

**Record of Decision for the
Electrical Interconnection of the
Juniper Canyon I Wind Project
May 2010**

INTRODUCTION

The Bonneville Power Administration (BPA) has decided to offer contract terms for interconnection of up to 150 megawatts (MW) of power to be generated by the proposed Juniper Canyon I Wind Project (Wind Project) into the Federal Columbia River Transmission System (FCRTS). The Wind Project will be developed by Pacific Wind Development (Pacific Wind), a wholly-owned subsidiary of Iberdrola Renewables, Inc., in Klickitat County, Washington. Klickitat County Planning Department, the siting authority for the Wind Project, has approved a permit that authorizes Pacific Wind to construct and operate the Wind Project. Pacific Wind has requested interconnection of its Wind Project to the FCRTS at BPA's existing Rock Creek Substation in Klickitat County, Washington. BPA will expand and install new equipment at this existing substation to accommodate the additional power into the FCRTS.

BPA's decision to offer terms to interconnect the Wind Project is consistent with BPA's Business Plan Final Environmental Impact Statement (BP EIS) (DOE/EIS-0183, June 1995), the Business Plan Record of Decision (BP ROD, August 15, 1995), and the Supplement Analysis to the BP EIS (April 2007). This decision thus is tiered to the BP ROD.

BACKGROUND

BPA is a federal agency that owns and operates the majority of the high-voltage electric transmission system in the Pacific Northwest. This system is known as the FCRTS. BPA has adopted an Open Access Transmission Tariff (Tariff) for the FCRTS, consistent with the Federal Energy Regulatory Commission's (FERC) *pro forma* open access tariff.¹ Under BPA's Tariff, BPA offers transmission interconnection to the FCRTS to all eligible customers on a first-come, first-served basis, with this offer subject to an environmental review under the National Environmental Policy Act (NEPA).

For all requests for interconnection of generating facilities that exceed 20 MW, BPA chooses to act consistently with FERC's Order No. 2003, Standardization of Large Generator Interconnection Agreement and Procedures, and Order No. 661, Interconnection for Wind Energy, as adopted by BPA and incorporated, with FERC approval, into BPA's Tariff. Order No. 2003 established the Large Generator Interconnection Procedures (LGIP) and Large

¹ Although BPA is not subject to FERC's jurisdiction, BPA follows the open access tariff as a matter of national policy. This course of action ensures that BPA will receive reciprocal and non-discriminatory access to the transmission systems of utilities that are subject to FERC's jurisdiction.

Generator Interconnection Agreement (LGIA), which provide a uniform process for offering interconnection to any generating facilities exceeding 20 MW. In its Order 2003 Tariff filing, BPA included provisions in its LGIP to reflect BPA's obligation to complete an environmental review under NEPA of a proposed large generator interconnection before deciding whether to offer a final LGIA to the party requesting interconnection. Order No. 661 contains additional standardized processes and technical requirements specific to interconnection of wind generators. BPA has adopted its LGIP and LGIA as Attachment L to its Tariff.

In May 2005, Iberdrola submitted two generation interconnection requests – now held by Pacific Wind – to BPA to interconnect a total of 150 MW from the proposed Wind Project to the FCRTS. Consistent with its Tariff, including the LGIP, BPA must respond to these interconnection requests and comply with its NEPA responsibilities.

RELATIONSHIP TO BUSINESS PLAN EIS

In response to a need for a sound policy to guide its business direction under changing market conditions, BPA explored six alternative plans of action in its BP EIS. The six alternatives were: Status Quo (No Action), BPA Influence, Market-Driven, Maximize Financial Returns, Minimal BPA, and Short-Term Marketing. The BP EIS examined each of these six alternatives as they relate to meeting the regional electric energy need in the dynamic West Coast energy market. The analysis focused on the relationships among BPA, the utility market, and the affected environment and evaluated transmission as well as generation, comparing BPA actions and those of other energy suppliers in the region in meeting that need (BP EIS, Section 1.7).

In the BP ROD, the BPA Administrator selected the Market-Driven Alternative. Although the Status Quo and the BPA Influence Alternatives were the environmentally preferred alternatives, the differences among alternatives in total environmental impacts were relatively small. Other business aspects, including loads and rates, showed greater variation among the alternatives. BPA's ability to meet its public and financial responsibilities would be weakened under the environmentally preferred alternatives. The Market-Driven Alternative strikes a balance between marketing and environmental concerns, including those for transmission-related actions. It is also designed to help BPA ensure the financial strength necessary to maintain a high level of support for public service benefits, such as energy conservation and fish and wildlife mitigation and recovery activities.

In April 2007, BPA completed a review of the BP EIS and ROD through a Supplement Analysis. The Supplement Analysis was prepared to assess whether the BP EIS still provides an adequate evaluation, at a policy level, of environmental impacts that may result from BPA's current business practices, and whether these practices are still consistent with the Market-Driven alternative adopted in the BP ROD. Changes that have occurred in the electric utility market and the existing environment were evaluated, and developments that have occurred in BPA's business practices and policies were considered. The Supplement Analysis found that the BP EIS's relationship-based and policy-level analysis of potential environmental impacts from BPA's business practices remains valid, and that BPA's current business practices are still consistent with BPA's Market-Driven approach. The BP EIS and ROD thus continue to provide a sound basis for making determinations under NEPA concerning BPA's business-related decisions.

The BP EIS was intended to support a number of decisions (BP EIS, Section 1.4.2), including contract terms BPA will offer for transmission interconnection services. The BP EIS and BP ROD documented a strategy for making these subsequent decisions (BP EIS, Figure 1.4-1 and BP ROD, Figure 3, page 15).

BPA's decision to offer terms for interconnecting the Wind Project is one of these subsequent decisions and the subject of this ROD. BPA reviewed the BP EIS to ensure that offering contract terms for interconnecting the Wind Project was adequately covered within its scope and that it was appropriate to issue a record of decision tiered to the BP ROD. This ROD for the Wind Project, which summarizes and incorporates information from the BP EIS, demonstrates this decision is within the scope of the BP EIS and BP ROD.

This ROD describes the specific project and environmental information applicable to this decision to offer contract terms for transmission interconnection of the Wind Project, with reference to appropriate sections of the BP EIS and BP ROD. This ROD references information that was incorporated by reference into the BP EIS from BPA's Resource Programs (RP) EIS (DOE/EIS-0162, February 1993). The RP EIS contains an analysis of environmental effects and mitigation for wind projects and associated transmission.

PROJECT DESCRIPTION

BPA Interconnection Facilities

To interconnect the Wind Project, BPA will install additional electrical interconnection equipment at its existing Rock Creek Substation in Klickitat County, Washington. This additional equipment will include one 115-kilovolt (kV) circuit breaker, two disconnect switches, a new dead-end tower, and one set of voltage transformers (3 total) all connected by aluminum tubing known as "bus". All of the additional equipment will be less than 30 feet tall, except for the dead-end tower which will be approximately 75 feet tall. New metering and communication equipment for the interconnection also will be installed inside the existing substation control house.

To accommodate the additional electrical interconnection equipment, BPA will expand the 7-acre Rock Creek Substation by approximately 0.25-acre on already disturbed land within BPA's existing property boundary. The expansion area will be located on the north side of the existing substation, and will occupy an area approximately 120 by 75 feet. Up to an additional 1.0 acre may also be temporarily disturbed during construction activities. Because the substation expansion area is located on land that slopes away from the substation site, BPA will construct a 10-foot high retaining wall along the outer perimeter of the expansion area and place fill to provide a level surface for the additional equipment to be installed.

The new substation equipment will be installed on concrete pads for stability, and the remainder of the expansion area will be covered in crushed rock. For security and public safety, the existing 7-foot high chain link substation perimeter fence and lighting will be extended around the perimeter of the expansion area. Klickitat County Public Utility will also need to re-locate a single, wood-pole transmission line support that is currently located in the expansion area.

Juniper Canyon I Wind Project

A description of the Wind Project is provided in various materials prepared by Klickitat County, the siting authority for the Wind Project, and Pacific Wind.² The following summary of the Wind Project is based on project information contained in these materials.

