

# 1. SUMMARY

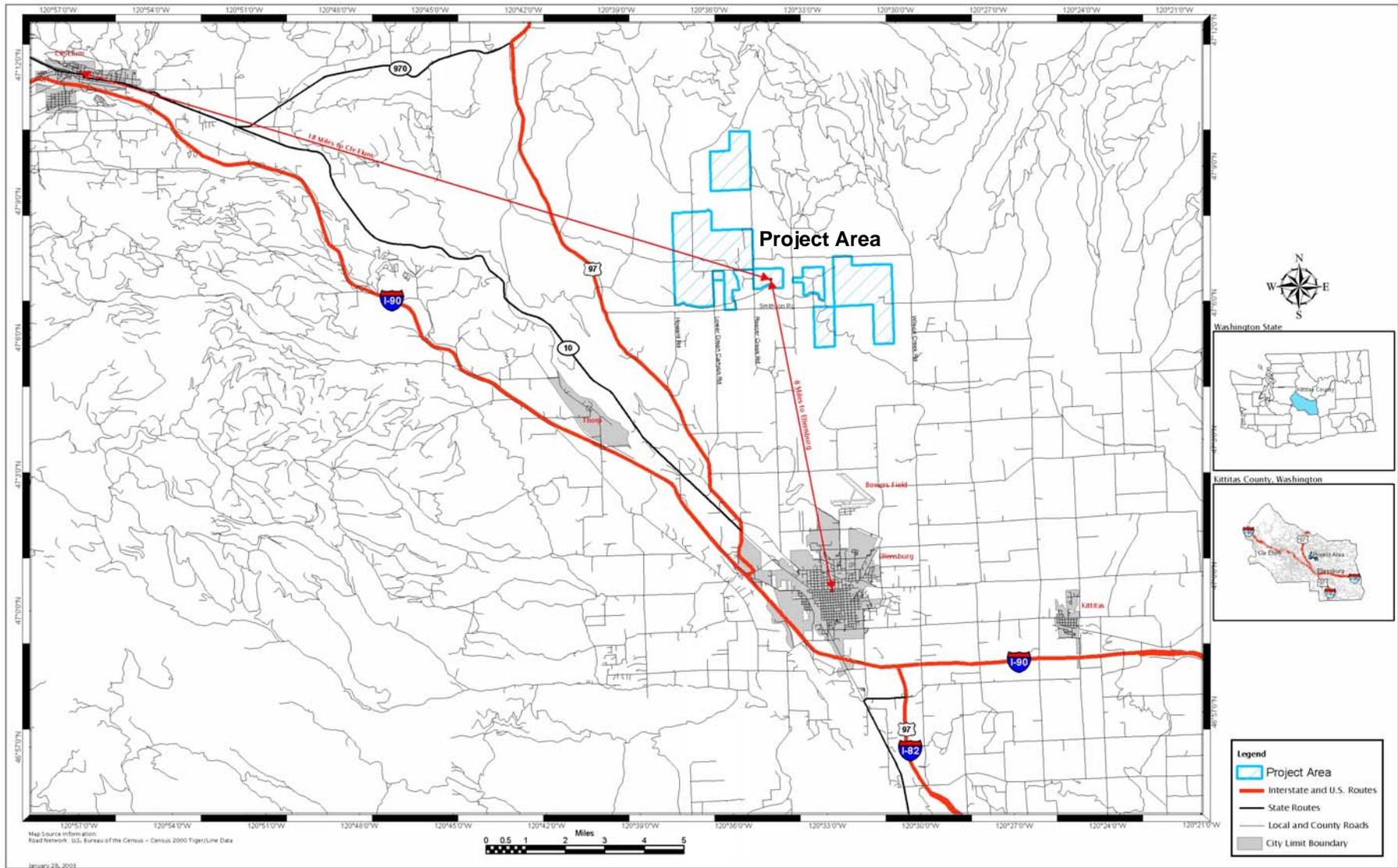
## 1.1 INTRODUCTION

**Chapter 1** provides a summary of the Final Environmental Impact Statement (Final EIS) for the Desert Claim Wind Power Project proposed by Desert Claim Wind Power LLC. It briefly describes the background for the proposed wind energy development and the regulatory framework for the actions under consideration by Kittitas County (**Section 1.2**), the applicant's objectives for the proposal (**Section 1.3**), Kittitas County's objectives for the review of the proposal (**Section 1.4**), and the applicant's proposal and the alternatives to the proposal that are evaluated in the EIS (**Section 1.5**). **Chapter 1** also includes a comparative overview of the proposal and two alternatives, summarizing their expected environmental impacts, potential cumulative impacts, potential mitigation measures that would address the identified impacts and significant unavoidable adverse impacts (**Sections 1.6 through 1.9**). This summary is not a substitute for the comprehensive analysis contained in the EIS document and technical appendices. Readers should consult the full EIS and the technical appendices for detailed information about the proposal, impacts and mitigation measures.

**Chapter 2** of the EIS provides a more detailed description of the proposed wind power project and the alternatives that are evaluated in the EIS. **Chapter 3** documents the affected environment applicable to the project, the expected environmental impacts of the proposal and the alternatives, and the proposed or possible mitigation measures that would address those impacts. **Chapter 4** provides a complete discussion of potential cumulative impacts associated with the Desert Claim project. **Chapter 5** provides responses to issues identified in the review comments on the Draft EIS. **Chapter 6** reviews the consultation and coordination activities related to the preparation of the EIS. **Chapter 7** lists the references cited in the text of the EIS and **Chapter 8** lists the agencies, organizations and individuals receiving copies of the EIS. A second volume of the EIS contains detailed technical documentation supporting several of the environmental impact analyses.

## 1.2 REGULATORY FRAMEWORK

Desert Claim Wind Power LLC, a wholly owned and managed subsidiary of *enXco, Inc.*, submitted an application dated January 28, 2003 to Kittitas County Community Development Services for permits necessary to construct and operate a wind energy facility. The proposed project would be located within a project area of 5,237 acres approximately 8 miles north of the City of Ellensburg, the county seat for Kittitas County (see **Figure 1-1**). The project would consist of up to 120 wind turbine generators with a total nameplate capacity of at least 180 megawatts (MW). Construction of the project would also require construction and placement of access roads, control cables and power collection cables. The project would include one or more substations (to convert project-generated electricity to the higher voltage required for transmission) and an operations, maintenance, storage and repair area to be co-located with the substation. The operating life for the proposed project is assumed to be approximately 30 years.



Source: Desert Claim LLC, 2003



### Kittitas County Desert Claim Wind Power Project EIS

Figure 1-1  
Location Map

### **1.2.1 Environmental Review**

The proposed approval of the Desert Claim Wind Power Project by Kittitas County is subject to review under the Washington State Environmental Policy Act (SEPA). Kittitas County Community Development Services is the lead agency for the environmental review of the project under SEPA. Kittitas County issued a Determination of Significance (DS) for the proposed project on April 23, 2003 and announced its intent to prepare a SEPA environmental impact statement (EIS). In conjunction with the DS, Kittitas County requested public and agency comments on the scope of the Desert Claim Wind Power Project EIS. Kittitas County responded to the scoping comments with the development of a Draft EIS for the project. Kittitas County provided a 30-day comment period to receive scoping comments on the EIS. The Draft EIS was available for review by agencies and the public for a 45-day comment period. During this period, Kittitas County held a public meeting to receive comments on the Draft EIS. After the formal review period for the Draft EIS closed, Kittitas County revised the Draft EIS as necessary in response to comments and issued this Final EIS. As specified in the SEPA rules (WAC 197-11-460 [5]), Kittitas County may not take action on the proposal sooner than 7 days after the Final EIS has been issued. SEPA rules provide for a period of 10 working days after the issuance of a Final EIS during which an appeal of that EIS may be filed.

### **1.2.2 Kittitas County Comprehensive Plan and Zoning**

The Kittitas County Code (KCC), Chapter 17.61A, sets forth the requirements for approval of a wind energy project in the County. These include: (1) securing a Wind Farm Resource Development Permit from the County; (2) executing a development agreement with the County; (3) County adoption of a site-specific amendment to the Comprehensive Plan land use designation map, changing the designation for the project area to Wind Farm Resource overlay district; and (4) County adoption of a site-specific rezone of the project area to Wind Farm Resource Overlay Zoning District. In conjunction with preparation of the Final EIS, the Planning Division of Kittitas County Community Development Services will prepare a staff report on the proposed action pending before the County and will forward that report to the Planning Commission and the Board of County Commissioners for their consideration. The Planning Division also will prepare a draft Development Agreement for the project pursuant to Kittitas County Code Chapter 17.61A. The Planning Division will forward the draft Development Agreement and the proposed site-specific rezone and Comprehensive Plan amendment for the project to the Planning Commission for its review. The Planning Commission will forward a recommendation on the site-specific rezone to the Board of County Commissioners. The Planning Commission will also review the draft Development Agreement and make a recommendation to the Board of County Commissioners to either approve or reject it. The Board of County Commissioners will make the final permit decision for the project and will make the final decision regarding the Development Agreement.

### **1.2.3 Development Agreements**

State law (RCW 36.70B.170) permits local governments to enter into “development agreements” with property owners as a means of documenting development standards and mitigating conditions that will be applicable to a proposal. The agreement must be adopted by ordinance or resolution after a public hearing. The agreement must set forth the “standards” and other provisions that will apply to and govern a proposed use. Pursuant to KCC Chapter 17.61A, Desert Claim Wind Power LLC, the project proponent, is required to execute a development agreement with Kittitas County. The development agreement may include standards for densities, number, size, setback, and location of turbines; mitigation measures; and other development conditions necessary to protect surrounding properties, the local neighborhood, or Kittitas County as a whole. Among other things, the agreement would provide a vehicle for compiling all

SEPA mitigating conditions and conditions of approval and ensuring that they are legally enforceable. The agreement would provide a means of documenting and tracking project assumptions (about existing or future conditions), and environmental monitoring or additional study requirements applied to the project.

### **1.3 APPLICANT'S OBJECTIVES FOR PROPOSAL**

In the Development Activities Application submitted to Kittitas County (Desert Claim Wind Power LLC, 2003), Desert Claim Wind Power LLC identified the objective for the proposed action as the development of a commercially viable wind energy facility with a total nameplate capacity of at least 180 megawatts (MW) and a maximum of 120 wind turbine generators, plus necessary project support facilities. The application also indicated that the site-specific criteria needed to support such a facility included: (1) sufficient wind resource to support the generating capacity objective; (2) ready access to sufficient available capacity on an existing electric transmission system; (3) lack of significant constraints posed by environmentally sensitive resources or parks/recreation areas; (4) relatively large tracts of open land; and (5) a sufficient number of willing land owners interested in participating in a wind energy project.

*enXco* develops, builds, operates and manages wind energy projects throughout the United States and in other countries. The company focuses its efforts on the wind energy sector, and is not active in developing electric production capacity using other types of generating technology. *enXco's* project development activities respond in general to the demand for electric power and to federal and state policies supporting wind and other types of renewable energy resources. The Desert Claim Wind Power Project proposal also responds to projected future demand for electricity within the Pacific Northwest, policies that encourage electric utilities to obtain a portion of their electricity supply from renewable energy resources, and specific actions by utility organizations to acquire wind energy resources. The Bonneville Power Administration, for example, has entered into power supply agreements with some existing wind energy projects in the Northwest. Puget Sound Energy (2003) recently issued a request for proposals to prospective respondents who could supply 150 MW of electric capacity from wind resources; the proposed acquisition of this wind-based generation would help PSE meet established objectives for developing a diversified electric resource portfolio and meeting 10 percent of PSE customers' energy needs through renewable resources. Avista and PacifiCorp, two other investor-owned utilities that serve retail customers in Washington, have issued similar requests for proposals from suppliers of wind energy resources.

### **1.4 KITTTAS COUNTY OBJECTIVES**

As discussed in **Section 1.2**, Kittitas County must undertake several actions for the Desert Claim Wind Power Project to be approved and constructed. Those actions include: (1) granting a Wind Farm Resource Development Permit; (2) executing a development agreement; (3) adopting a site-specific amendment to the Comprehensive Plan land use designation map; and (4) adopting a site-specific rezone of the project area to Wind Farm Resource Overlay Zoning District. The County's criteria with respect to making a decision on these proposed actions are as follows:

- The project is essential or desirable to the public convenience;
- The project is not detrimental or injurious to the public health, peace, or safety, or to the character of the surrounding neighborhood; and
- The project will not be unreasonably detrimental to the economic welfare of the county and will not create excessive public cost for public facilities and services.

## 1.5 SUMMARY OF THE PROPOSAL AND ALTERNATIVES

The Desert Claim Wind Power Project EIS evaluates four alternatives in detail. These include the wind energy development proposed by the applicant; generic plans for developing a comparable wind energy facility at two alternative sites, identified as the Wild Horse and Springwood Ranch sites, to provide comparative information about potential environmental impacts; and a no-action alternative. The proposed Desert Claim Wind Power Project and the three alternatives to the proposal are summarized briefly in **Sections 1.5.1** through **1.5.4** below, and are described in more detail in **Sections 2.2** and **2.3** of the EIS.

### 1.5.1 Proposed Action

The applicant's objective is to develop a commercially viable wind energy facility with a nameplate capacity of at least 180 MW that would deliver renewable energy to the Pacific Northwest. The facilities, construction process and operation and maintenance for the proposed project are summarized below.

#### 1.5.1.1 Project Facilities

Wind energy production includes five basic functions of electricity generation, energy transfer, power collection, substation and transmission. The specific facilities proposed to accomplish these functions for the Desert Claim project include:

- a maximum of 120 wind turbines, each with a capacity to generate 1.5 megawatts (MW) of electricity, for a total project nameplate generation capacity of at least 180 MW;
- each turbine would include a freestanding, tubular-steel tower up to 212 feet high, supporting a nacelle housing the generator, gear box and three-bladed rotor;
- each rotor blade would be up to 126.5 feet in length, for a maximum total rotor diameter of 253 feet;
- the maximum total height for the turbines would be 340 feet;
- towers would be anchored to steel and concrete foundations extending from 8 to 42 feet below the ground surface;
- the generator in each turbine nacelle would produce electricity at 575 volts;
- a transformer mounted on a concrete pad near the base of each turbine would raise the voltage from 575 volts to 34.5 kilovolts (kV);
- approximately 28 lineal miles of 34.5-kV underground power collection cables in the project area, primarily buried within the project road system, connecting all of the turbines;
- approximately 3 lineal miles of 34.5-kV of right-of-way underground power collection cables, connecting all project areas with the project substation,
- a fenced substation (or possibly two) occupying up to 2 acres, with transformers to step the voltage up from 34.5 kV to 115 or 230 kV for transmission;
- up to 300 feet of 115- or 230-kV transmission line, on wood pole structures, from the substation to the regional transmission system;
- five free-standing, lattice-steel meteorological towers up to 212 feet in height at various locations within the project area;
- a network of project roads totaling approximately 27.5 lineal miles, with a graveled travel surface of 15 to approximately 20 feet (on curves) in width, to provide vehicle access to the base of each tower; and
- an operations, storage, and repair facility occupying up to 2 acres that may be located adjacent to the project substation.

### 1.5.1.2 Construction Process

Construction of the proposed project is estimated to require approximately 9 months. Approximately 120 to 150 workers would likely be employed at the project site at some time during the construction period. A Temporary Erosion and Sedimentation Control Plan would guide ground-disturbing activities and stormwater management during construction, and disturbed areas would be revegetated following construction. A Construction Traffic Management Plan would address transportation and access concerns during the construction period.

