

2.1 SITE DESCRIPTION

WAC 463-42-125 Proposal—Site description. The application shall contain a description of the proposed site indicating its location, prominent geographic features, typical geological and climatological characteristics, and other information necessary to provide a general understanding of all sites involved, including county or regional land use plans and zoning ordinances.

2.1.1 Project Location

The Kittitas Valley Wind Power Project (the “Project”) is to be constructed in central Washington’s Kittitas County which has long been known for its vigorous winds. The Project will be built on open ridge tops between Ellensburg and Cle Elum at a site located about 12 miles northwest of the city of Ellensburg. The ridges rise as high as 1,300 feet above the surrounding valley floor. The area’s strong northwesterly winds are compressed as they pass by Lookout Mountain, and are further accelerated as they pass over the site’s ridge tops. The site center is located approximately where the main Bonneville Power Administrations (BPA) and Puget Sound Energy (PSE) east-west transmission line corridors intersect with state Highway 97. Maps showing the locations of Kittitas County and the Project are presented in Figures 2.1.1-1 and 2.1.1-2 respectively.

Figure 2.1.1-1 Location of Kittitas County

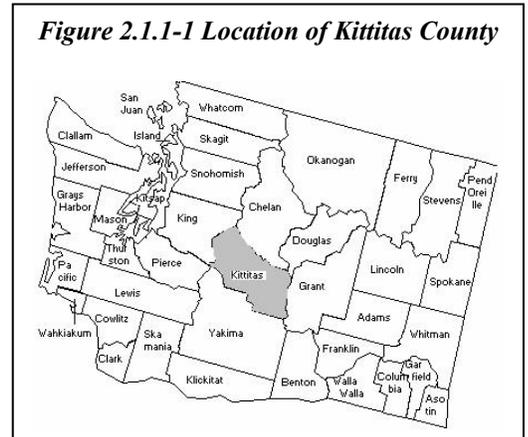
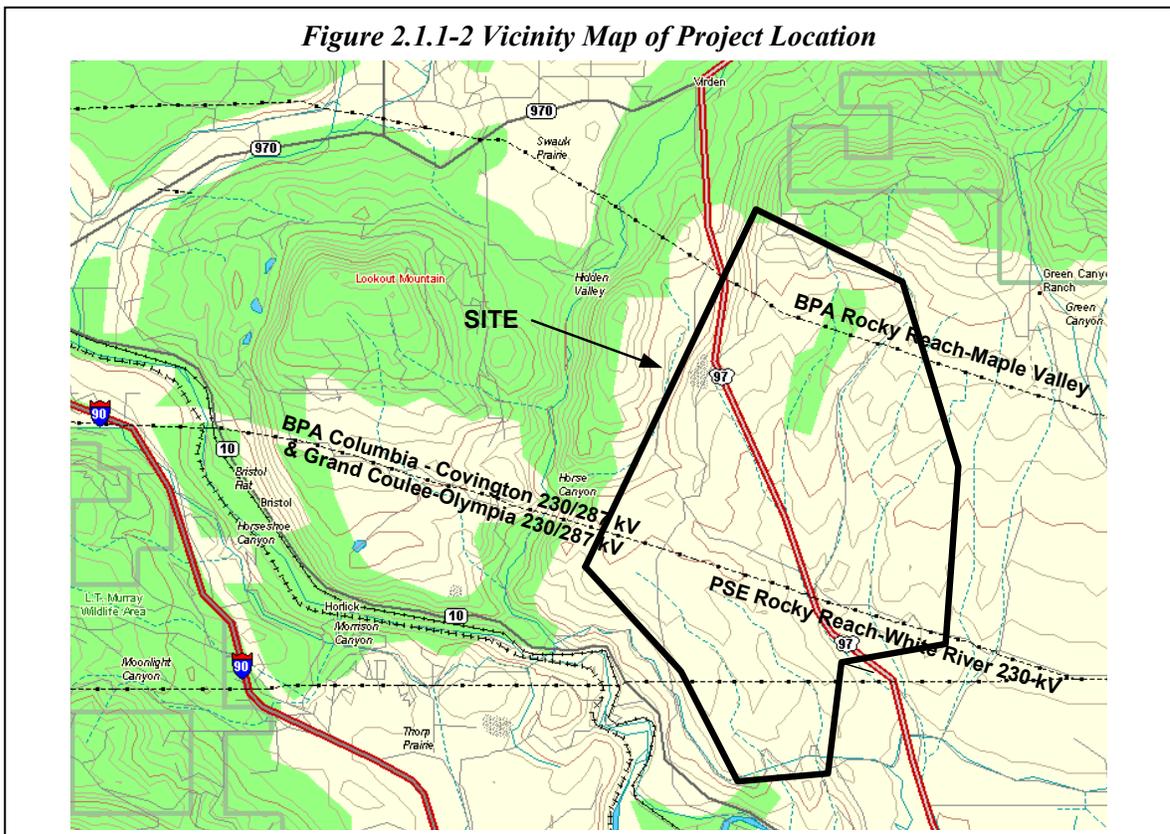