The project area for Pacific Wind's Wind Project is located in unincorporated Klickitat County immediately south of the town of Bickleton, Washington, and north of Roosevelt, Washington and the Columbia River. This project area consists of 13,347 acres of leased land. An estimated 58 acres of this area will be permanently disturbed by construction and operation of Wind Project facilities. These facilities include proposed wind turbines and supporting infrastructure such as access roads, underground and overhead electrical collection system lines, substations, transmission lines, communications equipment, operations and maintenance (O&M) facilities, and meteorological towers. Additionally, approximately 120 acres would be temporarily disturbed during project construction by use for temporary construction access and staging areas. Existing agricultural activities, primarily dryland wheat cultivation and grazing, will continue on the portions of the project area not permanently occupied by Wind Project facilities.

Under its Energy Overlay Zone (EOZ) permit from Klickitat County, Pacific Wind is authorized to construct and operate up to 63 2.4-MW turbines for its Wind Project, resulting in a total nameplate capacity of 151.2 MW.³ Project wind turbines will be located in "strings" generally along ridge tops in the project area and in a north-south alignment. Each wind turbine will be a typical modern commercial wind turbine model, consisting of a generator, rotor, and blade assembly mounted atop a tubular steel tower on a reinforced concrete foundation. The 2.4-MW wind turbines will be approximately 420 feet tall at maximum blade tip height.

Access to the Wind Project will primarily be from Interstate-84 (I-84), Washington State Route 14 (SR 14), Old Highway 8 (Roosevelt Grade Road) and a combination of existing private and county roads. During construction, temporary access roads will be installed for construction activities, as needed. All temporary roads and disturbance areas will be restored to their original condition after construction. In addition, many existing roads in the Wind Project area will be permanently widened and improved for access during construction and project operation, and approximately 19 miles of new gravel roads will be developed.

² See e.g., Pacific Wind Development., *Juniper Canyon Wind Project Energy Overlay "EOZ" Application*, April 2008 (as amended September 2009); Klickitat County, Washington, *Juniper Canyon Wind Project Final Environmental Impact Statement*, January 15, 2010; Klickitat County Planning Department, *In the Matter of an Application to Permit the Juniper Canyon Wind Energy Project – Phase 1 pursuant to the "EOZ" Energy Overlay Zone: Findings of Fact, Conclusions, and Decision*. February 12, 2010.

³ Pacific Wind has requested the interconnection of up to 150 MW for the Juniper Canyon I Wind Project under Open Access Same-Time Information System (OASIS) Generation Interconnection (GI) request numbers G0203 and G0204. This ROD documents BPA's decision to issue a LGIA for these two requests, and generation from the Wind Project will be required through the LGIA to conform to the requested amount. In addition, Pacific Wind has proposed a separate, second phase of wind development in the area (Juniper Canyon II) and has submitted a separate GI request (G0242) to BPA for Juniper Canyon II. BPA will review this request separately under NEPA and prepare any necessary NEPA documentation before making a decision regarding that request.

Electrical lines will be installed to connect the turbines and strings to the existing high-voltage transmission grid in the area. This electrical system will have three key elements: (1) a collector system, which will collect the lower voltage energy generated by each wind turbine, increase it to 34.5 kV through a pad-mounted transformer, and connect to the project substation; (2) a project substation, which will transform energy from the collector lines (at 34.5 kV) to the transmission level (230 kV); and (3) a 230-kV overhead power line that will connect the Wind Project substation to the BPA Rock Creek Substation and the FCRTS. The collector lines will be installed underground to the extent practicable, but small segments of the collector line might be constructed aboveground where necessary to cross streams, wetlands or canyons; or due to other geotechnical considerations. The project substation will be constructed on a 10-acre site near the center of the Wind Project area, about 1.5 miles north of the intersection of East Road and Whitmore Road. The 20.4-mile long, 230 kV overhead transmission line will deliver electricity from the project substation to the BPA Rock Creek Substation, where the voltage will be stepped up to the 500-kV required for the interconnection to the BPA transmission system. All overhead transmission lines will be supported by H-frame wooden structures, single pole structures, or lattice towers.

Fiber optic communication lines will also be installed to link each wind turbine to the project substation and O&M facility. These communication lines will allow individual wind turbines and other Wind Project facilities to be monitored and controlled by a Supervisory Control and Data Acquisition (SCADA) system both onsite at the O&M facility and from remote locations. The fiber optic lines will follow the electrical underground collector system and overhead transmission system. Fiber optic communication lines will also be installed on the 230 kV overhead transmission line to the BPA Rock Creek Substation.

A single O&M facility will be constructed at the 10-acre substation site near the center of the Wind Project area. The O&M facility will contain offices, control system equipment, bathroom and kitchen facilities, and workshop areas for vehicle, turbine and equipment maintenance. A permanent graveled parking area for employees, visitors, and equipment will be located adjacent to the O&M building.

A rock quarry and temporary concrete batch plant will be established in the project area to supply gravel and concrete for Project construction. The quarry is anticipated to have a disturbance footprint of less than three acres, and the depth will be determined by the type of rock encountered where it is located. A portable rock crusher will be used to create road construction materials and the concrete batch plant will be used for mixing concrete.

Temporary staging areas will be utilized throughout the project area to provide temporary storage for turbine parts, other Wind Project components, and temporary employee parking. Each temporary staging area will be approximately 2 to 5 acres. These temporarily disturbed areas will be restored to pre-project conditions following completion of construction.

Pacific Wind also plans to erect 2 permanent meteorological towers in the project area, one near the project substation and one to the north, to track and monitor meteorological data including wind speed, direction, and temperatures. Each tower will be about 260 feet tall and consist of a single, non-guyed lattice-steel tower secured by a concrete foundation. These towers may also serve as potential locations for microwave communication equipment.

The Wind Project is expected to take about 9 to 12 months to construct. An estimated 250 workers will be employed during the peak of construction, which is planned to begin in summer 2010. The Wind Project is expected to have at least a 30-year service life.

PUBLIC PROCESS AND CONSIDERATION OF COMMENTS

Consistent with BPA's strategy for tiering appropriate subsequent decisions to the BP ROD, public processes were conducted for the Wind Project and BPA's proposed interconnection of the Wind Project into BPA's transmission system. Public review processes for Pacific Wind's EOZ permit and other permits provided opportunities for public comment on the Wind Project. In particular, Klickitat County conducted a Washington State Environmental Policy Act (SEPA) EIS process under Ch. 43.21C Revised Code of Washington for the Wind Project, which included several opportunities for public review and comment on the Wind Project. BPA's decision in this ROD concerns whether to allow Pacific Wind's proposed interconnection. In making this decision, BPA considered public comments received through the EOZ permit and associated SEPA EIS processes.

Pacific Wind held an initial, informal community meeting on March 14, 2008, at the Alder Creek Grange Hall in Bickleton, Washington. Notice of the meeting was published in the *Goldendale Sentinel*, and meeting announcement letters were sent to landowners and interested parties in the area. Approximately 40 people attended the community meeting. Materials documenting public notice and community participation were filed with the County following the meeting. The Klickitat County Planning Department then issued a Notice of Conditional, Complete EOZ Application on April 7, 2008. The notice was posted on the County website.

Formal public scoping for the proposed project was initiated on April 14, 2008, with announcements in both the *SEPA Register* and the *Goldendale Sentinel*. The formal public scoping period ran through May 8, 2008. Klickitat County received five comment letters during the scoping period; of these, four were from State agencies interested in the project. In addition to the formal scoping process, landowners were invited to an additional informal public meeting held in Bickleton, Washington, on April 14, 2009 concerning the project.

After Klickitat County published the Draft EIS for the Wind Project on September 21, 2009, it held a 30-day comment period to receive comments on the EIS that ran through October 26, 2009. Klickitat County received five letters regarding the Draft EIS, and the comments in each were evaluated and responded to in the Final EIS published on January 15, 2010. All of the letters were from State agencies, and stipulations addressing these comments were imposed in the conditions of EOZ approval. On February 12, 2010, the Klickitat County Planning Director approved issuance of an EOZ permit with conditions that allows Pacific Wind to construct and operate the Wind Project.