### 1.5.1.3 Operation and Maintenance

Desert Claim Wind Power LLC would operate and maintain the wind energy facility throughout the project life, which is assumed to be 30 years. Electricity generated by the project would be sold to power marketing entities, such as the Bonneville Power Administration; local and regional public utilities, such as the Kittitas County PUD and the Grant County PUD; and/or regional investor-owned utilities, such as Puget Sound Energy and Avista. Power from the project would ultimately be distributed by utilities to their customers. The project would employ approximately 10 full-time staff for operations and maintenance. Long-term operation and maintenance activities would include the following functions:

- round-the-clock monitoring of project output and performance;
- controlling turbine operations as necessary to meet scheduled power deliveries and implement scheduled outages for scheduled turbine maintenance;
- performing periodic, routine testing and maintenance of the turbines;
- conducting on-site repairs of project equipment in response to malfunctions or scheduled maintenance;
- patrolling the project area to ensure security and monitor on-site conditions;
- periodic maintenance of project access roads; and
- implementing the project noxious weed control plan.

## 1.5.2 Alternative 1: Wild Horse Site

Alternative 1 consists of a comparable wind power project development on an alternative site in eastern Kittitas County, termed the Wild Horse site. This alternative is included in the evaluation to provide a benchmark for comparison of the potential levels of environmental impact from wind power development. The SEPA rules require consideration of an off-site alternative for private rezone proposals. The conceptual plan for this alternative is based on the wind energy facility proposed for this site by Zilkha Renewable Energy, which has requested the Washington Energy Facility Site Evaluation Council (EFSEC) to evaluate the proposed Wild Horse Wind Power Project. The Wild Horse site is not available to *enXco*.

The Wild Horse Wind Power Project is proposed on an approximately 5,000-acre site located about 10 miles east of the town of Kittitas, on the eastern slopes of Whiskey Dick Mountain. The proposed configuration of wind turbines on the Wild Horse site is shown in **Figure 2-15**. The proposal would be comprised of approximately 158 wind turbines (each of 1.5 MW nameplate capacity) and associated facilities. Facilities and construction techniques would generally be as described in **Section 2.2** for the Proposed Action. The project would interconnect to either the existing BPA transmission line located approximately 4 miles west of the site, or to the existing PSE transmission line located approximately 5 miles southwest of the site. Zilkha anticipates that construction for the proposed Wild Horse project would occur over a 9-12-month period and would be completed by the end of 2005. The total area

occupied by the permanent facilities would be approximately 104 acres. The total area cleared/temporarily disturbed by construction activities would be approximately 294 acres. Once construction was completed, an estimated 10 to 14 workers would be employed to operate and maintain the facility.

### **1.5.3 Alternative 2: Springwood Ranch Site**

A second off-site alternative is included in the EIS to provide another benchmark for comparing the impacts of the proposed wind power project. The SEPA rules require consideration of an off-site alternative for private rezone proposals. Based on readily available information, and after initial screening of several additional sites, Kittitas County identified a property that it considers a location to represent an off-site wind project alternative. This property is known as the Springwood Ranch, which is located in central Kittitas County just northwest of the unincorporated community of Thorp. This site lies between I-90 and the Yakima River and is approximately 7 miles northwest of Ellensburg. The property includes approximately 3,600 acres of land that currently supports ranching and farming, and some rural residential uses.

The project plan for the Springwood Ranch is intended as a reasonable approximation of a plausible wind facility layout on the site to permit comparative environmental evaluation, not as an actual proposal for development on the site. A conceptual plan for a hypothetical wind energy facility of 60 to 65 MW on the Springwood Ranch property is presented in **Figure 2-16**. This plan is highly schematic in nature. It was developed based on existing, readily available information, without extensive on-site study or comprehensive meteorological (wind) data. Based on site size, known meteorological conditions and topography, and assuming the same size turbines and approximate spacing between turbines as for the Proposed Action, the Springwood Ranch site could accommodate approximately 40 to 45 turbines; **Figure 2-16** shows locations for 43 turbines. A smaller or greater number of turbines could potentially be accommodated based on micro-siting. Characteristics of other project facilities, construction techniques, and operation and maintenance plans for Alternative 2 would be the same as described for the Proposed Action.

### **1.5.4 No Action Alternative**

The no action alternative in an EIS is intended to represent the most likely future condition if the lead agency decides not to undertake the proposed action or a reasonable alternative course of action. For the Desert Claim Wind Power Project EIS, Kittitas County has defined the no action alternative to mean that no wind energy facility would be developed in the proposed project area at this time. Existing land uses in the area, which are primarily agricultural but include low-density rural residential development, would continue for an indefinite time.

Based on the applicable existing zoning provisions, the project area could be segregated into as many as 400 residential lots with no discretionary action required by Kittitas County to approve the segregations. These are the conditions assumed to exist under the no action alternative. Under differing scenarios, such as use of the formal subdivision process or clustering bonus provisions available under existing zoning, it might be possible to create significantly more lots in the area. Such actions would require environmental review and discretionary approval by the County, however, and are not hypothesized as part of the no action alternative.

## 1.6 SUMMARY COMPARISON OF ENVIRONMENTAL IMPACTS

**Sections 1.6** through **1.9** provide a summary of the key findings of the EIS for the proposed action and the alternatives. **Section 1.6** highlights the environmental impacts that were identified for the respective elements of the environment that were addressed in the EIS. Cumulative impacts, mitigation measures and significant unavoidable adverse impacts are addressed in **Sections 1.7, 1.8** and **1.9**, respectively.

**Table 1-1** displays the expected impacts of the proposed action and the alternatives in highly summarized form. The entries in the table highlight the conclusions of the impact analyses presented in **Chapter 3** of the Final EIS. The specific entries in the table provide capsule descriptions of the impact conclusions for the key issues addressed in the impact analysis for the respective elements of the environment. Some additional issues are discussed only in **Chapter 3** and are not noted in the table, while detailed results for all issues are documented in **Chapter 3**.

Consistent with Kittitas County’s objectives for including evaluation of alternative sites in this EIS, the entries in **Table 1-1** for Alternatives 1 and 2 are generally stated in comparative terms to the impacts of the proposed action.

