

TWO RIVERS TRANSMISSION LINE PROJECT

Conditional Use Permit Application

Carbon County, Wyoming

SUBMITTED BY:

TWO RIVERS WIND LLC

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REGULATORY REFERENCES

REQUIREMENT	CARBON COUNTY ZONING RESOLUTION¹ REFERENCE	APPLICATION REFERENCE
Pre-Application Meeting	Section 7.7. A	Section 7.1
Signed Application Form	Section 7.7. B (1)	Included with Application Package
Site Plan and Vicinity Map	Section 7.7. B (2)(A)	Section 2.3; Appendix A
Survey or Engineering Drawings	Section 7.7. B (2)(B)	Section 4.2
Statement of Purpose and Need	Section 7.7. B (2)(C)	Section 2.4
Project Description and Projected Timeline	Section 7.7. B (2)(D)	Section 2.1 and 2.2
Applicants Response to All Review Criteria	Section 7.7. B (2)(E))	Chapter 3
Names and Mailing Addresses of All Adjacent Property Owners	Section 7.7. B (2)(F)	Section 5.2; Appendix B
Application Fee	Section 7.7. B (2)(I)	Included with Application Package
Public Notice and Hearing	Section 7.7. B. (4)	Section 7.3
REQUIREMENT	CONDITIONAL USE PERMIT APPLICATION FORM² REFERENCE	APPLICATION REFERENCE
Completed Affidavit	Item 3	Appendix C
Current Notice of Valuation(s)	Item 4	Section 5.3; Appendix E
Current Tax Certificates	Item 5	Section 5.3; Included with Conditional Use Application Form
Proof of Legal Access/Easements	Item 6	Section 5.4; Appendix D

¹Carbon County Zoning Resolution of 2015, as amended, July 7, 2020; Chapter 7, Administration and Enforcement

ACRONYMS AND ABBREVIATIONS

APLIC	Avian Power Line Interaction Committee
BLM	Bureau of Land Management
EPC	Engineering, Procurement, and Construction
kV	kilovolt
RAM District	Ranching, Agriculture and Mining District
ROW	Right-of-Way
RFO	Rawlins Field Office
USFWS	U.S. Fish and Wildlife Service
WGFD	Wyoming Game and Fish Department
SHPO	Wyoming State Historic Preservation Office
WY	Wyoming
WYDOT	Wyoming Department of Transportation

Chapter 1

Project Summary

1.1 Introduction

Two Rivers Wind LLC (“Two Rivers Wind” or the “Applicant”) proposes to construct an overhead 230 kilovolt (kV) generation-tie (gen-tie) transmission line (the “Project”) that will connect the Two Rivers Wind Project to the PacifiCorp regional grid at the Freezeout Substation. The Project is approximately 10.6 miles (mi) in length and is wholly located within Carbon County on 4.7 miles of Bureau of Land Management (BLM)-administered lands and 6.0 miles of private land. **Table 1** provides additional details on the Project.

Table 1. Project Details in Carbon County, Wyoming

Project Details	Project Components in Carbon County
Location	Two Rivers Wind Project to Freezeout Substation
Point of Interconnection	Freezeout Substation
Project Area	264 acres (4.7 miles BLM; 6.0 miles Private land)
Site Plan	101 Pole Structures
Permitting and Approvals	2018 – 2023
Construction Start	April 2023
Commercial Operations	March 2025
Construction Workforce (average)	20

Two Rivers Wind has been actively working on obtaining the necessary permits and approvals for the Project since 2018 and anticipates that all permits will be obtained by early 2023. A right-of-way (ROW) grant application for the Project was submitted to the BLM Rawlins Field Office (BLM RFO) and is currently under review. Two Rivers Wind was granted a Section 109 permit from the Wyoming Department of Environmental Quality (DEQ) Industrial Siting Division (ISD) on November 20, 2019, which included approval of the gen-tie transmission line and associated Two Rivers Wind Project. Two Rivers Wind has submitted a separate Conditional Use Permit (CUP) application for the Project’s associated wind energy conversion system to Carbon County simultaneously with this permit application.

Two Rivers has an executed LGIA with PacifiCorp to the Freezeout substation and is negotiating power purchase agreements with multiple offtakers. Construction of the Project is anticipated to begin in April 2023 following permit approvals. The targeted commercial operations date is March 2025.