BPA also provided the following opportunities for public involvement concerning the proposed interconnection:

- On December 30, 2009, BPA sent written notice to adjacent property owners and interested parties describing the interconnection of the Wind Project into the FCRTS at Rock Creek Substation. The notice requested comments on the proposal by January 30, 2010.

- BPA posted information about the proposed interconnection on the Internet at http://www.efw.bpa.gov/environmental_services/Document_Library/Juniper_Canyon_Wind/ and in BPA's monthly information periodical, the "BPA Journal."
- On November 10, 2009, BPA initiated Section 106 consultation with the Washington State Historic Preservation Officer (SHPO).
- On November 10, 2009, BPA initiated Section 106 consultation with the Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, and the Confederated Tribes of the Warm Springs Reservation of Oregon.

BPA received two letters through its public process for this project. The first letter expressed a concern that BPA should not make changes to the transmission system that costs BPA rate-payers money and that wind developers should be accountable for all costs resulting from integration of wind power onto the grid, including penalties for scheduling imbalances. A second letter from the Washington Department of Ecology commented on the potential need for a water right permit for all surface water diversions and wells exceeding 5,000 gallons a day. No other comments were received.

ENVIRONMENTAL ANALYSIS

Consistent with the BP ROD, the BP EIS was reviewed to determine whether offering terms to interconnect the Wind Project is adequately covered within its scope. The BP EIS alternatives analyzed a range of marketing actions and response strategies to maintain a market-driven approach. The BP EIS showed that environmental impacts are determined by the responses to BPA's marketing actions, rather than by the actions themselves. These market responses include resource development, resource operation, transmission development and operation, and consumer behavior.

BPA's BP EIS described generating resource types, their generic environmental effects on a per-average-MW (per-aMW) basis, and potential mitigation. The discussion of generic environmental impacts of renewable energy resource development, including wind, is provided in Section 4.3.1 of the BP EIS. The RP EIS also described the environmental effects and potential mitigation associated with the construction or upgrade of transmission facilities to integrate the resources with the existing transmission system (Section 3.5). The per-aMW impacts for wind projects (RP EIS, Table 3-19) were incorporated and updated in the BP EIS (Table 4.3-1). This data was further updated with the preparation of the Supplemental analysis to the BP EIS in April 2007. The BP EIS contains an analysis of generic environmental impacts, including resource development and operation (Section 4.3.1), as well as transmission development and operation (Section 4.3.2).

The Market-Driven Alternative anticipated unbundling of products and services, constructing transmission facilities for requests for non-federal power transmission, and providing transmission access to wholesale power producers (Section 2.2.3). The BP EIS also noted that, under the Market-Driven Alternative, new transmission would depend more on generator and other customer requests than on new resource development by BPA (Section 4.2.3.2). Finally, the BP EIS identified the associated need to enhance transmission facilities (Section 4.2.4.1) as

one consequence of all resource development. One example would be customer requests for new transmission line and substation facilities for interconnection of generation resources.

In light of the analyses contained in the BP EIS and RP EIS, interconnection of the Wind Project falls within the scope of the BP EIS. Site-specific impacts that will result from the Wind Project are of the type and magnitude reported in the BP EIS and the RP EIS. The following discussion describes the site-specific environmental impacts that will result from the transmission line interconnection and the Wind Project, and provides additional information on potential cumulative impacts.

BPA Interconnection Facilities Impacts

As discussed previously, the additional interconnection facilities will be located within the 0.25-acre Rock Creek Substation expansion area immediately adjacent to this existing substation. The substation expansion area was included in the area previously reviewed and evaluated in BPA's Record of Decision to build the Rock Creek Substation.⁴ The following discussion describes environmental impacts from these facilities based on information contained in this previous ROD and updated as necessary.

Land Use and Recreation

Lands in the immediate vicinity of the Rock Creek Substation, including the substation expansion area, are currently zoned for agricultural use. These lands are mainly open rangeland that may occasionally be used for grazing livestock. However, the substation expansion area was previously disturbed during construction of the substation, and is now located entirely within a substation perimeter access road that was built around the substation at the time it was constructed. Because this land is no longer available for grazing, use of the expansion area would not affect agricultural uses in the project vicinity. Also, because the expansion area will be constructed adjacent to the existing substation and transmission corridor, the expansion will be consistent with this adjacent use and does not represent a significant change from current land uses in the area.

In addition to the 0.25-acre expansion area, construction activities related to this expansion will temporarily disturb up to an additional 1.0 acre. Areas of temporary disturbance will be reseeded with native seed species and returned to the present use after construction. To mitigate potential impacts to adjacent grazing uses during construction, the construction crew will leave any existing gates on private property as they are found, open or closed, to avoid disturbances to any livestock in the area. Recreational use of the area may include hunting, but permission from the landowner is needed for this activity and may be restricted. Current land use will not be changed around the substation expansion, and the expansion will not diminish or affect any recreational opportunities in the area.

⁴ BPA, *Record of Decision for the Electrical Interconnection of the Goodnoe Hills and White Creek Wind Energy Projects*, October 2005.

Geology and Soils

The Rock Creek Substation, including the substation expansion area, is located in the Columbia Hills in the south-central part of the Columbia Basin. The Columbia Hills are the southernmost of east-west trending ridges known as the Yakama Folds. In general, these basalt flows are topped with loess deposits transported by the wind. The substation and expansion area sits on a relatively flat ridge top characterized by wind-blown barren weathered rock or rock fragments with sparse vegetation. Soils, consisting of fine silt loams and sand, are shallow and prone to wind and water erosion. No surface water is present at the site.

The substation expansion area will require a retaining wall, backfill, grading and rocking. The retaining wall will be approximately 10-feet tall, and is required due to the slope of the existing grade. Access to the substation will be from a paved road (Hector Road) and the existing access road that surrounds the substation. BPA will require site-specific erosion and sediment controls for soil stabilization through the use of best management practices (BMPs) and other safety measures to avoid spills and releases of hazardous materials into the soil. To reduce disturbance to soils and vegetation, vehicle use will be restricted to access roads and immediate work areas. Access road drainage structures will be kept functional and the road surface will be maintained to minimize erosion, run-off, and sedimentation.

Vegetation

Vegetation around the substation and expansion area is typical of the semi-arid region of Klickitat County, located within the big sagebrush/bluebunch wheatgrass vegetation zone. The vegetation where the substation will be expanded was previously disturbed and reseeded during the original substation construction, and consists of a combination of native and non-native grasses. No trees or large shrubs are present.

Up to 1.25 acres will be disturbed, either temporarily or permanently, from expansion of the substation. Any cleared or disturbed areas outside of the permanent substation footprint will be reseeded with a seed mix of native species. There are no federally listed endangered, threatened, or candidate species known to occur at the substation site.

Water Resources and Wetlands

The Rock Creek Substation and expansion area are in an upland location with no wetlands or other water resources present. The expansion site is adjacent to a topographical depression that naturally drains any run-off water away from the substation site. An updated drainage plan has been developed for the Rock Creek Substation that incorporates the impacts from the substation expansion. Also, the environmental requirements document will include site-specific erosion and sediment control BMP's.

Fish and Wildlife

No aquatic or riparian habitats exist at the substation site or expansion area, and no fish are present. The existing vegetation in the expansion area was seeded after the construction of the substation, and is surrounded by the perimeter access road. The combination of native and non-native species is low quality habitat for animal species. No wildlife was observed during a site visit. Small numbers of upland animals that may now occupy or pass through the surrounding

area, such as mice, rabbits, ground squirrels, fox, coyote, mule deer, and birds will be displaced temporarily during construction. Any animals or birds that migrate through the area during the summer may also be disturbed and will likely avoid the area during construction. There are no trees or shrubs to support arboreal nesting activities. There are no federally listed endangered, threatened, or candidate species known to occur at the substation area.

Historic/Archeological Resources

Under Section 106 of the National Historic Preservation Act, BPA consulted with the Washington Department of Archaeology and Historic Preservation (DAHP), the Confederated Tribes and Bands of the Yakama Nation, Confederated Tribes of the Umatilla Indian Reservation, and the Confederated Tribes of the Warm Springs Reservation of Oregon on potential affects to cultural resources and historic properties.

