

**Record of Decision for the  
Electrical Interconnection of the  
Kittitas Valley Wind Project  
September 2009**

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## **INTRODUCTION**

The Bonneville Power Administration (BPA) has decided to offer contract terms for interconnection of up to 108 megawatts (MW) of power to be generated by the proposed Kittitas Valley Wind Project (Wind Project) into the Federal Columbia River Transmission System (FCRTS). Sagebrush Power Partners, LLC (Sagebrush) has received authorization from the Washington Energy Facility Site Evaluation Council (EFSEC) to construct and operate the proposed Wind Project in Kittitas County, Washington, and has requested interconnection to the FCRTS on BPA's Columbia-Covington 230-kV transmission line in the vicinity of Ellensburg, Washington. BPA will construct a new substation to accommodate this 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.<sup>1</sup> 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

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<sup>1</sup> Although BPA is generally not subject to FERC's jurisdiction, BPA follows the open access tariff as a matter of national policy. This course of action demonstrates BPA's commitment to non-discriminatory access to its transmission system and 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. 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 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.

On September 28, 2001, Sagebrush submitted a generator interconnection request to BPA to interconnect 108 MW from its proposed Wind Project to the FCRTS. Consistent with its Tariff, including the LGIP, BPA must respond to this interconnection request 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 also 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 construct a new substation (Bettas Road Substation) on the Columbia-Covington 287-kV transmission line about 11 miles northeast of Ellensburg, Washington. The substation will occupy approximately three acres adjacent to the existing right-of-way for the Columbia-Covington transmission line. This transmission line will be looped into the new Bettas Road Substation, and a connection to the Wind Project's collector substation will be provided. The BPA Bettas Road Substation will include a 3-breaker ring bus configuration, and BPA will own, operate and maintain the substation up to the connection with Sagebrush's transformer. The basic elements of the substation and interconnection facilities will be a control house, two main transformers, metal tubing (known as "bus"), outdoor breakers, relaying equipment, steel support structures, and overhead lightning suppression conductors. The substation area will be graveled, and to provide security, a 7-foot high chain link fence and lighting will be installed around the perimeter of the substation. Access from Bettas Road to the new substation will be from a combination of an existing access road within the BPA right-of-way, as well as new or improved roads that will be constructed as part of Sagebrush's Wind Project.

### **Kittitas Valley Wind Project**

A description of the Wind Project is provided in various materials prepared for the Wind Project by Sagebrush and Washington EFSEC.<sup>2</sup> Washington EFSEC is the siting authority for the Wind

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<sup>2</sup> Sagebrush Power Partners, LLC, *Application for Site Certification 2003-01*, January 13, 2003; Washington EFSEC, *Council Order No. 826, Findings of Fact, Conclusions of Law, and Order Recommending Approval of site Certification on Condition*, March 27, 2007; Washington EFSEC,

Project. Upon completion of the siting process and recommendation of project approval by Washington EFSEC, Washington State Governor Gregoire approved the Wind Project in September 2007. In June 2009, Sagebrush submitted a request to Washington EFSEC to amend the Site Certificate Agreement for the Wind Project. After providing an opportunity for public review and comment, Washington EFSEC approved the amendment in August 2009. The following summary of the Wind Project is based on the project as amended.

Under its Site Certificate Agreement with Washington EFSEC, Sagebrush is authorized to construct and operate a wind power generation facility within a project area approximately 3.5 miles (east-west) by 5 miles (north-south) in Kittitas County, Washington. This project area is located about 12 miles northwest of the City of Ellensburg, Washington. The permanent (i.e., for the life of the project) footprint of the Wind Project facilities will be approximately 108 acres within this project area. During construction, a total of approximately 211 acres will be disturbed, the additional acreage being used for temporary facilities such as staging areas and equipment laydown areas.

The authorized Wind Project has a total approximate nameplate capacity of up to 195 MW<sup>3</sup>. The Wind Project includes up to 52 wind turbines arranged in strings on both public and private land on open ridgetops within the project area. The Site Certificate Agreement allows Sagebrush to construct the project within the following range of turbine scenarios:

- **330-foot Turbine Scenario:** This scenario includes turbines measuring up to 330 feet tall at maximum blade tip height. These turbines have a nameplate capacity of approximately 1.5 MW. Under this scenario, the total nameplate capacity would be 97.5 MW.
- **410-foot Turbine Scenario:** This scenario includes turbines measuring up to 410 feet tall at maximum blade tip height. These turbines have a nameplate capacity of approximately 3.0 MW. Under this scenario, the total nameplate capacity would be 195 MW.

Under either scenario, the turbines will be a tubular conical steel structure manufactured in multiple sections depending on the tower height and approximately 12 to 16 feet in diameter at the base. The towers will be painted a neutral gray color to be more visually compatible with the surrounding environment. Turbine tower sections will be transported to the site on trailers that

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*Council Order No. 831, Order on Remand, Letter from Governor Gregoire Modifying the Draft Site Certification Agreement Accompanying Order No. 826, August 8, 2007; Washington EFSEC, Site Certification Agreement Between the State of Washington and Sagebrush Power Partners, LLC for the Kittitas Valley Wind Power Project, September 18, 2007.*

<sup>3</sup> Although Sagebrush has obtained permission for a 195-MW wind facility from EFSEC, Sagebrush has requested interconnection from BPA of only 108 MW under Open Access Same-Time Information System (OASIS) Generation Interconnection (GI) request number G0080. This ROD documents BPA's decision to issue a LGIA for the 108 MW request. If Sagebrush should seek interconnection of additional megawatts from its project, it would be through a new request under the Open Access Transmission Tariff. BPA would review any such request under NEPA and prepare any necessary NEPA documentation before making a decision regarding the request.

would carry one tower section per truck. Tower sections will be delivered to a staging area and then to each tower location, where they will be erected using a large construction crane.

A number of other project elements are also included in the Wind Project. To access and service the wind turbines and other facilities at the site, up to 8 miles of existing private roads will be improved, and up to 13 miles of new access roads will be constructed. These roads will branch from US 97 and two county roads in the area (Bettas and Hayward Roads), and will generally follow each turbine string. Roads between individual turbines will be 34 feet wide, but access roads between the turbine strings will be 24 feet wide. In areas of steeper grades, cut and fill slopes will be kept to below 15% to prevent erosion.

One Operations and Maintenance facility, approximately 5,000 square feet on a 5-acre site, also will be constructed. This facility will be constructed near where the existing BPA transmission line corridor crosses Hayward Road. The O&M facility will include offices, spare parts storage, kitchen, restrooms, a shop area, graveled outdoor parking, a turnaround area for larger vehicles, outdoor lighting, and gated access with either partial or full perimeter fencing. Water for on-site use will be obtained from a new domestic well; anticipated water use will be less than 1,000 gallons a day. Wastewater from the facility will be discharged to an onsite domestic septic tank.

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 two key elements: (1) a collector system, which will collect energy at between 575 and 690 volts (V) from each wind turbine (depending on the type of turbine used), increase it to 34.5 kilovolts (kV) through a pad-mounted transformer, and connect to the project substations; and (2) the substations and interconnection facilities, which will transform energy from the collection lines (at 34.5 kV) to the transmission level (230 kV). Lines connecting individual turbines in each string will be located underground, and lines connecting the strings primarily will be underground with some overhead lines in certain areas.

Sagebrush also will erect up to five permanent, free-standing meteorological towers in the project area. These towers will be approximately as tall as the turbine tower hub height (i.e., 215 to 262 feet).

Project construction could begin in fall 2009, and it is anticipated that it will take approximately one year to construct the facility. The expected service life of the facility is 20 years.

## **PUBLIC PROCESS AND CONSIDERATION OF COMMENTS**

Consistent with BPA's strategy for tiering appropriate subsequent decisions to the BP ROD, a public process was conducted for the Wind Project and BPA's proposed interconnection of the Wind Project into BPA's transmission system. Public review processes for Sagebrush's site certificate application and other permits provided opportunities for public comment on the Wind Project. In particular, Washington EFSEC conducted a State Environmental Policy Act (SEPA) EIS process for the Wind Project, which included several opportunities for public review and comment on the Wind Project. Washington EFSEC also conducted public hearings on the site certificate application itself, as well as on the recent proposed amendment to the Site Certificate Agreement. BPA's decision in this ROD concerns whether to allow Sagebrush's proposed

interconnection. In making this decision on the interconnection, BPA considered public comments received by EFSEC on the proposed interconnection.

