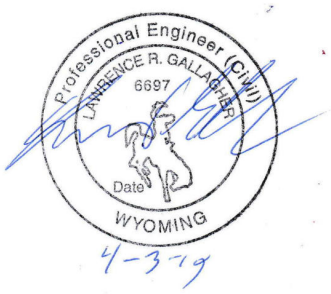
Appendix K-1

Decommissioning Plan

Two Rivers Wind Project

Decommissioning Plan



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Appendix A – Decommissioning Cost Estimate Summary

Abbreviations:

WTG – Wind Turbine Generator

LF – Linear Feet

MW - Megawatt

kV – Kilovolt

CY – Cubic Yard

LM – Linear Mile

sf – Square Foot

ac - acre

1.0 Decommissioning Plan Objective

The objective of the decommissioning plan is to establish an opinion of probable cost for removal of all wind turbine generator (WTG) facility components and reestablish disturbed areas similar to pre-project conditions following the retirement of the Two Rivers Wind Project**.** Decommissioning will commence when the facility is either no longer economical to continue operation or has reached the end of its design life which typically ranges between 20 to 30 years.

The decommissioning plan assumes no salvage value for any facility components and that all materials requiring removal will be transported to registered landfills or waste disposal facilities. The plan does not take into account any costs associated with interim reclamation and facility maintenance. Details of the decommissioning plan identify general means and methods for removal of facility components. Ultimately it will be up to the contractor to determine the most efficient and cost-effective methods.

The decommissioning of the WTG facility will be completed in accordance with Wyoming's Industrial Siting Act (Rule Section 9). There are no requests for variances to the Industrial Development Information and Siting Act (ISA) regulation as a part of this decommissioning plan.

2.0 General Project Understanding

Two Rivers Wind LLC, a wholly owned subsidiary of BluEarth Renewables US, LLC (Two Rivers) is planning to develop a wind farm project (Project) located on both private and public lands in Albany and Carbon Counties, Wyoming. The project is proposed to be sited on Two Rivers Ranch and Medicine Bow River Ranch, which include Bureau of Land Management (BLM) and Wyoming state lands administered by the Office of State Lands and Investments (OSLI). The Project includes construction of up to 77 WTGs with a maximum power generation capacity up to 280 MW.

3.0 Site Characterization

The Two Rivers Project is located approximately 45 miles north-west of the City of Laramie in proximity to the towns of Rock River and Medicine Bow. The Two Rivers project consists of two development areas approximately 10 miles apart and adjacent to US Highway 30 located on Two Rivers Ranch and Medicine Bow River Ranch. Combined, the project has a project boundary area of approximately 20,381 acres.

Existing land uses include range land for cattle grazing with landcover consisting of high meadow vegetation dominated by sage brush and high meadow grassland species. The proposed area for development is approximately 7000 feet in elevation. Topography varies including bluffs, plains, and rolling hill sides.

4.0 Project Elements

The Two Rivers Wind Project will include all the elements typical to a wind farm facility including:

- Towers with concrete foundations
- Generators
- Wind turbine blades
- Electrical collection lines
- Access roads
- Substations
- Maintenance buildings
- SCADA systems
- Meteorological stations
- Operations and Maintenance buildings
- And associated civil infrastructure for access and facility construction.

Prior to dismantling electrical substations, maintenance buildings, and generators, a thorough inspection for the presence of industrial contamination from spills or leaks will be conducted followed by the appropriate remediation as needed. Demolition or removal of equipment and facilities will be conducted in accordance with applicable environmental and health regulations.

4.1 Wind Generators, Towers, and Foundations

The Project will incorporate up to 77 WTGs each with 4.2-megawatt (MW) Vestas generators. Towers for the WTGs will be 105 meters (approximately 345 feet) high incorporating a hub and blades. Each WTG will integrate three (3) blades each with a length of 73.7 meters (approximately 240 feet) with a rotating diameter of 150 meters (approximately 490 feet). The maximum tip height of each WTG will be 179 meters (approximately 590 feet). Each tower will be fixed to a concrete foundation. Wind turbine foundations will incorporate a steel reinforced concrete pad, pedestal, and anchor bolts which the base tower section will be fix to. After proper curing time, the foundations will be backfilled with compacted soil.