A literature search and records review indicated that pedestrian surveys of the entire project area had been conducted in 2003 and 2005, prior to the construction of the Rock Creek Substation. No cultural resources or historic properties were found during the previous surveys, and BPA made a determination of no effect. Because the substation expansion site and surrounding area had been previously surveyed and no cultural resources were identified, BPA determined that no survey was necessary for the proposed substation expansion. On November 17, 2009, the Washington DAHP concurred with BPA's "Determination of No Historic Properties Affected." The Yakama Nation concurred with BPA's determination in a letter dated November 30, 2009.

If any cultural resources are uncovered during construction, work will immediately cease and BPA archeologists, state archaeologists, and tribal archaeologists will be notified to ensure proper procedures are implemented to protect the site until it is properly assessed.

Visual Resources

The existing substation is adjacent to Hocter Road and can be seen by passing motorists however, the expansion site is on the north side of the substation opposite the road. Traffic along the county road is generally limited to landowners in the area, and traffic is low. No residences are within sight distance of the substation. The substation expansion includes equipment consistent with the surrounding substation and will occupy a small area already impacted by utility development. Impacts to visual resources will be negligible.

Noise

Substation expansion noise will be generated by construction equipment, excavation and grading activities, and equipment installation. Construction will occur between May 2010 and July 2010, and will be limited to daytime hours. Increased noise levels will be temporary and will cease once construction is complete.

Transmission lines and related facilities are classified as industrial sources under the Washington Administrative Code (WAC 173-60). The existing substation currently generates noise (akin to a low frequency electrical hum) from the operation of the transformer, and noise (corona) also is currently generated by the existing 500-kV transmission line that passes through the area. The additional equipment associated with the project will generate noise consistent with these existing sources and thus have little impact to the current noise levels at the substation. All work

associated with the substation expansion will comply with federal and Washington State Noise Standards.

Public Health and Safety

During substation expansion work, access to the site will be limited to authorized personnel and the general public will be excluded. BPA will use standard construction safety procedures to reduce the risk of fire. BPA requires that the construction contractor develop an emergency response plan that includes responding to a potential accidental fire during construction. BPA will also use standard industry traffic controls to inform motorists and manage traffic during construction activities.

All equipment fueling operations will use pumps and funnels and absorbent pads. A supply of sorbent materials will be maintained on-site in the event of a spill. Response measures and procedures will be put in place in case of an accidental release of petroleum products and/or hazardous substances. BPA's Pollution Prevention & Abatement (PPA) Program will create an environmental requirements document that will guide construction personnel. A member of the PPA staff is assigned to the project, and will be notified immediately in the event of any hazardous material spill.

Except for fuel and oil used in construction equipment, no combustible materials will be used; therefore, increased risk of fire and explosion is unlikely. Minimal new toxic substances or hazardous waste (small amounts of lubricants and solvents) will be introduced. BMPs will be employed to reduce or control the potential for environmental health hazards.

In order to prevent unauthorized public access during operation, the existing substation fence and lighting will be extended around the expanded yard. In addition, the substation will be locked and accessible only by authorized personnel.

Socioeconomics and Public Services

Expansion of the substation is expected to take 2 to 3 months to complete. No increase in public services is anticipated from the expansion construction or continued operation of the substation because of the low level of human activities at the site. During construction, some slight indirect economic benefits will accrue to businesses in the general vicinity from construction workers in the area purchasing goods and services.

Air Quality

The Rock Creek Substation is adjacent to Hactor Road and will be accessed via paved roads, minimizing dust generation. Temporary, small amounts of dust will be created by earth moving activities during construction activities at the expansion area, especially during dry, windy weather. BPA requires that the construction contractor develop and implement a suitable dust abatement plan to control and minimize dust. BMPs, including using water for dust control, proper storage of disturbed soils, minimizing the amount of disturbed soil at any given time, and restoration seeding of disturbed areas will be used to control dust. Construction and maintenance vehicles and equipment will be in good running condition, minimizing emissions. Water trucks will be used for dust control, as needed. No water will be withdrawn from any stream, ditch or water body in the project area, unless approved.

Transportation

The Rock Creek Substation is located along a county road (Hector Road) approximately 14 miles east from the intersection with U.S. Highway 97. The substation could also be accessed via Goodnoe Station Road and Washington SR-14. Substation expansion construction may temporarily increase traffic on these primary access roads. The county roads are of sufficient quality to allow equipment and personnel movement to the construction site without road improvement. Any damage to county roads due to equipment movement or operation will be repaired to county standards prior to equipment demobilization. After construction, occasional maintenance trucks and other vehicles will need to use local roads.

Wind Project Impacts

The following summary of environmental impacts is based on information from the EIS that has been prepared for this project, other Klickitat County documents such as the Klickitat County Energy Overlay Final EIS (Klickitat County, September 2004), and information submitted by Pacific Wind to BPA. Mitigation requirements were incorporated into the EOZ permit for the Juniper Canyon I Wind Project. In total, 106 non-discretionary “Conditions of Approval” were included as part of the EOZ permit for the Wind Project.

Land Use and Recreation

The Wind Project site consists of approximately 13,347 acres located in Klickitat County, south of Bickleton, Washington. Current land use within the Wind Project area is primarily agricultural, with most of the farmland currently cultivated for wheat or in the Conservation Reserve Program⁵, along with some undeveloped rangeland used for livestock grazing. Farming and grazing would continue to occur in and around the turbines and other facilities.

The Wind Project will permanently occupy about 58 acres, with the majority of the project footprint on land currently or previously used for agriculture. New turbine string access roads will be located to minimize conflict with farm uses on surrounding land. The new access roads and the improved existing roads will be available for use by the landowner or lessee for farm operations. The project facilities have been sited in consultation with landowners and the project will require few, if any, changes to existing agricultural practices in and around the project site.

The Klickitat County Comprehensive Plan and the relevant zoning regulations designate the proposed project site as Extensive Agriculture (EA) within the Energy Overlay Zone. According to the Klickitat County zoning code, EA areas within the EOZ are suitable for energy resource operations based on the availability of energy resources, existing infrastructure, and locations where energy projects can be sensitively sited and mitigated. The Klickitat County EOZ FEIS evaluated potential impacts of wind energy development within the EOZ.

There are no protected areas and there are no designated recreational facilities or activities on the project site. Recreation in the area may include hunting, but little if any displacement of hunting

⁵ The Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners. Through CRP, a landowner can receive annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland. Source: <http://www.fsa.usda.gov/dafp/cepd/crp.htm>.

opportunities is expected. The proposed project site is entirely outside the Columbia Gorge National Scenic Area. At its closest, the Scenic Area is over 30 miles from the Wind Project.

Geology and Soils

The Wind Project site lies within eastern Klickitat County, in the mid-Columbia River Basin. The topography of the area is characterized by gently sloping dryland plateaus and by deeply incised ephemeral and perennial streams that flow south to southeast toward the Columbia River. The typical ground surface slope at the site is less than 5 percent, although some canyon slopes can exceed 30 percent. Soils in the project site generally consist of silty, sandy, and clayey loams underlain by basaltic bedrock. These soil types have a moderate potential for erosion.

Wind and water erosion is of concern within the project site, especially where construction activities will occur. Construction will include removal of surface vegetation, grading and leveling operations, soil exposure from road building and trenching, and the use of large cranes and other heavy equipment that will temporarily increase the potential for soil erosion. The potential for wind erosion will be greatest from exposed soils during mid-summer through fall, when the area is driest.

Heavy equipment movement, car and truck traffic and component lay-down during construction could cause soil compaction. Soil compaction could reduce agricultural productivity, impact stormwater runoff, or interfere with re-vegetation.

Construction projects that disturb one or more acres of land are required to obtain coverage under the Washington Department of Ecology National Pollutant Discharge Elimination System (NPDES) for discharge of stormwater during construction. An NPDES permit will be obtained from Ecology before construction activities begin. Properly engineered roads, turbine foundations, drainage systems, and the use of BMPs and compliance with NPDES permit conditions is expected to minimize erosion from the Wind Project.