BPA also is aware that there has been public controversy surrounding the siting of this Wind Project. In addition to a number of administrative motions and petitions, the ultimate approval of the Project by the Washington state governor in September 2007 was appealed to the Washington State Supreme Court in March 2008. In November 2008, the Supreme Court upheld the Governor's approval of the Project.

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

- BPA staff attended several EFSEC public meetings for the Wind Project, beginning in March 2003, and continuing through 2006. At these meetings, BPA staff gathered information on public comments for the Wind Project, and was available for questions about the BPA proposed interconnection.
- BPA posted information about the proposed interconnection on the Internet at [http://www.efw.bpa.gov/environmental\\_services/Document\\_Library/Kittitas\\_Valley/](http://www.efw.bpa.gov/environmental_services/Document_Library/Kittitas_Valley/) and in BPA's monthly information periodical, the "BPA Journal."
- BPA issued a letter on July 25, 2008, seeking public comments on the proposed interconnection, and received 28 comments through email, letter, or web-based comment forms.

Of the comments received by BPA, some were in favor of the proposed interconnection (and Wind Project), because of either economic development opportunities, or support for development of renewable energy and the related decreased reliance on fossil fuels.

Many of the comments received by BPA focused on issues with the Wind Project itself. Concerns raised in these comments included a number of potential environmental effects, a purported lack of power sales agreements, the opinion that renewable energy benefits would be exported and would not benefit the local economy, and other similar concerns. While BPA's decision concerns the proposed interconnection rather than the Wind Project, as mentioned above, the comments related to the Wind Project have been considered by BPA decision-makers to the extent that the comments bear on the decision to interconnect.

Comments that did express concerns about the proposed interconnection included some which stated that it was premature for BPA to consider the interconnection because, at the time of the letter in July, 2008, the Governor's approval of the Site Certificate was being appealed before the Washington State Supreme Court. Other commenters stated that BPA seemed to be on a "fast track" approval process for the proposed substation. BPA's review process for interconnection requests is parallel, but distinct from state siting processes, so the timing of BPA's public letter was not linked to the judicial review of the Site Certificate. Further, because the court upheld the Governor's approval of the site certificate in November 2008, this ROD is being issued well after judicial review of the site certificate was completed.

Another comment noted that the proposed location of the BPA substation is not consistent with the recreational and residential character of the surrounding land uses. The substation will be

constructed adjacent to a transmission corridor containing several high-voltage circuits, and within the project area of the approved Wind Project. The location of the proposed BPA substation, for practical and technical reasons, is planned in relation to the Wind Project site. The issue of land use consistency for Wind Project facilities was considered extensively by EFSEC and the Governor.

Some comments were specific to impacts from the proposed BPA substation, including light pollution, noise levels, and fire danger. One commenter asked whether BPA could use “pollution-free light” at this, and other, substations, in order to preserve dark night skies for astronomical viewing. Another commenter asked about both the fire danger and the noise levels of the proposed substation. As discussed further in the Environmental Analysis section below, noise from construction of the proposed substation will be temporary, and noise from ongoing operations at the substation will be minor and infrequent. Fire danger is negligible because substations are fenced, graveled, and cleared of vegetation in order to prevent electrical disturbances. BPA uses substation lighting necessary to maintain safety and security.

Finally, BPA notes that the EFSEC public process for the Wind Project extended over several years, and at the time of the Final EIS, had generated well over 1,000 comments. Although the comments represent a diverse set of questions and opinions, BPA is aware that the state siting process for the Wind Project created substantial controversy in the nearby communities. As mentioned above, EFSEC and the Governor are the appropriate siting authorities for the Wind Project, and that process is now complete. BPA’s decision is limited to the question of whether to issue an interconnection agreement, and to build any facilities required under that agreement; the controversy surrounding the siting of the Wind Project informs this ROD to the extent that it bears on the interconnection, but is one of many factors that is considered.

## **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). The BP EIS contains an analysis of generic environmental impacts, including resource development and operation (Section 4.3.1) and 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**

### ***Land Use and Recreation***

The land where Bettas Road Substation will be constructed is undeveloped land that is zoned for agricultural use. Construction of the substation will impact approximately 3 acres. Because the substation will be constructed adjacent to an existing transmission corridor, development of the substation will be consistent with this adjacent use, and the substation does not represent a significant change from current land uses in the area. In addition, because there are no existing recreational areas in the substation vicinity, the substation will not diminish or affect any recreational opportunities.

### ***Transportation***

The substation site is located directly south of Bettas Road, approximately 0.8 miles west of the intersection of State Route 97 and Bettas Road. Construction vehicles for the substation coming from State Route 97 will turn onto Bettas Road and follow it to Hayward Road, where vehicles will turn left and follow Hayward Road to the existing BPA transmission line corridor. Construction vehicles then use an existing access road within the BPA right-of-way to access the substation site.

Construction-related traffic will consist of deliveries of project equipment and construction materials (such as concrete and steel) by truck. Truck deliveries are anticipated to occur between 8 a.m. and 4:30 p.m. on weekdays. These truck deliveries would include gravel, water (for dust control), construction equipment delivery and pickup, miscellaneous steel and other building material, and electrical equipment. Transportation impacts will be temporary, and compose a minor fraction of total Wind Project transportation impacts, which are within county standards for traffic flow. Operations and Maintenance traffic impacts will be occasional and have negligible impacts to transportation.



## ***Geology and Soils***

The substation site is located in the Yakima Fold Belt subprovince of the Columbia Plateau. The Columbia Plateau is a broad expanse of land at the eastern base of the Cascade Range and at the western edge of the Columbia Intermontane physiographic province. The Yakima Fold Belt subprovince is an area that includes most of the western half of the Columbia Plateau north of the crest of the Blue Mountains. Soils in the area of the substation are primarily Reeser-Lablue-Sketter complex, with a minor amount of argixerolls-durixerolls complex. .

Construction of the new substation will require grading and leveling of the substation site. Access will be through existing right-of-way or on roads being constructed or improved as part of the Wind Project. BPA will require site-specific erosion and sediment controls for soil stabilization through the use of best management practices (BMPs) and will follow notification procedures. During construction, any spills or leaks of hydraulic fluid or oil from construction equipment will be cleaned up to prevent spills from reaching the soil or groundwater and causing contamination. To reduce disturbance to soils and vegetation, vehicle use will be restricted to access roads and immediate work areas.

## ***Vegetation***

The land where Bettas Road Substation will be constructed is a shrub-steppe habitat dominated by sagebrush. Clearing for the construction of the substation will include removal of all brush and debris and some grading. About 3 acres will be disturbed. Any cleared or disturbed areas outside of the permanent substation footprint will be reseeded with naturally occurring shrubs and grasses after construction. Impacts to vegetation will be minimal because the amount of vegetation removal is minor and the types of vegetation removed are abundant in the county.

## ***Wetlands and Water Resources***

The substation site has no wetlands or other water resources that will be impacted by the project.

## ***Fish and Wildlife***

No aquatic or riparian habitats occur at the substation site and no fish are present. Therefore, no fish species will be impacted because the project will not involve work in or around water. The loss of sagebrush and shrub habitat at this site may have a local temporary effect on species that use that habitat. Small numbers of upland animals such as rabbits, ground squirrels, fox, coyote, elk, mule deer, and birds, that may now occupy or pass through the substation site, may be displaced, but given the abundance of similar habitat in the area, it is expected that any such species would relocate to these other habitat areas. Small burrowing mammal species such as mice and shrews also would be expected to relocate, but some individuals may be killed if they have burrows at the substation site that are crushed or excavated. Increased human use in the area will have a small impact on local resident species such as elk and mule deer. There are no federal or state endangered, threatened or proposed species known to occur at the substation site.