4.2 Substations

The project will incorporate two (2) substations. Substations for the project include a 34.5kV substation and a 230kV substation. Each substation site will be approximately 0.7 acres. Site development will start with removing and stockpiling topsoil and establishing a level area for construction. The site will be laid out with the required electrical conduit before concrete pads are poured. Substation equipment including switches, electrical buswork, instrument transformers, and other components that will be established on the site. At the conclusion of substation construction, perimeter fencing will be erected in order to secure the site.

4.3 Operation and Maintenance Buildings

Two (2) operation and maintenance (O&M) buildings will be constructed as a part of the Two Rivers Project. These buildings will include space for offices, bathroom and kitchen facilities, a break room, a storage area, a garage for vehicles and equipment, warehousing and maintenance. New domestic groundwater wells and onsite septic systems for collection and treatment of sanitary waste will be installed at the O&M buildings for long-term operation of the facilities. Both buildings are anticipated to be 2,500 sf constructed on a 2.5 ac site. These facilities will incorporate driveways and parking areas.

4.4 Underground 34.5 kV Collection System

WTGs will generate three-phase electrical power with an oil-filled, medium voltage pad-mounted transformer located at the base of or within each tower that will feed to the collection system. The 34.5 kV electrical collection system will consist of subsurface lines buried at a depth of approximately 48 inches. In both project locations, collection lines will run from each tower facility to the onsite substation. The collection lines are proposed to run in the access roadways and will be backfilled with suitable material and compacted to ensure their integrity. Trenching equipment will be used to install the underground collection system electrical lines and any associated cabling.

Where splices are necessary in the collection system cables, splice boxes may be installed at ground surface over the cable trench or in concrete vaults in line with the cable trench. In addition, where two or more sets of collector lines come together, above ground pad mounted switch panels may be used to tie together. Combined, the project may include approximately 172,000 linear-feet (LF) or nearly 33 miles of underground electrical collection lines.

4.5 Access Roads and Crane Pads

Access roads will be built to all the WTG tower locations. Where access roads cross drainage ways, culverts with be installed to pass stormwater in order to maintain roadway integrity. Topsoil will be removed and stockpiled for final reclamation. The initial roadway design width will be 40 feet in order to allow access for long semi's with extended trailers carrying the turbine blades to each tower location. Once all towers have been erected, the access road width will be reduced to 20 to 25 feet. Abandoned roadway areas will be regraded and reclaimed as a part of interim reclamation. Roadway base material in the form of crushed gravel or pit run gravel will be applied to roadway drive surfaces.

Pads will be constructed around each WTG tower location. Pads will be level areas and provide enough work area for a large crane, helper crane, forklifts, assembly areas, and laydown areas in order to facilitate construction of WTG tower facilities. Pad areas will be reclaimed after initial construction and need to be reestablished for decommissioning activities.

5.0 Decommissioning Facilities, Components, and Final Reclamation

Per Wyoming Department of Environmental Quality regulations for industrial development, decommissioning of WTG facilities must begin within 12 months after the end of the useful life (20 to 30 years) or when no electricity has been generated for a continuous 12-month period. It is expected that the decommissioning period would occur over a 6 to 12 month period. It should be noted that current industry trends are to repower wind farms when they reach their design life.

The equipment anticipated for use in executing the various elements of the WTG farm decommissioning and site reclamation are presented in **Table 1**.

Table 1 – Anticipate Decommissioning Equipment

Equipment	Decommissioning Use
18 Wheel Tractor Trailers	Facilities Component Removal from Site
Small Helper Cranes	Load Facility Component on to 18 Wheel Tractor Trailers
Heavy Duty Crawler Crane	WTG Dismantling and Staging
Roadway Grader	Roadway Modifications and Crane Pad Construction
Water Trucks	Soil Compaction and Dust Control
18 Wheel Bottom Dumping Tractor Trailer	Haul Roadway Aggregate Off Site
Trenching Machine	Trenching for Electrical Cable Removal
Rough Terrain Forklifts	Staging and Loading Facility Components
Bulldozer	Crane Pad and Roadway Regrading
Large Excavator with Jake Hammer	Tower Foundation Removal

For the disturbed areas, both maintained throughout the design life of the facility and those needed for decommissioning activities, areas will be recontoured to match the pre-project existing topography as best practical. Topsoil stockpiled during the initial construction phase of the project will be redistributed to disturbed areas to a depth to support reestablishment of vegetation. Reseeding will be performed according to the revegetation plan with prescribed seed mixes and application methods. Prescribed mulching will protect reclamation areas from wind and water erosion, help retain soil moisture, and better establish vegetative cover. In general, all disturbed areas will be reclaimed and restored to similar pre-project grades and contours. The intent for reclaiming disturbed areas and roadways is so that existing agricultural land uses can be resumed after final reclamation. A final reclamation plan will be submitted for review and approval prior to initiating the decommissioning plan.