Vegetation

The Wind Project area lies within the Columbia Basin Ecoregion, which primarily includes native perennial grasslands, dwarf shrub-steppe/native grasslands matrix, cropland, CRP, and shrub-steppe vegetation. Native plant communities are found in sagebrush-grassland steppe consisting mostly of wheatgrass, bluegrass and fescue. Some of the project area has been converted from these native habitats to wheat production and CRP grasslands. Habitats and vegetation cover types that would be most affected by the proposed project are grassland, cropland, and CRP grassland.

Field surveys conducted by Pacific Wind did not locate any federally listed endangered, threatened, proposed, or candidate plant or lichen species. Likewise, no potential habitat was found for such species. The field surveys did locate three state-listed species and one state-sensitive species⁶, within the project area.

⁶ Washington State listed species in project area and listing status: Hot Rock Penstemon (*Penstemon deustus* var. *variabilis*), threatened; Beaked Cryptantha (*Cryptantha rostellata*), threatened; Woven-spore Lichen (*Texasporium sanctijacobi*), threatened; and potential habitat for Sessile Mousetail (*Myosurus clavicaulis*), sensitive.

Because the Wind Project has been designed to avoid areas with state listed plant species, no impacts to these species from Wind Project construction or operation are expected. To further minimize the potential for impacts, Pacific Wind will avoid sensitive areas, retain topsoil for final surface application, re-vegetate disturbed areas with an appropriate seed mix, and control undesirable plants during and after construction.

Water Resources and Wetlands

Most of the Wind Project facilities will be located on higher plateaus away from surface waters, which would minimize the potential for land-disturbing activities that will affect surface water resources located at elevations below the plateaus. The facility layout (including roads, turbines, and construction laydown areas) was selected to minimize the total amount of area disturbed, to preserve existing vegetation to the degree possible, and to minimize disturbances in wetland, pond, and stream areas. Wetland field surveys identified a large number of smaller wetland areas within the Wind Project area, and numerous intermittent and ephemeral stream channels occur within the project area. Most of the wetlands are within or adjacent to stream channels and less than 0.25 acre in size.

Construction within wetland areas, stream channels, and buffer areas of these features will be avoided or minimized. However, up to 0.13 acre of stream buffer, and up to 0.30 acre of wetland buffer, could be permanently impacted by Wind Project road construction. These estimated impacts include a total of five proposed stream-channel crossings for Wind Project access roads. Road crossings will consist of low-impact ford crossings or installation of roadbed fill material with adequately sized culverts. Up to 216 linear feet of streams will be permanently impacted as a result of access road construction.

In addition to these impacts from access roads, there will be six stream-channel crossings for underground electrical collector lines. Underground electrical collector-line crossings will be placed in excavated trenches, the trenches backfilled, and the ground surface restored to original contours. Up to 144 linear feet of streams will be temporarily impacted as a result of underground electrical collector lines.

Shorelines and floodplains will not be impacted. No water used on the site will be discharged into wetlands, lakes, rivers or streams. Pacific Wind will follow a Stormwater Pollution Prevention Plan to reduce impacts. Construction activities will be regulated by an NPDES 1200-C general construction permit that requires BMPs to minimize possible impacts. Permanent erosion control measures will be implemented with final design of the project.

Fish and Wildlife

Fish Species

Overall, no direct impacts to fish are likely to occur as a result of this project. The overhead stream crossing by the transmission line to the Rock Creek substation and the overhead collector lines within the project area will include crossings of the fish-bearing Rock Creek, Squaw Creek, Pine Creek, and Wood Gulch. Wood Creek, west and south of the project site, may provide for migration of summer-run steelhead trout (*Oncorhynchus mykiss*). The closest turbine to Wood Creek will be about 0.5 mile away. The project activities and transmission line structures will be

located outside of stream channels, stream buffers, and riparian areas to avoid direct impacts and mitigation measures are planned to minimize potential impacts.

Terrestrial Wildlife Species

No federal- or state-listed threatened, endangered or proposed wildlife species were observed in the Wind Project area. There is no Washington Department of Fish and Wildlife (WDFW) designated big game winter range within the project site or turbine development area, though mule deer were observed within the project site during surveys.

Potential impacts on wildlife associated with the Wind Project include temporary and permanent loss of habitat, displacement of big game species, and inadvertent mortality or injury of small mammals. Impacts to terrestrial wildlife from construction will be local and temporary. Impacts from permanent loss of habitat will be low because the habitat disturbed is of such low quality. Overall, impacts on terrestrial wildlife are expected to be negligible.

Avian Species

The most probable impact of the Wind Project on avian species is direct mortality or injury due to collisions with the turbines and project facilities. Collisions may occur with resident birds foraging and flying within the project area, or with birds migrating through the area. Other potential impacts include abandonment of habitat near wind turbines due to disturbance caused by turbine operation and facility maintenance activities. Displacement has been observed at some wind projects, but it is currently unknown whether displacement results in any permanent adverse impacts on population size, population trends or reproduction. If construction occurs near an active nest or primary foraging habitat, disturbance of individuals may occur. Foraging opportunities and breeding effort may be temporarily altered by construction activities.

Average fatality estimates (all birds combined, including raptors) from 11 Columbia Basin wind projects, where fatality monitoring has been completed, range from 0.9 fatalities/ MW/ year at the Klondike I Wind Project to 6.66 fatalities/MW/year at the Leaning Juniper Wind Project, both in Oregon. The only species that accounted for more than 10 percent of the documented fatalities is the horned lark (which accounted for approximately 30 percent of fatalities).

Overall bird use in fall and winter in the Wind Project site was not high relative to other regional project sites. This suggests that fatality estimates observed at these projects provide a fair basis for predicting fatality impacts in the project site, and an avian fatality rate of between 1 and 4 fatalities per MW per year thus has been predicted for the Wind Project. The proportion of the fatalities by species is also expected to be similar. A more detailed analysis of potential direct impacts on birds by guild, including the special-status species listed below, can be found in the Wind Project EIS.

No federally-listed ESA species were documented in the Wind Project site. Twelve state-listed avian species have been observed at either the Juniper Canyon Wind Project site or the neighboring Big Horn or White Creek I wind projects. Of these twelve state-listed species, nine were observed during site-specific surveys for the Wind Project. The species observed include the state-threatened ferruginous hawk, state-sensitive bald eagle, and seven state-candidate species, including the golden eagle, merlin, loggerhead shrike, Lewis's woodpecker, Vaux's swift, sage thrasher, and sage sparrow. The burrowing owl (state-candidate) and peregrine

falcon (state-sensitive) may also occur in the project vicinity, but no individuals were identified during site surveys. Based on fatality monitoring at other Columbia Basin wind projects, the risk of impacts to state-listed species is low to very low; except for the ferruginous hawk, which has a moderate risk of collision from the wind turbines. The increased potential for impact to the ferruginous hawk is primarily due to the adjacent nature of foraging areas and known nest sites within proximity of the project area.

Additionally, ten state-monitor species were observed at the Wind Project site including the prairie falcon, turkey vulture, grasshopper sparrow, ash-throated and gray flycatchers, western bluebird, black swift, lesser goldfinch, long-billed curlew and Swainson's hawk. Impacts from the Wind Project to these species will likely be proportional to their use of the area. However, all of the state monitor species were determined to be at a low overall risk for collision with turbines from the proposed Wind Project. Mitigation measures to avoid and minimize impacts to avian species include avoidance buffers around active raptor nests, construction monitoring, demarcation of sensitive resource areas on the project site, environmental training for construction contractors, and an avian and bat impact monitoring plan.

Bat Species

The primary impact to bats will be from collision mortality. Bat mortality at the Wind Project is expected to be similar to that documented at ten operating facilities in the Columbia Basin where bat fatality monitoring has been conducted. Accordingly, bat mortality at the Wind Project is expected to be between 1.18 and 1.90 bats/MW/year. Species composition is likely to be similar to that at other Columbia Basin wind projects, with migratory bats comprising most of the fatalities.