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<b>EARTH</b>			
<p>Most of project area classified as low or moderate erosion hazard. High hazard areas are limited to steep slopes in drainages along edge of Thorp Gravel terrace, and bedrock outcrops.</p> <p>Short-term erosion risk from clearing and grading activities on approximately 340 acres during construction. Potential erosion impacts expected to be insignificant with implementation of BMPs, even in high erosion hazard areas.</p> <p>During project operation, the risk of erosion would be negligible.</p> <p>Three turbine locations are near area of high landslide hazard, and would require site-specific geotechnical studies and measures if not moved. Potential landslide impacts expected to be mitigated to insignificant levels through stabilization measures, even in high hazard areas.</p> <p>Project development would have no influence on the level of seismic hazard in the project vicinity, and would not result in potential seismic-related impacts on adjacent uses or properties.</p>	<p>Impacts from Alternative 1 to earth resources in the area would be similar to those described for the proposed action.</p> <p>Erosion and landslide impacts are expected to be insignificant with implementation of standard erosion control measures.</p> <p>Development would have no influence on the level of seismic hazard in the project vicinity.</p>	<p>Impacts would be similar to the proposal, but less extensive due to the smaller number of turbines and smaller project footprint.</p> <p>Given the use of standard erosion control and stormwater management BMPs, erosion impacts would be localized and temporary, and therefore insignificant.</p> <p>Approximately 10 to 15 turbines could be located near areas of high and moderate landslide potential, requiring setbacks and/or engineered protective measures.</p> <p>Development would have no influence on the level of seismic hazard in the project vicinity.</p>	<p>The no action alternative would result in no change to the baseline land use pattern.</p> <p>Ongoing impacts relative to erosion, landslide and seismic hazards would generally continue or increase in response to future human activity within the area.</p> <p>Agricultural or construction activity could potentially occur in all erosion and landslide hazard zones. Erosion risks could be increased from existing conditions and localized areas of significant erosion could occur.</p> <p>Existing seismic risk conditions would continue.</p>
<b>AIR QUALITY</b>			
<p>Construction and decommissioning activities would create fugitive dust. Emissions would be dispersed among multiple locations temporarily and, with standard control practices, would not likely reach significant concentrations at off-site locations.</p>	<p>Air quality impacts would be essentially the same as for the proposed action, but would occur in a different part of Kittitas County. Construction impacts would be virtually the same as for the proposal, based on area of construction disturbance.</p>	<p>Air quality impacts would be of the same type as for the proposed action, but would occur in a different part of Kittitas County. The smaller site size, reduced number of turbines and lower levels of construction activity would generate lower air quality impacts that would likewise be insignificant.</p>	<p>Potential impacts include typical emissions associated with low-density residential development and agricultural activities. Depending on their type, construction of alternative energy facilities to meet future demand could generate air pollutants.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p>Emissions during operation of the project would be limited to exhaust and fugitive dust generated by maintenance vehicles, with negligible impact on air quality.</p> <p>Turbine operation would not increase the normal dispersion of dust and pollen, and would not result in dust-related impacts for residents near the project area.</p>	<p>Operation and maintenance impacts would be negligible.</p>	<p>Operation and maintenance impacts would be negligible.</p>	
<b>WATER RESOURCES</b>			
<p><b><u>Surface Water</u></b> The temporary disturbance zone associated with project construction would overlap with 16 stream segments, resulting in temporary disturbance along 3,700 linear feet of streams and in 3 acres of riparian area. Five of the affected streams would be Type 3 waters; the other 11 would be Type 4 or 5 waters that are dry much of the year. With use of required BMPs and restoration after construction, impacts to streams would be temporary and insignificant.</p> <p>Project facilities would permanently occupy approximately 1,200 linear feet of streams, mostly at road crossings, and less than 1 acre of riparian area. With possible avoidance through micro-siting, and restoration or compensatory enhancement, long-term impacts would be insignificant.</p> <p>Required use of spill prevention, containment and control plan would minimize potential for adverse water quality impacts from spills of hazardous materials.</p> <p>Surface water withdrawals or diversions not required for construction or operation.</p>	<p><b><u>Surface Water</u></b> Impacts on surface water would be similar to those described for the proposed action.</p> <p>Impacts to surface waters in the project area are expected to be minimal, due to the relative distances between project facility locations and existing surface water sources.</p> <p>Project operation is not expected to result in any discharges to surface water.</p> <p>Water for construction uses would be delivered from off-site and would not cause an impact to nearby surface waters.</p>	<p><b><u>Surface Water</u></b> Potential impacts on surface water would be of the same type as those described for the proposed action, but would occur within a smaller area.</p> <p>The possibility of construction stormwater discharge entering surface waters would be small.</p> <p>Six to eight turbine locations (and their associated access roads) would be within approximately one-quarter mile of the Yakima River and are near slopes mapped as high erosion and landslide hazard areas, representing potential impact concerns during construction.</p> <p>Operation would not result in significant impacts to surface water resources.</p>	<p><b><u>Surface Water</u></b> No new impacts to surface water resources would occur. Past and current effects to streams from existing land uses would continue. Additional land use conversion and low-intensity residential development would, over the long term, result in additional direct and indirect impacts to streams.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p>Overall, potential impacts to surface water quantity and quality would be minor and temporary and would not be likely to result in noticeable changes in down stream areas.</p> <p><b><u>Ground Water</u></b></p> <p>Impervious surfaces associated with the project would be limited in extent and have minimal impact on ground water recharge.</p> <p>Because of the depth to aquifers, distance to existing wells, relatively small amount of shaking resulting from potential blasting, and compliance with regulations governing blasting, significant impacts to ground water flow or well operation are unlikely. Vibration generated by operating turbines would dissipate quickly beneath the ground surface and is not expected to affect ground water flow or well operation.</p> <p>A limited amount of ground water would be needed for long-term operation, with no quantifiable impacts to ground water supply.</p> <p>Localized impacts to ground water quality from product spills would be minimized through required use of spill prevention, containment and control plan.</p> <p>Overall, the project is not expected to result in the potential for significant adverse impacts to ground water recharge, ground water supply or ground water quality.</p>	<p><b><u>Ground Water</u></b></p> <p>The tower foundations and other facilities would be sufficiently above the water table depth to avoid any significant construction impacts to subsurface hydrology.</p> <p>Operation of the project would have negligible impacts to groundwater.</p>	<p><b><u>Ground Water</u></b></p> <p>Ground water impacts from project construction and operation would be similar to those of the proposed action, but less in scope and extent.</p>	<p><b><u>Ground Water</u></b></p> <p>Up to 400 developed parcels could result from future development of the project area, based on existing zoning provisions. It is unlikely that this development density would result in a quantifiable impact to ground water recharge for the site.</p> <p>Water supply for future development of individual parcels under the no action alternative would be provided using exempt domestic wells. Potential impacts to aquifers would be minimal.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<b>PLANTS AND ANIMALS</b>			
<p><u><b>Vegetation</b></u></p> <p>An estimated 88 acres of existing vegetation would be permanently occupied by project facilities and 342 acres would be temporarily disturbed.</p> <p>The area of permanent impact would include an estimated 47 acres of shrub steppe, 30 acres of grassland, 5 acres of agricultural lands, 1 acre of riparian shrub, 1 acre of riparian forest and 3 acres of wet meadow. Based on the limited extent of vegetation loss and the effect on specific communities, the project is not expected to have significant impacts to the vegetation.</p> <p>No impacts are anticipated to rare plant species. All areas disturbed by the project are potential habitat for noxious and invasive species, but control measures should prevent significant impacts.</p> <p><u><b>Wetlands</b></u></p> <p>Construction would temporarily disturb approximately 17 acres of wetlands. Project facilities would overlap 3.2 acres of wetland area, which would be permanently displaced based on the modified project configuration, but subject to compensatory mitigation.</p>	<p><u><b>Vegetation</b></u></p> <p>Impacts would be similar to the proposed action. A total of 104 acres of existing vegetation, including shrub-steppe (87 acres), grassland (17 acres), and talus (.4 acres) would be permanently displaced. 294 acres would be temporarily disturbed, (240 acres) mostly in shrub-steppe.</p> <p>No significant project-related impacts are anticipated to any endangered, threatened, or sensitive plant species, or in conjunction with noxious weeds.</p> <p><u><b>Wetlands</b></u></p> <p>No identified wetlands occur in areas that would be occupied by project facilities or a 164-foot (50 meter) buffer around each facility. Therefore, no wetland impacts would be expected.</p>	<p><u><b>Vegetation</b></u></p> <p>Vegetation impacts would be similar in type to those described for the proposed action, but less in extent.</p> <p>Grasslands (generally used for grazing now) and shrublands currently dominate the site and would be the vegetation communities most affected.</p> <p>Alternative 2 would not result in significant impacts to rare plants, or in relation to the introduction or spread of noxious weeds.</p> <p><u><b>Wetlands</b></u></p> <p>Five wetlands in the northern and western portions of the site could be subject to temporary disturbance by construction activity or displacement by permanent project facilities. The areas of likely disturbance and displacement have not been estimated.</p>	<p><u><b>Vegetation</b></u></p> <p>Existing vegetation conditions would remain generally as they are, and subject to influences from current land uses.</p> <p>Existing threats to rare plant species (i.e., from agricultural practices or rural residential development) would continue.</p> <p>Noxious weeds could be introduced or spread through existing land use practices (e.g., agriculture, housing development, road maintenance etc).</p> <p><u><b>Wetlands</b></u></p> <p>Past and current effects to wetlands from existing land uses would continue for the foreseeable future. Additional land use conversion and low-intensity residential development could result in additional direct and indirect impacts to wetlands.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p><u><b>Wildlife</b></u></p> <p><b>Birds</b> Collision-related impacts (fatalities) would not be expected to exceed what has been observed at other wind plants in the Northwest, and would represent insignificant impacts.</p> <p>Waterfowl mortality anticipated to be low, and likely to consist mostly of mallards. Passerines would comprise the largest share of fatalities, with common species such as European starling, western meadowlark and American robin most at risk.</p> <p>Compared to other wind plants that have been studied, raptor use for the Desert Claim site is above average. A range of approximately 3 to 4 raptor fatalities per year could occur. Potential raptor nesting impact is considered low.</p> <p>The overall bird mortality rate for the proposed project is expected to be in the middle of the range, approximately 1.2 to 1.8 birds per turbine per year, or approximately 140 to 220 total birds per year. Passerine fatalities are expected to comprise the majority of the avian mortality.</p> <p><b>Other Wildlife</b></p> <p>Impacts to small mammals are expected to be low and not significant.</p> <p>Migratory bat species are likely at some risk of collision with wind turbines, primarily during the fall season. The estimated mortality range is similar to, or lower than</p>	<p><b>Birds</b> Potential mortality from construction equipment on site is expected to be quite low and similar to other recent wind projects. Overall, impacts to birds would be very similar to those for the proposed action, because of the similar vegetation types and avian species at the two sites.</p> <p>No disturbance or displacement impacts to raptor nests are anticipated, since no active raptor nests were identified within ½ mile (0.80km) of the proposed WHWP facilities.</p> <p>No impacts to federal endangered, threatened or sensitive status bird species are anticipated.</p> <p><b>Other Wildlife</b></p> <p>Impacts on mammals are expected to be very low and not significant.</p> <p>Some mortality of migratory bats, in particular hoary and silver-haired bats, is anticipated during operation.</p>	<p><b>Birds</b> Potential impacts to bird populations by this alternative would be similar in type to those from the proposed action, but smaller in magnitude because of the smaller project. Some displacement or disturbance effects to grassland avian species might occur.</p> <p><b>Other Wildlife</b></p> <p>Wildlife species displacement or disturbance would be similar in type to those from the proposed action, but smaller in magnitude because of the smaller project footprint. Forest wildlife species would be affected to a greater degree than under the proposed action, while grassland wildlife</p>	<p><b>Birds</b> There would be no impact on bird populations, associated with wind power development.</p> <p><b>Other Wildlife</b></p> <p>There would be no impact on reptile, amphibian or mammal populations from a wind power facility.</p> <p>Land conversion in the area for residential development could have significant impacts in the form of habitat loss and</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p>that for birds; non-migratory and migratory resident bat populations do not appear to be negatively impacted by wind turbines.</p> <p>Impacts to amphibians and reptiles are expected to be low and not significant.</p> <p>The study area is within habitats designated by WDFW as winter range for mule deer. The Quilomene elk migration corridor is an important spring pathway that encroaches upon the project's north boundary.</p> <p>Temporary loss of big game habitat from project construction is considered a minor impact due to vegetation reclamation and the vast expanse of suitable habitat for mule deer in the region. Once construction is complete, it is expected that deer would become habituated to wind turbines and again occupy areas on-site. Elk could shift their path to the north without migratory hindrance due to the large size of the corridor.</p> <p>Most of the listed threatened and endangered species identified as potentially occurring are not likely to actually use the project area and would not be affected. The level of risk for the five species documented on or near the site would be low. Any mortality to bald eagles would be at a very low level and would not have a measurable effect on the bald eagle population; there have been no documented bald eagle fatalities at U.S. wind plants.</p>	<p>Construction impacts to reptiles and amphibians on site would be loss of habitat and direct mortality of some individuals occurring in construction zones. Operation impacts would be limited.</p> <p>Impacts to big game would be similar to those for the proposed action.</p>	<p>would be affected to a similar extent.</p> <p>Alternative 2 would have little impact on elk. Impacts on deer would be similar to the proposed action, due to similar types of suitable deer habitat and disturbance from development.</p> <p>Increased disturbance of winter concentrations of bald eagles could occur along the Yakima River; bald eagles in the area would be subjected to similar risk factors as the Desert Claim site.</p> <p>Habitat loss could affect sensitive species such as loggerhead shrikes, western bluebirds and sage thrashers. Most other endangered, threatened or sensitive wildlife species are unlikely to occur on the site and would not be affected.</p>	<p>displacement of wildlife, especially big game from important wintering areas.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p><b><u>Fish</u></b></p> <p>None of the streams in the project area are known to contain fish communities, although juvenile steelhead could possibly be diverted to some project-area waters. Potential adverse impacts to fish are expected to be minor, and limited to possible minor downstream impacts. With required mitigation, the proposed project is expected to have only temporary impacts on stream resources.</p> <p>The federally threatened summer steelhead is located in lower Reecer Creek and in the Yakima River downstream, and juvenile steelhead could be present in some project-area waters. With use of Best Management Practices (BMPs) for construction and appropriate site management practices, impacts to streams and waterways would be minimized or avoided. The effect on fish, including special-status species, would likely be in significant because of required protective measures.</p>	<p><b><u>Fish</u></b></p> <p>Provided best management practices are employed on site and compliance with applicable permits regarding runoff and sediment control is maintained, no fish should be affected by construction or operation. No fish-bearing streams are located in the Wild Horse project area.</p>	<p><b><u>Fish</u></b></p> <p>Alternative 2 could pose a higher risk of adverse impact to fish-bearing waters than the proposed action, because the Yakima River and Taneum Creek support important fish habitat. There would be some potential for greater construction-related impacts, primarily delivery of sediment to fish habitat</p> <p>Site-specific evaluation and BMPs might be required to address potential effects on habitat in the Yakima River and Taneum Creek used by species of concern, bull trout and steelhead trout.</p>	<p><b><u>Fish</u></b></p> <p>The No-Action Alternative would result in no foreseeable new impacts to wetlands or streams. Existing and future land uses, would continue to have direct and indirect effects on fish habitat in the project vicinity.</p>
<b>ENERGY AND NATURAL RESOURCES</b>			
<p>Energy consumption during project construction or decommissioning would not require large volumes of fuel or electricity and would not significantly affect locally available energy resources.</p> <p>Use of sand, gravel, steel, water and concrete would not have a significant effect on their supply in the area.</p> <p>Project operation would have minimal demand for energy and natural resources.</p>	<p>Impacts on energy and natural resources from construction and operation of Alternative 1 would likely be the same as those described for the proposed action.</p> <p>Average annual generation would be about 60 MW; marketing and delivery would be as described for the proposed action.</p>	<p>Impacts on energy and natural resources from construction and operation would generally be of the same type as those described for the proposed action but would be of lesser magnitude (less than 40 percent of the corresponding requirements for a 120-turbine project).</p> <p>Average annual generation of about 20 to 25 MW; marketing and delivery would be as described for the proposed action.</p>	<p>No energy would be consumed or generated by wind power facilities. No natural resources would be consumed or conserved in construction or operation.</p> <p>The broader energy impacts of the no-action alternative would depend on how and where alternative electricity supplies might be developed.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p>Power produced by the project, expected to average 60 MW, would be delivered to regional electric suppliers. Project would have little or no impact on supply and price of electricity available to local consumers.</p>			
<b>CULTURAL RESOURCES</b>			
<p>Ground-disturbing activities could destroy the relationships among artifacts and features and their contexts. Five identified cultural resource sites would experience direct impacts from construction, based on modified project layout. Direct impacts to some or all sites might be avoided through micro-siting. Mitigation would be required for sites that could not be avoided.</p> <p>Indirect impacts from development activities can include increased opportunities for removal of artifacts due to increased visibility of the artifacts or awareness of their existence. The proposed project is not expected to cause access-related indirect impacts to cultural resources.</p> <p>Existing cultural sites in the general vicinity of the project would be subject to possible changes to their visual setting. This would primarily be limited to historic sites, and would depend on the visibility of project facilities from those sites.</p> <p>Development of the project would not affect access to or the ability to use traditional cultural properties (TCPs) in the vicinity. TCPs in the general area might be subject to indirect effects through visibility of project facilities.</p>	<p>Direct construction impacts on cultural resources would likely be minimal or non-existent. No project facilities coincide with the locations of inventoried cultural sites.</p> <p>Operations and maintenance activities would not likely result in direct impacts to cultural resources or increase the potential for disturbance and/or removal of artifacts from cultural resource sites. The visual setting for a cultural site on the National Register would be modified by the presence of project facilities.</p>	<p>Types of potential impacts under Alternative 2 would be similar to those identified for the proposed action. It is not known how many of the seven identified resources would be subject to direct impacts from project construction.</p> <p>Indirect impacts to cultural resources would likely be similar to those for the proposed action, and would primarily involve changes to the visual context of the sites.</p>	<p>Cultural resources in the project vicinity would continue to physically deteriorate naturally, primarily as a result of low-level ongoing surface erosion and weathering.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<b>LAND AND SHORELINE USE</b>			
<p><b><u>Land Use Patterns</u></b>            During construction approximately 341 acres of land would be temporarily disturbed. Construction and decommissioning activities could temporarily reduce or interfere with some existing agricultural activities.</p> <p>Direct impacts to land use would consist of the long-term conversion of approximately 90 acres (1.5 percent of project area) from existing agricultural/range uses to use for energy production.</p> <p>Existing residential uses would not be directly displaced, but would be located proximate to wind turbines and other facilities. The presence of these project facilities is not expected to significantly impact the ability to carry out existing activities.</p> <p>Wind turbines would be significantly greater in scale than nearby rural residential uses, and some degree of incompatibility or conflict would exist.</p> <p>Although turbines would be larger and more visible than typical rural uses, wind farm operations are not inherently more intensive than other resource activities in terms of noise and associated land use impacts.</p> <p>The project's overall direct effect on land use patterns is not seen as significant. Wind energy production is seen as generally compatible with rural resource uses and with ongoing agricultural operations.</p>	<p><b><u>Land Use Patterns</u></b>            Direct land use impacts from construction and decommissioning of a wind power project at the Wild Horse site would be similar to those for proposed action. Construction activities would temporarily disturb approximately 310 acres of the site.</p> <p>Long-term operation would result in the conversion of approximately 104 acres from grazing use to energy production use.</p> <p>The existing use would continue on the remainder of the site not contained within the footprint of the permanent project facilities. No residential uses would be displaced or otherwise directly affected.</p> <p>The proposed use would be generally compatible with typical rural uses and with the ongoing agricultural activity that predominates in the area. No significant conflicts with existing land use patterns would occur.</p> <p>Indirect impacts on existing land uses from Alternative 1 would likely be negligible or non-existent.</p>	<p><b><u>Land Use Patterns</u></b>            Direct and indirect land use impacts would generally be the same in type as those described for the proposed action, but less in magnitude.</p> <p>Approximately 30 acres of (primarily) grasslands would be converted to wind energy facility use while existing grazing activity would be temporarily displaced or disturbed on approximately 125 acres.</p> <p>Impacts with respect to effects on existing uses, land use patterns and supporting or spin-off development would be similar to those of the proposed action, and would not be significant.</p>	<p><b><u>Land Use Patterns</u></b>            On-site agricultural and rural residential activities would continue for the foreseeable future.</p> <p>The potential for residential development in the project area, as permitted by existing zoning, and the potential for conflicts with existing agricultural activities, would continue.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p>The proposal would not attract supporting land uses, generate secondary or spin-off development, significantly increase traffic, or increase demand for commercial or industrial uses nearby.</p> <p>Similarly, the proposal would not attract significant numbers of non-resident workers and would not result in significant demand for housing or services.</p> <p><b><u>Plans and Policies</u></b> The proposed project would be consistent with the land use and utilities policies of the Kittitas County Comprehensive Plan.</p> <p>The proposal would not be characterized as “urban growth” as defined in the Washington Growth Management Act; therefore, with implementation of project-specific mitigation and development conditions, compliance with the GMA rural policies would be achieved.</p>	<p>Alternative 1 would not attract supporting land uses, generate secondary or spin-off development, significantly increase traffic, or increase demand for commercial or industrial uses nearby.</p> <p>Similarly, the proposal would not attract significant numbers of non-resident workers and would not result in significant demand for housing or services.</p> <p><b><u>Plans and Policies</u></b> The proposed project would be consistent with the land use and utilities policies of the Kittitas County Comprehensive Plan.</p> <p>Project consistency with the GMA would be as described for the proposed action.</p>	<p><b><u>Plans and Policies</u></b> Consistency with the Kittitas County Comprehensive Plan and the GMA would be as described for the proposed action.</p>	