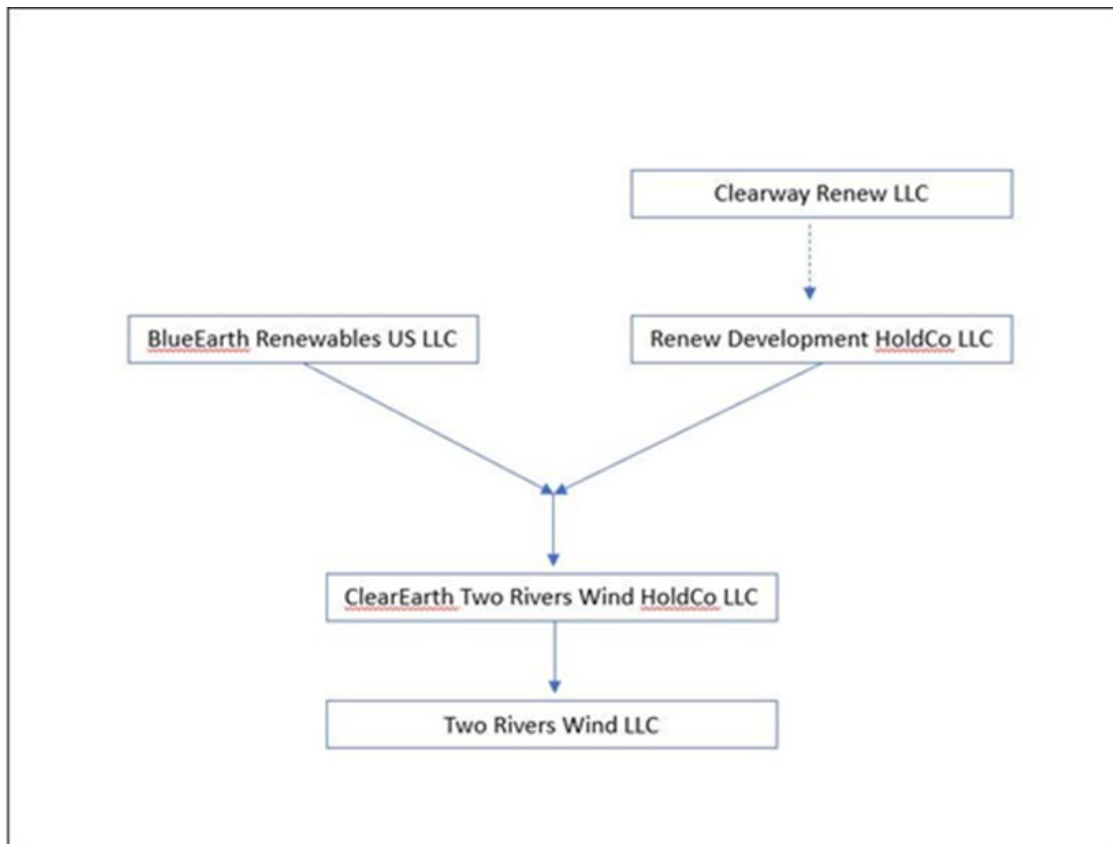
The Applicant, Two Rivers Wind, is committed to developing the Project in a way that avoids, minimizes, and mitigates potential socioeconomic and environmental impacts on the human and natural environment, respectively. Prior to acquiring land, Two Rivers had a third party conduct a routing analysis to determine the route of least impact for the gen-tie routing, including collocating infrastructure with exiting transmission infrastructure where possible.

As demonstrated within this Conditional Use Permit (CUP) Application (the “Application”), the Project complies with all applicable requirements of the Carbon County Zoning Resolution of 2015, as amended July 7, 2020 (the “*Carbon County Zoning Resolution*”) and meets all six criteria for obtaining a CUP (see **Chapter 3**). Based on these factors, Two Rivers Wind respectfully requests the Board of Carbon County Commissioners (the “Board”) approve this application and grant Two Rivers Wind a Conditional Use Permit for the Project.

1.2 Applicant, Owner, and Operator Information

The Applicant for the Two Rivers Project is Two Rivers Wind LLC (the “Applicant” or “Two Rivers Wind”), a joint venture between BluEarth Renewables US LLC (“BluEarth Renewables”) and Clearway Renew LLC (“Clearway”). Two Rivers Wind is a limited liability company organized in Delaware and authorized to do business in Wyoming. Two Rivers Wind will be the owner and operator of the Project.

Figure 1. Corporate Structure



Contact information for Two Rivers Wind is provided in **Table 2** below.

Table 2. Project Contact Information

Representative	Contact Information
Glenn Isaac Director, Regulatory & Environment	Address: 850 New Burton Road, Suite 201 Phone: Dover, Delaware 19904 403-609-5103 Email: glenn@bluearth.ca
Ricky Davis Director, Project Development	Address: 100 California Street, Suite 400 San Francisco, CA 94111 Phone: 415-238-2065 Email: ricky.davis@clearwayenergy.com

1.3 Company Overview

BluEarth Renewables and Clearway are both experienced and reputable renewable energy companies with strong track records in developing, constructing, and operating large-scale projects including transmission lines. The below subsections provide a brief description of their experience and capabilities.

1.3.1 BluEarth Renewables

BluEarth Renewables US LLC is the US affiliate of BluEarth Renewables LP, headquartered in Calgary, Canada. BluEarth Renewables is a leading power producer that develops, builds, owns and operates wind, hydro, and solar facilities across North America. BluEarth's portfolio includes 564 MW net (658 MW gross) of nameplate capacity in operation, over 1,000 MW of projects in advanced stage development, and over 4,000 MW of projects in early-stage development.

For more information, visit www.bluearthrenewables.com.

1.3.2 Clearway

Clearway Energy Group LLC, along with its public affiliate Clearway Energy, Inc., own and operate more than 8 gigawatts of renewable and conventional energy assets across the country. Clearway's portfolio includes an additional 30 GW of wind, solar, and energy storage projects under development. Clearway's 5.6 gigawatts of operating wind, solar, and energy storage assets offset the equivalent of more than 10.5 million metric tons of carbon emissions for customers nationwide.

Clearway is a full-scope development and operations platform that actively participates in every stage of projects, from origination and development, through construction and financing, to commercial operations and long-term ownership. Clearway strives to create enduring relationships with its customers, counterparties, affiliates, and stakeholders. Clearway has over a decade of experience developing, financing, owning, operating and selling power from renewable energy projects – from clusters of small-scale community solar projects to some of the largest wind farms and solar plants across the United States. Clearway has completed more than \$11 billion in financings over the last few years to support the construction of more than 200+ projects. Clearway has proven expertise in

delivering renewable power under long-term offtake contracts to corporations, governments, and investor-owned utilities to deliver clean, reliable, and cost-effective energy.

Chapter 2

Project Description and Projected Timeline

2.1 Project Description

The Project consists of an overhead 230 kV transmission line that is approximately 10.6 mi in length and will connect the Two Rivers Wind Project to the PacifiCorp regional grid at the Freezeout Substation, which is located at T23N, R80W, Section 15. The Project is wholly located within Carbon County on 4.6 mi of BLM-administered lands and 6.0 mi of private land. Approval for the portion of the Project on BLM-lands is anticipated in early Q2 2023.

2.2 Projected Timeline

Construction is scheduled to begin in the second quarter of 2023 following permit approvals and is expected to take 8-10 months.