Fourteen of the sixteen species of bats in the state of Washington may occur in Klickitat County, but only two are migratory (silver-haired and hoary bats). The other bat species in the county are not considered migratory, but there is some potential for these species to move within and through the project area. One state-candidate species, Townsend's big-eared bat, was detected in a recent study at the Miller Ranch Wind Project, 2.5 miles away from the Juniper Canyon I project site. Overall, collision mortality at the Wind Project is not expected to result in a measurable impact on bat populations.

Historic/Archeological Resources

Several field investigations of the Wind Project site were conducted in January, March, April, July and November 2008. Additional field reviews were done in 2009 to survey the 230 kV transmission line corridor and other areas that were not previously surveyed.

Prior to beginning field surveys, background research was conducted at the Washington State Department of Archaeology and Historic Preservation (DAHP). Pacific Wind sent letters to the Yakama, Umatilla, and Warm Spring tribes, as well as the Washington DAHP, requesting information on specific concerns about the project site. The background review identified eight previous cultural resource surveys in the vicinity of the project area, and three sites previously identified within the project area.

A total of 53 sites and isolates were identified at the Wind Project site, and another 6 sites and isolates were identified in the transmission line corridor. These sites have not been formally

evaluated for eligibility for listing on the National Register of Historic Places. Nevertheless, the Wind Project has been designed to avoid these sites, and these sites will be avoided during project construction.

Pacific Wind has prepared a Cultural Resource Management Plan (CRMP) in consultation with affected Tribes and the Washington DAHP. The CRMP establishes a process for continued protection of known or unknown cultural resources within the project site, including avoidance of archaeological sites and inadvertent discovery protocols. The plan also describes the legal requirements and regulatory protocols to be followed if human remains are encountered during construction and operation of the project.

Visual Resources

The Wind Project area is characterized by rolling terraces, agricultural fields and rangeland above the Columbia River. Wind energy facilities have no emissions to affect air quality or visibility. Dust suppression during construction will avoid the creation of dust clouds that could create haze and impact visibility.

The Wind Project could potentially be visible and alter views from several locations, including Roosevelt, Bickleton, and Cleveland, Washington, and Arlington and Schutler, Oregon. The project will also be visible to a number of residences surrounding the project area. The turbines could potentially be visible to passing motorists on SR-14 and I-84, and to motorists on local roads. Overall, views of the Wind Project will be similar to existing wind projects in the vicinity such as the Big Horn and White Creek wind projects, and impacts to visual resources will also be similar⁷. To reduce impacts, paint colors for turbines will be coordinated; non-reflective paints will be used to reduce glare and lighting for security will be minimized and directed away from adjacent properties.

Noise

The Wind Project location is located in a rural area with low population density. Ambient noise levels are expected to be low, given the lack of industrial and commercial noise sources. Normal construction activity on the Wind Project will cause localized, temporary noise for nearby residents. Typical construction equipment likely to be used during construction of the facility includes bulldozers, front-end loaders, trucks, graders, portable generators, cranes, concrete pumps, and tractors. Construction equipment typically produces noise levels of 80 to 90 decibels on an A-weighted scale (dBA) at a distance of 50 feet from the construction activity, and range from 54 dBA to 60 dBA at 1,500 feet away.

To minimize noise, construction will occur only during daylight hours and is anticipated to last approximately 9 to 12 months. Once the project is operational, when the turbine blades are rotating, the noise level from the project will not exceed 50 dBA at any residential dwelling. The project will meet all applicable noise standards for Washington State, per WAC 173-60.

⁷ Visual impacts of the Wind Project likely will be less than described in the EIS for the Wind Project. The EIS analyzed construction of 100 turbines with a turbine height of up to 492 feet high at maximum blade tip height, whereas the approved Wind Project will have 63 turbines with a turbine height of up to 418 feet at maximum blade tip height.

Public Health and Safety

Limited public health and safety hazards currently exist in the project site. Potential public health and safety impacts from the Wind Project could result from fire, explosion, hazardous materials spills, turbine collapse, blade throw or ice throw from blades. Wildfires are the major hazard, because much of the area is arid. Except for fuel and oil used in construction equipment, no combustible materials would be used. During construction activities, the potential for fires and accidents always exists. However, the project will be constructed in accordance with applicable state and local health and safety regulations to minimize those risks.

Minimal new toxic substances or hazardous waste (small amounts of lubricants and solvents) will be used during construction and operation of the project. Pacific Wind will develop a Spill Prevention, Control, and Countermeasure Plan with procedures to be used during construction and operations to reduce the risk of spills. Onsite vehicles will be monitored for petroleum leaks. Any hazardous waste material generated by project construction and operation will be disposed of in a manner specified by local and state regulations or by the manufacturer.

Socioeconomics and Public Services

The Wind Project will have a positive impact on socioeconomic conditions within the communities surrounding the project site. The facility will offer local employment opportunities by providing up to 250 jobs during construction and up to 15 jobs during operation. Annual lease payments to the landowners in the facility lease area will supplement income from other farm operations without significantly reducing the land available for farming practices. In addition, the Wind Project will provide significant property tax revenue to Klickitat County.

The Wind Project will not cause any significant adverse impact on the ability of communities in the local area to provide services such as housing, health care, schools, police and fire protection, water and sewer, solid waste management, transportation and traffic safety. Increases in the Klickitat County tax base will provide revenue that supports schools and public services. Indirect economic benefits will accrue to businesses in the area from construction workers purchasing goods and services.

Air Quality

Air quality in Klickitat County is generally good. The primary sources of air pollution generated by construction of the Wind Project will be fugitive dust particles from disturbed soils and vehicle exhaust emissions. Construction activities that could create dust include clearing and grading for road building and project facilities, underground cable trenching, operation of a portable concrete batch plant and on-site travel on unpaved surfaces. Wind erosion of all cleared areas will also contribute to fugitive dust.

Dust and heavy-duty vehicle emissions will include nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter (PM₁₀), and will be temporary. The quantity of these emissions will be limited because of the limited number of vehicles that will be used and the relatively short duration of the construction period. Also, BMPs will be employed to minimize dust and emissions during construction and include keeping vehicles and equipment properly maintained, watering roads to prevent dust, and installing erosion control measures.

Overall, air quality impacts will be low because impacts will occur in the short term in a localized area, during construction only, with very unlikely health and safety risks. Operation and maintenance impacts on air quality from the Wind Project will be negligible.

Transportation

The Wind Project will be built over 9-12 months and employ an estimated 250 workers at peak construction periods. In addition to travel by construction workers, construction traffic will include deliveries of heavy equipment, materials, and turbine components. The existing county and state roads in the project vicinity will provide the primary routes for construction of the Wind Project. Traffic volume levels along local roads currently are low. Short-term traffic delays on project area roads from slower-moving construction vehicles may temporarily occur.

Delays are likely to occur on Roosevelt Grade Road due to the reduced ability of vehicles to pass delivery vehicles carrying turbine components and closures in both directions during transportation. To minimize this impact, long and heavy loads will be staged at the bottom of Roosevelt Grade Road and sent up in stages with a pilot car to reduce delays and backups. Construction employee trips also will generate traffic on project access roads during the construction period. Given the existing low volume of traffic on local roads and temporary nature of impacts, these effects from the Wind Project will be minor.

After Wind Project construction is completed, limited vehicle use associated with operation will occur from full-time employees working at the Wind Project, as well as occasional maintenance trucks and vehicles. Given their occasional nature and very low volume of trips, transportation impacts from operation and maintenance of the Wind Project will be negligible.

Cumulative Impacts

The BP EIS and RP EIS provide an analysis of potential cumulative impacts resulting from development of generation resources and transmission facilities in the region. The Klickitat County Energy Overlay EIS also discusses potential cumulative impacts of wind energy development throughout the County. Many other wind projects have been built or are reasonably certain to be built in the region. For the purposes of the cumulative impact analysis of the Wind Project, wind power development that is operational or reasonably certain to be built within 15 miles of the project area has been considered; this development totals approximately 3,000 MW⁸.

