery systems would be dismantled and disposed of in the same manner as routine battery disposal.

Subsurface and in-river transmission cables and fiber optic cable would be removed. Concrete and conduits for the underground HVDC and HVAC cables would likely remain in place, as removing them would cause unnecessary disturbance to the ground surface. Reclamation procedures would be based on site-specific requirements and techniques commonly employed at the time when the area is to be reclaimed. As appropriate, based on intended use of the land at the eastern and western converter station locations following decommissioning, the land would be revegetated in accordance with the Project's approved revegetation plan.

A detailed estimate of decommissioning costs will be prepared prior to construction for approval by WA EFSEC.

3 Total Costs, Estimating Methods, and Assumptions

A detailed cost estimate for retiring the Project, including the submarine HVDC cables and the two converter stations, is provided in Attachment A-1.

The estimated retirement cost is \$58,967,237.

Broken out by state:

- \$48,606,198, corresponding to 58.6 percent of the cable in the river and 61.3 percent of the cable on land being located within the State of Oregon, along with both converter stations; and
- \$10,361,040, corresponding to the decommissioning costs for cable located within the State of Washington.

It is assumed that conduits in the upland areas and the marine horizontal directional drilling (HDD) conduits would remain in place, but the cables would be removed.

The Applicant made the following assumptions as part of estimating site restoration costs:

- Labor costs for the upland cable systems and the converter stations are based on current New York labor rates, which were adjusted to the Oregon labor market rates, which include base wage, fringe, and payroll tax liability, as well as an estimated 10-hours-per-week at overtime rates.
- Equipment rates are based on current New York contractor-owned and rental vendor rates, which were adjusted to the Oregon market and include fuel and maintenance.
- Costs for the submarine cable systems were derived using actual vendor costs to remove a submarine cable system in the Hudson River in 2017. These costs were proportioned to cover the actual length in the Columbia River, adjusted to bring into 2024 dollars, and then adjusted for the Oregon market.
- Mobilization and demobilization costs were estimated to reflect the cost of equipment and crew mobilization. Temporary facilities would be placed on site to include office trailer, storage units, portables, first aid supplies, and utilities.
- For purposes of estimating costs, it is assumed that the road ROW would be regraded and reestablished to the landowners' requirements.
- Project management, overhead, and profit can vary significantly by contractor. This estimate includes average costs as a percentage of total cost and consists of project management as 25 percent of direct labor, and 15 percent for overhead and profit. Contractor contingency in the amount of 3 percent of total cost is also included.
- Costs such as permits, engineering, and traffic control are itemized in the estimate while other incidental costs are included in the project overhead rates.
- Scrap value in Attachment A-1 is calculated using the copper commodity pricing per pound based on the previous 5 years' average. This price was decreased by the scrap processing fee incurred on the Applicant's previous Hudson Transmission project and adjusted into 2024

dollars. Metals scrap value for converter station equipment (i.e., transformers, steel supports and aluminum bus work) is calculated using current metals standard pricing and decreasing by a typical scrap handling fee.

The Applicant's proposed cost estimate would be sufficient to restore the Project to a useful, nonhazardous condition. Please see Section 1.9 of the WA EFSEC application for site certification for information on the security the Applicant will provide to cover this amount.