Figure 2.1.1-2 Vicinity Map of Project Location



The Project will be located on privately owned open range land and range land owned by the Washington Department of Natural Resources (WDNR) which is zoned as Agriculture-20 and Forest and Range by Kittitas County. The site extends over an area of approximately 3½ miles (east-west) by 5 miles (north-south). The overall Project footprint is roughly 90 acres. The Project site has been selected primarily for its energetic wind resource and access to several sets of power transmission lines which traverse the site and have adequate capacity to allow the wind generated power to be integrated into the power grid.

Surrounding land uses include the highway right-of-way, limited cattle ranching, gravel quarrying and private residences, see Exhibit 2, 'Aerial Photo with Site Layout'. A 2001 amendment to Kittitas County's Comprehensive Plan designates wind power projects as a conditional use in Ag-20 and Forest and Range zoned areas.

The Project area is bisected by five Bonneville Power Administration (BPA) and one Puget Sound Energy (PSE) high-voltage transmission lines. A Project substation, which would connect the Project's output to the regional transmission grid, would be constructed near the center of the Project site, adjacent to the BPA or PSE lines. The output of the Project would be sold under contract to one or more regional utilities for transmission to regional electricity consumers.

In summary, the location of the Project site offers a number of advantages for a wind power plant including the following:

- A rigorous and well proven wind energy resource;
- A local transportation network that supports both construction and operation of the Project;
- Land uses adjacent to the Project site are complementary, i.e. agricultural or ranching;
- Nearby interconnection to transmission systems that facilitate delivery of electric power to markets in the Pacific Northwest.

For these principal reasons the Applicant believes the proposed Project site is a good location for the Kittitas Valley Wind Power Project.

2.1.2 Prominent Geographic Features

The proposed Kittitas Valley Wind Power Project is located in the Kittitas Valley in south-central Washington. Kittitas County is located east of the Cascade Range in the geographical center of the state. It is bounded to the north by Chelan County, to the south by Yakima County, to the west by King County and to the east by Grant County. Comprising a geographic area of 2,308 square miles, Kittitas County ranks eighth in size among Washington counties. See Section 3.1.1.1, 'Regional Geography', for a detailed description of the regional and local geography.

Prominent geographic features in Kittitas County include the Yakima River to the south of the Project, the Wenatchee Mountains to the north, Lookout Mountain to the west, the Cascade Mountains to the far west, and the Kittitas Valley and Columbia River to the east. The immediate Project area is dominated by north-south oriented ridges that slope down from about 3,100 feet in elevation to about 2,200 feet in elevation above the Yakima River towards the south. These ridges are generally dry and wind blown and thus do not support forest cover.

2.1.3 Typical Geological Features

The Kittitas Valley Project area is located at the eastern base of the Cascade Mountain range, at the western edge of the Columbia Basin physiographic province (Franklin and Dyrness 1988). This lowland province, surrounded on all sides by mountain ranges and highlands, covers a vast area of eastern Washington, and extends south into Oregon. The province is characterized by moderate topography incised by a network of streams and rivers which empty into the centrally located Columbia River. The Project area extends over a 3.4 mile by 5.1-mile portion of land which consists primarily of long north-south trending ridges. Between the ridges are ephemeral and perennial creeks that flow into the Yakima River, which is located just south of the Project area.