<b>HEALTH AND SAFETY</b>			
<p><b><u>Mechanical Hazards</u></b> Collapse of a turbine tower constructed in accordance with international standards and local building codes is an extremely remote possibility. Similarly, the potential for blade or blade fragment throw is extremely remote. Sound engineering design and quality control are the most effective means for minimizing the risk of such events in project operation.</p> <p>Under certain conditions there is the possibility of “ice throw.” Studies have shown that no ice fragments have been thrown distances of over 100 meters, and</p>	<p><b><u>Mechanical Hazards</u></b> Mechanical and related hazards applicable to Alternative 1 would be of the same type as those described for the proposal.</p> <p>There are no residential uses or public roadways within or immediately adjacent to the Wild Horse site. Consequently, the numbers of residents and visitors to the site who would be subject to hazards such as tower collapse, blade throw and ice throw would likely be considerably less under Alternative 1.</p>	<p><b><u>Mechanical Hazards</u></b> Mechanical and related hazards applicable to Alternative 2 would be of the same type as those described for the proposal.</p> <p>The residential density level for the Springwood Ranch site is somewhat less than for the Desert Claim project area, so the number of residents and visitors who might be subject to these hazards would be less overall. However, some residents of the Sunlight Waters community would likely be within 500 feet of some turbines.</p>	<p><b><u>Mechanical Hazards</u></b> The proposed action would not be implemented and the potential mechanical hazards associated with a utility-scale wind energy project would not occur. The project area would retain a high fire hazard.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p>there have been no reported injuries resulting from ice throw.</p> <p>Hazards associated with tower collapse, blade throw and ice throw for the proposed GEWE 15.sl turbine can be adequately mitigated by establishing exclusion zones or setbacks around turbines ranging from approximately 416 feet to 487 feet.</p> <p>Project construction activity would pose some temporary increase in the level of fire hazard locally. The Kittitas County Fire Marshal has identified appropriate mitigation measures for this hazard, including contracting with Fire District 2 for fire protection services and establishment of fire prevention and control plans.</p> <p>The project would likely have little long-term effect on the level of fire hazard. Operation of the turbines would not be likely to materially affect the behavior of a fire, wind turbine machinery is designed with fire safety in mind and the project facilities would be continually monitored.</p> <p><b><u>Electrical Hazards</u></b> Electrical safety precautions would be required in areas near the project power collection cables and transmission line; these areas would not be accessible to the general public.</p> <p>Electric and magnetic fields associated with the project would be comparable to those already present on the site. Incremental changes in exposures to electric and</p>	<p>Construction and operation impacts with respect to fire hazards, and applicable mitigation, would be essentially the same as for the proposed action.</p> <p><b><u>Electrical Hazards</u></b> Alternative 1 would require construction and operation of the same types and voltages of electrical facilities as the proposed action, and involve the same types of electrical safety, electric and magnetic fields and electromagnetic interference issues.</p> <p>Electric and magnetic fields associated with Alternative 1 would be comparable to those already present near the transmission lines that exist in the vicinity of the site.</p>	<p><b><u>Electrical Hazards</u></b> Impacts with respect to potential electrical effects would be essentially the same as those for the proposed action and Alternative 1, and would not be significant.</p>	<p><b><u>Electrical Hazards</u></b> Existing electric and magnetic field levels in the project area would continue. No change in public health and safety impacts for residents in the project vicinity would be expected.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p>magnetic fields would be small to non-existent for the public, and impacts associated with possible long-term health effects are highly unlikely.</p> <p>Project electric facilities would be highly unlikely to cause short-term electric or magnetic field effects, such as nuisance shocks or interference with computer monitors, because the facilities would be located away from human activity and/or would produce fields of low strength.</p> <p>The project electrical system would be separate from the local electric distribution system and would not create stray voltage effects for nearby properties. Lightning-related faults or surges would not increase lightning hazards for nearby residents.</p> <p>Cable and satellite television systems are not affected by electromagnetic interference. Wind turbines would be located 1000 feet from the nearest residence and should not interfere with broadcast signals.</p> <p><b><u>Shadow Flicker</u></b> The distance threshold for shadow flicker impacts is approximately 2,000 feet. 65 receptors in the project vicinity could be exposed to shadow flicker for some time during the year. Maximum duration of shadow flicker in a day for any receptor would range from 6 minutes to 2 hours.</p> <p>The highest shadow-flicker exposure modeled for any receptor would be about 50 hours per year. Most (56 percent) of the receptors would experience less than 5 hours</p>	<p>Incremental changes in public exposure to electric and magnetic fields would be small to non-existent.</p> <p><b><u>Shadow Flicker</u></b> Because there are no residences closer than 2 miles from a proposed wind turbine location on the Wild Horse site, no permanent receptor locations would be affected by shadow flicker.</p>	<p><b><u>Shadow Flicker</u></b> Based on a 2,000-foot distance threshold, it is likely that some residences near the site would be exposed to shadow flicker under Alternative 2; this would primarily affect some residences on the eastern edge of Sunlight Waters.</p> <p>The frequency and duration of shadow flicker conditions at these locations might be similar to the analysis results for the Desert Claim site.</p>	<p><b><u>Shadow Flicker</u></b> Potential shadow flicker impacts associated with a utility-scale wind energy project would not occur.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p>of shadow flicker per year, only 7 would experience more than 20 hours per year. Several simple, practical options exist for controlling or preventing these impacts.</p> <p>Shadow-flicker frequencies are sufficiently low as to be considered harmless with respect to possible adverse human health consequences. Significant impacts to off-site outdoor uses are not expected.</p>			
<b>NOISE</b>			
<p>There would be temporary increases in sound levels near active areas of project construction and along roadways. Noise levels 1,000 feet from active construction areas would often fall within the daytime noise limits for residential receivers and would meet limits for agricultural/industrial receivers. Construction noise is exempt from the state noise limits from 7 a.m. to 10 p.m.</p> <p>Predicted operational noise levels at all receptor locations at wind speeds of 4 m/s and 8 m/s would meet applicable noise limits. Highest sound level increase at any receptor would be 7 dBA; increase would be 1 to 4 dBA for 26 of 34 receptors. Based on noise levels and/or increase over ambient levels, project noise impacts would be rated either low or medium, and would not be significant. Based on wind patterns, turbines would produce audible noise about 22 percent of the time.</p> <p>Low-frequency noise impacts are not anticipated due to "upwind" design and streamlined turbine design. Tonal noise from turbine operation is possible, but the potential for significant impacts is low.</p>	<p>Construction noise impacts for Alternative 2 would be very similar to those described for the proposed action. Based on the minimal existing development within 2 miles of the Wild Horse site, few if any local residents would experience construction noise; no significant impacts would occur.</p> <p>Modeling results indicate operation would comply with the applicable noise requirements. No long-term noise impacts would be expected.</p>	<p>Construction noise impacts would be similar to those described for the proposed action. On-site sources of those impacts would be confined to a smaller area.</p> <p>Operational noise levels at any receptors within 1,000 feet of the Springwood Ranch site would likely meet the nighttime noise limit applied to Class A receivers, and predicted sound level increases at such locations would likely be no more than 5 to 7 dBA.</p> <p>Several residences along the eastern edge of Sunlight Waters could be subject to noise in excess of the 50-dBA limit and/or increase in the vicinity of 10 dBA.</p>	<p>Existing sound levels from the site include agricultural and livestock production activities, which would continue in the future with or without the proposed action. No known noise impacts currently occur from these agricultural activities, and none would be anticipated to occur in the future.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<b>AESTHETICS/LIGHT AND GLARE</b>			
<p><b><u>Aesthetics</u></b> Visual changes associated with construction and decommissioning activities would have a temporary but moderate visual impact on views from nearby residences and roads, primarily in the Northwest Valley and Northeast Valley Visual Assessment Units. The construction-related visual impact from more distant viewpoints would be low.</p> <p>Long-term impacts during project operation would vary with location in the region surrounding the project. Among 19 key views selected as representative of the visual assessment units, 4 were determined to have impacts rated as high, based on the degree of change from existing visual quality. Views showing the greatest degree of visual impact were 1A, 1E, 1F and 1G in the Northwest Valley Visual Assessment Unit.</p> <p>The level of impact was considered to be moderate for 6 of the 19 key views. These views tend to be from high points at moderate distances from the project (1 to 4 miles).</p> <p>Impacts to the remaining 9 views would be "low"; visual quality at these locations would not be changed significantly.</p> <p><b><u>Light and Glare</u></b> 48 wind turbines marking the perimeter of the project would have dual lighting systems to meet FAA safety requirements. The daytime white flashing lights would be visible, but not very intrusive. Nighttime flashing red lights would contrast</p>	<p><b><u>Aesthetics</u></b> The visual changes associated with the construction activities would have a moderate level of visual impact in close-at-hand areas, limited to nearby segments of the Vantage Highway. The impact in views from middle ground areas, with the greatest numbers of viewers (i.e. to the south and west), would be low.</p> <p>Turbines would be clearly visible along the ridgeline of Whiskey Dick Mountain, on the mountain's southern slopes, and on the ridge lands to the mountain's north. The aesthetic impacts of visual changes would be less than significant.</p> <p>The greatest visual change would be in views of the site from lands to the immediate west, north, and east, where up to 100 turbines would be visible on the high-elevation plateau north of Whiskey Dick Mountain. The overall visual impact in these areas would be moderate. Moderate impacts would also occur in views toward the site from the Vantage Highway and areas in the eastern end of the Kittitas Valley.</p> <p><b><u>Light and Glare</u></b> The lighting system employed to comply with FAA safety requirements and the impacts of those lights would generally be the same as for the proposed action.</p>	<p><b><u>Aesthetics</u></b> Visual impacts from construction and decommissioning would be of the same type as those described for the proposed action and Alternative 1. Visual changes during construction would have a temporary, but moderate visual impact on views from nearby residences and roads in the Thorp Prairie area.</p> <p>Alternative 2 would have significant visual impacts during operation. In views from I-90, many of the turbines would be quite noticeable because they would be visible in the middle ground and would break the skyline.</p> <p>There would be similar impacts on views from SR 10 and the Thorp Highway. Overall, development of Alternative 2 would significantly change the aesthetic character of the local landscape, especially as viewed from I-90.</p> <p><b><u>Light and Glare</u></b> Aviation marking lights would result in significant additional impacts on nearby residents and passing motorists. Flashing red lights at night would be visible from I-90, the Thorp Highway, and SR 10, as well as from residences in the immediate</p>	<p><b><u>Aesthetics</u></b> Under the No Action Alternative, the visual quality of the surrounding environment would not be influenced by wind power facilities. Visual character in and near the project area would continue to be influenced by existing land uses.</p> <p><b><u>Light and Glare</u></b> Light and glare in the surrounding environment would not be influenced by the proposed project.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p>significantly with the nighttime sky and be very noticeable for residents around the Northwest Valley and Table Mountain Slope Visual Assessment Units. Project safety lighting would not impede local stargazing activity.</p> <p>Impacts associated with other project lighting would be minimal. Blade glare or glint can be noticed over distances of 6 to 9 miles and could be an occasional occurrence, but would be limited to a minor nuisance effect.</p>	<p>The O&amp;M facility and substation(s) would create sources of light in areas where there are currently no nighttime sources of light. However, impacts would not be substantial.</p>	<p>vicinity and in Thorp. Security lighting at the operations and maintenance facility and the project substation would have minimal impact on the nighttime visual environment.</p> <p>Blade glint or glare from sunlight reflecting off moving blades could be an annoyance to eastbound drivers on I-90 late in the day.</p>	
<b>RECREATION</b>			
<p>Direct impacts to existing recreation resources and opportunities (which are quite limited) from construction would be very low or negligible.</p> <p>After construction was completed, most recreational activities that are currently possible would be able to resume at current levels. With the possible exception of hunting, all recreational activities previously allowed by permission of project-area landowners would be allowed to continue during operations.</p> <p>No USFS, BLM, DNR, State Parks, WDFW or private recreational facilities would experience direct impacts from the project. Indirect impacts would be limited to minor audible and visual intrusion into nearby recreational areas and congestion along roads. Neither would disrupt recreational opportunities on nearby federal, state, and private lands and facilities.</p>	<p>Construction activities would not directly affect any existing recreation facilities, as there are no such facilities in or adjacent to the project area.</p> <p>Recreational visitors using the nearby WDFW wildlife areas or the Ginkgo State Park facilities might notice construction activities on the site or project-related construction traffic and might be subject to occasional traffic delays or detours.</p> <p>Existing recreational use of the project area is limited to hunting with the specific permission of the current landowner, and would presumably be displaced to the extent that the construction period coincided with hunting seasons.</p> <p>Some hunting activity could be allowed during the operating period. If hunting were displaced, it would constitute a minor loss of recreational opportunity.</p>	<p>Impacts would be of the same type as those described for the proposed action, primarily involving temporary displacement of any existing recreational activities during construction and probable limitations on selected types of recreation during long-term operation.</p> <p>Recreational users of the Iron Horse State Park/John Wayne Trail and the Yakima River would experience noise, views of construction equipment and activities, and possibly blowing dust during the construction period.</p> <p>During operations, users of these resources would be exposed to views of wind turbines and other project facilities at some specific locations.</p>	<p>There would be no impacts on the current recreational opportunities within the project area or in nearby off-site areas.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p>Operation of the project would not change the existing access conditions along public roads that are currently used to reach recreational opportunities, or on adjacent private properties.</p> <p>The project would likely provide some degree of attraction for tourists. It would not have a significant effect on the baseline level of recreation and tourism use in the County.</p>			
<b>GROUND TRANSPORTATION</b>			
<p>Additional trips during periods of peak construction activity would be well within the capacity of the local road network and would not noticeably or significantly affect existing levels of service.</p> <p>Potential short-term impacts from construction activities for project access roads include potential delays or detours on or adjacent to county roads. Construction activities could require temporary road modifications to accommodate trucks transporting tower components; damage to road surfaces from transport of components or construction materials; and potential interruptions to general traffic flow from detours or delays.</p> <p>Project operation would generate a negligible volume of traffic that would not affect existing levels of service on public roads. The level of future tourist activity and traffic cannot be specifically predicted, but could be safely accommodated with signage, off-road parking and viewing opportunities, and vehicle maneuvering space.</p>	<p>Construction impacts would generally be the same as the proposed action. Alternative 1 would not have a significant impact on existing levels of service. Potential impacts include degradation of the road surface caused by trucks delivering tower components.</p> <p>Traffic generated by project operation would not affect local traffic operations or change the existing levels of service.</p> <p>Because Alternative 1 would be further from I-90 it is anticipated that relatively few travelers would leave the freeway to take a close look at the facility.</p>	<p>Potential impacts of construction would generally be the same as for the proposed action. The delivery of turbine components might be more difficult due to the physical constrictions of the Elk Heights interchange and the adjacent intersection of Elk Heights Road and Thorp Prairie Road.</p> <p>Trips generated by project operations would be proportionally less than the proposed action and would not affect the existing level of service at local intersections.</p> <p>Wind turbines would be closer to I-90 than with the proposed action and some travelers on I-90 could leave the freeway to take a closer look at the facility. Similar provisions to accommodate tourists would likely be needed.</p>	<p>Existing land uses would remain and there would likely be a modest growth in the number of rural residences within the project area. This would result in an equally modest growth in average daily traffic volumes, but would not significantly affect existing traffic operations.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<b>AIR TRANSPORTATION</b>			
<p>Desert Claim turbines would exceed the minimum structure height (200 ft.) for which the Federal Aviation Administration (FAA) requires notification and would prompt the FAA to conduct a study of potential airspace impacts.</p> <p>Proposed wind turbines would be in accordance with FAA criteria regarding obstructions and would not be in conflict with arriving aircraft operating under existing or potential future instrument approaches to Bowers Field. Similarly, the project would have no impact on operations using the instrument departure procedure.</p> <p>10 turbines would exceed the maximum allowable structure height relative to the existing VFR traffic pattern and would likely be considered hazards to air navigation and a potential adverse impact on air traffic operations by large aircraft in the traffic pattern. This conflict could be resolved either through further modification of project plans or adoption of an increased traffic pattern altitude for large/jet-powered aircraft using Bowers Field.</p> <p>The project would include dual lighting systems on 48 turbines to comply with FAA standards for marking and lighting tall structures.</p>	<p>Based on the distance between the Wild Horse site and Bowers Field, it is anticipated that turbines at this site would not be considered obstructions to air navigation. It is unlikely that Alternative 1 would result in adverse impacts to air traffic operations.</p> <p>FAA standards for marking and lighting tall structures would apply.</p>	<p>A detailed, site-specific evaluation of potential airspace conflicts has not been undertaken. However, based on the distances from the Springwood Ranch site to both Bowers Field and the Cle Elum Municipal Airport, it does not appear that a wind energy project at the Springwood Ranch site would interfere with protected airspace or air traffic operations associated with either facility.</p> <p>FAA standards for marking and lighting tall structures would apply.</p>	<p>There would be no changes to current air traffic operations, and no conflicts that are foreseeable at this time.</p>
<b>PUBLIC SERVICES AND UTILITIES</b>			
<p><b>Fire and Emergency Medical Services</b> Construction activities could result in increased calls for fire and emergency medical services. Depending on the number of calls (if any), there could be an impact on</p>	<p><b>Fire and Emergency Medical Services</b> The impacts of Alternative 1 on public services and utilities would be similar to those described for the proposed action.</p>	<p><b>Fire and Emergency Medical Services</b> The impacts of Alternative 2 on public services and utilities would be very similar to those described for the proposed action. Potential service demands during</p>	<p>Under No Action, the level of public services and utilities in the project vicinity would not likely change significantly in the foreseeable future. No new impacts to public services and utilities are anticipated</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<p>Fire District 2 service demand; a specific service contract would be appropriate to manage potential impacts.</p> <p>During operations, impacts to fire and emergency medical services would not be significant. Current Fire District No. 2 resources, combined with project resources, would be sufficient to provide fire suppression services to the project area, although staff are not trained for high-angle rescues.</p> <p>Project safety, control and response systems would serve to minimize the risk of fire and limit damage from any potential fires.</p> <p><b><u>Police Service</u></b> The potential project demand for law enforcement services is not likely to require additional personnel or have an adverse impact on existing service levels.</p> <p><b><u>Schools</u></b> No significant impacts on local schools are anticipated during construction or operation.</p> <p><b><u>Water Supply, Stormwater, and Sewer</u></b> Impacts to public water supply, stormwater, and sewer services are not anticipated, as none of these utilities are or would be available on-site.</p> <p><b><u>Solid Waste, Energy, Communications</u></b> No significant or adverse impacts are likely to occur during construction or operation.</p>	<p>Potential needs for fire service during construction and operation would likely result in the execution of a service contract with a rural fire district (either Fire District 2, based in Ellensburg, or Fire District 4 in Vantage).</p> <p><b><u>Police Service</u></b> Project-related demands for police would be minimal and no significant adverse impacts on existing services would be expected.</p> <p><b><u>Schools</u></b> No significant impacts on local schools are anticipated during construction or operation.</p> <p><b><u>Water Supply, Stormwater, and Sewer</u></b> No significant impacts would occur.</p> <p><b><u>Solid Waste, Energy, Communications</u></b> No significant impacts are anticipated</p>	<p>construction might be less due to the smaller scale of the project.</p> <p>A service contract with Fire District 1, based in Thorp, would likely be executed.</p> <p><b><u>Police Service</u></b> Project-related demands for police would be minimal and no significant adverse impacts on existing services would be expected.</p> <p><b><u>Schools</u></b> No significant impacts on local schools are anticipated during construction or operation.</p> <p><b><u>Water Supply, Stormwater, and Sewer</u></b> No significant impacts would occur.</p> <p><b><u>Solid Waste, Energy, Communications</u></b> No significant impacts are anticipated</p>	<p>under this alternative.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>Proposed Action: Desert Claim Wind Power Project</b>	<b>Alternative 1: Wild Horse Site</b>	<b>Alternative 2: Springwood Ranch Site</b>	<b>No Action Alternative</b>
<b>POPULATION, HOUSING AND EMPLOYMENT</b>			
<p>The project would employ an estimated 150 workers during construction and 10 during operations. There would not be a noticeable impact on the population in Ellensburg or Kittitas County.</p> <p>No housing units would be destroyed or displaced by the project and, therefore, there would be no direct impacts on housing.</p> <p>Non-local workers could seek temporary housing during construction. Based on supply and vacancy rates, impacts are not expected to be significant.</p> <p>Spending on labor and materials would indirectly result in an additional 40 full and part-time jobs during the construction phase. Total labor income during construction would be over \$3.8 million. The amount of other value added (corporate profits, property rents and net interest) is estimated at over \$1.5 million.</p> <p>Economic impacts during operation would include about \$0.9 million in labor income and \$2 million in other value added per year.</p> <p>Current research has generally found that wind farms have either no effect on tourism or a positive effect.</p>	<p>Impacts from construction and operation of Alternative 1 on population, housing and employment would be similar to those described for the proposed action.</p> <p>Alternative 1 would have no direct impacts on housing.</p> <p>Temporary housing would be needed for non-local workers during construction of the project. The impact to the local housing market is not expected to be significant.</p> <p>Economic impacts (direct and indirect) during construction and operation would be similar to those estimated for the proposed action.</p>	<p>Impacts from construction and operation of Alternative 2 on population, housing and employment would be similar to but smaller than those described for the proposed action.</p> <p>The total economic impact of Alternative 2 would likely be 35 to 40 percent of the level estimated for the proposed action.</p>	<p>Countywide population, housing and employment trends would generally be expected to continue as in recent years, pending other significant actions not associated with the Desert Claim proposal.</p>