Attachment A-1: Decommissioning Cost Estimate

Cascade Renewables Transmission Project

Upland Cable Systems Decommissioning Cost Estimate

	Unit Cost	No. of Units	Total	Comments
1) Permits				
Rivergate/Hayden Island Cable Systems	\$10,000	1	\$10,000	Street opening, traffic
Washington	\$15,000	1	\$15,000	Street opening, traffic
The Dalles	\$10,000	1	\$10,000	Street opening, traffic
2) Mobilization and Demobilization				
Rivergate/Hayden Island Cable Systems	\$75,000	1	\$75,000	
Washington	\$125,000	1	\$125,000	
The Dalles	\$70,000	1	\$70,000	
3) Engineering				
Prep MOT plans	\$3,300	38	\$125,400	38 traffic control locations
Prep removal specs	\$15,000	3	\$45,000	3 packages
4) Maintenance of traffic				
Rivergate/Hayden Island Cable Systems	\$2,500	55	\$137,500	
Washington	\$3,500	100	\$350,000	
The Dalles	\$3,000	45	\$135,000	
5) Civil Activities				
Rivergate/Hayden Island Cable Systems (19 segments)				
Labor (day)	\$4,400	118	\$519,200	Open/Close pit, pave
Equipment (day)	\$2,700	118	\$318,600	
Material (location)	\$2,200	20	\$44,000	Clean fill
Paving (9 locations, 5 double for AC)	\$3,000	19	\$57,000	
Concrete Sidewalks for AC boxes	\$3,500	5	\$17,500	Sidewalk restore
Washington Cable Systems (20 segments)				
Labor (day)	\$4,400	84	\$369,600	Open/Close pit, pave
Equipment (day)	\$2,700	84	\$226,800	
Material (location)	\$2,200	20	\$44,000	Clean fill
Paving (19 locations)	\$3,500	19	\$66,500	
The Dalles Cable Systems (13 segments)				
Labor (day)	\$4,400	52	\$228,800	Open/Close pit, pave
Equipment (day)	\$2,700	52	\$140,400	
Material (location)	\$2,200	13	\$28,600	Clean fill
Paving (7 locations)	\$3,500	7	\$24,500	
6) Electrical Activities				
Rivergate/Hayden Island Cable Systems (19 segments)				
Labor (day)	\$5,400	30	\$162,000	
Equipment (day)	\$2,300	30	\$69,000	Chopper truck, dump, assist trucks
Washington Cable Systems (20 segments)				
Labor (day)	\$5,400	20	\$108,000	
Equipment (day)	\$2,300	20	\$46,000	Chopper truck, dump, assist trucks
The Dalles Cable Systems (13 segments)				
Labor (day)	\$5,400	13	\$70,200	
Equipment (day)	\$2,300	13	\$29,900	Chopper truck, dump, assist trucks
Subtotal			\$3,668,500	
7) Project Overhead				
Insurance (2% of Subtotal)			\$73,370	
Supervision (25% of Labor)			\$364,450	
Admin (10% of Labor)			\$145,780	
P&P Bond (1% of Subtotal)			\$36,685	
Contingency (15% of Subtotal)			\$550,275	
8) Cable Scrap Credit				
230 KV AC 2500 mm2 (100,800 ft)	\$.94/lb net handling		(\$1,613,153)	Cable is 22.7 lbs/ft, 75% copper wt.
320 KV DC 2000 mm2 (164,000 ft)	\$.94/lb net handling		(\$2,092,722)	Cable is 18.1 lbs/ft, 75% copper wt.
GCC 600 V 350 mm2 (33,600 ft)	\$1.94/lb net handling		(\$142,427)	Cable is 2.3 lbs/ft, 95% copper wt.
TOTAL			\$990,758	

DC Submarine Cable System Decommissioning Cost Estimate

[illegible]