Slopes within the Project area generally range from 5° to 20°. The soils on the Project area ridgetops east of Swauk Creek are primarily complexes of very shallow to moderately deep durixerolls that formed in alluvium and glacial drift over a duripan. Loess mixed with volcanic ash is typically present at the surface. Ridgetop soils in this portion of the Project area (which includes the majority of the turbines) include the Lablue, Reelow, Sketter, and Reeser series (USDA, 2002a). A more detailed geologic description is contained in Section 3.1.2, 'Geology'.

2.1.4 Climate Characteristics

The following summarizes the climate characteristics of the Project site. The Project will be designed to withstand the forces of the local climate as described in more detail in Section 2.15, 'Protection from Natural Hazards'.

The Project site is located in a semi-arid region of south-central Washington, at the western edge of the Columbia Basin physiographic province which includes the Ellensburg Valley, the central plains area in the Columbia Basin south from the Waterville Plateau to the Oregon border and east to near the Palouse River. The elevation increases from approximately 400 feet at the confluence of the Snake and Columbia Rivers to 1,300 feet near the Waterville Plateau and 1,800 feet along the eastern edge of the area. This large province occurs within the rain shadow of the Cascade mountain range, and is characterized by semi-arid conditions, as well as a large range of annual temperatures indicative of a continental climate. However, the relatively close proximity of the Pacific Ocean and the dominant westerly winds of the region combine to moderate the continental influence (Franklin and Dyrness 1988). Annual precipitation ranges from 7 inches in the drier localities along the southern slopes of the Saddle Mountains, Frenchman Hills and east of Rattlesnake Mountains, to 15 inches in the vicinity of the Blue Mountains.

Summer precipitation is usually associated with thunderstorms. During July and August, it is not unusual for four to six weeks to pass without measurable rainfall. The last freezing temperature in the spring occurs during the latter half of May in the colder localities of the Columbia Basin. The first freezing temperature in the fall is usually recorded between mid-September and mid-October. (*Climate of Washington*, Western Region Climate Center: (WRCC)).

The Project site bolsters a strong wind energy resource which is primarily thermally driven. Warm air rises over the desert-like area east of Ellensburg, and cooler air in the Cascades west of Cle Elum, near Snoqualmie Pass, is drawn through the Kittitas Valley over the Project site like a chimney effect. The rapidly moving cooler air mass is further compressed as it is passes by Lookout Mountain and is

accelerated further by the Project's ridgelines. The thermal wind mechanism results in a summer peaking wind resource which has been measured at more than 10 different sensor locations around the Project site.

Extreme gust wind speeds have been measured and calculated for Ellensburg in a report prepared by Wantz and Sinclair, (J. Appl. Meteor., 20, 1044-1411, 1981) which indicates that the 100 year expected peak gust is 73 miles per hour (mph). In the 3 ½ years of on-site data collected at the Project site, no extreme wind gusts in excess of the 73 mph have been recorded. The design case for all facility equipment, specifically the turbines and towers, are designed to withstand wind loads far in excess of this gust level as described in more detail in Section 2.15.6, 'Erosion Protection and Storm Design'.

2.1.5 County Land Use Plans and Zoning Ordinances

The Project area is characterized by a hilly rural landscape of rangeland with some scattered residences. The overall population density in the area is very low. Land uses in the area are dominated by open space and cattle grazing. The property on which the wind turbines would be located contains two zoning designations: Agriculture-20 and Forest and Range. The areas east of Highway 97 are zoned Forest and Range while those west of Highway 97 are zoned Agriculture-20. Exhibit 18, 'Project Area Zoning Designation, Aerial Photo', indicates where these County zoning designations fall within the Project area. The County does not anticipate zoning changes in the Project area.

Land use in Kittitas County is guided by the Kittitas County Comprehensive Plan (Kittitas County, 2001), which implements the planning requirements and goals of the 1990 Washington State Growth Management Act. The Kittitas County Comprehensive Plan is not directly applicable to the Project, in that the Plan is implemented through adopted development regulations. The Comprehensive Plan is implemented through the adoption of ordinances and codes designed to achieve the objectives and policies outlined in the Plan. It does not contain policies specifically related to wind power projects. A detailed description of land-use plans, zoning ordinances, and other land-use regulations applicable to the Project site is included in Section 5.1.2.1 'Consistency with Land Use Policies,' and 5.1.2.2 'Consistency with Zoning'.