Construction of the Project would follow the sequence of:

- 1) Centerline surveying
- 2) Locating and constructing access roads
- 3) Clearing transmission pole-structure sites
- 4) Foundation installation
- 5) Structure assembly and erection
- 6) Installation of ground wires and conductors
- 7) Installation of counterpoise/ground rods
- 8) Cleanup and site reclamation. Site Plan and Vicinity Map

2.3 Site Plan

A Site Plan and Vicinity Map for the Project has been included as **Appendix A** of this Application. Applicable setbacks and constraints considered in the design of the transmission line route are detailed in Section 4.1.

2.4 Statement of Purpose and Need

The purpose of the Project is to transmit energy generated by the Two Rivers Wind Project to the PacificCorp regional grid. By integrating clean, renewable energy into the existing system, the Project will help meet the growing demand for power in the United States and play a critical role in diversifying the regional energy supply mix.

Chapter 3

Applicant's Response to Review Criteria

Per Section 7.7 (B)(2)(e) of the Zoning Resolution, Two Rivers Wind has provided a detailed response to each of the review criteria below.

Criterion 1: The Conditional Use shall be generally consistent with the Goals, Strategies and Actions of the Comprehensive Land Use Plan, including the Future Land Use Map.

The Project is consistent with the Goals, Strategies, and Actions of the Comprehensive Land Use Plan, including the Future Land Use Map. The Carbon County Comprehensive Land Use Plan identifies seven goals for future land uses in the County. These goals are outlined in the bullets below:

- ***Goal 1: Achieve a sustainable balance between energy development, agriculture, and the environment.***

The Project provides an optimal opportunity to achieve a balance between energy development, preservation of local land uses and community values, and the environment. The Project allows for clean-renewable energy to be delivered to the power grid, generating tax revenue and jobs for Carbon County, while emitting no operational odors or pollution, or causing other detrimental environmental impacts to air, water, or human health. Once construction is complete, livestock grazing will be allowed to continue in the Project Area. The Project is also fully compatible with the existing grazing uses on the state-leased land. Grazing leases will continue after development, completing a well-balanced and integrated approach to land use in Carbon County.

- ***Goal 2: Protect water supplies of established users.***

Transmission facilities require very little water for construction and operational use. During construction, Two Rivers Wind anticipates purchasing water through a Wyoming State Engineer's Office Temporary Water Use Agreement with an existing senior water rights holder. By using established water rights, the Project will not impact existing water users.

- ***Goal 3: Sustain scenic areas, wildlife habitat, and other important open spaces.***

Two Rivers Wind has been coordinating with the Wyoming Game and Fish Department (WGFD), U.S. Fish and Wildlife Service (USFWS), and the Wyoming State Historic Preservation Office (SHPO) since initiation of the Project to ensure proper environmental surveys were completed, and to incorporate agency feedback and appropriate setbacks into development of the transmission line route. Wildlife data has been collected and analyzed for sage-grouse leks, raptor nests and high raptor use areas, bats, other migratory bird species, and other sensitive wildlife species to determine their potential presence and inform the development of the Project such that impacts are avoided or minimized.

The Project completely avoids any greater sage-grouse core habitat areas. The Project Area does not overlap with Greater Sage Grouse Core Areas established by WGFD (also referred to as Priority Habitat Management Areas by the BLM) and there are no known leks within proximity to the Project.

Impacts to big-game species such as elk, pronghorn, and deer will be minimal, and the Project site will continue to maintain open space and wildlife habitat.

A cultural resource file search did not identify any cultural sites in the Project Area that are eligible for listing on the National Register of Historic Places. There are no scenic or historic sites located near the Project Area or other designed important open spaces. Class III pedestrian surveys of the Project Area have been completed and provided to the BLM for coordination with SHPO, tribes, and other permitting entities.

- ***Goal 4: Retain ranching and agriculture as the preferred land uses in rural areas.***

The Project is compatible with existing ranching and agricultural uses and is appropriate for current and future use as a Rural Agricultural Area. Once Project construction is complete, the ROW will be reclaimed to the minimum footprint required to maintain and operate the transmission line. Ranching and agriculture activities will continue in the Project Area following construction, and throughout the life of the Project. Additionally, the Project will help ensure the longevity of ranching operations and the rural character of the land it occupies by providing stable, annual income to the Project landowners through royalty and lease payments, which in turn will help enhance their ability to continue to ranch and further preserve the land's traditional rural character. At the end of the Project's life, the land will be properly decommissioned and reclaimed and no net loss of land or land use will be experienced.

- ***Goal 5: Locate new residential developments and commercial sites in close proximity to municipalities and developed areas.***

This goal is not applicable to this CUP application as the Project is not a new residential development or commercial site.

- ***Goal 6: Ensure that future land development is fiscally responsible and has adequate roads and other infrastructure.***

The Project has been responsibly designed and will be implemented using the highest standards of quality and commitment to minimizing socioeconomic and environmental impacts to the surrounding area. Two Rivers Wind has coordinated extensively with local residents and community leaders, including Carbon County, and other federal, state, and local jurisdictions to identify infrastructure needs and potential Project-related issues.

Two Rivers Wind has entered into a Road Use Agreement (RUA) with Carbon County for the associated Two Rivers Wind Project to ensure that all county roads are maintained responsibly during construction and returned to their original condition, or better, at the end of construction. This Road Use Agreement includes the access roads that will be used for the Project. Two Rivers Wind is in the process of updating the Road Use Agreement with Carbon County Road and Bridge. Two Rivers Wind may also improve certain existing county roads that will remain available for public access, which will leave Carbon County roads in equal or better shape than when the Project began. The Project will also ensure that appropriate funds are available for during construction for road maintenance, as well as during decommissioning to support restoration activities and returning the land to its original state.

- ***Goal 7: Retain diversity of use on public lands and provide for conversion of public lands to other land uses as would benefit the orderly development of the County.***

The Project is fully compatible with existing grazing, agriculture, and recreational uses. After construction, land use will continue to be productive and available for a diversity of uses including agriculture, recreation, and hunting.