Costs associated with decommissioning of all project and facility components along with the required reclamation activities are presented in **Appendix A** of this report. The costs developed for the decommissioning plan do not consider any recycling or salvage value. Although it is likely that many materials can be sold to salvage companies and have some salvage valve, the plan assumes all structural, mechanical, and electrical components will be directed to landfills or other permitted waste disposal facilities.

Decommissioning costs were established from a variety of sources including previous contractor bids, industry experience, correspondence with industry experts, and industry standard publications for construction costs. All costs are presented in 2019 dollars. Market conditions could result in cost variations at the time of execution.

5.1 Wind Generators, Towers, and Foundations

The decommissioning of the WTGs and towers will begin after confirmation that all facilities have been properly deenergized. It will be up to the contractor to determined how many crews and WTGs will be dismantled at one time. Each tower site will be prepared for staging the dismantling of the WTG blades, nacelle, and generator, including laydown areas for the tower sections. Crane platforms and lay down areas will be reestablished in order to facilitate dismantling each WTG as platform work area for the erection of each WTG will be reclaimed as a part of post construction interim reclamation. Large cranes, helper cranes, and forklifts will be mobilized to each WTG site and staged for disassembling each WTG. A 300 to 500 ton crawler crane will be used to remove the turbine blades, blade hub, nacelle, and tower sections.

The hub with blades will be removed and placed in a laydown area for disassembly. Blades will be processed to such a size as to allow for standard haul trucks to cart these materials off site. The hub will be removed in whole or part, whichever the contractor sees as being the most efficient process for removal. Next the generator with nacelle will be disengaged from the tower, removed, and place in the laydown area for disassembly. All hazardous fluids and materials associated with the generator and gear box will be properly drained and collected in approved containers for offsite transport. Per Waste Management Plan, all hazardous waste will be transported to a licensed hazardous waste facility for proper disposal. Tower sections will be removed and placed in the laydown area. Each section will be processed to a size where standard hauling equipment can be used to haul off site.

All WTG tower foundations will be removed to 48-inches below the finish grade surface. This includes all steel reinforcement, anchor bolts, conduit, cable, and appurtenances that are a part of the tower foundation. The remaining portion of the foundation will be buried in place. Equipment required for foundation removal could include a large excavator with a jack hammer, bucket and thumb, cutting torch, concrete saw, among other equipment. However, the means and methods could vary for the efficient demolition and removal of the required portion of the concrete foundation. All foundation material removed will be loaded into haul trucks and transported to a landfill for disposal.

The foundation excavation area will be backfilled with clean sub-grade material and compacted to a similar density of the surrounding native ground. The areas of disturbance including backfill area, crane pad, laydown area, and storage areas will be regraded and contoured to best match existing topography allowing for positive drainage. Next, topsoil will be spread over the disturbed area and the area will be seeded and mulched according to the revegetation plan.

5.2 Substation Decommissioning

Substation decommissioning will begin by dismantling and removal of the existing electrical equipment, conduit, concrete foundations, removal of buildings, and perimeter fencing. Components including steel, conductors, switches, transformers, fencing, and control houses will be removed from the site and disposed of at approved locations that accept electrical equipment waste. Equipment required for dismantling substation facilities could include boom trucks, bucket trucks, man-lifts, and cranes. All hazardous fluids and materials associated with transformers will be properly drained and collected in approved containers for offsite transport to a permitted facility for disposal of hazardous materials.

5.3 Maintenance Buildings

The maintenance builds associated with the project will be demolished and removed from site. Before demolition commences, the structures and surrounding areas will be examined for hazardous materials and hazardous material spills. Any hazardous materials found will be collected and transported to a permitted hazardous waste disposal facility. The building structure will be toppled my mechanical methods, most likely with an excavator. The foundation pad will be removed and broken down to a size where standard hauling equipment can be used for transport. Any pavement or gravel material that was placed for driveways or parking areas will be remove and stockpiled for transport off site.

