# Summary

In this Summary:

- Purpose and Need for Action
- Alternatives
- Affected Environment
- Impacts

This summary covers the major points of the draft Environmental Impact Statement (EIS) prepared for the Klondike III/Biglow Canyon Wind Integration Project proposed by the Bonneville Power Administration (BPA). The project includes constructing a new double-circuit 230-kilovolt (kV) transmission line in northern Sherman County, Oregon. The new line would connect the Klondike III Wind Project and the Biglow Canyon Wind Farm to BPA's existing John Day 500-kV Substation. The project would also require expansion of BPA's existing John Day 500-kV Substation and a new 230-kV substation to integrate the two wind projects.

As a federal agency, BPA is required by the ***National Environmental Policy Act*** (NEPA) to assess the impacts that its actions may have on the environment. BPA's proposal to construct a transmission line and substation requires that it assess the potential environmental effects of the proposed project, describe them in an EIS, make the EIS available for public comment, and consider the impacts and comments when deciding whether to proceed with the project.

## S.1 Purpose and Need for Action

### S.1.1 Background

Two companies, PPM Energy, Inc. (PPM) and Orion Energy LLC, (Orion) want to develop wind resources in Sherman County, Oregon and have submitted transmission interconnection requests to BPA for interconnection of the output of their respective projects – Klondike III Wind Project and Biglow Canyon Wind Farm. BPA needs to respond to these requests. If BPA decides to interconnect the wind farms, BPA needs to decide how best to integrate them into the regional transmission grid.

### S.1.2 BPA's Purposes

Purposes are goals to be achieved while meeting the need for the project. These objectives are used to evaluate alternatives proposed to meet the need. BPA will use the following purposes to choose among the alternatives.

- Maintain transmission system reliability to industry standards;
- Act consistently with BPA's statutory obligations;

- Continue to meet BPA's contractual obligations;
- Minimize environmental impacts;
- Minimize costs; and
- Encourage development of renewable energy resources.

## S.2 Alternatives

### S.2.1 Proposed Action

BPA's Proposed Action is to: (1) enter into interconnection agreements with PPM and Orion for their proposed wind projects; and (2) construct and operate a new double-circuit 230-kV transmission line and ancillary facilities from the proposed wind projects to BPA's John Day 500-kV Substation. These actions would allow the proposed wind projects to be interconnected with the Federal Columbia River Transmission System. The preferred route for the new BPA transmission line is the North Alternative (see Map 1). The 12-mile long line would generally extend north from PPM's Klondike Schoolhouse Substation for about 5.3 miles, and then west for the remaining 6.7 miles to the John Day Substation. PPM's Klondike III project would be tied into the new line at Klondike Schoolhouse Substation. The Biglow Canyon Wind Farm would connect to the line at a new substation built by Orion located in between Klondike and the new John Day 230-kV Substation.

### S.2.2 Middle Alternative

The Middle Alternative would originate from the same location as the Proposed Action (see Map 1), but would follow a different route to the new 230-kV substation. This alternative would be about 12.5 miles long. The Middle Alternative has all the components of the Proposed Action, but uses a different route.

### S.2.3 Wind Power Projects

Klondike III Wind Project facilities would consist of up to 165 wind turbines and towers, about 19 miles of new roads, an operations and maintenance (O&M) facility, and two substations. Wind turbines and roads would be built within 900-foot-wide corridors.

The Biglow Canyon Wind Farm would consist of up to 225 wind turbines and towers, about 40 miles of new roads, an O&M facility, and a substation. Wind turbines and roads would be built within 500-foot-wide corridors.

### S.2.4 No Action Alternative

The No Action Alternative is often called the no-build alternative. Under this alternative, BPA would not sign interconnection agreements with PPM and Orion, and would not construct a new BPA substation, expand the existing John Day 500-kV Substation, or construct a transmission line. The environmental impacts described for each of the BPA action alternatives would not occur. In addition, it is likely that both PPM's and Orion's proposed wind projects would not be built since there appears to be no feasible interconnection option for these projects other than the FCRTS.