Carbon County's Future Land Use Map in the Carbon County Comprehensive Land Use Plan represents a general guide for future development that has been determined to be appropriate for unincorporated Carbon County. The Future Land Use Map portrays private lands as falling into one of five types of areas representing desirable locations for different types of development and future land uses. The Future Land Use Map is not intended to be prescriptive and does not address future land use on public lands within the County.

The Future Land Use Map classifies the private lands within and adjacent to the Project as Rural Agricultural Areas. Rural Agricultural Areas are intended to maintain open land for ranching, agriculture, mining and related uses and carefully sited industrial and energy production. Rural Agricultural Areas can also accommodate agricultural-related commercial uses, forestry, and seasonally accessible residential and recreation uses. Agriculture should be the predominant land use and can be accompanied by low-density residential use that supports agricultural operations, public uses, outdoor recreational uses, and carefully sited industrial uses.

Existing land use in the Project vicinity is predominantly ranching, with grazing leases extending onto lands administered by the BLM. Development of the Project will allow for continued use of the Project ROW and surrounding areas for ranching and is consistent with the classification of surrounding private lands as Rural Agricultural Areas in the Future Land Use Map.

Criterion 2: The proposed use shall serve a public need.

The Project will serve a public need by providing a variety of benefits for Carbon County and its residents.

The Project allows for renewable energy to be delivered to the power grid, generating tax revenue and jobs for the residents of Carbon County, while causing no detrimental environmental impacts to the air, water, or human health. The Project will result in a variety of benefits for Carbon County and its residents, in addition to diversifying the energy generation portfolio in the region.

Many of the local benefits are economic in nature, primarily resulting from construction employment and expenditures and increased sales and use tax revenue for Carbon County. The Project will direct its Engineering, Procurement, and Construction (EPC) contractor(s) to hire qualified local workers and qualified and cost competitive local contractors. The EPC contractor(s) and subcontractors will coordinate with the local Wyoming Department of Workforce Services offices in Laramie, Rawlins, Hanna, and Casper to post job openings and hire qualified workers.

Criterion 3: The proposed use should be appropriate for the proposed location and will not be detrimental to the surrounding area or to established uses.

The Project is situated in unincorporated northeastern Carbon County, north of the town of Medicine Bow, in the Laramie Basin Rolling Sagebrush Steppe Ecoregion of the Wyoming Basin (Chapman et al. 2004). Most of the land in the Project Area is comprised of rangeland, primarily used for cattle grazing or wildlife habitat. The Project is located in a zoning district called the RAM District. The purpose of the RAM District is "to preserve historic uses and open space areas of the County while at the same time permit ranching, agriculture, animal husbandry, forestry, and mining in a manner that attains this purpose." Pursuant to the *Carbon County Zoning Resolution*, transmission line projects are considered a conditionally permitted use for land in a RAM District.

The region has seen the successful establishment of the renewable wind energy sector over the past decade, and currently there are several existing wind facilities and associated transmission line infrastructure surrounding the Project Area. Development of the Project will allow for continued historic use of the Project Area and surrounding areas for ranching and agriculture and is consistent with the classification of surrounding private lands as Rural Agricultural Areas in the Future Land

Use Map. The Project will not be detrimental to the surrounding area or to established uses in the area.

Criterion 4: The proposed conditional use should be adequately served by facilities and services including legal and physical access and circulation, water and wastewater facilities, solid waste, law enforcement, fire protection and emergency medical services.

The Project will be adequately served by existing facilities and services or by facilities and services that will be acquired prior to construction. Existing public roads will be used to access the Project and Two Rivers Wind will adhere to all conditions agreed to within the Two Rivers Wind Project RUA. While very little water will be required for the construction of the Project, Two Rivers Wind anticipates that it will purchase water from an existing water rights holder through a Wyoming State Engineer's Office Temporary Water Use Agreement. During construction, waste that cannot be recycled will be transported to a licensed disposal facility, likely in Casper or Laramie by a private waste hauling service.

Two Rivers Wind has also engaged with law enforcement, fire protection and emergency medical service providers in the Project Area to receive feedback and input on potential impacts to emergency services in the area and address any concerns regarding public safety. Based on these discussions, the Project is unlikely to increase the demand for these services and thus, will be adequately served by Carbon County's existing law enforcement, fire protection, and emergency services.

Criterion 5: That any resulting commercial and truck traffic shall not use a residential street nor create a hazard to a developed residential area.

No Project-related commercial and truck traffic will use a residential street or create a hazard to any developed residential area. Public roads will be used in compliance with federal, state, and county regulations governing such activities. All applicable road use and access permits will be obtained from Wyoming Department of Transportation (WYDOT) for the transport of heavy or large deliveries from the state port of entry to the Project site.

Criterion 6: That the record owner has taken adequate steps to minimize and control potential environmental problems that might result from the proposed conditional use.

Two Rivers Wind is committed to minimizing impacts on the environment and local communities from the construction, operation and maintenance, and decommissioning of the Project. Two Rivers Wind has conducted multiple surveys and baseline studies and prepared multiple plans to ensure adequate measures are taken to minimize and control impacts to biological, cultural, and visual resources as well as the local infrastructure and service providers. Two Rivers Wind will continue to work with federal, state, and local agencies throughout the construction and operation periods of the Project to minimize potential environmental impacts caused by the Project and to address community concerns

Chapter 4

Project Infrastructure and Design

4.1 Consistency with Carbon County Land Use Ordinance

The Project has worked diligently with regulatory agencies and stakeholders to design a transmission line route that minimizes impacts to the environment and local stakeholders.

Private lands to be crossed by the Project ROW are within in the Ranching, Agriculture, and Mining (RAM) zoning district in Carbon County. Per Section 5.4 of the Carbon County Zoning Resolution, the purpose of the RAM zone district is to preserve historic uses and open space areas of the County while at the same time permit ranching, agriculture, animal husbandry, forestry, and mining in a manner that attains this purpose. Overhead electrical transmission lines of 115,000 volts or less are principally permitted uses in all zone districts. Overhead transmission lines of greater than 115,000 volts are conditionally permitted uses in all zones.