Converter Stations Decommissioning Cost Estimate - Single Station

JOB DESCRIPTION	Qty.	Unit Cost	Total	Markup Included	Unit Price Sell	
Site Setup				27%		
Deliver Equipment (In/Out)	12.00	\$1,500	\$18,000	\$22,860	\$1,905	Ea
Mobilize Site /Set up Trailer	5.00	\$10,543	\$52,716	\$66,949	\$13,390	Day
Decomission Station	10.00	\$10,543	\$105,431	\$133,898	\$13,390	Day
Remove Preliminary Spoils	15.00	\$1,550	\$23,256	\$29,535	\$1,969	Day
Mobe Office Trailer	1.00	\$4,953	\$4,953	\$6,290	\$6,290	Ea
Office furniture	1.00	\$5,000	\$5,000	\$6,350	\$6,350	LS
Cassone Trailer rental - deliver, pickup, block and level	1.00	\$2,375	\$2,375	\$3,016	\$3,016	LS
Trailer Electric Hook Up	1.00	\$8,000	\$8,000	\$10,160	\$10,160	Ea
Cassone Trailer rental	10.00	\$1,500	\$15,000	\$19,050	\$1,905	Month
Callahead sink and toilet for trailer and water	10.00	\$958	\$9,580	\$12,167	\$1,217	Month
Port-o-san	10.00	\$1,500	\$15,000	\$19,050	\$1,905	Month
Demo Switch Yard # 1						
Demo Switch Yard # 1 Steel Structures	60.00	\$1,299	\$77,946	\$98,991	\$1,650	Ea
Remove Steel Structure Concrete Foundations	120.00	\$378	\$45,321	\$57,558	\$480	CY
Truck out Steel for scrap	10.00	\$3,100	\$31,000	\$39,370	\$3,937	Loads
Truck out concrete	144.00	\$273	\$39,272	\$49,875	\$346	CY
Place Clean Fill in foundation openings	144.00	\$189	\$27,193	\$34,535	\$240	CY
Truck clean fill	144.00	\$127	\$18,340	\$23,291	\$162	CY
Decomission Large Transformers	4.00	\$21,086	\$84,345	\$107,118	\$26,780	Ea
Remove Transformers	4.00	\$6,495	\$25,980	\$32,995	\$8,249	Ea
Truck Transformers	4.00	\$1,363	\$5,453	\$6,925	\$1,731	Ea
Remove transformer Foundations	80.00	\$378	\$30,214	\$38,372	\$480	CY
Truck out concrete	96.00	\$262	\$25,125	\$31,909	\$332	CY
Place Clean Fill in foundation openings	96.00	\$189	\$18,128	\$23,023	\$240	CY
Truck clean fill	96.00	\$123	\$11,843	\$15,040	\$157	CY
Misc. clean up/demo	2.00	\$12,991	\$25,982	\$32,997	\$16,499	Ea
Demo Switch Yard # 2 Steel						
Demo Switch Yard # 2 Steel Structures	130.00	\$1,299	\$168,883	\$214,481	\$1,650	Ea
Remove Steel Structure Concrete Foundations	260.00	\$378	\$98,195	\$124,708	\$480	CY
Truck out Steel for scrap	21.67	\$3,101	\$67,188	\$85,329	\$3,938	Loads
Truck out concrete	312.00	\$273	\$85,088	\$108,062	\$346	CY
Place Clean Fill in foundation openings	312.00	\$189	\$58,917	\$74,825	\$240	CY
Truck clean fill	312.00	\$127	\$39,736	\$50,465	\$162	CY
Decomission Transformers	6.00	\$21,086	\$126,518	\$160,677	\$26,780	Ea
Remove Transformers	6.00	\$12,991	\$77,946	\$98,991	\$16,499	Ea
Truck Transformers	6.00	\$2,726	\$16,359	\$20,775	\$3,463	Ea
Remove transformer Foundations	300.00	\$378	\$113,302	\$143,894	\$480	CY
Truck out concrete	360.00	\$262	\$94,219	\$119,658	\$332	CY
Place Clean Fill in foundation openings	360.00	\$189	\$67,981	\$86,337	\$240	CY
Truck clean fill	360.00	\$123	\$44,409	\$56,400	\$157	CY
Demo Switch Yard # 2 Steel Overhead Gantry	1.00	\$39,367	\$39,367	\$49,996	\$49,996	Ea
Remove Steel Structure Concrete Foundations	150.00	\$283	\$42,488	\$53,960	\$360	CY
Truck out Steel for scrap	25.00	\$3,101	\$77,520	\$98,450	\$3,938	Loads
Truck out concrete	180.00	\$273	\$49,089	\$62,344	\$346	CY
Place Clean Fill in foundation openings	180.00	\$189	\$33,991	\$43,168	\$240	CY
Truck clean fill	180.00	\$123	\$22,205	\$28,200	\$157	CY
Misc. clean up/demo	2.00	\$12,991	\$25,982	\$32,997	\$16,499	Ea