## S.3 Affected Environment

### S.3.1 Land Use

Most of the analysis area (and Sherman County) is under dryland wheat or barley production, with some areas of open range for cattle. Portions of the county and analysis area are also enrolled in the Conservation Reserve Program (CRP), a voluntary federal program to assist private landowners to convert highly erodible and environmentally sensitive cropland to permanent vegetative cover.

Nearly all of Sherman County is zoned F-1 (Exclusive Farm Use), as is the analysis area, except for some isolated nodes of commercial, industrial, and residential zoning designations in and around the city of Wasco. The F-1 zone restricts most development to preserve land for agriculture or resource extraction. The area is sparsely populated, with a few single-family residences in the project area.

### S.3.2 Transportation

The state highways generally function as major or principal arterials through Sherman County. US 97 is classified as a major arterial; OR 206 from Wasco to the John Day River is classified as a minor arterial; and OR 206 from the Deschutes River to Wasco and OR 216 are classified as major collectors. Major collectors and minor arterials serve regional and local traffic demands. The primary difference between the two classifications is daily traffic volume.

I-84 is the main east-west highway through north central Oregon and the analysis area.

### S.3.3 Recreation

In general, recreational activities in the county include camping, hiking, upland bird and big game hunting, rafting, boating, fishing, sightseeing, nature and wildlife photography, and bicycling. Water-based recreation activities occur on the nearby John Day River. Recreational opportunities in the analysis area are generally limited to

"access by permission only" upland bird and deer hunting on private property and viewing historic trail alignments from county roads.

No important recreational facilities or opportunities exist along the proposed transmission line routes, substation sites, or within the two proposed wind power site boundaries.

Three important recreational facilities are within the vicinity of the proposed projects, but are outside the immediate project boundaries: the John Day River Corridor, the Journey Through Time Scenic Byway, and the Historic Oregon Trail and Barlow Road Cutoff Trail alignments.

## S.3.4 Geology and Soils

The analysis area is in the Deschutes-Columbia Plateau physiographic province, a north-sloping, volcanic plateau that covers over 60,000 square miles in Oregon, Washington, and Idaho. Volcanic rocks mapped as Columbia River Basalt Group underlie nearly the entire province. Most of the analysis area is mantled by brown, fine-grained, silty soils, referred to as loess. The thickness of loess observed in road cuts is typically 4 to 6 feet.

Soils are susceptible to accelerated erosion caused by disturbance of natural conditions through burning, excessive grazing, or tillage. These disturbances increase the potential for erosion by wind and water. Wind typically presents the greatest source of erosion due to the arid climate.

## S.3.5 Water Resources and Wetlands

Most of the analysis area is in dry land wheat production. Very little acreage of native plant communities remains, occurring in small patches along tributaries.

There are no floodplains mapped by the Federal Emergency Management Agency (FEMA) within the projects' study areas (FEMA, 1984).

The principal ground water uses in the county are for public supply, domestic and commercial, agriculture, and industrial (USGS, 2006).

Within the analysis area, two jurisdictional wetlands and six jurisdictional drainage crossings (a jurisdictional wetland or drainage is one that is considered a water of the state and regulated by the Oregon Department of State Lands and/or the Army Corps of Engineers) were identified. Many other non-jurisdictional drainages were also identified in the analysis area, however these drainages are not regulated and most have been affected by agricultural practices such as plowing and no channels exist.

## S.3.6 Fish and Wildlife

Elk, mule deer, bighorn sheep, pronghorn, and very common species such as coyote and badger are known to occur in the vicinity. Many common avian species such as horned lark and meadowlark are also regularly found within the area.

Bald eagles are the only species listed under the federal Endangered Species Act (ESA) that is present near the analysis area. The bald eagle is federally listed as threatened. It is also listed as threatened by the State of Oregon. In the project vicinity, bald eagles are primarily found along the Columbia River corridor; no bald eagle use of the upland areas within and/or near the analysis area has been observed.

Peregrine falcons also occur in the analysis area. The peregrine falcon was removed from the federal ESA in 1999 but remains listed as endangered by the State of Oregon. Peregrine falcons are limited to areas that contain suitable nesting ledges. Cliffs and bluffs typically found along river courses and other large bodies of water usually provide habitat for nesting peregrines. No peregrine falcon nests are located in the project area.