Section 5.4(D) of the Resolution lists the following requirements that would apply to the Project as it will be over 115,000 volts:

1. Electrical substations and underground and overhead transmission lines of over 115,000 volts, together with accessory structures including but not limited to switching stations and communications facilities are only allowed by conditional use permits in all zones. Building permits are required prior to construction.
2. Setbacks and Height Requirements. There are no Minimum Setbacks and no Maximum Height Limitations for new Electrical Substations and Transmission Towers; however, the proposed setbacks and maximum height proposed must be included in the Conditional Use Permit (CUP) application and justified to the Commission as part of the CUP review process.

Response: The Project will use a combination of wooden H-frame and single steel monopole transmission structures with typical heights of 60 to 90 feet. Structure heights will vary depending on terrain and height requirements to cross other features (i.e., such as other overhead transmission lines). The maximum height of transmission structures would be 150 feet.

Two Rivers Wind designed the shortest transmission line route to minimize physical and visual impacts, with consideration of the following:

- Land ownership and the interest of landowners crossed by the ROW;
- Routing relative to other wind energy developments to avoid conflicts with other existing or planned turbine development;
- Constructability with regard to access and terrain (i.e., steep slopes and floodplains);
- Engineering considerations (i.e., shortest overall length and fewest angle structures);
- Avoidance of subdivisions and the Town of Medicine Bow;
- Avoidance of other utilities (i.e., paralleling pipelines);

- Minimizing crossings of other transmission lines;
- Avoidance of sage-grouse core area and sage-grouse leks;
- Avoidance of No Surface Occupancy (NSO) areas on BLM-administered lands.

Specific setbacks incorporated into Project design include the following:

- Two Rivers Wind coordinated with PacifiCorp to determine the setback from wind turbine generators at Ekola Flats.
- Transmission towers are set back at least 0.25 mile from the perimeter of occupied sage-grouse leks outside core area; and
- Transmission towers are set back at least 300 feet from the municipal boundary for the Town of Medicine Bow.

In addition to applying these setbacks, the Project is committed to incorporating best practice recommendations from the Avian Power Line Interaction Committee (APLIC) into the Project design in order to reduce bird collisions with power lines and other risks that result from avian interactions with electric facilities.

4.2 Survey or Engineering Drawings

Detailed survey and engineering work for the Project is currently underway and will be finalized closer to construction.

Based on this timeline, the Applicant requests that submission of these drawings be included as a condition of approval of the CUP.

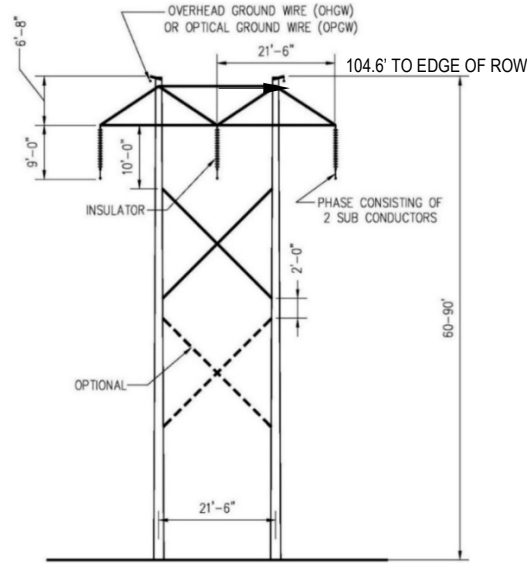
Illustrative examples of typical designs for the support structures have been provided in [Section 4.4](#).

4.3 Signage

Appropriate signage and flagging will be utilized during Project construction to protect workers and ensure public safety.

4.4 Support Structures

While two support structure designs are currently being considered for the Project (monopole or H-frame), it is most likely that the structures will be wooden as this is the predominant transmission structure type installed in the area. In the event that metal poles are used, a metal staining product will be applied to ensure that the poles blend in with the surroundings. Illustrations of a typical 230 kV monopole or H-Frame structure are provided below in **Figure 2** and **Figure 3**.

Figure 2. Typical of H-frame Transmission Structure**Figure 3. Picture of Typical H-frame Transmission Structure**

Source: Two Rivers 2020

In addition to the typical support structures used throughout most of the transmission line route, dead-end structures and turning structures will be required at specific locations, as determined necessary by Project engineers for design stability.

A summary of the preliminary design characteristics of the transmission line are provided in **Table 3** below. As described in [Section 4.2](#), final design characteristics will be included in the survey maps provided as a condition of approval of this CUP prior to construction.

Table 3. Typical Transmission Line Design Characteristics

Characteristic	Specification
Voltage	230,000
Circuit Configuration	Double Circuit 230 kV
Proposed T-Line Route Length	10.6 miles
ROW Width	200-feet temporary ROW, 125-feet permanent ROW per 230 kV line
Type of Structure	H-Frame, Monopole
H-Frame Structure Height	60 – 90 feet
H-Frame Structure Width	21.6 feet at base; 43 feet at top
Monopole Height	75-feet
Monopole Width	8-10 feet
Estimated Temporary Disturbance Area per Structure Per Line	ROW width 200 feet x 150 feet = 0.69 acre
Estimated Permanent Disturbance Area per Structure per line	Reduced to Foundation Diameter ROW width 125 feet x 150 feet = 0.43 acre
Temporary Staging Area/Storage Yard	5-10 acres
Wire Tensioning Site	150 ft x 60 ft located about every 9,300 ft
Access Roads	Use existing access roads and overland travel, use existing roads for water crossings
Other Hardware	Aerial marker spheres or other hardware may be applied for aircraft and avian considerations, as needed and practicable

4.5 Structure Foundations

The foundations used for the Project will depend on whether wooden or steel structures are used:

- **Wooden:** Wooden poles will be directly embedded into the ground at a depth of approximately 10% of the pole length plus two feet. The diameter of the hole excavated for embedment is typically the pole diameter plus 18 inches. Once the pole is placed in the hole, native or select backfill will be used to fill the voids around the perimeter.
- **Steel:** Steel structures will be secured to a concrete foundation, which will require the drilling of concrete piers that typically range from 4 to 12 ft in diameter and are placed approximately 15 to 60 ft deep. The concrete piers will use anchor bolt cages with reinforced steel.