Land Use and Recreation

Wind projects and associated facilities have a relatively minor direct impact on land use, because the footprint of the facilities is small despite occurring across large areas. Additionally, wind projects tend to reinforce agricultural land uses, the primary land uses in most areas proposed for wind energy. Wind projects are generally compatible with all types of agriculture and, once the wind projects are built, tend to inhibit conversion of these lands to other uses.

⁸ Klickitat County, Washington. *Juniper Canyon Wind Project Draft Environmental Impact Statement*, Appendix J. September 2009.

Depending upon the size of the project, Washington state and local land use regulations require land use approval prior to construction of any additional facilities. This permitting process is designed to prevent incompatible uses and the degradation of farmland. The potential for cumulative impacts to land use is substantially minimized by these regulations.

Wind projects and associated facilities have little direct impact to recreational use in agricultural areas. Dispersed hunting that may occur in the region normally could continue after construction and during turbine operation.

Geology and Soils

Cumulative wind project development has resulted in soil disturbance at wind project sites throughout the region. However, the amount of cumulative ground disturbance is relatively small due to the small actual footprint of wind project facilities. Construction of energy projects close together could increase the flooding and erosion potential in flood-prone areas as a result of the decrease in soil storage area and compaction. Additional wind projects and associated facilities developed in the future could increase the potential for erosion, but the relatively small permanent footprint of wind project facilities, along with the use of control measures and BMPs, would limit these impacts.

Vegetation

Native plant communities are being lost in the region because of past and current development and actions, and these trends will likely result in the further reduction and fragmentation of native plant communities. Additional projects in the region, combined with existing facilities, will increase the total acreage in the region used for wind development. The footprint of each turbine and associated facilities, including roads and substations, would permanently remove any native vegetation communities or habitat. A substantial portion of these impacts would be to agricultural and grazed lands. The acreage not used for facilities or temporarily impacted during construction would remain unchanged.

Most vegetative communities in the analysis area have been previously disturbed by human activities. The actions associated with the proposed projects would contribute incrementally and in a relatively minor way to the continuing cumulative loss of native vegetation communities.

Wetlands and Water Resources

Water quality, water use, and wetland impacts related to new wind generation projects will be temporary and minor, and subject to further regulatory approvals. Most wind project infrastructure is located on ridgetops and upland areas away from wetlands and water resources. Wind project facilities can be designed and located to avoid these resources, and BMPs are followed throughout construction, maintenance and operation. Therefore, cumulative impacts to wetlands and water resources from wind projects in the region are expected to be minimal.

Fish Species

Potential cumulative impacts to fish and other aquatic resources from past, present, and future development in the region include the loss of riparian habitat, increased sediment loading, increased stream temperatures, pollution from herbicide and insecticide use, changes in peak and

low stream flows, fragmentation of fish habitat, decreases in stream bank stability, and altered nutrient supply. Since wind projects in the region are typically located in upland areas and generally well away from fish habitat, these projects are not expected to have a significant contribution to direct cumulative impacts to fish species.

However, the interconnection of existing and proposed wind-powered generation projects in the region to the BPA transmission system does pose the potential for cumulative impacts to listed Columbia River fish species through a somewhat complex relationship among the wind projects, general Columbia River hydrosystem operations, and operation of the hydrosystem to meet Clean Water Act (CWA) and ESA requirements for listed fish species.

Many of the region's wind generators are located within what is known as the BPA Balancing Area. In BPA's balancing area, like in all balancing areas, there must be a match between generation and load at all times. Within BPA's Balancing Area, most existing and proposed wind projects are concentrated in one geographic area, located to the east of the Columbia River Gorge. Because of this concentration, the amount of wind power on BPA's transmission system tends to vary with the sometimes widely fluctuating wind velocities (and hence wind project output) in this area. That is, when wind speeds are low in this area, there is very little wind power generated, and the amount of wind power on BPA's system is low. Conversely, when wind speeds are high, the wind projects are generating close to or at full capacity, and the amount on BPA's system is high.

The proportion of wind power on BPA's transmission system has grown quickly and dramatically in recent years, and even greater future growth is expected. As of January 2010, there were more than 2,700 MW of total wind generation interconnected to the BPA system. In addition, BPA expects to have up to 6,000 MW of total wind generation interconnected to the system by 2013.

The combination of an increasingly large proportional share of wind power on BPA's system and the natural fluctuation of this power results in large, unscheduled swings in wind generation of up to several hundred megawatts within a single hour. To address this situation, BPA currently reserves capacity in the hydrosystem to provide balancing services for these swings when needed.

The potential for impacts to Columbia River fish arises when the electrical output from wind generators in the region exceeds their hourly generation schedules. In such situations, BPA must immediately decrease generation elsewhere in the system to maintain the constant balance of generation and load needed to keep the system stable. This can be accomplished in one of three ways. First, BPA can reduce overall Columbia River water flows and generation by releasing less water from Columbia River hydroprojects and putting the water into storage. Second, BPA can decrease hydroproject generation by spilling water at the dams rather than running it through the dam turbines. Third, BPA can reduce other sources of generation within the BPA Balancing Area.

During certain times and conditions, the first option of reducing flows is not available because reservoir space is being maintained for required flood protection at the hydro projects. At these times, river flows are already high due to spring runoff or other required drafts to maintain flood control space. Because of these flood control requirements, there simply is no space at the reservoirs in which to store additional water to decrease generation during these periods.

Likewise, the second option – spilling water at the dams – is not available during certain times and conditions because this spilling results in elevated levels of total dissolved gases developing in the river. As the amount of water spilled increases, so does the level of total dissolved gases. The CWA standards for total dissolved gases, which were established to protect fish, limit the level of dissolved gas saturation permissible in the river when migrating salmon are present. Naturally occurring levels of gas in the Columbia and Snake rivers varies between 105 and 120 percent of equilibrium total gas saturation pressure (ambient atmospheric pressure). The state standard for saturation in these rivers is limited to 110 percent of saturation at any point of sample collection without a state waiver. The U.S. Army Corps of Engineers has obtained a state waiver from Oregon and Washington that allows the level of gas in the rivers to be 120 percent. Running the river to this level, but no higher, to avoid CWA violations has become a fundamental component of how spill and resultant fish passage has been managed at hydroelectric power generation facilities.

Another issue with the second option is the increased potential to actually harm ESA-listed fish species. Higher levels of gas supersaturation associated with increased spilling increases the risk of ESA-listed fish species being affected by gas bubble trauma from excessive uncompensated gas pressure which they cannot avoid. Species, life-stage, size and genetics are all important factors in determining the tolerance of fish to supersaturated waters. Acute mortality will occur when gas bubbles are present in the heart in sufficient quantity to prevent the movement of blood. Various sublethal effects have also been reported to significantly impact mortality, most importantly blindness, decreased tolerance to stress, loss of lateral sense, and secondary infections. Permanent affects to individuals and large-scale mortality in populations may occur after only short-term exposure to high levels of gas, especially in environments where compensating pressures do not exist. Avoiding such impacts to ESA-listed fish species is also a fundamental component of how spill and resultant fish passage has been managed at hydroelectric power generation facilities.

Because of these issues with the first and second options, BPA currently is working towards implementing the third option. Accordingly, BPA is working with wind project developers and operators to develop measures for temporarily reducing sources of wind generation within the BPA Balancing Area when necessary. As part of a comprehensive review of wind project interconnections and their effects that was conducted in winter 2008, BPA has established transmission operation protocols under which BPA’s dispatch system automatically instructs wind project operators to reduce their generation to specified levels if necessary for reliability and ESA or CWA compliance. BPA has issued Dispatcher Standing Order (DSO) 216 to document these protocols, and is continuing to refine and clarify this DSO as more is learned about wind project operations relative to BPA’s transmission system (visit http://www.transmission.bpa.gov/wind/op_controls/default.cfm for more information). These measures ensure that wind power on BPA’s transmission system does not cumulatively impact Columbia River hydro operations necessary for listed fish species.