No listed fish or fish habitat occur within the project area.

## S.3.7 Vegetation

The following vegetative communities are found in the analysis area: upland trees, shrub-steppe, CRP, and agriculture. No threatened or endangered plant species were identified in the analysis area. There are no records of any rare or special status species within the analysis area.

## S.3.8 Visual Resources

The general landscape character features rolling hills in dry land winter wheat production or grasses. The Deschutes River Canyon and John Day River Canyon are important visual features. Basalt cliffs and rock outcrops are typical within the river canyons. Where vegetation is not in agricultural production or CRP, it is shrub-steppe habitat typical to central Oregon. Trees are sparse, usually occurring in ravines or near the few home sites in the area. Multiple transmission and distribution lines, as well as highways, cross the area. Existing wind turbines and substation facilities are also visible.

Important visual resources within 30 miles include the Columbia River Gorge National Scenic Area, the John Day River Canyon, the Oregon National Historic Trail, the Lower Deschutes River Canyon, the Lower Klickitat River Canyon, and the Journey Through Time Scenic Byway.

### S.3.9 Socioeconomics

The project area is entirely within Sherman County, which has four incorporated communities: Grass Valley, Moro, Rufus and Wasco. Rufus and Wasco are the only two towns near the proposed project; Moro (county seat) and Grass Valley are in the southern portion of the county. The estimated 2003 population for Sherman County is 1,900 residents. Wasco is the largest community in the county with about 380 residents.

### S.3.10 Cultural Resources

Two archaeological resources were found within the Proposed Action corridor, and two resources were found within the proposed Middle Alternative corridor. No historic or archeological resources were identified near BPA's proposed substation site.

At the proposed Klondike III Wind Project site, field surveys identified four archaeological resources. At the proposed Biglow Farm site, field surveys identified three historic sites and one historic archaeological site.

### S.3.11 Noise, Public Health and Safety

Transmission facilities and wind projects provide electricity for heating, lighting and other services essential for public health and safety. These same facilities can potentially harm humans. Contact with transmission lines or turbines can kill or injure people and damage aircraft. Existing transmission lines and wind projects in the area have the potential for public health and safety concerns such as electric shock, fires, and electric and magnetic fields.

### S.3.10 Air Quality

Sherman County has the lowest total emissions of any county in Oregon and is classified as an attainment area.

## S.4 Impacts

### S.4.1 Land Use

The **Proposed Action** would be entirely within land zoned F-1 (Exclusive Farm Use). BPA would acquire easements for a 125 feet wide right-of-way to build, operate and maintain the proposed transmission line. The substation expansion area (15 acres) would be acquired in fee. BPA would also purchase easements for access roads.

The proposed transmission line is about 12 miles long. Transmission line towers would be placed about 900 feet apart, requiring about 71 towers (61 steel tubes, 10 steel lattice towers). Land use impact would be **low.**

The **Middle Alternative** would originate from the same location as the Proposed Action, but would follow a different route to the proposed John Day 230-kV Substation. This alternative would be about 12.5 miles long. Except for the different route, the Middle Alternative would have the components of the Proposed Action. Land use impact would be **low**.

The **No Action Alternative** would have **no** land use impact:

The **Klondike III Wind Project** would require about 64 acres of land to be permanently removed from farm use. About 129,000 acres are farmed within the Sherman County area, so the amount permanently removed from production would be less than 0.1 percent. Land use impact would be **low**.

The **Biglow Canyon Wind Farm** would require that about 170 acres be permanently removed from farm use. This would account for less than 0.1 percent of existing acreage in barley and wheat production. Land use impact would be **low**.

## S.4.2 Transportation

For the **Proposed Action**, no construction would occur within existing road rights-of-way. Construction equipment and supply vehicles would use the existing state highway system and county roads to reach the construction area. The transmission line would be outside of existing road right-of-way and would not hinder any future expansion of the road. Some road improvements may be necessary to accommodate construction-related equipment or to repair sections of road damaged by heavy equipment and construction-related traffic. During construction, temporary, short-term disruption to traffic could occur, although the level of the impact would be low because of existing low traffic volumes within the area. Disruption of existing traffic patterns would likely be caused by construction traffic entering and leaving county roads to access construction areas. Transportation impacts would be **low**.