## ***Historic/Archeological Resources***

Under Section 106 of the National Historic Preservation Act, BPA consulted with the Washington State Historic Preservation Office (SHPO) and the Confederated Bands and Tribes

of the Yakama Nation on potential effects to cultural resources and historic properties at the substation site.

As a result of several surveys of the project area, one lithic scatter was found near the proposed substation site. BPA worked with the SHPO to ensure that the site will not be affected by construction or operations at the new substation, concluding consultation in June, 2009. A buffer around the site will be flagged by professional archaeologists prior to construction activities, and no disturbance will occur within the range of the buffer. If any cultural resources are uncovered during construction, work will immediately cease and BPA, state archeologists, and tribes will be notified to ensure proper procedures are implemented to protect the site until it is properly assessed.

### ***Visual Resources***

The vicinity of the substation site is largely undeveloped, with the exception of the existing BPA high-voltage transmission line corridor immediately to the south of the site, as well as scattered rural residences and structures. The new substation likely will be visible to varying degrees from State Route 97, Bettas Road, and Hayward Road, as well as from some residences in the vicinity. However, the substation will not greatly alter existing visual resources in the area because it will be next to the existing transmission lines. Impact to visual resources will be minimal.

### ***Noise***

Construction of the substation is expected to begin in late summer, 2009, and take from 4 to 6 months. Crews will work 8- to 12-hour days, during daylight hours, as needed to meet the schedule. Substation construction noise will be temporary and will cease once construction is complete.

Routine operations and maintenance activities at the substation will occur after construction. . . When the switches or breakers in the substation are operated, they create a brief, loud burst of noise, similar to the type of noise caused by a gunshot. This noise will occur infrequently. The disconnect switches will automatically operate when there is a problem with a transmission line to prevent equipment from being damaged and as part of the maintenance of the line, such as when there is a need to repair or replace insulators damaged by vandals or hunters. The nearest residential structure is approximately ½ mile away, and is not likely to be impacted by noise.

### ***Public Health and Safety***

During construction, access to the site would be limited to authorized personnel and the general public would be excluded. In order to prevent unauthorized public access during operation, the new substation will be fenced and lighted. In addition, the substation will be locked and accessible only by authorized personnel.

During construction, 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.

### ***Socioeconomics and Public Services***

Construction of the substation is expected to take 4 to 6 months. Construction activities may temporarily increase traffic on roads in and around the access routes. Once operation commences, BPA personnel will visit the substation occasionally. There will be no water supply at the substation. A portable toilet will be available for personnel.

No increase in public services is anticipated from the construction and operation of the substation because of its small size and lack of need for services. During construction, workers purchasing goods and services will cause a small, short-term economic benefit to the local community.

### ***Air Quality***

Small amounts of dust will be temporarily created by excavation activities during construction of the substation, 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 used will include: 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. Construction and maintenance vehicles and equipment will be in good running condition, minimizing emissions. Water trucks will be used for dust control. No water will be withdrawn from any stream, ditch or water body in the project area unless approved.

## **Wind Project Impacts**

The following summary of environmental impacts is based on information contained in the Final Environmental Impact Statement (FEIS) that was prepared for the Wind Project by Washington EFSEC,<sup>4</sup> as well as other EFSEC site certificate information referenced previously.

### ***Land Use and Recreation***

The approximately 6,000-acre Wind Project area is characterized by a rural landscape of rolling hills and rangeland with scattered residences. Approximately 4,000 acres of the project area is in private ownership, with the remaining 2,000 acres owned by the state of Washington and

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<sup>4</sup> *Final Environmental Impact Statement for the Kittitas Valley Wind Power Project*, Washington EFSEC, February 1, 2007.

managed by the Washington Department of Natural Resources (DNR). The overall population density in the project area is low.

Land use in the project area consists of cattle grazing interspersed with some rural residential development. In addition, an existing BPA high-voltage transmission line corridor runs through the project area in an east-to-west direction. This corridor, which contains four existing transmission lines, bisects the project area. There are also some planned rural residential developments in the project area. None of the land in the project area is irrigated and no crops are grown. Most grazing use is seasonal in nature (primarily in the spring). About half of the private property owners within the project area currently use their land for grazing. About half of the Washington DNR parcels within the project area are currently used for grazing. There are no commercial forestry operations in the immediate project vicinity.

The Wenatchee National Forest, located north and east of the project area, is a major recreational destination in central Kittitas County. The National Forest encompasses 2.2 million acres extending from Lake Chelan on the north to Rimrock Lake on the south, and includes lands on the slopes of Table Mountain to the north and east of the project area. Although Table Mountain has relatively few developed recreational facilities, it is a popular destination for valley residents for winter sports, hiking, camping, picnicking, and other recreational activities. One of the best known features on Table Mountain is Lion Rock, approximately 6.75 miles northeast of the project area. Lion Rock's attraction is the panoramic view it offers of the central Cascade Mountains to the north.

Another important recreation resource in the project vicinity is the John Wayne Trail, a hiking, biking, and equestrian trail developed in the Iron Horse State Park. The John Wayne Trail extends 109 miles from a trailhead near North Bend on the west to the Columbia River on the east. In the project area, the trail extends along the south side of the Yakima River. The project area ranges from approximately 1 to 5 miles from the trail.

Some hunting occurs in the project area on both private and public lands. Hunting on private lands occurs at the discretion of the individual landowners. DNR does not currently allow public access to two sections within the project area. Public access is allowed in two other areas.

Land use impacts from development of the Wind Project include conversion of a portion of rural lands to utility-related uses. Of the 6,000-acre project area, project facilities will permanently occupy about 108 acres of rural lands. During construction, the Wind Project could cause some temporary displacement of grazing activities. After construction, however, existing grazing operations would be expected to continue around the turbines and access roads. The Wind Project thus would not cause a significant change in current grazing practices and would not significantly increase the costs of these practices.

Recreational impacts from development of the Wind Project include potential conflicts between the project and onsite and offsite recreation activities and increased demand for park and recreational resources. These types of direct impacts could be associated with construction, operations, and decommissioning of any of the proposed project elements, including wind turbines and meteorological towers, existing and new gravel access roads, additional power lines, and the proposed O&M facility and substations. The presence of Wind Project facilities on publicly accessible state property could impair the use and enjoyment of recreational activities in the project area. A small number of turbines and meteorological towers would operate on state

property, likely removing this property from recreational use, such as rock hounding and hunting. Because the public lands that might contain Wind Project facilities represent a very small portion of public lands in the area, impacts to recreation will be minimal.

### ***Transportation***

Most public roads in the project vicinity are paved county roads, with a few state routes traversing the area. State Route 97 crosses through the middle of the project area, generally in a south-to-north direction. Other paved roads in the project area include Bettas Road and Hayward Road. In addition, several unpaved and gravel county roads are present, such as Elk Springs Road in the eastern portion of the project area and those associated with BPA's existing transmission line corridor that passes through the project area. Traffic volume levels along local roads currently are low.

The existing road network will provide the primary routes for construction of the Wind Project, which is expected to take approximately one year. The wind turbines, towers, transformers, and other large equipment will be transported to the site using a semi-truck and lowboy transporter designed for heavy loads (i.e., multiple axles). Short-term traffic delays on project area roads from slower-moving project construction vehicles may temporarily occur. In addition, some local roads will need to be improved to accommodate heavier construction equipment, which could result in traffic delays during road improvement periods. Construction employee trips also will generate traffic on project area roads during the construction period. During the peak construction period, an estimated 320 daily employee trips will occur, with 160 of these trips occurring during the evening peak hour. Given the existing low volume of traffic on project area roads and the temporary nature of impacts, these effects from the Wind Project would be minor. In the long term, these road improvements would result in a benefit to the local road system.

After Wind Project construction is completed, vehicles associated with operation of the Wind Project will generally be limited to the vehicles of the 12 to 14 full-time employees working at the Wind Project, as well as occasional maintenance trucks and vehicles. It is estimated that the maximum number of worker vehicle trips will be 40 during a 24-hour period. Given their extremely low volume and occasional nature, transportation impacts from these additional trips will be negligible.