**Table 1-1  
Summary of Environmental Impacts by Alternative**

<b>FISCAL CONDITIONS</b>			
<p>The purchase and installation of machinery and equipment for wind generation facilities are exempt from State sales tax. Project construction would indirectly generate minor amounts of sales tax revenue.</p>	<p>The fiscal impacts associated with the construction and long-term operation of Alternative 1 would be very similar to those described for the proposed action.</p>	<p>Alternative 2 would involve considerably smaller construction values and would result in a lower total assessed valuation for the project (approximately 37 percent of the value of Desert Claim).</p>	<p>The Kittitas County tax base would not increase as a result of Desert Claim wind power facilities. Tax revenue and service cost trends associated with the project area would likely continue similar to those of past years, at least with respect to the project area.</p>
<p>The completed project would have an initial assessed value estimated at about \$92 million, equivalent to 3.6 percent of total assessed valuation in Kittitas County.</p>	<p>The capital value of Alternative 1 would have a large proportionate impact on the existing tax base for the Kittitas School District.</p>	<p>The capital value of Alternative 2 would have a large proportionate impact on the existing tax base for the Thorp School District.</p>	
<p>Potential property tax revenues from the project are estimated at a maximum of nearly \$1.1 million for the first year of operation. Tax revenues in subsequent years would be based on depreciated value of the personal-property component of the project and would decline over time.</p>	<p>Net fiscal effects are expected to be positive.</p>	<p>Net fiscal effects are expected to be positive.</p>	
<p>Potential public service costs attributable to the project are expected to be minimal for both construction and operation. Therefore, net fiscal effects are expected to be positive.</p>			

## 1.7 CUMULATIVE IMPACTS

Cumulative impacts are the incremental impacts of a proposal when considered in the context of other past, present and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time.

In the context of the proposed Desert Claim Wind Power Project, cumulative impacts are identified largely on the basis of significant proposed and reasonably foreseeable future developments. These include, primarily, the Kittitas Valley and Wild Horse wind power projects proposed by Zilkha Renewable Energy; pending approval from EFSEC and Kittitas County, Zilkha would develop these two projects in other areas of Kittitas County according to their respective plans and schedules. Applications filed by Zilkha with EFSEC and SEPA documents released by EFSEC provide the primary sources of information concerning the potential impacts of these two wind power projects. Past and ongoing activities in the project area and background growth, in both urban and rural areas, are also considered in the cumulative impact assessment.

Cumulative impacts of the Desert Claim proposal alone, apart from those impacts associated with other wind power proposals in Kittitas County, would be essentially the same as the direct and indirect impacts summarized in **Table 1-1. Chapter 4** provides a complete discussion of potential cumulative impacts for all elements of the environment, considering the Desert Claim project alone and in conjunction with the other proposed wind power projects. **Section 1.7** includes excerpts from the **Chapter 4** discussion that summarize the cumulative impacts associated with the three proposed wind power projects.

### 1.7.1 Earth Resources

Ground disturbance during construction or decommissioning of the Desert Claim project would result in minor, localized soil erosion impacts. These impacts would occur within the context of erosion associated with current and expected future land uses in the project vicinity (primarily agricultural activities and scattered rural residential development). Widespread or significant erosion problems in the project vicinity have not been identified. Based on the magnitude, extent and timing of possible erosion impacts from the Desert Claim project, these impacts would not result in the potential for significant cumulative erosion impacts in the local area. Similarly, construction and operation of the Desert Claim project would not increase the existing landslide hazards, provided appropriate mitigation measures were implemented, and would have no effect on the degree of seismic hazard applicable to other existing or future uses in the project vicinity. Therefore, direct and indirect effects from the project would not add to the ongoing effects of other activities in the local area and would not create the potential for cumulative impacts related to landslide or seismic hazards.

Impacts to earth resources from development of the Kittitas Valley and/or Wild Horse wind power projects would be similar to those described for the Desert Claim project, and would generally be confined to localized, temporary erosion impacts from ground disturbance during construction. The Kittitas Valley and Wild Horse project areas are not characterized by extensive areas of high geologic hazards, or by widespread or significant existing impacts to earth resources. The earth resource impacts of each project would occur within the construction footprint for the respective project and would not be overlapping in geographic extent. Consequently, there would not be an interactive effect among any two of the projects or all three projects (e.g., erosion impacts related to the Desert Claim project would not exacerbate erosion conditions in the vicinity of the Kittitas Valley project and vice-versa), and the impacts of the respective projects would not represent the potential for significant cumulative impacts to earth resources.

## **1.7.2 Air Quality**

Development of the Desert Claim project would result in vehicle exhaust and fugitive dust emissions during the construction period, and in similar impacts during decommissioning. Because these emissions would be temporary, would typically occur within only a portion of the project area at a given time, and would not be noticeable in extensive off-site areas, they would represent insignificant air quality impacts. These impacts would occur within the context of air emissions associated with existing and expected future land uses in the project vicinity and elsewhere in the Kittitas Valley. The Kittitas Valley is a predominantly agricultural area in which operation of agricultural equipment in cultivated fields and vehicle traffic on gravel and dirt roads are common sources of exhaust and dust emissions. Kittitas County is not designated as a non-attainment area for air pollutants of concern, and current air quality problems are not known to exist. The additive effect of the temporary exhaust and dust emissions associated with the Desert Claim project would not constitute the potential for significant cumulative air quality impacts.

The Desert Claim project is one of three wind power facilities proposed for different locations in the Kittitas Valley. The baseline conditions and expected impacts to air quality from the construction and operation of the Kittitas Valley and/or Wild Horse wind power projects would be similar to those described for the Desert Claim project. Vehicle exhaust from construction equipment and fugitive dust from construction activities would be the primary air emissions, and the air quality impacts from these emissions would be temporary and localized. Air quality impacts from project operation would be negligible for all three projects.

The air emissions from contemporaneous construction of multiple wind projects would be additive in terms of their contribution to total regional pollutant loads. Based on the combined area of wind project construction activity and volume of construction traffic relative to existing sources of air emissions in Kittitas County (e.g., vehicle traffic on I-90 and other roads, and agricultural activities on over 350,000 acres of commercial agricultural lands), however, it is not anticipated that the incremental impact of the aggregate air emissions from construction of multiple wind power projects would be sufficient for regional air pollutant concentrations to temporarily exceed the applicable air quality standards. Consequently, there does not appear to be a potential for significant cumulative air quality impacts from the development of multiple wind power projects in the Kittitas Valley, even if all three projects were constructed during approximately the same period.

## **1.7.3 Water Resources**

The Desert Claim project's effects on water resources (described in **Section 3.3.2**) would be additive to other effects from past, present, and reasonably foreseeable actions in the project vicinity. The water resource impacts of the project, however, would be localized to the immediate area of specific project facilities and would primarily be temporary effects limited to the project construction period. Direct and indirect impacts to streams and riparian areas in the project area would be minor, and could be reduced or avoided through micro-siting of individual turbines and related project facilities. The project would have minimal ongoing demands for water consumption, and re-establishment of pre-construction contours and vegetation would allow surface waters to infiltrate back into existing ground water recharge areas. Consequently, the project would have negligible effects on water quantity conditions for surface water or ground water resources. Existing regulations to protect water quality are expected to be sufficient to avoid significant adverse impacts from project activities.

The incremental effects of the Desert Claim project would not substantially change baseline water resource conditions in the project vicinity, and would have a negligible effect on conditions in the Upper Yakima watershed. Therefore, the potential water resource impacts of the Desert Claim project would not result in significant cumulative impacts at the local level or on a watershed basis.

Three utility-scale wind power projects are currently proposed for Kittitas Valley locations within 13 miles of Ellensburg. Two of the three projects are located within the Upper Yakima drainage basin and near streams that drain to the Yakima River near Ellensburg (Desert Claim and Kittitas Valley), while one is primarily within the drainage basin of the middle Columbia River (Wild Horse). As mentioned in **Section 3.3.1**, the Yakima River is currently on Washington State's Clean Water Act 303(d) list of impaired water bodies, based on reported high concentrations of copper (Ecology 1998).

The water resource impacts of the Kittitas Valley and Wild Horse projects are expected to be similar to those described for the Desert Claim project. All of the projects would involve the same types of construction activities and project features, relatively similar areas of ground disturbance, similar restoration and mitigation actions, and similar water demands. Construction activities for each project would be required to follow stringent surface water protection regulations. None of the projects would require extensive construction activity or permanent project facilities along or near major streams. Overall, the effects of the individual projects on water quantity and quality would be minor, and would not be likely to result in noticeable changes in downstream areas.

Because the three projects are sufficiently distant from each other and are located in different tributary watersheds, there would not be combined effects from multiple projects on the same stream. The minor, localized effects of each project would occur within the drainages of minor tributaries to the Yakima River and the Columbia River, and at a distance of at least several miles upstream from either river. Therefore, significant cumulative effects on water resources within the Upper Yakima River basin or the northeastern portion of the Kittitas Valley are not expected, even if all three projects were constructed.

## **1.7.4 Plants and Animals**

### **1.7.4.1 Vegetation**

Development of the Desert Claim project would result in both temporary and permanent loss of vegetation within the project area, with corresponding impacts to several types of plant communities present. These impacts would occur within the context of disturbance and vegetation change associated with current and expected future land uses in the project vicinity (primarily agricultural activities and rural residential development). While much of the project area appears to have been converted from native vegetation to grasslands or agricultural crops, more than half of the project area remains in shrub-steppe vegetation dominated by native species. Construction of Desert Claim project facilities would result in the permanent loss of 88 acres of existing vegetative cover, including approximately 47 acres of shrub-steppe and 4 acres of grassland lithosol. Based on the limited extent of vegetation loss resulting from the Desert Claim project, in the aggregate for the 5,237-acre project area and with respect to specific communities, these impacts would not result in the potential for significant cumulative vegetation impacts in the local area.

Impacts to vegetation from development of the Kittitas Valley and/or Wild Horse wind power projects would be similar to those described for the Desert Claim project, and would generally consist of localized impacts to the same types of vegetation communities. The permanent footprint for the Kittitas Valley project would displace approximately 93 acres of existing vegetation, including approximately 41 acres of shrub-steppe and 29 acres of lithosol. Corresponding figures for the Wild Horse project include 165 total

acres displaced, including 87 acres of shrub-steppe habitat; lithosol habitats are also present on the Wild Horse site, but have not been quantified. For each project, the area of existing vegetation permanently displaced by the project facilities amounts to a small portion (approximately 2 percent or less) of the respective project area. The combined figures for the three projects amount to approximately 297 total acres of existing vegetation lost, including 177 acres of shrub-steppe and at least 35 (and no more than 100, based on a conservative estimate for Wild Horse) acres of lithosol habitat. Based on the limited incremental loss of native vegetation relative to the local distribution of these communities, the combined effects of the three projects would not represent a significant cumulative impact on vegetation.

No federally-listed rare plants were identified at either the Kittitas Valley or Wild Horse project sites. The minimal potential impacts of the proposed wind projects on rare plants would not represent a significant cumulative impact to any species.

Past and ongoing development and agricultural activities create the potential for the introduction of new noxious weeds or the spread of existing noxious species, with potential negative consequences for both native and cultivated vegetation communities. The development of multiple wind energy projects would result in equivalent (and possibly lesser) opportunities for similar types of noxious weed impacts. The degree of collective impact associated with the proposed projects would be minimized or reduced through control measures implemented or required by Kittitas County, EFSEC, individual landowners (which would include the WDNR) in each project area, and each project's developer and owner. In addition, the three projects are all located in areas where past and existing human activity has already created some opportunity for noxious weed infestation, and where existing control programs are active. Therefore, it is unlikely that there would be a significant increase in the risk of noxious weed infestation from the development of multiple wind energy projects in the Kittitas Valley.

#### **1.7.4.2 Wetlands**

The effects of the Desert Claim project on wetlands would be additive to other effects from past, present, and reasonably foreseeable actions. As discussed in **Section 3.3.4**, existing environmental conditions in the project area have been influenced by past and present activities. Significant changes to the project area have resulted from activities related to crop cultivation, grazing, water diversion for irrigation, and residential development in and near the project area. The incremental contribution from the project would not substantially change the condition of wetland resources in the project area. The majority of the wetlands in the project area are marginal-quality wetlands dependent on artificial hydrology (i.e., irrigation return flows and leakage from canals). Based on the current plans for the project, construction activities would temporarily disturb approximately 17 acres of wetland area, while the permanent project footprint would overlap with an area estimated at 3 acres. Final micro-siting for project facilities could be used to avoid at least some of these wetland areas. To the extent that avoidance of wetland areas was not feasible, mitigation would be developed to enhance or replace wetland areas. Existing regulations to protect water quality are expected to be sufficient to avoid significant indirect effects to project area wetlands through stormwater runoff, and thus the potential for hydrologic changes to wetlands would be minimal. With mitigation, the disturbance effects of Desert Claim project construction would not constitute a significant cumulative impact on wetlands in the local area.

Wetlands are rare in the project areas for both the Kittitas Valley and Wild Horse wind power projects, and these projects would have negligible to nonexistent impacts to wetlands. The collective effects of the three proposed projects would essentially be the same as the effects identified for the Desert Claim project. As discussed above, the wetland impacts of the Desert Claim project would be minor as a result of wetland avoidance and/or required mitigation for wetlands that could not be avoided. Because the

collective effects of these projects would be minor and are not expected to extend to downstream surface waters or wetlands, there would not be a potential for significant cumulative effects on wetland resources.

### **1.7.4.3 Wildlife**

#### **Birds**

Using mortality estimates from existing wind plants with similar habitat and bird use, combined mortality of passerines (bird of the order Passeriforme, which includes perching birds and songbirds such as finches, warblers, sparrows blackbirds and jays) for the three projects would range from 430 to 740 fatalities per year. This level of mortality would not exceed that which has been reported at other, newer-generation wind plants in the Pacific Northwest and is not expected to have any population-level consequences for individual species. This conclusion is based on the expected low fatality rates for most species and the high population sizes of the locally-occurring common passerine species such as European starling, American robin, horned lark, American pipit, and western meadowlark.

Potential impacts to raptors from the Proposed Action or from all three projects combined is expected to be similar to other new-generation wind plants in the U.S. Some individual breeding raptors might use both the Kittitas Valley and Desert Claim project areas. Because the Wild Horse project is at least 13 miles distant from either of the other projects, individual breeding raptors using the Wild Horse area are not expected to also use the Kittitas Valley and/or Desert Claim areas. Based on levels of raptor use within the study areas, raptor mortality is expected to be slightly higher than other new generation wind projects with similar turbine types. For all three proposed Kittitas County projects combined, 14 to 15 raptor fatalities per year could occur.