The **Middle Alternative** would have similar impacts as the Proposed Action. Transportation impacts would be **low**.

The **No Action Alternative** would have **no** transportation impact.

The **Klondike III Wind Project** would not interfere with any future improvement to the local transportation system. Some of the local roadways would require improvements, which would generally be a 6-inch gravel layer placed on top of the existing road prior to project construction to accommodate the length and weight of vehicles that would deliver the turbine pieces and machinery necessary for construction. Construction-related traffic could cause short-term traffic delays when trucks deliver construction-related equipment and the turbines, but those delays would be temporary and are not anticipated to have an adverse impact on highways in the area. Transportation impacts would be **low**.

The **Biglow Canyon Wind Farm** would have similar impacts to the transportation facilities as the Klondike III Wind Project. Transportation impacts would be **low.**

## S.4.3 Recreation

None of the nearby recreational facilities – the John Day River, the Journey Through Time Scenic Byway, and the historic Oregon Trail – would be removed or relocated under the **Proposed Action** or **Middle Alternative**. However, visual impacts to recreational resources could occur, particularly in areas where the landscape is relatively flat and views are unobstructed by trees or natural features. There would be no direct loss of opportunity as a result of the action alternatives; however, views could be altered from those areas. Recreation impacts would be **low**.

The **No Action Alternative** would have **no** recreation impact.

None of the recreational facilities – the John Day River, the Journey Through Time Scenic Byway, and the historic Oregon Trail - would be removed or relocated by the **Klondike III Wind Project** or the **Biglow Canyon Wind Farm**. However, visual impacts to recreational resources could occur, particularly in areas where the landscape is relatively flat and views are unobstructed by trees or natural features. Views could be altered from those areas. Recreation impacts would be **low**.

## S.4.4 Geology and Soils

Geologic conditions are relatively stable and suitable for both the **Proposed Action** and **Middle Alternative**. Rock is present at shallow depths and the groundwater table is relatively deep. Developing the proposed project would not affect geologic conditions. Most of the project site consists of agricultural fields where bare soils are often exposed to wind and water. Based on the soil types present, soil erosion potential ranges from highly erodible to not highly erodible; however, neither alternative would appreciably increase the amount of exposed soils. Geology and soils impacts would be **low**.

The **No Action Alternative** would have **no** geology and soils impacts.

The **Klondike III Wind Project** and the **Biglow Canyon Wind Farm** would be located on land with similar geologic and soil characteristics as the Proposed Action and Middle Alternative. Geology and soils impacts would be **low**.

## S.4.5 Water Resources and Wetlands

The **Proposed Action** is located far from any of the wetlands identified in the analysis area and no impacts to wetlands would occur. The three jurisdictional drainages crossed by the Proposed Action would be spanned, and no access roads would be constructed across them. **No** impacts to surface waters would result from the project.

The **Middle Alternative** is located far from any of the wetlands identified in the analysis area and no impacts to wetlands would occur. The three jurisdictional drainages crossed by the Middle Alternative would be spanned, and no access roads would be constructed across them. **No** impacts to surface waters would result.

The **No Action Alternative** would have **no** water resources or wetlands impacts.

The **Klondike III Wind Project** would avoid all impacts to wetlands and drainages and would create **no** water resources and wetlands impacts.

The **Biglow Canyon Wind Farm** would limit impacts to minor disturbances of non-jurisdictional drainages, a **low** impact.

## S.4.6 Fish and Wildlife

Undeveloped habitats would be spanned by structures or avoided by route design for the **Proposed Action** and **Middle Alternative**. There would be **no** impact to listed species.

Bird fatalities could result from impacts with overhead ground wires during foggy conditions, and from increased road traffic along access roads during construction. Temporary, construction-related impacts could disturb raptors and other birds, coyotes, jackrabbits, ungulates (e.g., deer and elk), and other common species, such as reptiles. Although temporary disturbance to such species during critical life stages (e.g., breeding and rearing) would be a **moderate** impact, seasonal restrictions on construction in sensitive areas would reduce the level of impact to **low**.