### ***Geology and Soils***

Similar to the substation site, the Wind Project area is located in the Yakima Fold Belt subprovince of the Columbia Plateau. The subprovince is characterized by long, narrow anticlines with intervening narrow to broad synclines that extend in an easterly to southeasterly direction from the western margin of the plateau to its center. The Columbia Plateau is underlain by a series of layered basalt flows extruded from vents between 7 and 26 million years ago that are collectively known as the Columbia River Basalt Group. The flows range in thickness from a few millimeters to as much as 300 feet.

In the project area, ridges rise as high as 1,300 feet above the surrounding valley floor. The basaltic bedrock underlying the project area consists of lava flows of the Grande Ronde basalt. Soils in the project area along the ridgetops primarily consist of shallow to moderately deep mineral soils that formed in alluvium and glacial drift. Loess mixed with volcanic ash is typically present at the surface. In general, surface soils have low permeability, are dry to moist,

and contain local clay-rich zones that retain moisture. These soils are typically present in the upper 12 inches, although they may extend to 10 feet below ground surface. At most locations in the project area, a cemented layer of alluvium is encountered at various depths below the surface soil. This cemented material has a very low permeability; its presence at the site indicates a relatively high runoff potential.

Mineral resources in the immediate project vicinity include active and inactive commercial and private rock quarries. In addition, the area is a known resource for a rare type of agate known as “Ellensburg Blue,” which is classified by some gemologists as a precious gem. Ellensburg Blue is found primarily in Kittitas County, northeast to northwest of Ellensburg. Most of the areas where the project would coexist with potential deposits of Ellensburg Blue agate are on privately owned land.

Impacts on soils from project construction would result from clearing, excavation, and filling activities associated with constructing roads, establishing temporary crane pads, and creating the base for each turbine. Each of the turbine scenarios requires the same length of access road. However, turbines larger than 1.5 MW would require wider roads (34 feet versus 24 feet) to safely accommodate the wide-track cranes required for erecting the turbines. The total amount of ground disturbance during construction will be approximately 211 acres. Soils on the project site have a high runoff potential, with runoff and erosion potential increasing as the slope increases. In general, slopes range from 9% to 36%. Even though much of the work will occur on the tops of the ridges where slopes tend to be more gradual, there will still be a potential for substantial runoff during significant rain events in both turbine scenarios. Significant erosion could occur within areas disturbed by project construction and corresponding cut and fill activities.

Before construction begins, a detailed Stormwater Pollution Prevention Plan (SWPPP) would be developed and approved by EFSEC for the project to minimize the potential for pollutant discharge from the site during construction and operation activities. The SWPPP would include both structural and nonstructural BMPs. Examples of structural BMPs include the installation of silt curtains and/or other physical controls to divert flows from exposed soils or otherwise limit runoff and pollutants from exposed areas of the site. Examples of nonstructural BMPs include materials handling protocol, disposal requirements, and spill prevention methods. All construction practices would emphasize erosion control over sediment control through activities as using straw mulch and vegetating disturbed surfaces, retaining original vegetation wherever possible, directing surface runoff away from denuded areas, keeping runoff velocities low by minimizing slope steepness and length, and providing and maintaining stabilized construction entrances.

### ***Vegetation***

Vegetation communities within the Wind Project site consist primarily of sagebrush and grasslands. There are riparian zones along ravines and lithosols (shallow soils) communities along ridgetops. The higher portions of the project area border the ponderosa pine zone. The project is at the western edge of the Central Arid Steppe zone defined by the Washington State Gap Analysis. The Central Arid Steppe zone typically contains plant communities dominated by big sagebrush (*Artemisia tridentata*), bluebunch wheatgrass (*Pseudoroegneria spicata* previously *Agropyron spicatum*), and Sandberg’s bluegrass (*Poa secunda*). In many areas of the

zone, the introduced species cheatgrass (*Bromus tectorum*) is common due to past and present disturbance factors.

Specialized habitats such as lithosols occur throughout the region, although the extent of this habitat has not been quantified at a regional scale. Lithosols are of concern because they are a specialized subdominant habitat with unique characteristics, and are both sensitive to disturbance and difficult to replace. The project site's lithosol areas are typically in "good" condition. Lithosols present in the surrounding region are likely to be of comparative quality because of similar land uses such as development and cattle use.

Several riparian areas associated with springs, seeps, and creeks also are present in the project area. These habitats are typically degraded from heavy cattle use, and much of the riparian vegetation has been removed. Common native riparian associates include chokecherry (*Prunus virginiana*), golden currant (*Ribes aureum*), various rush species (*Juncus* spp.), various speedwell species (*Veronica* spp.), and yellow monkeyflower (*Mimulus guttatus*).

Impacts during construction at any of the proposed Wind Project facilities will involve direct disturbance to vegetation through heavy equipment, vehicle, and construction crew activities. The disturbances will include vegetation clearing, and digging, filling, grading, trenching, and compacting of soils. The extent of impact will depend on the type and quantity of affected vegetation for each proposed turbine scenario. Total temporary habitat disturbance will be approximately 211 acres. Total permanent habitat disturbance will be approximately 108 acres.

Grassland, shrub-steppe, and sagebrush vegetation communities account for more than 98% of temporary impacts and more than 96% of permanent impacts associated with the clearing of vegetation. The remaining vegetation communities that will be disturbed - coniferous forest, deciduous shrub, and riparian habitat - account for 0.2% of temporary impacts and less than 0.1% of permanent impacts on vegetation. It is estimated that 75% of the total area affected by project construction will only be temporarily disturbed (i.e., for less than one year), and will be replanted and restored after construction is finished.

Three field surveys of the project area were performed in 2002 by Sagebrush. The survey corridors included all land within 50 meters of proposed project facilities (e.g., turbine strings, access roads, staging areas, etc.) as defined through July 2002. The 2002 rare plant field surveys did not locate any federal or state endangered, threatened, proposed, or candidate plant species.

Marginal potential habitat was found for one federally listed species, Ute ladies'-tresses (*Spiranthes diluvialis*), in several of the project area riparian zones. However, the project area is west of the species' known range, and the habitat at these sites was degraded due to past disturbance. Both these factors greatly reduced the potential for occurrence of Ute ladies'-tresses.

Marginal potential habitat was found for one federal candidate species, basalt daisy (*Erigeron piperianus*). Although basalt daisy is typically restricted to the extensive cliffs along the Yakima River and Selah Creek, all cliffs within the project area were searched intensively for the presence of the species, with negative results. Marginal potential habitat was also found within the study area for a number of federal species of concern. These include Columbia milkvetch (*Astragalus columbianus*), Hoover's desert-parsley (*Lomatium tuberosum*), least phacelia (*Phacelia minutissima*), Seely's silene (*Silene seelyi*), and Hoover's *tauschia* (*Tauschia hooveri*).

In all cases, where potential habitat was found for these species, the area was searched carefully, with negative results.

Likewise, the field surveys did not locate any plants listed as endangered, threatened, or sensitive by Washington State. Potential habitat, however, was found for several of these species throughout the project area. These habitats were searched thoroughly for the presence of the target species, but none was found.

### ***Wetlands and Water Resources***

Wetlands within the Wind Project area are rare and consist primarily of ephemeral areas within the riparian zone of ravines. Within or near the project area, three potential wetlands were identified and delineated. Potential impacts on wetlands associated with construction of the proposed project include filling or grading of wetland systems. Two of the three identified potential wetland systems will be affected by proposed construction activity. Impacts on wetlands may involve up to a combined 165 square feet due to proposed road and electrical collection system improvements. Through the permitting processes, Sagebrush committed to mitigating this permanent wetland impact through preservation and enhancement of an 8-acre riparian mitigation parcel.

### ***Fish and Wildlife***

#### ***Fish Species***

No fish species will be impacted by the project because no suitable habitat for fish species exists within the site boundary, and because facility construction will not take place in any streams that function as habitat for the species or consume water from those sources.