Cumulative impacts to bald eagles conceivably could be loss of winter habitat and a very low number of potential (near zero) fatalities. None of the projects would contribute to the loss of roosting habitat (which is limited to the Yakima River riparian corridor) or foraging areas (which are primarily cattle lots and calving operations). To date, no bald eagle fatalities have been reported from wind plants in the U.S. Foraging behavior of wintering bald eagles, primarily scavenging, may make them less susceptible to collision with wind turbines because they are presumably less focused on moving prey and more attentive to their surroundings while searching for carrion. Based on low use of the proposed project areas by bald eagles, and the lack of any reported fatalities at any operating wind plant in the U.S., fatalities at all three projects are expected to be nearly zero. However, due to nearby roosting and foraging areas, bald eagles might regularly move through the project areas of the three projects and thereby increase their exposure. Assuming risk of collision is proportional to use, 1 bald eagle fatality across all three projects might occur every 2 to 3 years. The effect of this low level of mortality on the increasing bald eagle winter population in the Kittitas Valley and the State of Washington would not be measurable.

#### **Mammals**

Temporary displacement of wintering mule deer and elk would be anticipated if construction occurred during the winter, and this impact might be greater if two or more of the projects were under construction simultaneously during winter. While human-related activity at wind turbines during regular maintenance would be less than during the construction period, it is not known if human activity associated with regular maintenance activity would exceed tolerance thresholds for wintering mule deer or elk. For all three projects, operational impacts to wintering mule deer and elk are expected to be low due to the current level of disturbance associated with existing residential development and roads in the vicinity of the projects.

Based on experience at other wind plants, bat fatalities are likely to occur at all three Kittitas County projects, but no loss of key bat habitat is expected. Most bat fatalities found at wind plants occur during the fall and have been tree-dwelling migratory bats, with hoary and silver-haired bats being the most prevalent. Using mortality estimates from other wind plants, total annual bat fatalities for all three projects would range from 361 to 782. The significance of bat mortality from the three projects is hard to predict because there is very little information available regarding the size of bat populations. Some studies suggest, however, that resident bats do not appear to be significantly affected by wind projects because nearly all observed mortality has occurred during the fall migration period (Johnson et al., 2003; Gruver, 2002). On that basis, significant adverse impacts to resident bat populations are not expected.

#### **1.7.4.4 Fish**

Past and existing human activities have affected fishery resources in the Desert Claim project area. Development of the Desert Claim project would result in minor disturbance or displacement impacts to streams and riparian zones in the project area; because none of the affected streams are known to contain fish communities, direct impacts to fish resources are expected to be negligible or nonexistent. Similarly, the potential indirect effects of the project on water quality and quantity would have a negligible effect on downstream water resources or the fish habitat they provide. Therefore, the Desert Claim project would not result in significant cumulative impacts on fisheries resources.

Studies conducted for the Kittitas Valley wind power project did not identify any fish-bearing habitat within 0.5 miles of proposed facility or construction locations, and no impacts to fish habitat or fish species resulting from construction and operation of the Kittitas Valley project are expected (EFSEC, 2003). Similarly, no fish are known to occur in the Wild Horse project area, and the nearest fish habitat is located along Quilomene Creek approximately 1 mile north of the project. Assuming best management practices were employed for erosion and sediment control (as would be required permit conditions for all three projects), the Wild Horse project would not result in adverse impacts to fish or fish habitat on-site or in downstream areas.

The collective effects of the three proposed projects would consist of negligible direct and indirect effects on water resources in three localized areas of the Kittitas Valley. Because the effects of the respective projects would be negligible and would not extend to downstream waters, there would not be a potential for significant cumulative effects on fishery resources.

#### **1.7.5 Energy and Natural Resources**

Incremental increases in the consumption of energy and other natural resources attributable to construction of the project, either relative to the supply of resources available locally or within the context of the total baseline use of energy and natural resources in the County, would be small and temporary. Energy and natural resource consumption for the operation of the project would be negligible. Electrical energy produced by the operation of the project would represent a significant addition to the local production of energy.

The impacts of construction of the Kittitas Valley and Wild Horse projects on energy and natural resources would be very similar to those described for the Desert Claim project. The combined demands of the three projects for fuel and construction materials would add measurably to the local and regional consumption of these non-renewable resources on a temporary basis, but is not expected to have a noticeable effect on the supply or availability of these resources. The single largest demand would be for sand and gravel resources, which are abundant in the local area and might, in at least two cases, be obtained from sources within the project area. Overall, based on timing considerations and the

incremental resource demands associated with the projects, the development of multiple wind energy projects in Kittitas County would not represent the potential for significant cumulative adverse impacts on energy and natural resources.

The three proposed wind power projects would provide a combined nameplate capacity of approximately 560 to 565 MW of electricity (under the “middle scenario” for development of the Kittitas Valley project). Assuming long-term operation of the three projects at a typical plant factor of 33 percent, the Kittitas Valley, Desert Claim and Wild Horse projects would produce approximately 180 average MW of electricity on a long-term basis. Operation of the three projects would add substantially to the capacity, production and availability of renewable energy sources in Washington and the Pacific Northwest. Energy produced by the three wind power projects would provide a sustainable, renewable source of electric power supply to supplement the region’s existing hydroelectric and thermal (nuclear, coal-fired and gas-fired) power sources, although it would represent a relatively small addition to the total regional electricity supply. Utilities receiving the wind energy would be able to diversify their energy resource portfolios and stabilize a portion of their long-term energy supply costs. Power produced by the wind projects would also be responsive to the identified needs of regional utility providers, including Puget Sound Energy.

### **1.7.6 Cultural Resources**

Direct and indirect impacts to cultural resources within the Desert Claim project area would occur within the context of comparable impacts from past and ongoing land uses in the vicinity. Agricultural activities, irrigation development, construction of roads and power transmission lines, and rural residential development have no doubt disturbed or destroyed cultural resources that existed in the project vicinity at one time, and have altered the historic setting for the resources that remain. Based on the results of the field survey of the Desert Claim project area, however, numerous identifiable artifacts remain in the area. Given the relatively small area of temporary disturbance associated with development of the project, it is unlikely that the additional impacts to remaining cultural resources would represent a significant cumulative change compared to impacts from past and ongoing activities.

The Kittitas Valley and Wild Horse wind power projects would likewise create the potential for adverse impacts to cultural resources through ground disturbance, increased opportunity for removal of artifacts or vandalism of cultural sites, and/or changes to the settings of cultural sites. The direct and indirect effects of each project on cultural resources are not yet known with precision, as avoidance of identified cultural resource sites can be taken into account in final micro-siting of project facilities. Therefore, the combined cultural resource impacts of the three projects are uncertain. Nevertheless, the combined effects of the three proposed projects on cultural resources appear to be the possible disturbance of a small number of sites and the alteration of the visual setting for up to approximately 35 to 40 cultural sites. Based on the incremental nature of the unregulated setting changes ongoing in the Kittitas Valley and the uncertain historical significance of the identified cultural sites, it is unlikely that the combined effects of the project would represent a significant cumulative impact on the cultural resources of the region.

### **1.7.7 Land and Shoreline Use**

Cumulatively, the three wind power projects would be located in an area of approximately 18,000 acres. These lands are currently used primarily for agricultural activities (grazing and rangeland). Based on adopted Comprehensive Plan (Rural, in all three cases) and zoning designations (Forest and Range for Wild Horse, and a mixture of Forest and Range and Ag-20 for Kittitas Valley and Desert Claim), agriculture is the intended long-term use of the majority of this land. Together, the areas potentially affected by the proposals represents approximately 4 percent of the total lands in Kittitas County zoned

Ag-20 and Forest and Range. (In addition, extensive areas of forest and range land in Kittitas County are in federal ownership and are not zoned.) Some dispersed rural residential uses are located adjacent to the Desert Claim and Kittitas Valley sites, and at further distances (approximately 3 miles) from the Wild Horse site. These areas are also characterized by the presence of electric transmission facilities.

Existing uses and activities would not be displaced by proposed wind power facilities. Collectively, the 3 proposals would result in the long-term (i.e., 30 year) conversion of an estimated 350 acres of agricultural land as a result of construction of wind power facilities. This represents less than 2 percent of the total site area of the 3 proposals. Agricultural activities would continue unaffected on the remainder of the affected sites.

Kittitas County considers wind farms to be a “utility” use, which, depending on site-specific conditions, is potentially compatible with ongoing agricultural activities. The proposed wind energy facilities would not collectively disrupt or change the underlying land use pattern of this portion of the county. Wind facilities are not inherently more intensive than many other agricultural, energy or utility uses that occur in rural areas in terms of their potential external impacts (e.g., off-site noise, land use conflicts). While some localized land use conflicts could occur based on the location of specific turbines, these are seen as site-specific and not indicative of conflict with the broader, underlying rural land use pattern.

Individually and collectively, the proposals would not be likely to attract supporting uses or generate spin-off development. The combined number of operational full-time employees (30-42) is modest and the wind power facilities would be widely dispersed. They would not create a cumulative demand for supporting commercial or industrial uses and would not create pressure to change or convert existing land uses.

Proposed wind turbines (approximately 370 cumulatively) would be significantly larger in scale than nearby rural and agricultural uses and structures, would be dispersed over a large area, and would result in some degree of visual discord or intrusion with existing uses. Viewers would be able to see both the Desert Claim and Kittitas Valley proposals from some view locations within certain visual assessment units. However, these cumulative visual impacts are not indicative of a conflict with the underlying land use pattern. Cumulative visual impacts are considered in detail in **Section 3.10** of this EIS.

It is possible that the proximate Desert Claim and Kittitas Valley proposals (together more than 12,000 acres) could cumulatively discourage residential uses to some degree in their general locations. (The location and topography of the Wild Horse site generally makes it less susceptible to residential development.) This could have the effect of reducing pressure for the conversion of agricultural lands to residential uses, which could be seen as positive, and would be consistent with Kittitas County’s policies to preserve agricultural uses. Some nearby residential users might seek to relocate if they felt that wind facilities, individually or collectively, conflicted with elements of their lifestyles.

Cumulatively, proposed wind energy facilities would be consistent with Growth Management Act goals and policies for rural areas, and with relevant Growth Management Hearings Board decisions. Turbines would not be defined as “urban growth” (RCW 36.70A.030(17): they would not make intensive use of the land for buildings and structures (330 acres collectively, or 2 percent of the combined site areas), and they would not be incompatible with the primary use of rural lands for agricultural activities. Please refer to the discussion in **Section 3.7.2.2**.

### **1.7.8 Health and Safety**

Construction and operation of the Desert Claim project would add to the existing health and safety risks that currently exist in the project vicinity, and would introduce some new types of risks. Existing mechanical hazards for humans primarily include those associated with operating motor vehicles, lawn and garden equipment (e.g., mowers, snow blowers, string trimmers), agricultural machinery, and other types of equipment typically used in rural areas (e.g., portable generators, chain saws). At many locations in the project area people must be aware of the risks of living and working around low- and high-voltage electric lines. Wildland and structure fires can occur, and the project is considered to be in a high-hazard area for wildland fires. While the existing risks are diverse, the possibilities of serious adverse consequences for a given individual or location are small or remote. The Desert Claim project would introduce new hazards, such as blade throw and ice throw, which would likewise have remote probabilities of occurrence. Given the distance separation from human use areas and other safety features incorporated into project plans, as well as the mitigation measures included in the modified Desert Claim proposal, it is anticipated that the Desert Claim project would add to the existing health and safety risks in the project area to a very small degree.

Development of the Kittitas Valley and/or Wild Horse wind power projects would involve the same types of hazards associated with the Desert Claim project. With respect to the health and safety risks specific to wind energy projects, including mechanical hazards and shadow flicker, the potential impacts of the three projects would be localized to the respective project areas and are not expected to be cumulatively significant. While the probability of any specific hazard occurring would be essentially the same for each project (based on very similar numbers and sizes of wind turbines), the risk of exposure to those hazards would vary with the level of human activity in the near vicinity of each project. In general, the risk of exposure would be greatest (although still low, in probability terms) for turbines that are in close proximity to residences or public roads; turbines in such circumstances are also the focus of the mitigation measures that have been identified for this issue. Some individuals living in the northern portion of the Kittitas Valley might have common travel patterns that would involve trips through or past portions of both the Kittitas Valley and Desert Claim project areas, which could result in exposure to ice throw or similar mechanical risks associated with elements of both projects. Based on the low probability associated with these hazards and the mitigation measures available to reduce the risks, this situation is not anticipated to involve a significant cumulative increase in health and safety risks.

Development of two or more wind energy projects in Kittitas County could result in a cumulative increase in the risk of wildfire in the central and eastern portions of the County. The greatest fire risk for each project would occur during the construction period, because of the level of activity and the numbers of workers and equipment active at that time. The greatest cumulative fire risk would occur if and when construction schedules for two or all three of the projects overlapped. While wind energy project construction would introduce additional human activity, machinery and fuels into the affected environment for each project, it would also result in higher levels of watchful presence in and around each project site, the use of stringent fire protection measures, and the presence of trained personnel who could respond to fire hazards. In addition, the construction program for each project would include contracted fire protection services from the respective local rural fire district, which would facilitate prompt response to any incidents that might occur. Based on the heightened level of fire prevention and protection that would exist during project construction, it is unlikely that the cumulative increased risk of fire during this period would be significant.

As discussed in **Section 3.8.2**, certain fire risks specific to wind energy projects would also exist during the operating period for each project. Similar to the construction process, however, specific measures to counteract or manage these risks would be implemented during project operation. The wind turbine

machinery is designed with fire safety in mind, and the cleared areas and gravel pads around the base of the turbines and other facilities would serve to minimize the spread of fire around the facilities. In addition, the project facilities would be continually monitored, the project areas would be regularly patrolled and access to the projects areas would be limited. Because the level of fire prevention and protection that would exist within the respective project areas would be greater than what presently exists or what would occur in adjacent areas, it is possible that the net impact of project operation would be a reduction in the existing fire hazard level within the project areas. In any event, it is unlikely that the cumulative increased risk of fire during the operating period for multiple wind energy projects would be significant.

The electric and magnetic fields associated with the Desert Claim, Kittitas Valley and/or Wild Horse wind power projects would be less than those produced by electrical facilities already present in the vicinity of the respective project areas, and would diminish to background levels at distances within which public exposure could occur. Therefore, the wind project facilities would not add to the strength or extent of electric and magnetic field exposure that might already occur, and there would not be cumulative exposure impacts from development of multiple wind energy projects. Similar conclusions apply to concerns involving electrical safety (inadvertent contact with energized electrical facilities), stray voltage and lightning.

Potential shadow flicker impacts from the three proposed projects would be limited to the immediate vicinity (approximately 2,000 feet) of the wind turbines within each respective project area. There are no permanent receptor locations within this distance of the Wild Horse project, and shadow flicker impacts from this project would be minimal or nonexistent. Some residences that are close to turbine locations for the Desert Claim or Kittitas Valley projects would be subject to shadow flicker for varying numbers of hours per year. These impacts would be limited to a number of discrete locations that are well separated from each other, and would not constitute a cumulative impact from these two proposed projects.

### **1.7.9 Noise**

The proposed Desert Claim project would not be expected to induce additional development in the project vicinity beyond the proposed wind turbine generators and associated equipment. Therefore, the potential for cumulative impacts would be restricted to the construction and operation effects of the project on the existing environment and their relation to past, present and expected future noise conditions. Cumulative impacts from the project are inherently considered in **Section 3.9.3.2**, where the cumulative sound levels (i.e., the existing sound levels plus the projects sound levels) are displayed in **Table 3.9-6**. While the project would result in incremental increases in typical noise levels at a small number of selected locations, the additive effect of the project would not represent a significant cumulative impact to existing noise conditions in the project vicinity.