4.6 Structure and Conductor Clearances

Conductor phase-to-phase and phase-to-ground clearance parameters will follow the standards outlined with the National Electrical Safety Code (“ANSI C2”) that is published by the American National Standards Institute. ANSI C2 sets forth the minimum distances that must be maintained

between the conductors and ground, crossing points of other lines, and the transmission support structures, as well as the minimum working clearances for personnel during energized operation and maintenance activities. Typically, the clearance of conductors for 230 kV structures is 28 feet above ground or vegetation. During detailed design, clearances may be increased to account for localized conditions.

4.7 Transmission Line Hardware

The below subsections detail the transmission line hardware that will be used for the Project.

4.7.1 Conductors

Conductors are one of the major components of the Project. A conductor is a cable or wire that facilitates the flow of electricity (or electric current) through the transmission line. Different types of conductors are used in transmission lines, and they vary in number and size, depending on the type of circuit and the transmission voltage. Steel, aluminum, and copper are the most common conducting materials used in transmission lines. However, aluminum conductors have completely replaced copper conductors in overhead power lines because of their lower cost and lower weight.

The selection of conductor size is determined by the final engineering design, and is influenced by the following main factors:

1. Electrical Requirements – Substation requirements, operating voltage of the line, total line length.
2. Mechanical Requirements – Strength, tension limits, climactic load, and line stresses.
3. Cost of Construction - The proposed conductor model for the Project is a single 1272 kcmil Pheasant aluminum cable.

4.7.2 Insulators

The overhead line conductors must be supported on the transmission structures in such a way that currents from conductors do not flow to the ground through supports. This is achieved by securing conductors to the transmission structures with the help of insulators. The insulators provide the necessary insulation between line conductors and tower structures, thereby preventing any leaking of current from the conductors to the earth.

The typical insulator configuration for a monopole or H-frame structure consists of insulators hung in the form of an “I”, as shown in **Figure 2** and **Figure 3**. Insulators are used to suspend each conductor bundle (phase) away from the structure, maintaining the appropriate electrical clearance between the conductors, the ground, and the structure. A V-shaped configuration may also be used, which restrains the conductor so that it will not swing into the structure in high winds. Dead-end insulator assemblies typically use an I-shaped configuration, which consists of insulators hung from either a tower dead-end arm or a dead-end pole in the form of an “I”. The most commonly used material for insulators is porcelain, but glass, steatite, and special composition materials are also used to a limited extent.

4.7.3 Overhead Shield Wires

Lightning protection shield wires will be installed on the peaks of each structure. Shield wires may be composed of extra high strength (EHS) steel wire or optical ground wire (OPGW) constructed of aluminum and steel which carries glass fibers within its core. Typically, EHS steel wires have a diameter of 0.495 inches and a weight of 0.517 pounds per ft, and OPGWs have a diameter of 0.637 inches and a weight of 0.375 pounds per ft. The glass fibers inside the OPGW shield wire may also help facilitate data transfer required for system control and monitoring.

4.7.4 Minor Additional Hardware

In addition to the conductors, insulators, and overhead shield wires, other associated hardware will be installed on the tower as part of the insulator assembly to support the conductors and shield wires. This hardware will include clamps, shackles, links, plates, and various other pieces composed of galvanized steel and aluminum.

4.7.5 Grounding Systems

A grounding system will be installed at the base of each transmission structure that will consist of copper ground rods embedded into the ground in immediate proximity to the structure foundation and connected to the structure by a buried copper lead. In instances where the resistance to ground will be greater than 25 ohms, counterpoise will be installed to lower the resistance to 25 ohms or less. Counterpoise will consist of a bare copper-clad or galvanized-steel cable buried a minimum of 12 inches deep, extending horizontally underground from structures (from one or more legs of structure) for approximately 200 feet within the ROW.

4.7.6 Other Non-Electric Hardware

Other hardware that is not associated with the transmission of electricity may also be installed as part of the Project. This hardware may include aerial marker spheres or aircraft warning lighting for the conductors or structures per Federal Aviation Administration (FAA) regulations. Proximity to airports and structure height are the determinants of whether FAA regulations will apply based on an assessment of wire/tower strike risk. However, as the proposed structures are less than 200 feet and will not be located near airports that require structure lighting, it is not anticipated that structure lighting will be required.

4.7.7 Induced Currents

Alternating current (AC) transmission lines have the potential to induce currents on adjacent metallic structures such as other transmission lines, railroads, pipelines, fences, or structures that are parallel to, cross, or are adjacent to the transmission line. Induced currents on these facilities occur to some degree during steady-state operating conditions and during a fault condition on the powerline. For example, during a lightning strike on the line, the insulators may flash over, causing a fault condition on the line and current will flow down the structure through the grounding system (i.e., ground rod or counterpoise) and into the ground. The magnitude of the effects of the AC induced currents on adjacent facilities is highly dependent on the magnitude of the current flows in the transmission line, the proximity of the adjacent facility to the line, and the distance (length) for which the two facilities parallel one another in proximity.

The methods and equipment needed to mitigate these conditions will be determined, as required, through electrical studies of the specific situation. As standard practice and as part of the design of the Project, electrical equipment and fencing at the substation will be grounded. All infrastructure that cross or are within the transmission line ROW (i.e., fences, metal gates, pipelines, metal buildings, etc.) will be grounded. If applicable, grounding of metallic objects outside of the ROW may also occur, depending on the distance from the transmission line as determined through the electrical studies. These actions will take care of the majority of induced current effects on metallic facilities adjacent to the line by shunting the induced currents to ground through ground rods, ground mats, and other grounding systems, thus reducing the step and touch potential that a person may experience when touching a metallic object near the line (i.e., reduce electric shock potential).