Demo Switch Yard # 3 Steel						
Demo Switch Yard # 3 Steel Structures	6.00	\$25,982	\$155,892	\$197,983	\$32,997	Ea
Remove Small Transformers/Misc. Components	18.00	\$12,991	\$233,838	\$296,974	\$16,499	Ea
Transformers/Misc. Components	18.00	\$2,726	\$49,076	\$62,326	\$3,463	Ea
Remove Steel Structure/Small transformers Concrete Foundations	1200.00	\$189	\$226,605	\$287,788	\$240	CY
Truck out Steel for scrap	12.00	\$3,101	\$37,209	\$47,256	\$3,938	Loads
Truck out concrete	1440.00	\$273	\$392,715	\$498,748	\$346	CY
Place Clean Fill in foundation openings	1440.00	\$189	\$271,926	\$345,346	\$240	CY
Truck clean fill	1440.00	\$123	\$177,638	\$225,600	\$157	CY
Decomission Large Transformers	2.00	\$21,086	\$42,173	\$53,559	\$26,780	Ea
Remove Large Transformers	2.00	\$12,991	\$25,982	\$32,997	\$16,499	Ea
Truck Transformers (Sections)	8.00	\$2,726	\$21,811	\$27,701	\$3,463	Ea
Remove transformer Foundations	500.00	\$378	\$188,837	\$239,824	\$480	CY
Truck out concrete	600.00	\$273	\$163,631	\$207,812	\$346	CY
Place Clean Fill in foundation openings	600.00	\$189	\$113,302	\$143,894	\$240	CY
Truck clean fill	600.00	\$123	\$74,016	\$94,000	\$157	CY
Misc. clean up/demo	2.00	\$12,991	\$25,982	\$32,997	\$16,499	Ea
Demo Storage Shed						
Demo Storage Shed	1.00	\$12,991	\$12,991	\$16,499	\$16,499	Ea
Remove Shed Concrete Foundation	100.00	\$189	\$18,884	\$23,982	\$240	CY
Truck out Steel for scrap	3.00	\$3,101	\$9,302	\$11,814	\$3,938	Loads
Truck out concrete	120.00	\$273	\$32,726	\$41,562	\$346	CY
Place Clean Fill in foundation openings	120.00	\$189	\$22,660	\$28,779	\$240	CY
Truck clean fill	120.00	\$123	\$14,803	\$18,800	\$157	CY
Demo Storage Tank						
Decomission Tank	1.00	\$67,173	\$67,173	\$85,309	\$85,309	Ea
Demo Tank	1.00	\$51,964	\$51,964	\$65,994	\$65,994	Ea
Remove Tank Concrete Foundation	100.00	\$189	\$18,884	\$23,982	\$240	CY
Truck out Steel for scrap	5.00	\$3,101	\$15,504	\$19,690	\$3,938	Loads
Truck out concrete	120.00	\$273	\$32,726	\$41,562	\$346	CY
Place Clean Fill in foundation openings	120.00	\$189	\$22,660	\$28,779	\$240	CY
Truck clean fill	120.00	\$123	\$14,803	\$18,800	\$157	CY
Demo Subsurface piping,catch basins, duct banks, cable troughs						
subsurface utilities	15.00	\$5,665	\$84,977	\$107,921	\$7,195	days
Truck out Steel for scrap	30.00	\$1,550	\$46,500	\$59,055	\$1,969	Loads
Truck out concrete	100.00	\$262	\$26,172	\$33,238	\$332	CY
Place Clean Fill in foundation openings	120.00	\$189	\$22,660	\$28,779	\$240	CY
Truck clean fill	120.00	\$123	\$14,803	\$18,800	\$157	CY