The noise impacts of the Desert Claim, Kittitas Valley and/or Wild Horse wind power projects would be localized to the vicinity of each project. Residences near a portion of the Kittitas Valley project area could experience a noticeable change in the ambient sound level relative to baseline noise conditions, similar to the case for selected noise receptors near the Desert Claim project. The two projects are a sufficient distance apart that residents near the Desert Claim project would not also experience elevated noise levels from Kittitas Valley project facilities, and vice versa. Noise modeling results for both projects indicate that receptors located between the two projects would be unlikely to experience noticeable increases in noise levels as a combined effect of the projects. The Wild Horse project would not affect noise levels at any residences or other permanent receptors. Consequently, potential noise impacts from the proposed wind energy projects would be confined to certain project-specific locations, and there would not be cumulative noise impacts from the development of multiple wind projects.

### **1.7.10 Aesthetics, Light and Glare**

Aesthetic and related impacts of the Desert Claim project would occur within the context of landscape modifications associated with past, current and expected future uses in the project vicinity. As discussed in **Section 3.10.1**, the local landscape shows evidence of changes resulting from agricultural practices, land management activities (such as timber harvest and road construction), rural residential development, and construction of infrastructure facilities such as electric transmission lines and irrigation canals. While the existing landscape in the vicinity of the project and elsewhere in the Kittitas Valley has been substantially modified, the additive visual effect of the Desert Claim project facilities would represent a significant change from the baseline aesthetic condition in areas where those facilities were visible and prominent.

The aesthetic impacts of the Kittitas Valley and Wild Horse projects would be similar to those described for the Desert Claim project, although there would be differences with respect to viewer location and viewer groups affected. In addressing the potential adverse cumulative impacts of multiple wind power projects, it is most important to consider the Desert Claim and Kittitas Valley projects together because of their proximity. Viewers exposed to wind projects tend to react more negatively to longer lines of turbines than to isolated smaller clusters (Righter, 2002). This finding suggests that the combined effects from two projects developed near each other (within 2 miles) might be greater than the sum of their individual impacts. Should both the Kittitas Valley and Desert Claim projects be built, the visual consequences would include approximately 240 wind turbines (120 for each project) on the valley floor and adjacent slopes in the north-central portion of the Kittitas Basin.

Based on the analysis provided in **Section 3.10.2**, the most significant cumulative visual impacts would be from the Northwest Valley Visual Assessment Unit, especially in views to the west from residences and roads in this unit. For viewers in this unit, the wind turbines from the two projects might appear to surround the valley. Views from the Hayward Hill, Dry Creek Slope, Yakima River, and Southwest Valley Visual Assessment Units would also experience significant cumulative visual impacts because turbines in the ridgetop configuration of the Kittitas Valley project would be prominent in their views. In addition, motorists on I-90, the Thorp Highway, U.S. Highway 97, State Route 10 and some local roads would have longer-duration wind turbine views because they would be passing two nearly adjacent projects.

The Wild Horse Wind Power Project would be located a considerable distance from the other two projects and in a different portion of the local landscape, creating a limited potential for this project to be evident in the same view as the Desert Claim and/or Kittitas Valley projects. Nevertheless, there are likely to be some locations near the Kittitas Valley or Desert Claim project areas from which there is a clear view toward the Wild Horse site on Whiskey Dick Mountain, which is prominent at the eastern edge of the valley. The Wild Horse turbines would be quite distant in such views (up to 21 miles from the Kittitas Valley area and 14 miles from the Desert Claim area), however, and would have minimal additional effect on these views. There may also be some viewpoints in or near the valley from which all three projects would be visible.

The overall effect of multiple wind energy projects on the regional landscape and the experience of viewers when considered over time and at multiple locations is another important consideration. For example, drivers passing through Kittitas County on I-90 would likely notice a major wind development (the Wild Horse project) for a time in the stretch of highway east of the Columbia River and again in the eastern end of the Kittitas Valley (primarily around the community of Kittitas), and could subsequently view a more extensive area of wind turbines to the north and west of Ellensburg (the Desert Claim and

Kittitas Valley projects). These repeated views of relatively large numbers of wind turbines would all be at background distances and would be intermittent, rather than continuous for this portion of the trip. Nevertheless, the viewers could recall seeing extensive wind energy development in the Kittitas Valley area. Similarly, residents of Ellensburg, for example, might not see turbines from one or more of the wind projects on a daily basis, they would likely experience repetitive views of numbers of wind turbines through their local travels over a period of weeks, months or years. Consequently, some local residents and frequent visitors might perceive a substantial change to the overall character of the Kittitas Valley landscape, and such a response would be more likely with the development of multiple wind projects.

### **1.7.11 Recreation**

As documented in **Section 3.11.2**, little recreation activity occurs in or near the Desert Claim project area and impacts from the project on recreation would be low. Given the applicable baseline recreation conditions, the impacts of the project would not constitute significant cumulative impacts within the context of other past, present and foreseeable future actions.

Baseline conditions and expected impacts for the Kittitas Valley and Wild Horse wind power projects would be similar to those identified for the Desert Claim project. The other two projects are roughly the same size as the Desert Claim project and would be located primarily on private property. Existing recreational activities within these project areas, with the possible exception of hunting, would generally continue to be available on privately-owned lands with the permission of the landowners. Based on the minor nature of the expected impacts and the negligible potential for interaction among two or more projects, development of multiple wind power projects would not result in significant cumulative impacts to recreation.

### **1.7.12 Ground Transportation**

Cumulative construction impacts from the proposed Desert Claim, Kittitas Valley and Wild Horse wind power projects would include increases in traffic volumes generated by construction workers and the delivery of construction supplies and materials. The concrete and gravel production and delivery capacity of local suppliers would not likely be sufficient to supply all three projects at the same time. This situation would likely require the use of concrete batch plants on one or more project sites in order to maintain a dependable supply of concrete, or use of revised construction schedules to reduce or avoid overlap among projects. If batch plants were utilized extensively, there would be fewer collective concrete-truck trips on county roads.

Zilkha Renewable Energy, the applicant for the Kittitas Valley and Wild Horse wind power projects, prepared an analysis of the combined effects of the construction traffic for those two projects. This analysis is summarized below, followed by a discussion of the possible construction schedule overlap and additive construction traffic effects of the Desert Claim project.

#### **1.7.12.1 Combined Kittitas Valley and Wild Horse Traffic Effects**

Transporter routes for the delivery of turbine components have been defined for both the Kittitas Valley and Wild Horse projects. The single transporter route for the Kittitas Valley project begins in Seattle and continues east on I-90 to Exit 106, the interchange with US 97 west of Ellensburg. Both transporter routes for the Wild Horse project also begin in Seattle and continue east on I-90, overlapping with the entire I-90 segment of the Kittitas Valley transporter route. One of the Wild Horse routes continues eastward on I-90 to Exit 115, just south of the towns of Kittitas, while the other continues on I-90 to Exit 136 at Vantage.

The Kittitas Valley segment of I-90 is classified as a rural-interstate, according to the Washington State Department of Transportation (WSDOT) road classification system. The average daily traffic (ADT) volume (in both directions) on I-90 immediately west of Exit 106 is estimated at 22,000 vehicles, with an estimated truck percentage of 21 percent (WSDOT 2001). If construction were to occur simultaneously for both the Kittitas Valley and Wild Horse projects, the segment of I-90 west of Exit 106 would temporarily carry construction traffic for both projects. This is the only roadway that would potentially be affected by combined construction traffic from the two Zilkha projects.

The estimated construction traffic volumes for the Kittitas Valley and Wild Horse projects were added to the 2004 background traffic volumes to achieve a combined peak-hour directional volume with the projects. As a worst case, the Kittitas Valley project is conservatively estimated (i.e., the actual number would likely be lower, but would not be higher) to generate 149 heavy construction trips and 20 light-duty delivery truck trips traveling on I-90 during the peak hour, for a total of 169 peak-hour trips (for the medium project scenario). The corresponding trips for the Wild Horse project are conservatively estimated at 143 heavy construction trips and 15 light-duty delivery truck trips, for a total of 158 peak-hour trips traveling on Transporter Route 1 (to Exit 115). Transporter Route 2 for the Wild Horse project is estimated to carry 6 heavy construction trips in the peak hour.

The combined construction traffic for the Kittitas Valley and Wild Horse projects would result in a total maximum peak-hour volume of 1,616 vehicles. Based on the most current Highway Capacity Manual guidance for freeway segments, with the conservative estimates of combined baseline and construction traffic volumes during the PM peak hour this segment of I-90 would operate at LOS B during the construction period. By State standards, the LOS threshold for rural highways is LOS C. Therefore, while the combined construction traffic for the two wind power projects proposed by Zilkha could result in a temporary decrease in the LOS on I-90, the resulting LOS would still exceed state standards, and thus there would not be a significant impact to traffic operations.

### **1.7.12.2 Additive Desert Claim Project Construction Traffic Effects**

If it is assumed that the volume of construction trips for the Desert Claim project would be similar to the volumes estimated for the Kittitas Valley and Wild Horse projects, based on the similar size of the projects, the total peak-hour trips indicated above would be increased by approximately 120 to 140 trips. Applying a mid-range factor of 130 trips, the total peak-hour trips in 2004 if all three proposed projects were under construction simultaneously would be in the vicinity of 1,750 trips. This would correspond to an equivalent of 14.7 passenger cars per lane mile, an operating condition that is still within the numerical range for LOS B. Therefore, the additive effect of the potential Desert Claim construction traffic would still not result in a significant cumulative impact on the operating condition for I-90 during the construction period.

Aside from the increased traffic on I-90, there would be relatively little combined construction traffic effects on other roadways because of the geographic separation of the three projects. Cumulative increases in general construction traffic volumes would likely be restricted to roadways in the area around the intersection of I-90 and SR-97, and would be associated primarily with the Desert Claim and Kittitas Valley projects. Given existing daily volumes and the design capacity of these highway facilities, it is not likely that the addition of project-related trips generated by construction workers and the delivery of general construction materials (e.g., sand, gravel, concrete) would be noticeable. However, if turbine components were being delivered to multiple projects at the same time, there could be increased delays or additional detours within the area near the Desert Claim and Kittitas Valley projects. Additional vehicle delay could affect segments of SR-97 and Smithson Road. The potential for delay could be reduced if the contractors for the different projects coordinated the delivery of turbine components to avoid a situation

in which a number of transporters were traveling at the same time on a given road segment. WSDOT and/or Kittitas County could also condition the required oversize vehicle permits to limit the number of deliveries per day per project.

### **1.7.12.3 Potential Project-Related Tourist Traffic**

As discussed in **Section 3.12.2**, it is possible that the Desert Claim project by itself (or the Kittitas Valley or Wild Horse project) would generate some amount of tourist interest, and local traffic associated with tourists wanting to get closer views of the project facilities. It is not possible at this time to estimate how much tourist traffic would likely occur, or how much of the activity would be new traffic rather than additional activity by visitors already in the area for other purposes.

Development of multiple wind farms in the Kittitas Valley area would likely result in a larger total number of tourists visiting wind project facilities, relative to the level of activity with a single project. However, with the geographic separation of the proposed projects, it is not likely that roads adjacent to the Desert Claim project (for example) would experience substantially more tourist traffic because one or two other projects were also developed. In fact, the presence of additional wind farms could result in spreading tourists over a larger portion of the valley, with fewer tourist visits to a single project than might otherwise be expected. In any event, tourist interest in multiple wind projects would likely result in an increase in the amount of traffic on local roads near the respective project areas. The tourist traffic would likely be localized to the individual areas around the projects and would not likely be additive or cumulative (i.e., it is likely that most tourists interested in wind energy would visit any one of the projects, but would not visit two or all three projects).

### **1.7.13 Air Transportation**

Aircraft operations in the Kittitas Valley area, and specifically in the vicinity of Bowers Field, are already constrained to some degree by natural and human-caused factors. The wind turbines installed for the Desert Claim project would represent a cumulative addition to the existing natural and constructed features that need to be acknowledged and accounted for in safe aircraft operation near the Kittitas Valley. As discussed in **Section 3.13.2**, development of the Desert Claim project would create a potential conflict with the protected airspace associated with the visual flight rule (VFR) traffic pattern for Bowers Field, as 10 of the proposed turbines would intrude on that protected airspace. Multiple mitigation measures that would resolve that potential conflict have been identified. Available information for the Kittitas Valley and Wild Horse wind power projects does not indicate that the turbines and other structures for those projects would present potential conflicts with air traffic operations at Bowers Field or other facilities, and there would be no apparent adverse impacts on air transportation resulting from development of those projects. Therefore, development of multiple wind power projects in the Kittitas Valley would not result in cumulative significant impacts on air transportation.

### **1.7.14 Public Services and Utilities**

Development of the Desert Claim project in conjunction with similar projects in the County (Kittitas Valley Wind Power Project and the Wild Horse project) could contribute to cumulative impacts on area public services. The development and operation (to a lesser extent) of three projects could create additional demand for fire protection, emergency medical services, and police support. The level of impact would depend on the occurrence of simultaneous construction activities and the availability of emergency response resources at the time of an incident. Expected conditions for the major service categories are summarized below.

#### **1.7.14.1 Fire Protection & Emergency Medical Service**

The three proposed projects would increase the risk of fire, and the potential need for emergency medical services due to accidents, during construction and operation. Impacts for each project would generally be the same as identified in **Section 3.14** for the Desert Claim project, although differing provider jurisdictions might be affected. The western portion of the Desert Claim project area is included within Kittitas County Fire District 2, while the remainder is not within an existing fire district service area. Most of the Kittitas Valley project area is outside of existing fire district boundaries, although Fire District 1 serves a portion of the site. None of the Wild Horse site is within a rural fire district. The project proponents would need to contract with the appropriate rural fire district to obtain required fire protection services. For all three projects, such contracts would extend coverage to areas not presently served by a fire district. In the event that a fire service contract did not cover the actual costs of extending service to a project, there could be a gap between the time of occurrence of impacts prior to realization of project-generated property tax revenues.

#### **1.7.14.2 Law Enforcement**

Calls for service could increase, primarily during the construction phase, as a result of traffic accidents and construction site theft or vandalism. The cumulative potential number of increased calls has not been quantified but is not anticipated to be significant. Both wind power project applicants would provide on-site security for their respective projects. Impacts during project operations could result from calls for service in connection with vandalism or trespass, but would not be cumulatively significant.

#### **1.7.14.3 Schools**

The proposed wind power projects would not generate a cumulative impact to the permanent population of the local area or to student enrollment, as a result of the construction work force and scheduling characteristics described in the population, housing and employment analysis. The combined operations work force of the three projects would be approximately 30 to 42 workers. If all of these workers were hired from outside the local area and all or most of those in-migrants located in a school district with capacity limitations, there could be adverse impacts to school services. These circumstances are considered highly unlikely, however, as local residents would probably fill a portion of the operations jobs and it is unlikely that all of the in-migrants would locate in the same school district. Therefore, no significant adverse impacts to schools are anticipated from project construction or operation.

#### **1.7.14.4 Water Supply and Sewer Service**

Water would be used for dust suppression during construction at all three projects, and would be acquired from off-site sources. Small amounts of potable water, likely supplied from exempt on-site wells, would be used during operations. None of the projects would be connected to public sanitary sewer systems. Consequently, none of the projects would result in impacts on delivery systems for these utility services, and the combined effects of the three projects would not result in a significant cumulative impact.

#### **1.7.14.5 Solid Waste, Energy and Communications**

The collective impacts of the three projects on solid waste, energy and communications services would be the same as the individual impacts identified for each proposal. The energy and communications demands of the projects would be minimal. Based on the distances between residences and the respective project facilities, there does not appear to be a potential for significant interference with radio and television

reception in the areas near the proposed projects. The cumulative increase in demand for solid waste disposal services would essentially be limited to the period of project construction and is not anticipated to be significant with respect to either collection capability or the capacity of the construction and demolition waste disposal site.