Terrestrial Wildlife

The current and proposed wind projects near the analysis area would have low impacts to non-avian terrestrial species because much of area is under agricultural cultivation and disturbance to these species occurs regularly. Additional fragmentation and reduction will be

offset by mitigation (low-quality habitat restoration, or conservation easements). Likewise, operation of these facilities is not expected to adversely affect most terrestrial species.

Avian Species

Cumulative avian fatalities from existing and proposed wind projects in the Ecoregion are expected to be similar to the reported fatalities at eleven area facilities. Based on this assumption, songbirds are expected to account for 69.5 percent of the annual fatalities, with the ubiquitous horned lark comprising approximately 31.1 percent of songbird fatalities. By comparison, raptor fatalities are expected to represent less than 8.6 percent of the annual fatalities. Upland gamebirds can be expected to account for 3.2 percent and waterbirds/waterfowl/shorebirds for 1.7 percent of annual mortality. Due to variations in turbine numbers and sizes at existing and proposed wind energy facilities in the region, the impacts to bird species are difficult to predict and are calculated per MW rather than per turbine.

Annual avian mortality estimates at eleven wind projects in the Ecoregion averaged 1.9 avian deaths/MW/year. Annual avian fatalities at the Wind Project are expected to range from 12 to 22 fatalities per year for raptors and from 333 to 368 fatalities per year for all other birds. Impacts on special-status bird species are not expected. Avian mortality from the proposed Wind Project would account for 150 MW, or an estimated 2.2 percent, of the total expected energy output (3,027 MW) in the study area. In general, these additional cumulative mortalities in the region are relatively insignificant compared to the total bird populations anticipated to be present in the general area at various times of the year.

Bat Species

Relative to other, less arid regions, there are few bat foraging areas such as riparian zones, shrublands, streams, and other water sources in the Ecoregion and the study area. Annual bat mortality is predicted to involve primarily migratory species (i.e., silver-haired and hoary bats), and impacts on threatened or endangered bat species are unlikely. The level of turbine-related mortality on migratory bat populations is difficult to predict, however, the proposed Wind Project will likely contribute incrementally to overall bat mortality in the Ecoregion. The additional cumulative mortalities in the area are relatively insignificant compared to the bat populations believed to be present in the Ecoregion at various times of the year.

Historic and Cultural Resources

Cumulative effects on cultural resources are associated with construction activities and permanent land use changes through development of new wind generation projects. Because the developments are likely to be dispersed throughout the region, the impacts are not likely to be concentrated, so loss of cultural artifacts from an entire cultural source is unlikely. Most wind facilities conduct cultural resource surveys prior to final design to avoid impacting cultural resources. Wind projects can be located to avoid these resources if any are found.

Visual Resources

Additional turbine installation would increase the number of areas from which turbines would be visible. Because future wind energy development would likely occur in rural areas, visual impacts would be experienced by the relatively few rural residents. Turbines would also be

visible to other residents and people traveling through on public roads near wind project areas. The significance of the visual changes would vary according to the location of the wind project and the perceptions of the viewers (Some viewers find that wind energy projects add a positive element to the visual environment, while others feel the opposite). Over time, the cumulative effect of the addition of multiple wind farms throughout the region will change the visual landscape from primarily agricultural to more industrialized, although the basic visual elements that currently exist will be retained.

Noise

Noise impacts associated with wind generation projects are intermittent, short term, and primarily during construction. If multiple wind projects were constructed at the same time, a minor increase in construction noise within the vicinity of the projects could occur. During operation of a wind project, audible noise will be generated by each turbine. The noise at any particular location in the project area will typically be dominated by the closest turbines, with more distant turbines having a quickly diminishing impact on audible noise levels. However, the relocation or elimination of turbines, noise easements, and other measures are typically required during the project siting process to ensure noise increases do not exceed state noise standards. Cumulative long-term impacts to noise from wind projects are negligible because of these measures, low levels of noise generated during operation, and distance between wind turbines.

Public Health and Safety

Any potential risks to the health and safety of workers or the general public associated with the construction of the project would be incidental and comparable to other construction projects. The long-term risk to the health and safety of residents and passersby from cumulative operation and maintenance of wind turbines and associated infrastructure is low, due to the small number of people living and working in the area, and the large area over which wind projects are sited.

Socioeconomics and Public Services

Cumulative social and economic impacts from wind generation projects are generally positive. Wind lease payments to farmers provide a dependable source of income that helps farmers retain their farms when farm prices or weather reduce other sources of farm income. Additional development would provide tax revenue to local governments, and may increase the long-term stability of existing land use patterns in the area. New wind generation projects would create temporary effects on housing. Because these effects would be temporary and may occur during separate time periods, accumulation of impacts related to project construction would be minor.

Cumulative impacts on public services and utilities will be largely dependent on facility siting. Emergency services could have a higher demand if there are additional facilities to cover in the same service area. However, this additional demand could be offset by additional tax revenue. Impacts to utilities from additional wind energy integration are addressed during system planning studies, and minimized or eliminated with appropriate equipment within the system.

Air Quality

Air quality impacts associated with wind energy development are mainly limited to construction emissions, particularly fugitive dust emissions. These impacts could be minimized by the use of

reasonable controls on all projects. In the long term, cumulative development of wind projects may help to reduce the production of air pollutants by replacing a small percentage of energy that otherwise will have to be generated, presumably, by more traditional energy sources such as gas- or coal-fired turbines. This cumulative wind development also could serve to reduce greenhouse gasses in the atmosphere because of this displacement.

Transportation

If two or more wind projects are built at the same time in an area where the construction traffic uses the same road network, the construction-related traffic would have a cumulative effect. These effects would be temporary. To minimize impacts during construction, the developers involved could investigate coordinating delivery schedules and routes, use of shared resources to minimize trips, and coordinating construction schedules to address any temporary constraints on traffic flow that develop. The Public Works Departments in each county could work with project developers to ensure shared responsibility for any road improvements or repair.

MITIGATION

Specific resource mitigation conditions to avoid or minimize environmental impacts from the Wind Project were identified through the Klickitat County EOZ EIS, Juniper Canyon Wind Project EIS, and in the conditions of approval per the EOZ permitting process and are incorporated in this ROD by reference.

PUBLIC AVAILABILITY

This ROD will be available to all interested parties and affected persons and agencies. It is being sent to all stakeholders who requested a copy. Copies of the BP EIS, BP ROD, and additional copies of this Juniper Canyon I Wind Project ROD are available from BPA's Public Information Center, P.O. Box 3621, Portland, Oregon, 97208-3621. Copies of these documents may also be obtained by using BPA's nationwide toll-free document request line: 1-800-622-4520, or by accessing BPA's website: www.efw.bpa.gov.

CONCLUSION

BPA has decided to offer contract terms through a LGIA for interconnection of up to 150 MW of power from the Juniper Canyon I Wind Project into the FCRTS at Rock Creek Substation in Klickitat County, Washington. The LGIA provides for interconnection of the Wind Project with the FCRTS, the operation of the 150 MW from the Wind Project in the BPA Balancing Area, and the maintenance of reliability of the FCRTS and interconnected systems. As described above, BPA has considered both the economic and environmental consequences of taking action to integrate power from the Wind Project into the FCRTS. This decision is:

- within the scope of environmental consequences examined in the BP EIS;
- in accordance with BPA's Open Access Transmission Tariff and associated LGIP; and
- in accordance with BPA's statutory authority to make available to all utilities any capacity in this system determined in excess to that required by the United States (16 U.S.C. 838d).

Record of Decision for the Electrical Interconnection of the Juniper Canyon I Wind Project

BPA will take measures to ensure the continuing safe, reliable operation of the FCRTS. This ROD identifies all practicable means to avoid or minimize environmental harm that might be caused by the integration of the Wind Project into the FCRTS.

BPA contracts providing for integration of power from the Wind Project into the FCRTS at Rock Creek Substation will include terms requiring that all pending permits be approved before the contract is implemented. BPA contracts will also include appropriate provisions for remediation of oil or other hazardous substances associated with construction and operation of related electrical facilities in a manner consistent with applicable federal, state, and local laws.

Issued in Portland, Oregon.

/s/Stephen J. Wright

Stephen J. Wright
Administrator and
Chief Executive Officer

May 10, 2010

Date