In the case of a longer parallel facility, such as a pipeline parallel to the Project over many miles, additional electrical studies will be undertaken to identify any additional mitigation measures (more than the standard grounding practices) that will need to be implemented to prevent damaging currents from flowing onto the parallel facility, and to prevent electrical shock to a person that may come in contact with the parallel facility. Some of the typical mitigation measures that may be considered for implementation include:

- **Fault Shields** – shallow grounding conductors connected to the affected structure adjacent to overhead electrical transmission structures, poles, substations, etc. They are intended to provide localized protection to the structure and pipeline coating during a fault event from a nearby electric transmission power system.
- **Lumped Grounding** – localized conductor or conductors connected to the affected structure at strategic locations (e.g., at discontinuities). They are intended to protect the structure from both steady-state and fault AC conditions.
- **Gradient Control Wires** – a continuous and long grounding conductor or conductors installed horizontally and parallel to a structure (e.g., pipeline section) at strategic lengths and connected at regular intervals. These are intended to provide protection to the structure and pipeline coating during steady-state and fault AC conditions from nearby electric transmission power systems.
- **Gradient Control Mats** – typically used for aboveground components of a pipeline system, these are buried ground mats bonded to the structure, and are used to reduce electrical step and touch voltages in areas where people may come in contact with a structure subject to hazardous potentials. Permanent mats bonded to the structure may be used at valves, metallic vents, cathodic protection test stations, and other aboveground metallic and nonmetallic appurtenances where electrical contact with the affected structure is possible. In these cases, there is no “standard” solution that will solve these issues every time. Instead, each case must be studied to determine the magnitude of the induced currents and the most appropriate mitigation given the ground resistivity, distance paralleled, steady-state and fault currents, and fault clearing times expected on the transmission line, and distance between the line and the pipeline, to name a few of the parameters. In the instance that the electrical studies indicate a need to install cathodic protection devices on a parallel pipeline facility, a distribution supply line interconnection may be needed to provide power to the cathodic protection equipment.

During final design of the transmission line segments, appropriate electrical studies will be conducted to identify the issues associated with paralleling other facilities, and the types of equipment that will need to be installed (if any) to mitigate the effects of the induced currents.

4.8 Right-of-Way Design

Two Rivers Wind is requesting a 200-foot temporary ROW and a 125-foot permanent ROW for construction, operation, and maintenance of the transmission lines. The easements associated with the ROW for the portion of the Project that is located on private land have been included in **Appendix D**. The ROW grant for the portion of the Project that is located on BLM land is currently under review and will be provided upon approval.

the Applicant requests that the ROW approval be included as a condition of approval of the CUP.

Ground-disturbing activities associated with the construction of the transmission line will be minimized to the greatest extent possible and no blading/clearing will occur along the transmission route.

4.9 Access Roads

Existing access roads will be used to access the Project area

4.10 Substation

One collector substation will be built to capture the energy from the collector lines and convert it to 230 kV and deliver the energy to the overhead transmission line. The substation will be located within the Two Rivers Wind Project area. Approximately 5-15 acres would be required for construction of the substation. The permanent disturbance associated with the substation will be approximately 2.5 acres.

4.11 Reclamation

Areas disturbed by construction activities will be restored to their original contours to the extent practicable and where it is consistent with desired future operating needs. Interim reclamation activities could include recontouring eroded areas, applying mulch, creating berms, barriers, and water bars, and establishing vegetation.

Reclamation procedures for the Project were developed in accordance with BLM Wyoming Reclamation Policy (2012b), Rawlins Field Office Resource Management Plan (RMP) (BLM 2008), RFO Reclamation Guidance (BLM 2011) and State of Wyoming's reclamation guidance for wind development.

Chapter 5

Property Owners and Land Control

5.1 Participating Property Owners

Property owners crossed by the Project ROW are listed in **Table 4** below and shown on the Site Plan and Vicinity Map (**Appendix A**). Proof of legal access/easements to these properties has been provided in **Appendix D**.

Table 4. Surface Owners within the Project ROW

Owner	Address	Contact Name, Phone, & Email
Bureau of Land Management	1300 3rd St, Rawlins, WY 82301	Brandon Snyder Project Manager, RFO Phone: (307) 328-4261 Email: bwsnyder@blm.gov
Boulter Two Rivers Ranch, LLC	22019 County Rd 54 Greeley, CO 80631	Michael and Daisy Boulter Phone: 970-330-8251 email: ncesmadtat53@msn.com
Private Landowner	26925 County Rd 44 Kersey, CO 80644	William and Debra Bailey Phone: 970-590-9653 email: djb22815@gmail.com; bill@pdiamondirrigation.com
Windy Bow Ranch	2409 Mountain Valley Drive, Laramie, WY	Tracy Terrell Phone: 307-379-2315
Big Sky Montana Holdings LLC	5454 Pebble Creek Drive, Prosper Tx 75078	Bill Hiser Phone: (307)745-7358
Burton Gerald Palm Trust	P. O. BOX 96 Medicine Bow, WY, 82329	Burton G. Palm Phone: (307) 339-8041

5.2 Adjacent Property Owners

The contact information of property owners adjacent to the Project has been provided in **Appendix B**. The affidavit of notification and an example of the Project notice sent to landowners is provided in **Appendix C**.

5.3 Notice of Valuations and Current Tax Certificates

Current Notice of Valuations and Current Tax Certificates have been provided with the Conditional Use Permit application form and in **Appendix E**.

5.4 Proof of Legal Access/Easements

Copies of the easement agreements, which include boundary descriptions and are recorded with Carbon County, have been included in **Appendix D**.

5.5 ROW Acquisition

5.5.1 Private Land

On all private land necessary for the wind project to interconnect at the Freezout Substation, Two Rivers has secured a 150-ft ROW Easement. With the exception of Federal Land, the project has been preliminarily surveyed to show the anticipated centerline of the Project within the ROW. However, it is anticipated that the centerline may be adjusted to accommodate results from geotechnical and environmental studies, existing easements, landowner feedback, or other engineering constraints.