#### ***Terrestrial Wildlife Species***

Potential habitat for wildlife species within the Wind Project area include primarily grassland, shrub-steppe, and sagebrush vegetation communities, with a relatively small area of coniferous forest along the northwest edge of the project area where the perimeter of a ponderosa pine forest is located. Field surveys in the project area have confirmed the presence of mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), and American pika (*Ochotona princeps*). Mule deer were frequently observed throughout the project area. Large groups and individual elk were observed near the northern points of the project area. American pika was heard regularly on the talus slopes in the western portion of the project area. Based on the Washington Department of Fish and Wildlife Priority Habitat and Species Database, the project area is located adjacent to elk winter range, more than 3 miles southeast of elk calving areas, and more than 2 miles from the Quilomene elk migration corridor. The project area is located within mule deer winter range.

Other mammals that likely exist within the project area include badger (*Taxidea taxus*), coyote (*Canis latrans*), pocket gopher (*Thomomys mazama*), bobcat (*Lynx rufus*), and other small mammals such as rabbits, voles and mice. These species are known to occupy and/or breed in similar habitats in Washington and are generally common and widespread in Kittitas County and Eastern Washington.



Potential impacts on wildlife and wildlife habitat associated with construction of the proposed project includes removal and loss of habitat associated with clearing vegetation communities and noise associated with construction. The primary effect from project construction will be the fragmentation, alteration, and removal of wildlife habitat. Diversity and abundance of wildlife relate directly to the amount, type, and quality of habitat and its supply of forage, protective cover, and secure nesting/rearing areas. Removing forested habitat will create a corresponding adverse effect on the wildlife that inhabits the project area. Loss of snags and coarse woody debris negatively affects primary and secondary cavity nesters such as woodpeckers and chickadees. Removing the overstory adversely affects canopy-using mammals and birds and decreases thermal cover. Decreases in understory adversely affect ground-dwelling species. Loss of plant communities that generally offer less diverse wildlife habitat, such as dry grassland and shrub-steppe, will result in a lower adverse effect than loss of the more complex vegetation associations such as wetlands and forested areas.

Excavation could result in mortality of individuals in underground burrows. Ground-dwelling mammals will lose the use of permanently disturbed areas; however, they are expected to repopulate the temporarily disturbed areas. Because the turbine pad and road construction will occur in relatively narrow areas, most wildlife species will be able to move away from areas of disturbance during construction. Overall, loss of habitat will result in a decrease in wildlife diversity and abundance over existing conditions.

During construction, increased noise levels created by heavy machinery and blasting activity may affect wildlife in adjacent habitats by disrupting feeding and nesting activities. Increased noise levels created by heavy machinery and blasting could cause birds to abandon their nests and may displace wildlife. Construction activities could result in avoidance behavior by some wildlife species. Overall, loss of habitat will result in a decrease in wildlife diversity and abundance over existing conditions. Impacts on wildlife and habitat associated with proposed project construction, with implementation of the proposed mitigation measures, are not expected to result in a significant impact on native wildlife because habitat types in the project area are not unique, and because documented wildlife in the project area are relatively common and widespread.

### ***Bird Species***

A total of 97 avian species in the project area and vicinity were identified during project surveys and site visits. Passerines were the most abundant avian group observed. Passerines species documented during surveys include aerial feeders such as swifts and swallows and gleaners including warblers, vireos, chickadees, kinglets, and sparrows. Passerine species use diverse habitats and occupy a variety of foraging and nesting niches. Passerine species typically nest and forage in wetlands, forest stands, riparian habitats, and within snags or duff created by decaying logs. Species of sparrows, finches, and grosbeaks observed during the surveys typically are associated with forest-edge habitat. Cumulatively, four passerines, American pipit (*Anthus rubescens*), American robin (*Turdus migratorius*), horned lark (*Eremophila alpestris*), and western meadowlark (*Sturnella neglecta*), composed 47% of the observations. No other species individually accounted for more than 5% of the observations.

The next most abundant avian group varied by season, with corvids (crows, ravens, and jays) higher in spring and fall, and raptors more prevalent in summer. Raptor species observed during the surveys include American kestrel (*Falco sparverius*); bald eagle (*Haliaeetus leucocephalus*);

golden eagle (*Aquila chrysaetos*); turkey vulture (*Cathartes aura*); northern goshawk (*Accipiter gentilis*) red-tailed (*Buteo jamaicensis*), rough-legged (*Buteo lagopus*), sharp-shinned (*Accipiter striatus*), and Cooper's hawks (*Accipiter cooperii*); and great horned owl (*Bubo virginianus*). These species inhabit dense coniferous and deciduous forests, foraging in open areas associated with wetlands, meadows, grasslands, riparian, and open water habitats. Most of the raptor species forage on small mammals. The most common raptor species observed were red-tailed hawks and American kestrels.

Several species of woodpeckers, including northern flicker (*Colaptes auratus*), Lewis' woodpecker (*Melanerpes lewis*), and downy woodpecker (*Picoides pubescens*) were observed. These species rely on conifer forest stands with snags in varying stages of decay that provide habitat for nesting, foraging, and food caching.

Observed upland game birds include blue grouse (*Dendragapus obscurus*), ruffed grouse (*Bonasa umbellus*), California quail (*Callipepla californica*), and gray partridge (*Perdix perdix*). Bird species unique to shrub-steppe habitats, such as sage thrasher (*Oreoscoptes montanus*) and sage grouse (*Centrocercus urophasianus*), were once common but are now in decline. Sage thrasher was observed during project surveys. Sage grouse was not observed.

Avian species observed during the surveys are known to occupy and/or breed in similar habitats in Washington and are generally common and widespread in Kittitas County and Eastern Washington.

Based on the level of raptor use within the project area, raptor mortality is expected to be slightly higher compared to other wind projects with similar turbine types. Since American kestrels and red-tailed hawks account for most of the raptor use at the site, they are expected to be the species with the highest mortality. The potential exists for other raptor species, including northern harrier, rough-legged hawk, bald eagle, and turkey vulture, to collide with turbines. However, the mortality risk associated with these species is expected to be lower than the risk for American kestrel and red-tailed hawk. Turkey vultures appear less susceptible to collision than most other raptors. Few northern harrier fatalities and no rough-legged hawk or bald eagle fatalities have been observed at U.S. wind projects to date. Golden eagle use of the site is low relative to other wind sites and the mortality risk for golden eagles is also expected to be low.

Based on raptor use estimates in the project area, potential raptor mortality associated with the proposed project is estimated at about 0.038 raptor fatalities a year per turbine. Based on this assumption, an average of two to three raptor fatalities per year will occur, depending on the turbine scenario. Based on the raptor survey results, the majority of raptor fatalities are expected to be American kestrels and red-tailed hawks.

Passerines have been the most abundant avian fatality at other wind projects studied, often comprising more than 80% of the avian fatalities. Both migrant and resident passerine fatalities have been observed. Given that passerines make up the vast majority of the avian observations onsite, it is expected that passerines will make up the largest proportion of fatalities. Species most common to the study area, including western meadowlark, vesper sparrow and horned lark would likely be most at risk. Horned larks have been the most commonly observed fatality at several other wind projects. Nocturnal migrating passerine species may also be affected, but it is not expected that they would be found in large numbers based on data collected at other wind power projects (i.e., no large mortality events documented). Based on the per turbine mortality

estimates from the other wind power projects studied, between 30 and 200 passerine fatalities may occur per year.

### ***Bat Species***

At least two species of bats, hoary bat (*Lasiurus cinereus*) and silver-haired bat (*Lasonycteris noctivagans*), are known to migrate through Washington. Other species such as little brown bat (*Myotis lucifugus*) and big brown bat (*Eptesicus fuscus*) may make localized short-distance migrations to suitable hibernacula sites (e.g., caves, mines). Suitable foraging habitat for three bat species, fringed myotis, small-footed myotis and Yuma myotis, is present within the project area. Typical roosting habitat for these bat species (caves, cliffs, and crevices), is not located within the project area. Only general descriptions of potential distributions are available for these species, and they would likely avoid construction activity associated with the project.