One small area of upland tree habitat east of Scott Canyon Road was found to contain a Swainson's hawk nest along a public road near the **Proposed Action**. Since seasonal restrictions would be implemented if the nest was found to be active, impact levels would be **low**. The **Middle Alternative** would not disturb this nest. Impacts would be **low**.

The **No Action Alternative** would create **no** fish and wildlife impacts.

The **Klondike III Wind Project** and the **Biglow Canyon Wind Farm** would both be in areas almost entirely in agricultural wheat production. Loss of terrestrial wildlife habitat from land conversion would be minimal (a **low** impact). Temporary disturbance to terrestrial species during critical life stages could occur (a **moderate** impact). Bird and bat fatalities could result from impacts with turbine blades, a **moderate** impact.

## S.4.7 Vegetation

The **Proposed Action** would affect only agricultural areas in the long term. Towers and substation facilities would remove about 17 acres of agricultural plant communities, which are very common in the region. The **Middle Alternative** would also remove about 17 acres of agricultural plant communities. Undeveloped habitats (i.e., not in agricultural use) would be spanned by structures or avoided. Areas disturbed during construction would be replanted, and mitigation measures would be implemented to control the spread of noxious weeds. Vegetation impacts would be **low**.

The **No Action Alternative** would create **no** vegetation impacts.

The **Klondike III Wind Project** would permanently affect about 0.8 acres of grasslands, 0.1 acres of shrub-steppe, 6.5 acres of CRP lands, and 56.4 acres of agricultural land. Temporary impacts from the project would affect about 3.6 acres of grasslands, 1.4 acres of shrub-steppe, 10.4 acres of CRP lands, and 81.7 acres of agricultural lands. The temporary disturbance areas would be revegetated with similar vegetation. The undeveloped habitats disturbed by the project would be mitigated nearby. Vegetation impacts would be **low**.

The **Biglow Canyon Wind Farm** would permanently affect about 1.1 acres of grasslands, 0.2 acres of shrub-steppe, 11.2 acres of CRP lands, and 157.3 acres of agricultural land. Temporary impacts from the project would affect about 1.0 acres of grasslands, 1.3 acres of shrub-steppe, 15.5 acres of CRP lands, and 387 acres of agricultural lands. The temporary disturbance areas would be revegetated with similar vegetation. The undeveloped habitats disturbed by the project would be mitigated nearby. Vegetation impacts would be **low**.

## S.4.8 Visual Resources

The **Proposed Action** and **Middle Alternative** would be visible from many locations in the analysis area at distances ranging from the immediate foreground (less than 100 feet) to the distant background (greater than 20 miles). The proposed facilities would be visible in the foreground and middle ground from local residences. Visual resources impact in the general vicinity would be **moderate.**

Portions of the **Proposed Action** and **Middle Alternative** would potentially be visible from the Columbia River Gorge National Scenic Area. The alternatives would not be seen from the John Day River Canyon, Oregon National Historic Trail High Potential Sites, Lower Deschutes River Canyon, or Lower Klickitat River Canyon. They would be visible but not obtrusive in the view from the Journey Through Time Scenic Byway. Visual resources impact to important visual resources would be **low to none**.

The **No Action Alternative** would create **no** visual resources impacts.

The **Klondike III Wind Project** and the **Biglow Canyon Wind Farm** would be visible from many locations in the analysis area at distances ranging from the immediate foreground to the distant background.

The proposed facilities would be visible in the foreground and middle ground of local residences and from local roads. Visual resources impact in the general project vicinity would be **moderate to high**.

The **Klondike III Wind Project** and the **Biglow Canyon Wind Farm** would be seen from some of the sensitive receptor described above, but generally in the distant background. Visual resources impacts to important visual resources would be **low to moderate**.