5.5.2 State of Wyoming Right of Way

Two Rivers Wind will not be seeking a State of Wyoming Non-Roadway Easement as the Project will not traverse State Land.

5.5.3 BLM Right-of-Way Grant

Two Rivers submitted SF-299 Application and a Plan of Development (“POD”) to the Bureau of Land Management Rawlins Field Office in 2019 as project application WYW-186890 for a 4.6-mile Transmission Right-of-Way (“ROW”) included with the Projects wind development area ROW and executed a cost recovery agreement. Through discussions with the field office throughout 2019, it was determined that the Project would be required to undergo an Environmental Assessment (“EA”) to support the National Environmental Protection Act (“NEPA”) review. Two Rivers updated and submitted the POD to the Rawlins Field Office in August 2022.

Two Rivers has worked with the Rawlins Field Office to release a Draft EA which completed its Public Review Period on December 23, 2022, and to have the Final Environmental Assessment completed and the ROW Grant finalized in Q1 2023.

Two Rivers is committed to updating the Carbon County Planning Department, the Carbon County Planning and Zoning Commissioners, and the Carbon County Board of County Commissioners with updates during the EA Review process.

Chapter 6

Project Permits and Approvals

6.1 Federal Approvals

6.1.1 BLM Right-of-Way Grant

Two Rivers Wind has been proactive in working through the Statutory ROW Grant permitting process with the BLM since 2019. Two Rivers Wind submitted a ROW application (SF 299) to the BLM Rawlins Field Office in 2019, requesting a 30-year ROW grant for Project components located on 4.7-miles of BLM-administered lands. Two Rivers submitted a SF-299 Application and Preliminary Plan of Development to the BLM on September 19, 2019 and executed a cost recovery agreement to process the application for a ROW grant on January 15, 2022. A revised Preliminary Plan of Development was submitted to the BLM August 2022. Resource surveys needed to support the National Environmental Policy Act (NEPA) review and ROW grant for the Project were completed between the Spring and Fall of 2018. The BLM's NEPA review is currently underway, and the Draft EA was released for public comment on November 9, 2022. The BLM's NEPA process is anticipated to be complete January 2023.

6.1.2 NHPA Section 106 and ESA Section 7 Consultations

As part of the Project's BLM NEPA review for the ROW grant, the BLM will initiate consultation with the State Historic Preservation Office under Section 106 of the National Historic Preservation Act and with the USFWS under Section 7 of the Endangered Species Act. Based on a Class III cultural resource inventory conducted for the Project, a determination of "no historic properties affected" was recommended for the Project. Similarly, a determination of "no effect" to federally listed species is anticipated based on desktop analysis and biological field surveys conducted for the Project.

6.2 State Permits

Two Rivers would sell the entirety of their wind-generated electric power solely to PacifiCorp and is not a regulated public utility requiring a certificate of public convenience and necessity from the Wyoming Public Service Commission. Other State permits and approvals needed to construct the Project are described below.

6.2.1 Wyoming Department of Environmental Quality

The Large Construction General Permit issued by the Wyoming Department of Environmental Quality covers storm water discharges from construction activities that disturb 5 or more acres. The Project will disturb greater than 5 acres and Two Rivers will obtain a Large Construction General Permit prior to commencement of construction.

6.2.2 Wyoming Department of Transportation

The Wyoming Department of Transportation authorizes utility crossings of State Highways through application for an M-54 license that pertains to any entity proposing to place a utility facility within the Wyoming Department of Transportation (WYDOT) right of way or on WYDOT land. Two Rivers will obtain a utility license for the collection line crossings of State Highway 487 prior to construction.

6.3 Carbon County Permits and Approvals

Building permit(s) will be required from Carbon County Department of Planning and Development for Project facilities in Carbon County.

An updated access permit from the Carbon County Road and Bridge Department is required for any new access points to County roads. The applications for building permits, road access permit, and above ground utility permit will be submitted after issuance of the CUP.

6.3.1 Road Use Agreement

Two Rivers has been in discussion with Carbon County Road and Bridge Department to update the existing Road Use Agreement for the Project, which will apply to both the wind project as well as the transmission line.

Chapter 7

SUP Requirements

CUP Requirements Chapter 7, Section 7.7 of the Carbon County Zoning Resolution contains the requirements for filing an application for a CUP.

For an application to be approved by the Commission and Board, the following requirements must be met:

- Pre-application meeting must be held with the Zoning Officer or their designee;
- Complete application packet must be submitted;
- Public hearing will be held with the Commission to review the Project, the Commission will then give its recommendation to the Board; and
- Public hearing will be held with the Board to determine if the Project will be approved.

7.1 Pre-Application Meeting

Two Rivers Wind met with Carbon County on December 5th, 2022, to confirm the CUP Application requirements for the Project and answer any questions or concerns that Carbon County may have with the Project.

7.2 Application Form and Application Fee

A completed CUP Application Form, with all required attachments, and associated application fee has been provided with this application.

7.3 Public Notifications and Hearings

Two Rivers will attend the public hearings with the Planning and Zoning Commission and the Carbon County Board of County Commissioners. Two Rivers will comply with the public notification process by providing the names and mailing addresses of affected property owners from which easements may be acquired to construct and operate the Project, as well as adjacent property owners, to the Carbon County staff for the mailing of notifications. Two Rivers will post notice signs provided by the Carbon County Planning and Development Department at least 14 days before the Commission's hearing date. The locations of the signs will be approved by the Planning and Development Department prior to posting.

Chapter 8

References

- APLIC (Avian Power Line Interaction Committee). 2006. Suggested practices for avian protection on power lines: The state of the art in 2006. Edison Electric Institute, Washington D.
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- BLM. 2012. Wyoming Bureau of Land Management Reclamation Policy. Cheyenne, Wyoming: U.S. Department of the Interior, Bureau of Land Management, Wyoming State Office. Instruction Memorandum No WY-2012-032. Available online: <https://www.blm.gov/policy/im-wy-2012-032>
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