However, it is likely that some bat fatalities will occur at the proposed project site. Bat research at other wind power projects indicates that bat species are at some risk of collision with wind turbines. Wind power project studies indicate that most bat fatalities occur during migration, with low mortality associated with resident bat species. Most bat species in Washington migrate south in the fall. Washington bat species that do not migrate are year-round residents that hibernate in the winter. Most bat fatalities found at wind power projects have been tree-dwelling bat species, with hoary and silver-haired bats being the most common fatalities. Both hoary bats and silver-haired bats are migratory species that may use the forested habitats near the project site and may migrate through the project area.

### ***Historic/Archeological Resources***

The assessment of historic, archaeological, and traditional-use resources was conducted within the Area of Potential Effect (APE), the geographic area within which the proposed project may affect cultural resources. The APE includes the approximately 231- to 371-acre temporary construction footprint of the project including access roads; turbines, meteorological towers, and electrical pole foundation pads; operation and maintenance, and substation building locations; and construction staging areas.

There are two prehistoric archaeological sites recorded at the project area. These two sites are located near one of the turbine strings and the site for the new BPA substation. Because Sagebrush would avoid ground-disturbing activity within 100 feet of all documented cultural resource sites, no direct impacts to known archaeological sites are expected as a result of project construction.

During construction and operation of the Wind Project, Sagebrush will avoid ground-disturbing activity within 100 feet of all documented cultural resource sites. A qualified archaeologist will monitor all ground-disturbing activities and the Yakama Nation will be contacted prior to these activities and invited to have representatives present. If intact archaeological resources or human burial sites are encountered during construction, construction in the vicinity will cease and appropriate state and tribal authorities notified in order to determine how the materials should be treated. The area would be secured and placed off limits for anyone but authorized personnel. In addition, if any future changes to the project layout occur that involves impacts to areas not previously surveyed for cultural resources, additional surveys would be conducted to document and avoid archaeological sites. Also, Sagebrush will prepare a Cultural Resources Monitoring

Plan in consultation with the Washington Department of Archeology and Historic Preservation. Potentially affected tribes will be provided the opportunity to comment on this plan prior to its approval by EFSEC.

### ***Visual Resources***

During construction, large earth-moving equipment, trucks, cranes, and other heavy equipment will be highly visible from nearby areas. At some times, small, localized clouds of dust created by road building and other grading activities may be visible at the site. Because of construction-related grading activities, areas of exposed soil and fresh gravel that contrast with the colors of the surrounding undisturbed landscape will be visible. In close-up views, particularly those seen by travelers on the segment of US 97 that passes through the project site and those seen from the closest residences, the visual changes associated with the construction activities will be highly visible and will have a moderate to high visual impact. From more distant locations, the visual effects will be relatively minor and will have little or no impact on the quality of views.

During turbine erection, double shifts will occur on some days to maximize construction in low wind conditions. Therefore, some construction activities may occur during evening (dusk) or nighttime hours, and lighting may be needed. The effects of construction lighting will be temporary, lasting only during the specific activity period (for turbine erection, estimated at six months).

The project has the potential to create high levels of visual impact from some areas. Sagebrush conducted extensive visual analyses, including visual simulations of the project, as part of the EFSEC siting process. In order to minimize visual impacts, turbine setbacks from rural residences in the project vicinity have been increased in some areas.

### ***Noise***

The project area is mostly undeveloped hilly terrain with low population density. There are approximately 60 residential structures within 1 mile of the proposed wind turbine strings. Distances range from approximately 790 to 3,230 feet from the closest wind turbine. The primary source of noise in the project area is wind and vehicular traffic along US 97 that bisects the project site.

During the construction phase of the proposed project, noise from construction activities will add to the noise environment in the immediate area. Construction of the wind project will cause localized increases in noise that would have an intermittent and short-duration effect on nearby residences. These temporarily increased noise levels will result from normal construction activities and construction equipment, such as bulldozers, graders, and excavation equipment.

During operation of the Wind Project, the proposed wind turbines could potentially operate 24 hours per day during continuously windy periods, and not at all when winds are calmer. The selected turbines are expected to be warranted by the manufacturer not to exceed a maximum sound pressure level of 103 dBA (A-weighted decibels, a standard unit of noise measurement) with a wind speed of 18 miles per hour at 33 feet from the base of the tower in accordance with the protocol established in International Electrotechnical Commission (IEC) 61400. This is approximately equivalent to a sound pressure level of 72 dBA at 50 feet from the turbine.

However, a sound pressure level between 98 and 108 dBA is representative of the range of noise test data for all turbines under consideration for the proposed project.

### ***Public Health and Safety***

The Wind Project would have fencing around substations and other electrical equipment. Turbine generating equipment would be high above ground, and access to turbine towers would be secured and limited to authorized personnel. The collector system would be located at least three feet below ground.

During construction, access to the site would be limited to authorized personnel and the general public would be excluded. Authorized visitors would be required to check in with security and construction personnel would be diligent in identifying and excluding non-authorized visitors.

During operation, all electrical components, such as substations and turbines, would be locked and accessible only by authorized personnel.

Health and safety risks during construction include potential fire or explosion and release of hazardous materials to the environment. Health and safety risks during project operation include these risks as well as others specific to wind turbine generators such as ice throw, tower collapse, blade throw, and shadow-flicker. None of these public health and safety risks are expected to be substantial threats. However, Sagebrush will institute a number of mitigation measures designed to avoid and minimize risk, through compliance with all applicable local, state, and federal safety, health, and environmental laws, ordinances, regulations, and standards. Accordingly, Sagebrush will put in place a large number of measures to reduce the risk of fire, explosion, the release of hazardous materials, ice throw from rotating turbine blades, turbine tower collapse, shadow flicker from rotating blades, dust hazards, vandalism, electric and magnetic field hazards, and electrical shock hazards.

### ***Socioeconomics and Public Services***

The Wind Project will have beneficial economic consequences and no significant adverse economic consequences. The facility will offer local employment opportunities by providing up to 253 jobs during construction and up to 12-16 jobs during operation. Annual lease payments to the landowners in the wind facility lease area will supplement income from other farm operations without significantly reducing the land base available for farming practices. In addition, the Wind Project is expected to provide up to \$190 million in property tax revenue to Kittitas County over the life of the project.

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. The facility will avoid adverse impact to historic, cultural and archaeological resources. The Wind Project will have no adverse impact on recreational opportunities in the local area. During construction and operation of the facility, solid waste and wastewater minimization will properly be disposed or recycled.

## **Air Quality**

The project area is located in a semi-arid region of the Columbia Plateau, within the rain shadow of the Cascade mountain range. This area is characterized by a large range of annual temperatures indicative of a continental climate. Annual precipitation ranges from 7 inches in the drier localities along the southern slopes to 15 inches in the vicinity of the Blue Mountains. The project area has a strong wind energy resource, which is primarily thermal driven. When warm air rises over the desert-like areas east of Ellensburg, cooler air in the Cascades west of Cle Elum, near Snoqualmie Pass, is drawn through the Kittitas Valley.

The primary existing source of air pollutants in the project vicinity is vehicle emissions. Kittitas County is classified as an attainment area for all criteria pollutants. This means that ambient air quality in the study area meets the National and Washington Ambient Air Quality Standards (NAAQS/WAAQS).

The primary type of air pollution generated during project construction will be emissions from vehicle and equipment exhaust, and fugitive dust particles from travel on paved and unpaved surfaces. The fugitive dust particles occur when disturbed soils become airborne. Heavy trucks and construction equipment powered by gasoline and diesel engines will generate various carbon emissions, nitrogen oxides (NO<sub>x</sub>), and particulate matter in exhaust emissions. These emissions will be temporary and limited to the immediate area surrounding the construction site.

During project operations, travel on the new and upgraded private gravel access roads will generate limited amounts of fugitive dust and CO, hydrocarbon, NO<sub>x</sub>, and particulate matter emissions. This traffic is expected to consist of weekly or less frequent trips to turbines in service vehicles for maintenance and repair activities. The number of vehicle trips associated with workers commuting to and from the O&M facility on paved state and county roads will be approximately 28 daily trips. Therefore, it is unlikely that the resulting dust will generate a significant air quality impact in excess of the NAAQS/WAAQS.