The domestic water wells will be plugged and abandon according to industry standards after the pump and associated electrical wiring has been removed. The onsite septic system including holding tank and leach field pipes will be unearthed and removed. All materials associated with the building demolition including water well and wastewater treatment components will be transported to a permitted landfill location for disposal. All disturbed areas will be regraded to best match the existing topography providing positive drainage. The disturbed areas will be covered with topsoil and reseeded according to the approved revegetation plan.

5.4 Removal of Collection System

Underground collection system cabling will be removed as one of the last phases of decommissioning as collection line will be buried in access roads. Once access roads are no longer needed, the removal of the underground collection system can begin. Removal of the electrical collection system in the access roadways will begin with removal and stock pile of roadway sub-base material for loading, transport off site, and disposal. Removal of collection system cabling will also provide the opportunity to uncompact roadway subgrade soils in preparation for revegetation. It is anticipated that trenching or ripper equipment will be used to unearth the collection system cabling along with any communication lines.

5.5 Access Roads

Access road could require some modifications to allow the crawler crane access to WTG and tower dismantling. With completion of the decommissioning work and when all facility

components and debris have been removed, reclamation of the access roads will begin. Access road reclamation could coincide with electrical collection line removal as these lines are to be install under or alongside access roadways.

Access roads will be reclaimed by first removing road surface material. This material will be hauled offsite via bottom or side dumping semi dump truck and disposed of in an approved location. If culverts are installed during initial roadway construction, these materials will be removed and hauled offsite for proper disposal. Roadway grade fill and cut area will be regraded to best match pre-project topography and provide positive drainage. Access road reclamation with include deep tilling of compacted soil in order to provide optimal conditions for revegetation.

6.0 Decommissioning Schedule

Decommissioning activities are expected to be completed within a 6 to 12-month time frame. Monitoring of the revegetation of disturbed areas could extend beyond this time frame due to growing season and climatic factors. The sequencing for decommissioning, materials removal, and reclamation activity is anticipate in the following order:

- Total de-energizing of the facilities.
- Mobilization of equipment and materials for decommissioning activities.
- Removal of turbine hub and blades, processing of blades, and hauling to approved offsite disposal area.
- Removal and dismantling of the nacelle, generator, and associated components, and hauling to approved offsite disposal area.
- Removal of WTG foundations to 48 inches below the finish grade and haul foundation debris to approved offsite disposal area.
- Backfill foundation excavation areas, removal of crane pads, regrading, and reseeding.
- Removed of underground collector wires.
- Reclamation of access roads including removal of roadway base material, drainage culverts, deep till and regrading of roadways to match existing topography, and reseeding.

Appendix A - Decommissioning Cost Estimate Summary

Activity	Unit	Number	Cost per Unit	Total
Mobilization and Demobilization	lump sum		$ 175,000	$ 175,000
Wind Turbine Decommissioning				
Crane Pad Construction and Turbine Disassembly	each	77	$ 52,261	$ 4,024,116
Turbine Foundation-Demolition to 48" below Finish Grade	each	77	$ 8,850	$ 681,450
Turbine Foundation Backfill and Compaction (assume 60 ft base removed to 4 feet)	each	77	$ 1,500	$ 115,500
Crane Pad/Foundation Reclamation: Topsoil Replacement, Reseeding, and Mulching	each	77	$ 2,279	$ 175,509
Substation Decommissioning				
Substation: Dismantle and Removal from Site	each	2	$ 279,500	$ 559,000
Substation: Site reclamation and Reseeding	each	2	$ 2,700	$ 5,400
Collection and Transmission System Removal				
Collection Line Extraction (34.5 kV), Splice Box and Switch Panel Removal	LF	172128	$ 5.81	$ 1,000,064
Trench Backfill, and Compaction	LF	172128	$ 3.45	$ 593,842
Access Road Reclamation				
Roadway Surface Material Removal and Ripping of Compacted Soil	mile	42.4	$ 27,892	$ 1,182,613
Regrading of Roadway Profile Cut and Fill areas	mile	42.4	$ 22,313	$ 946,090
Topsoil Replacement, Reseeding, and Mulching	mile	42.4	$ 5,578	$ 236,523
Facility Demolition and Site Reclamation				
Met Tower Demolition and Reclamation	each	3	$ 14,306	$ 42,918
Operation and Maintenance Building Demolition	each	2	$ 38,000	$ 76,000
			Total	**$ 9,814,024**

* All itemized cost estimates include the cost for material processing, transport, and disposal to a licensed or approved facility

Cost per WTG **$ 127,454.86**