## S.4.9 Socioeconomics

Construction of the **Proposed Action** and **Middle Alternative** would require construction workers to temporarily relocate to the project vicinity and would also require hiring local workers. Businesses in the area would benefit from goods and services sold to construction workers. Temporary population increases during construction would not exceed current capacities for housing and public services. Landowners would be compensated for impacts to farmland or crops during construction, as well as for land and easement acquisition. The transmission line routes were designed to minimize impacts to farming activities. Socioeconomics impacts would be **positive**.

The **No Action Alternative** would create **no** socioeconomics impacts.

Construction of the **Klondike III Wind Project** and the **Biglow Canyon Wind Farm** would require construction workers to temporarily relocate to the project vicinity and would also require hiring local workers. Businesses in the area would benefit from goods and services sold to construction workers. Temporary population increases during construction would not exceed current capacities for housing and public services. Landowners would be compensated for impacts to farmland or crops during construction, as well as for land and easement acquisition. The wind turbine and distribution line alignments were located to minimize impacts to farming activities. Socioeconomics impacts would be **positive**.

## S.4.10 Cultural Resources

The archaeological survey and records review for the **Proposed Action** and **Middle Alternative** indicate that most of the previous studies and recorded sites are along the Columbia, Deschutes, and John Day rivers, outside the Proposed Action analysis area. Historic-period documents indicate that the Oregon Trail crossed both alternative routes, but field surveys did not identify any evidence of the trail primarily because much of the analysis area is cultivated or right-of-way and has been previously disturbed.

The archeological sites identified within the project corridor could be affected by the construction of the **Proposed Action** or **Middle Alternative**, though the archeological sites are small, and it is likely that placement of the towers could avoid the identified resources. Cultural Resources impacts would be **low**.

The **No Action Alternative** would create **no** cultural resources impacts.

The archeological sites identified within the Klondike III Wind Project and the **Biglow Canyon Wind Farm** areas would not be affected. Placement of the towers and access roads would avoid the identified resources. Cultural Resources impacts would be **low.**

## S.4.11 Noise, Public Health and Safety

The proposed transmission line and substation and the proposed wind projects could create potential noise, safety and health impacts. The projects would be designed to reduce this potential so that predicted impacts would be **low**.

## S.4.11 Air Quality

The **Proposed Action** and the **Middle Alternative** would create temporary impacts to air quality. Construction activities would generate dust and airborne particulates and small amounts of carbon monoxide (CO). Impacts would be **low**.

The **No Action Alternative** would create **no** impacts.

The **Klondike III** and **Biglow Canyon** projects would create similar impacts. Construction-related impacts would be similar to those described under the Proposed Action. Construction-related impacts would be from construction of the concrete pads for the turbines, staging areas and temporary access roads.

Permanent operations and maintenance staff would drive to the site daily, likely using gasoline- or diesel-powered vehicles that would generate CO. The exhaust from those vehicles would have almost no impact to air quality in the area considering current air quality and the small number of trips from operations and maintenance staff (15 to 20 employees) needed to operate each facility.

Operations and maintenance staff would perform periodic maintenance on the turbines, requiring equipment to drive along gravel or dirt roads along the turbine strings. Depending on the amount of moisture within the soils, some dust could be generated. No long-term impacts are anticipated because the dust generated from those activities would be minimal, particularly when compared to the much higher levels of dust generated from ongoing farming activities in the surrounding area. CO emissions from the small number of maintenance vehicles required would also be minimal and temporary.

## S.4.12 Cumulative Impacts

Although much of the project area has remained as undeveloped rangeland, agricultural and other rural development has occurred in the past two centuries. Typical past development includes large grain farms, irrigated row crop farms, specialty crop enterprises such as orchards and vineyards, and small rural communities. Various types of roads and utility infrastructure also have been developed. This type of development continues in present times and likely will continue into the future. A more recent type of development to occur in the area has been wind farms.

Construction, operations and maintenance of the transmission facilities and wind projects are expected to have a low to moderate impact on most resources within Sherman County. The low to moderate impacts to wildlife are from the expected bird and bat mortality and the cumulative impact of this project on wildlife when combined with other proposed wind projects in the region. The low to high impacts to visual resources reflect the effect that the transmission line and the turbine strings from both wind projects would have on viewers in the local area, but this impact diminishes with distance from the project. In the future, additional impacts to all resources could result from other development.