Operation of the Wind Project itself will result in minimal emissions. Unlike more traditional energy sources such as a gas or coal-fired turbines, the portion of the Wind Project that will generate electricity – the wind turbines – will not emit any air pollutants. Accordingly, Wind Project operation will not contribute to the accumulation of greenhouse gasses from traditional energy sources and other sources, which has been identified as a source of climate change and global warming.

## **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. Many other wind projects have been built or are reasonably certain to be built in the region. There are currently over 2,000 MW of wind energy connected to the transmission grid within BPA's Balancing Area, and several thousand more megawatts of wind power are expected to be developed and connected to the grid in the next few years.<sup>5</sup> In addition, according to a cumulative impacts

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<sup>5</sup> BPA. Factsheet: *How BPA Supports Wind Power in the Pacific Northwest*. DOE/BP-4002. March 2009.

analysis prepared for a proposed nearby wind farm<sup>6</sup> approximately 4,060 MW of wind power are proposed in the Columbia Basin and are reasonably certain to be built. Results from these analyses are used in the following sections discussing cumulative impacts.

### ***Land Use and Recreation***

Overall, wind projects and associated facilities have relatively little direct impact on land use because the footprint of the facilities is small even if they occur across large areas. Additionally, wind projects tend to reinforce the existing agricultural land uses (the primary land uses in most areas proposed for wind energy). Wind projects are compatible with all types of agriculture. Wind lease payments provide a supplemental source of income for farmers, helping them weather the uncertainties of agricultural yields and prices.

State and local land use regulations in Oregon and Washington require, depending on the size of the project, either county land use approval or State approval, prior to construction of 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 recreation in agricultural areas. Dispersed hunting that may occur in the region normally could continue after construction and during turbine operation.

### ***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 will have a cumulative effect. These effects will be temporary. To minimize these effects during construction, the projects 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.

### ***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 very small due to the small actual footprint of wind project facilities. Ground disturbance from construction of energy projects close together could increase erosion potential in some areas as a result of the decrease in soil storage area. Additional wind projects and associated facilities needed in the future could also increase the potential for erosion, but the relatively small footprint of wind projects and standard control and containment measures will limit these impacts.

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<sup>6</sup> Caithness Shepherds Flat, LLC. Application for a Site Certificate for the Shepherds Flat Wind Farm, Prepared for the Oregon Energy Facility Siting Council. Amended February 2007, and supporting documents.

### ***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 of native plant communities. Additional projects in the area combined with the acreages already planned for development will increase the total acreage in the region used for wind development. The permanent footprint (during operations) of wind projects is small compared to the total acreage of the projects, and will remove small amounts of agricultural land and native habitats. The area taken up by each turbine and associated facilities, including roads and substations, will be changed and could no longer be habitat. The acreage not used for facilities will remain unchanged. No land use changes and subsequent potential habitat changes will occur. Some projects will set aside acreage to mitigate impacts to wildlife habitat.

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

### ***Water Resources and Wetlands***

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. In areas where wetland and water resources are present, wind project facilities almost always can be located to avoid these resources. Cumulative impacts to wetlands and water resources from the Wind Project and other wind projects in the region are expected to be negligible because wetlands and water resources are scarce in the area, and wind project infrastructure will be located in upland areas where these resources generally are not present.

### ***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 streambank stability, and altered nutrient supply. Since the regional wind projects currently proposed are typically located in upland areas and generally well away from fish habitat, the proposed regional projects will not be expected to contribute 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 between the wind projects, Columbia River hydro operations, and operation of this hydrosystem to meet Clean Water Act (CWA) and Endangered Species Act (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 loads 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 May 2009, there was approximately 2,100 MW of total wind generation interconnected to the BPA system. In addition, BPA currently has contracts in place that will allow for the interconnection of an additional 2,100 MW of wind generation to the BPA system; these projects may be built and operational within the next few years.

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. At times maintaining the reserve can cause additional spill to occur.

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 in the BPA Balancing Area 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 could reduce overall Columbia River water flows and generation by releasing less water from Columbia River hydro projects and putting the water into storage. Second, BPA could decrease hydro project generation by spilling water over the dams rather than running it through the dam turbines. Third, BPA could reduce other sources of generation within the BPA Balancing Area.

During certain times and conditions, the first option of storing the water is not available because room is being maintained for 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. Moving to the second option – spilling water over the dams – runs the risk that standards under the CWA for total dissolved gases, that are established to protect fish, would be violated and ESA-listed fish species would be impacted because water being spilled over the dams results in elevated levels of dissolved gases developing in the river. As the amount of water spilled increases, so does the level of dissolved gases. The CWA standards for total dissolved gases limit the level of dissolved gas saturation permissible in the river when migrating salmon are present. Gas supersaturation can lead to gas bubble trauma in fish or other aquatic organisms as a result of 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. Acute affects may be reversed by exposure to equilibrated water or to increased hydrostatic pressure. However, 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. In these settings, large-scale mortality can occur in a matter of hours.

In natural circumstances, the limit of safe gas supersaturation levels depends on the depth within the water column a specific fish species swims. The naturally occurring levels of gas in the Columbia and Snake rivers varies between 105 percent and 120 percent of equilibrium total gas saturation pressure (ambient atmospheric pressure). Within the Columbia and Snake rivers, the state standards for saturation are 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. Because of this waiver the standard level of gas in the river is 120 percent. Running the river to this level but, no higher has become a fundamental component of how spill and resultant fish passage has been managed at hydroelectric power generation facilities.

An example of the potential for cumulative impact of wind development occurred in spring 2008, when wind turbines in BPA's balancing area produced significantly more power than scheduled over several hours. During this time, wind generation peaked at over 400 MW above the prescheduled amount. BPA was forced to reduce hydrosystem generation to accommodate this unscheduled wind generation and provide necessary balancing services. Due to high water flows in the Columbia River at the time, water was already spilling over dams above that needed for fish protection. Decreasing hydro generation at that time meant increasing water spill, and nitrogen saturation in the water rose nearly to levels dangerous to fish species.

BPA is currently taking steps to ensure that wind power on BPA's transmission system does not cumulatively impact Columbia River hydro operations necessary for listed fish species. 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 would automatically instruct wind project operators to reduce their generation to specified levels if necessary for reliability and ESA or CWA compliance (visit <http://www.bpa.gov/corporate/WindPower/WIT-DSO.cfm> for more information).

### ***Terrestrial Wildlife***

The current and proposed wind projects near the analysis area will have low impacts to non-avian terrestrial species because much of area is agricultural 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.

### ***Bird Species***

Annual avian mortality estimates at six recently constructed wind farms in the Columbia Plateau Ecoregion ranged from 0.9 to 2.9 birds per MW, averaging 1.9 avian deaths/MW/year. Assuming that mortality rates are representative of the region, new wind power generation could cause between approximately 3,650 and 11,775 and on average 7,715 avian deaths per year in the region (based on 4060 MW of power generated).

*Raptors*

At modern wind power projects in the Columbia Plateau Ecoregion, raptor mortality has been low, ranging from 0 to 0.14 raptor fatalities per MW per year. An added 4,060 MW of capacity in the region could result in between 0 and 568 fatalities, on average about 280 raptor deaths per year. Red-tailed hawk, American kestrel, and northern harrier account for most of the summer raptor use at other projects where avian use was studied while rough-legged hawk and red-tailed hawk account for majority of the winter use. These four species are expected to be the raptor species with the highest collision risk across all the projects. The potential exists for other species to collide with turbines, including Swainson's hawk, ferruginous hawk, turkey vulture, golden eagle, Cooper's hawk, sharpshinned hawk, prairie falcon, and bald eagle; however, the mortality risk associated with these species is expected to be lower due to the lower use by these species in general.