Demo Large Transformers						
Decomission Transformers	3.00	\$45,982	\$137,946	\$175,191	\$58,397	Ea
Dismantle Transformers	3.00	\$51,964	\$155,892	\$197,983	\$65,994	Ea
Truck Transformers (Sections)	3.00	\$10,906	\$32,718	\$41,552	\$13,851	Ea
Remove Transformer Concrete Foundations/Blast walls	3700.00	\$113	\$419,219	\$532,408	\$144	CY
Truck out concrete	3083.33	\$107	\$330,977	\$420,340	\$136	CY
Place Clean Fill in foundation openings	3083.33	\$57	\$174,675	\$221,837	\$72	CY
Truck clean fill	3083.33	\$51	\$157,274	\$199,738	\$65	CY
Demo Converter Building						
Decomission Converter Interior Relays,Circuits etc.	30.00	\$10,543	\$316,294	\$401,693	\$13,390	DY
Demo Building	35000.00	\$19	\$649,549	\$824,927	\$24	Sf
Remove Building Concrete Foundation	1400.00	\$227	\$317,247	\$402,904	\$288	CY
Truck out Steel for scrap	800.00	\$3,101	\$2,480,627	\$3,150,396	\$3,938	Loads
Truck out concrete	1680.00	\$273	\$458,168	\$581,873	\$346	CY
Place Clean Fill in foundation openings	1680.00	\$189	\$317,247	\$402,904	\$240	CY
Truck clean fill	1680.00	\$123	\$207,244	\$263,200	\$157	CY
Remove Asphalt/Concrete Roadways						
Remove Bollards/Signs/ etc	5.00	\$5,665	\$28,326	\$35,974	\$7,195	DY
Remove Asphalt/Concrete Roadways	2500.00	\$127	\$318,610	\$404,634	\$162	CY
Truck out concrete/asphalt	3000.00	\$262	\$785,157	\$997,149	\$332	CY
Place Clean Fill	3000.00	\$28	\$84,977	\$107,921	\$36	CY
Truck clean fill	3000.00	\$123	\$370,078	\$470,000	\$157	CY
Remove Crushed Stone	1500.00	\$207	\$309,966	\$393,657	\$262	CY
Truck out Crushed Stone	1800.00	\$207	\$372,094	\$472,559	\$263	CY
Place Clean Fill	1800.00	\$28	\$50,986	\$64,752	\$36	CY
Truck Topsoil	1800.00	\$148	\$267,047	\$339,150	\$188	CY
Hydro Seed	345000.00	\$1	\$172,500	\$219,075	\$1	LS
Management						
Project Management	200.00	\$1,507	\$301,365	\$382,734	\$1,914	Day
Safety Manager	200.00	\$1,190	\$237,958	\$302,207	\$1,511	Day
Clerk	200.00	\$826	\$165,135	\$209,722	\$1,049	Day
Superintendent	200.00	\$1,328	\$265,549	\$337,247	\$1,686	Day
Petty Cash	10.00	\$2,000	\$20,000	\$25,400	\$2,540	Month
Indirects	2%		\$294,210	\$373,646		
Umbrella Insurance	2%		\$300,094	\$300,094		
Total			\$15,304,790	\$19,356,058		
Scrap Value						
Steel Scrap	910	\$2,000	\$1,820,000	\$2,311,400		
Transformer Scrap - Large	3	\$25,000	\$75,000	\$95,250		
Transformer Scrap - Small	28	\$3,000	\$84,000	\$106,680		
Total				\$2,418,080		
Total Net of Scrap				\$16,937,978		

Total Decommissioning Cost Estimate			Portion located in the State of Oregon	Portion located in the State of Washington
Upland Cable		\$990,758	\$607,335	\$383,423
DC Submarine Cable		\$24,100,522	\$14,122,906	\$9,977,616
Converter Station #1		\$16,937,978	\$16,937,978	\$0
Converter Station #2		\$16,937,978	\$16,937,978	\$0
Total		\$58,967,237	\$48,606,198	\$10,361,040