Red-tailed hawk and American kestrel account for more than 69 percent of the raptor fatalities recorded at the regional wind projects studied. Assuming this trend holds true for all proposed wind projects in the Columbia Plateau, it will be expected that on average 70 red-tailed hawks and 70 American kestrels will be killed each year. Approximately 18 redtail and kestrel fatalities will occur during the breeding season. An estimate of the breeding population in the Columbia Plateau, based on the long-term average data is approximately 6,820 breeding red-tailed hawks and 6,288 breeding American kestrels. The impact to the breeding population will represent approximately 0.26 percent and 0.28 percent respectively, which is likely to be below background mortality for these species and is not considered to have an effect on the regional populations. The other species of raptors have been impacted far less and will represent a much smaller number of fatalities.

*Passerines*

Passerines have been the most abundant species among the avian fatalities at wind projects studied. For projects in the Columbia Plateau Ecoregion, on average approximately 69 percent of the avian fatalities have been passerine. Both migrant and resident passerine fatalities have been observed, with migrants generally making up 20-30 percent of the avian fatalities. Assuming that 69 percent of all bird mortality will be passerine fatalities, between approximately 2,518 and 8,125 (on average 5,323) passerine deaths per year in the region will occur. Some impacts are expected for nocturnal migrating passerine species, however, impacts are expected to be low for the Columbia Plateau Ecoregion. Estimates for nocturnal migrant mortality at the regional wind projects have ranged from 0.27 to 0.73 per MW per year or approximately 1,090 to 2,960 nocturnal migrant fatalities for the 4060 MW of wind power expected to be constructed. Passerine species most common to the project sites, including horned lark and western meadowlark, will likely be most at risk. Horned larks represent approximately 35 percent of the avian fatalities in the Columbia Plateau Ecoregion at wind projects.

Local populations of horned larks are difficult to define because of the vast amount of suitable habitat for this species in the Columbia Plateau. However, based on data from the United States Geological Survey Breeding Bird Survey for routes in the Columbia Plateau, the breeding horned lark population in the Columbia Plateau is calculated to be approximately 127,500 horned larks. If it is further assumed that the 2,715 horned lark fatalities are spread equally over the year, then roughly one-quarter of these fatalities (approximately 680) will be during the breeding season.

This number represents approximately 0.5 percent of the breeding horned larks and is not considered high enough to affect population dynamics. It is likely that other background mortality of breeding horned larks is greater than this estimate. Similar calculations for other passerine species indicate that impacts to these species will be minor and unlikely to have any population effects.

In general for wind projects in the Columbia Plateau, approximately 25 percent of the fatalities have been to migrants spread over many species. The most common migrant fatality (9 percent) was golden-crowned kinglet. Golden-crowned kinglets are typically associated with tree or wooded habitats during the breeding season so it is assumed that many of the impacted individuals were from surrounding more mountainous ecoregions or populations further north (e.g., Canada). As with horned lark, estimating the potential population size from which these birds came requires a number of assumptions. However, while it is unknown, it is possible that the individual fatalities came from multiple populations in surrounding or more northern ecoregions, thus diluting the impacts on any one population. Other potential migrant species were found in lower numbers. Cumulatively the impacts to migrants will be spread over a much larger population base and are not considered to have population effects.

#### *Upland Gamebirds*

For projects in the Columbia Plateau Ecoregion, upland gamebirds have composed a higher percentage of avian fatalities than in other regions of the U.S., approximately 18 percent of all avian fatalities. Estimates for upland game bird mortality in the Columbia Plateau Ecoregion have varied from 0.27 to 0.47 per MW per year, or between 1,090 and 1,910 upland gamebird fatalities per year. The upland game bird species most commonly impacted (ring-necked pheasant, gray partridge, and chukar) are introduced species common in mixed agricultural native grass/steppe habitats. There is generally low concern over impacts to introduced species of upland gamebirds. These species are regulated by state agencies as game species. Impacts from wind farms to these species are not expected to have population level effects given the vast amounts of suitable habitat and other impacts to these species (i.e., hunting).

#### *Bat Species*

Results of fatality monitoring for the Columbia Plateau Ecoregion wind projects indicate mortality ranges of approximately 0.63 to 2.46 bats per MW per year. Based on these results, and considering the similarities in the characteristics of the project areas and other regional projects, a conservative estimate of total bat mortality will be between 2,550 and 9,990 bats per year, assuming 4060 MW of wind power is constructed.

Fatalities to only four species (silver-haired bat, hoary bat, little brown bat, and big brown bat) have been documented for six wind projects monitored in the Columbia Plateau Ecoregion. The annual period when most bat fatalities occur is in August and September. Studies indicate that most bat fatalities occur during migration, with low mortality associated with resident bat species. The species at highest risk appear to be foliage-dwelling (trees) fall migratory species.

Unlike with birds, there is little information available about populations of bat species. Bat mortality in the Columbia Plateau Ecoregion will involve primarily silver-haired and hoary bats, and no impacts to threatened or endangered bat species are anticipated. Hoary and silver-haired

bats are wide spread across North America and breed into the boreal forests regions of Canada and migrate south to winter in the southern U.S., Mexico, and potentially further south in Central America. In general, mortality levels on the order of 1-2 bats per turbine are not significant to populations, however, cumulative effects may have greater consequences for long-lived low-fecundity species such as bats. Unlike many avian species that may have multiple clutches of multiple young per year, hoary bats and silver-haired bats likely only raise one or two young per year and only breed once per year. Bats tend to live longer than birds, however, and may have a long breeding lifespan. The impact of the loss of breeding individuals to populations such as these is generally unknown but may have greater consequences.

### ***Historic and Cultural Resources***

Cumulative effects on cultural resources are associated with construction activities and permanent land use change through development of new wind generation projects. Because the developments are likely to be dispersed, impacts are unlikely 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 siting 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 will likely occur in rural areas, most visual impacts would be experienced by the relatively few residents of the rural areas. Turbines will also be visible to other residents and people traveling through on public roads near the wind project areas. The significance of the visual changes will 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 disagree. 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***

Wind generation projects create noise during the construction period of the project. If multiple wind projects were constructed in the same area at the same time, a minor increase in construction noise would occur. No operational noise impacts are anticipated other than the sound of the blades when the turbines are operating and intermittent noise associated with substation operations. Noise easements, moving or eliminating turbines, or other measures are typically required during the permitting processes if noise increases are above state standards.

### ***Public Health and Safety***

Any potential risks to the health and safety of workers or the general public associated with the construction of the wind projects will be incidental and comparable to other construction projects. The long-term risk to the health and safety of residents and passersby from operation and maintenance of wind turbines and associated infrastructure is low, due to the small number

of people living and working in the predominantly rural areas, and the large area over which the various wind farms will be scattered.

### ***Socioeconomics and Public Services***

Wind lease payments to farmers will provide a supplementary source of income that could help farmers retain their farms when farm prices or weather reduce other sources of farm income. Additional development will provide tax revenue to local governments. New wind generation projects will create temporary effects on housing. Because these effects will be temporary and may occur during separate time periods, accumulation of impacts related to project construction will 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 issues associated with wind energy are limited to construction emissions, which could be minimized by the use of reasonable controls on all projects. These impacts are temporary and generally not significant. 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 a gas- or coal-fired turbines. This cumulative wind development also could serve to reduce greenhouse gasses in the atmosphere because of this displacement.

## **MITIGATION**

Specific resource mitigation conditions to avoid or minimize environmental harm from the Wind Project were identified through EFSEC's site certificate process and are incorporated here 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 Kittitas Valley 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](http://www.efw.bpa.gov).

## **CONCLUSION**

BPA has decided to offer contract terms through a LGIA for interconnection of up to 108 MW from the Kittitas Valley Wind Project into the FCRTS at Bettas Road Substation in Kittitas

***Record of Decision for the Electrical Interconnection of the Kittitas Valley Wind Project***

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County, Washington. The LGIA provides for interconnection of 108 MW from the Wind Project with the FCRTS, the operation of this amount of wind power from the Wind Project in the BPA Control Area (including control area services such as generation imbalance service), 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).

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 Bettas Road 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

September 4, 2009  
Date