## **1.7.15 Population, Housing and Employment**

### **1.7.15.1 Construction**

For purposes of analysis, and to identify potential worst-case impacts, it is assumed that all three projects could be under construction concurrently. Peak construction of each project could employ between 150 and 250 workers, or a combined total of 450 to 650 workers. These estimates are based on the experience of the applicants at other facilities. The number of construction workers who would reside within or outside Kittitas County cannot be precisely predicted. Based on the experience of the Stateline wind power project (personal communication, C. Taylor, Zilkha Renewable Energy, Portland, Oregon, 2003), and for purposes of analysis, it is assumed that approximately one-half of all workers would be local (i.e., already residing within Kittitas County or within reasonable commuting distance, such as in Yakima County) and one-half would come from outside that area (Benton County, King County, etc.). If one-half of wind facility workers are assumed to be local, approximately 75 to 80 non-local workers would be employed by each project, or a cumulative total of 225 to 240. The actual mix of local and non-local would depend on the availability and residence of construction workers with the particular skills needed for wind facilities, and competition from other, concurrent construction projects in the region (e.g., MountainStar Resort).

Local/resident workers already have housing and are part of the existing county population; any impact to population and housing associated with these workers has already occurred. Some non-resident construction workers could require temporary housing, which could potentially affect the local housing market; some portion of non-resident workers would commute to the project sites daily. According to 2000 census data, Kittitas County contained more than 1,900 housing units categorized as seasonal and recreational. In addition, more than 40 percent of the County's total housing stock is rental housing, with a vacancy rate (per 2000 census data) of almost 7 percent. There are also close to 50 motels/hotels, RV parks and other lodging establishments in the Ellensburg and Cle Elum/Roslyn area, which could provide temporary lodging for wind project construction workers. It is anticipated that cumulative non-resident workers would be able to find temporary housing over the 9-12 month construction period and that there would not be a significant impact to local housing markets. Vacancy rates for temporary housing could decrease for a period of a few months, however.

### **1.7.15.2 Operation**

Over their life times, each wind power project is estimated to employ 10 to 14 full time workers for operations and maintenance; cumulative operations employment would be between 30 and 42. These estimates are based on the applicants' experience with other projects. If all operations workers were hired from the local area, there would be no impact on population or housing. Experience at other wind power projects suggests that about half of the operations workers might be local residents. Even if all were assumed to be in-migrants, however, the cumulative housing impact from a population increase of this size would not be considered significant.

### **1.7.15.3 Economic Impacts**

The following information is provided for general information purposes. It does not address “environmental impacts” as defined by SEPA and is not considered to be part of the EIS, based on the direction in WAC 197-11-448.

Direct, indirect and induced income generated by the three wind power proposals was estimated for the construction and operation phases. These estimates are based on analyses of jobs, income, wages and similar economic impacts prepared for each proposal and included in the corresponding EISs or application materials. Basic assumptions and methodology used for the Desert Claim analysis are described in **Section 3.15** of this EIS. This methodology differs in some respects from the approach used for the Kittitas Valley and Wild Horse projects, as indicated by the differences among the projects for a given measure of economic impact.

In general, the analyses indicate that the projects cumulatively would generate substantial income for the local economy and residents – almost \$16 million during the construction period, and approximately \$5.3 million annually thereafter. The direct impact figures for the construction phase primarily represent local labor income assumed to be paid to construction workers. The indirect and induced impacts reflect the local income effect from purchases of local construction inputs and the re-spending of those dollars within the local economy. The direct impacts for the operations phase include local labor income to operations employees and annual lease payments to landowners (which have been estimated at \$4,500 per turbine per year).

### **1.7.16 Fiscal Conditions**

The Desert Claim, Kittitas Valley and Wild Horse proposals have each prepared analyses which estimate the fiscal (i.e., governmental cost and revenue) impacts of the individual project. Each project analysis also considered indirect and induced economic impacts (quantitatively or qualitatively) as well as direct fiscal impacts. The studies were performed at different points in time and/or were organized differently; refined information is now available for some of the proposals. As such, they provide a reasonable overview and estimate of the fiscal effects of each wind power proposal. The reader should consult the respective analyses to obtain greater detail about economic and fiscal issues.

Cumulative fiscal impacts, as summarized here, are considered to be the simple addition of the direct costs and revenues of each project. There is no synergistic effect assumed from multiple projects in terms of direct revenues; such an effect could occur, however, in terms of indirect or induced economic effects (e.g., additional jobs, income, spending, etc.). For purposes of estimating impacts, each project is assumed to be approximately the same size (120± turbines), and the value of each turbine is assumed to be assessed at approximately \$765,000. Therefore, each project would have an initial assessed value of over \$90 million, and the combined assessed value for all three projects would be over \$270 million. The combined value of the three projects would represent an increase of more than 10 percent over the current assessed valuation for all real and personal property in Kittitas County of approximately \$2.5 billion.

The current property tax levy rate for all taxing jurisdictions in Kittitas County is 1.18 percent. If this levy rate were to be applied to the tax base associated with the projects, the estimated potential property tax revenues in the first operational year would be approximately \$3.8 million in total, and more than \$1 million for each project. (Revenues for Wild Horse are assumed to be the same as for the medium scenario for the Kittitas Valley proposal [121 turbines], as reported in the Draft EIS for the Kittitas Valley project [EFSEC, 2003]. As was noted in the discussion of economic impacts, differences in methodology

[in this case, primarily the applied tax levy rate] result in different revenue estimates for projects with very similar capital characteristics.)

Because the value of the turbines would depreciate over time, property tax revenues would also decline over their 30-year lifetime. Depreciation schedules applicable to the projects are not available at this time. However, the effects of straight-line depreciation and reduction in property taxes were estimated for the Final EIS.

Current statewide legal limitations on property taxes would likely result in actual tax revenues lower than those indicated above. Initiative 747 limits the growth of local government property tax revenues to 1 percent per year, although the I-747 cap does not apply to the assessed value of new construction. Because the total assessed valuation for Kittitas County would increase substantially (over 10 percent) with inclusion of the value of the wind power projects, the tax rates levied against the total assessed valuation base might need to be reduced to stay within the I-747 limit. In that event, actual revenues derived from the projects would be less than indicated above, although all taxpayers would benefit from the reduced levy rate. On balance, the actual effect of the projects on property taxes would likely be some combination of increased revenues and decreased levy rates.

The three proposals could also generate some costs for public services (e.g., fire protection, law enforcement, road maintenance) that might not be covered by mitigation requirements. To the extent that this occurred, it would reduce the fiscal benefits that would otherwise be associated with the projects. These potential service costs have not been quantified but are estimated to be minor, both individually and cumulatively. Expected cumulative revenues are projected to be significantly higher than estimated costs for the projects and would result in a substantial benefit (a surplus of revenues relative to costs) for the affected local jurisdictions.

## 1.8 MITIGATION MEASURES

Mitigation measures for each element of the environment are addressed in full in **Chapter 3** of the Final EIS. Several categories of mitigation measures are considered. A number of planning, design, construction, operation and management measures have been incorporated as part of the proposal for the Desert Claim Wind Power Project. Other mitigation measures are identified in the EIS based on specific Kittitas County, State of Washington or other jurisdictional regulations, and are therefore considered as “required” mitigation measures. The EIS also identifies other “possible” or “potential” mitigation measures, which are additional measures that would address impacts identified in the document and that could either be incorporated as part of the proposal or required at the discretion of Kittitas County. Discussion of mitigation measures in the EIS is phrased to indicate that proposed or required measures “would” occur and that possible or potential mitigation measures “could” or “should” occur or be considered.

WAC 197-11-655(3)(b) notes that mitigation measures legally adopted by the lead agency “need not be identical to those discussed in the environmental document.” This allows the lead agency flexibility to revise or expand the mitigation measures presented in the EIS. It is often not possible to anticipate in an EIS every mitigation measure that will ultimately be required by the responsible jurisdiction.

## **1.8.1 Earth Resources**

### **1.8.1.1 Erosion**

To mitigate and reduce the sheet and channel erosion potential on the project site, the Desert Claim Wind Power Project would employ Best Management Practices (BMPs) outlined in Ecology's *Stormwater Management Manual for Eastern Washington*. These BMPs would be needed to meet the terms of the construction stormwater discharge permit, and would include the following measures:

- Source-control BMPs for cleared areas would be applied. Surface water runoff would be directed away from exposed subgrades or into approved stormwater conveyance systems.
- Protective measures for stockpiled soils.
- Temporary sedimentation traps or ponds.
- Rock check dams along roadways and within drainage ditches
- Silt fences would be established along wetlands, stream and river corridors, open space areas and other sensitive areas.
- Erosion control measures for stormwater discharge points.
- Construction runoff would be collected and treated by sediment ponds, turf-covered sand filters, temporary filtration or other approved methods.
- Clean water entering construction areas would not be allowed to mix with construction water.
- A temporary erosion and sediment control plan (TESCP) would be established.
- TESCP measures would be in place and operating properly prior to beginning major clearing and earthwork activities.
- Disturbed areas beyond the permanent project footprint would be revegetated, using an appropriate seed mix, by the close of the construction period.

In addition to the above BMPs that are outlined in the Ecology manual and previously incorporated into the proposal, the applicant has committed to implement the following erosion mitigation measures during the design and development of the project:

- Surface water and domestic discharge would not be directed onto sloping areas or randomly daylight on the site.
- Clearing, excavation and grading should be limited to the minimum areas necessary for construction and original vegetation should be retained as much as possible, including buffer strips between construction disturbance zones and potential receiving waters.
- A geotechnical engineer should review the grading, erosion, and drainage plans prior to final plan design to further assist in mitigating erosion hazards during and after development. Additional erosion mitigation measures might be offered at that time to address site-specific issues.

### **1.8.1.2 Landslides**

Construction of the proposed wind energy facility would not increase the existing landslide hazard risks, provided appropriate mitigation measures were implemented. To mitigate potential landslide hazards as a result of construction, the following setback distances for structures, infiltration systems, and detention ponds should be incorporated into the design plans, where appropriate. The setback distances are based on professional experience and standard practice with slopes of similar gradient, geology, and ground water conditions as those observed on the project area. As a result, the setback distances in this technical report are more stringent than that recommended in the 1997 *Uniform Building Code* (UBC). However,

as mentioned below, the enclosed setback distances could be reduced in some instances depending on detailed design plans and additional, site-specific geologic hazard studies.

- Landslide Hazard Zone 1 is considered to possess a high risk of landslide hazards under existing conditions. Therefore, a minimum setback distance of 125 feet should be maintained for turbines and roads proposed on lands within Landslide Hazard Zone 1. Based on the modified project configuration, three turbines and associated access road and underground cable would be located within the setback area of Landslide Hazard Zone 1 in Section 9. The turbines could be relocated outside of the buffer. Site-specific geotechnical studies designed to evaluate landslide hazards and stabilization needs would be required if these turbines were not relocated.
- Landslide Hazard Zone 2 is considered to possess a moderate risk of slope instability under existing conditions. A minimum setback distance of 50 feet should be maintained for structures.

In addition to the above setback distances, the mitigation measures outlined below should be implemented.

- Stormwater from the construction site should be collected and tightlined away from the top of Landslide Hazard Zones 1 and 2. Erosion control measures as outlined above would also apply for all discharge points.
- No fill, topsoil, or other debris should be placed over the top of areas within Landslide Hazard Zone 1. Any fill planned for slopes steeper than 5H:1V (Horizontal:Vertical) should be benched and compacted into the hillside as per the geotechnical engineer's recommendations. Site-specific studies and the use of retaining or erosion control structures might be required where filling is planned in Landslide Hazard Zone 2.
- No cuts should be made on or at the toe of areas within Landslide Hazard Zone 1 unless approved by the geotechnical engineer. The geotechnical engineer should review any proposed cuts into Landslide Hazard Zone 2 areas to evaluate the risk of slope instability and provide specific mitigation recommendations designed to minimize landslide hazard potential.
- No vegetation should be removed from areas within Landslide Hazard Zone 1, with the exception of dead or diseased trees, unless approved by the geotechnical engineer. Vegetation removed from Landslide Hazard Zone 2 areas should be limited to the immediate vicinity of construction.
- A geotechnical engineer should be given the opportunity to review all grading, erosion, and drainage control plans prior to construction to assist in reducing the landslide risks from and to the development.

### 1.8.1.3 Seismic Activity

Appropriate 1997 UBC guidelines would be followed for siting and design of the proposed Desert Claim Wind Power Project. Following this guidance, turbines and buildings should be designed to be able to sustain some damage from ground motion during the design seismic event without causing life safety concerns. The appropriate design for each turbine location would be selected by a Washington State-licensed engineer during the design phase of the project.

The provisions for seismic hazards in the 1997 UBC will continue to be updated in the future, and it is possible that the 1997 UBC will be replaced by the *International Building Code 2000* (IBC 2000). The IBC 2000 requires seismic design to evaluate ground motions for a longer earthquake recurrence interval (lower probability event) than currently used in the 1997 UBC. Kittitas County may choose to adopt the seismic provisions of the IBC 2000 code as part of the County's building codes.

### **1.8.2 Air Quality**

The applicant could implement the following standard practices to reduce the air emissions from construction activity:

- Emissions from construction equipment and trucks would be reduced by using well-maintained equipment. Avoiding prolonged periods of vehicle idling and engine-powered equipment would also reduce emissions.
- Dust produced by construction would be reduced by several techniques. Areas of exposed soils such as storage yards and construction roadways would be sprayed with water or other dust suppressants. Roads and other areas that might be exposed for prolonged periods would be paved, planted with a vegetation ground cover, or covered with gravel. The amount of soils carried out of the construction area by trucks would be reduced by wheel washing and covering dusty truck loads. Finally, soil that did escape the construction area on exiting vehicles would be reduced with an effective road-cleaning effort.
- A possible additional measure identified through review of the Draft EIS is the application of dust palliatives, such as calcium chloride, to road surfaces to reduce the amount of dust created by vehicle traffic on unpaved roads. Use of dust palliatives might obviate the need for repeated watering of project access roads. Conversely, some resource agencies have expressed concern over possible ecological impacts from dust-palliative compounds transported in stormwater runoff; this issue would need to be addressed before use of dust palliatives could be recommended.

### **1.8.3 Water Resources**

#### **1.8.3.1 Surface Water**

The applicant proposes to conduct further micro-site analyses of turbine locations and project access road locations during the Critical Areas review process to avoid and/or minimize impacts to water bodies and/or wetlands identified in **Section 3.3.2.1**. In addition, in some locations it might be possible to shift the temporary disturbance zone, which has been calculated as a 100-ft. radius buffer around each turbine, to avoid placing these directly in surface water or riparian areas or reduce the extent of overlap. Project construction and access roads would be designed to avoid stream crossings wherever possible.

If temporary and/or permanent access roads must be constructed across streams and drainage ways for the project, these roads would be designed so runoff from the upper portions of the watershed can flow unrestricted to the lower portion of the watershed. Erosion control measures would be installed prior to construction and maintained throughout construction until disturbed areas have been successfully revegetated.

Any creek crossings or work adjacent to creeks and wetlands would adhere to applicable federal and state regulations that would be addressed in the State Stormwater Construction Discharge Permit, Surface Water Pollution Prevention Plan (SWPPP), and Temporary Erosion and Sedimentation Control Plan (TESCP). Other measures to reduce or control impacts include compliance with applicable requirements of Kittitas County Critical Areas regulations (KCC Title 17A), the State Water Code (RCW chapter 90.03), and the State Water Pollution Control Act (RCW chapter 90.48).

A NPDES Construction Stormwater permit would be obtained prior to the construction of the wind turbines and project access roads. On-site erosion control measures as outlined in the State NPDES Construction Stormwater Permit, SWPPP, and TESCP would be implemented to control project-related

surface water runoff. Best Management Practices (BMPs) would be incorporated into the NPDES Construction Stormwater permit, SWPPP and TЕСP, including:

- Appropriate sized culverts would be installed at stream crossings;
- Sedimentation fences, certified weed-free straw bales or other control devices would be placed in areas of bare excavated soil, and in roadside drainage ditches and streams downstream of the work sites, to reduce surface runoff velocities and to protect stream channels;
- Erosion control measures would be implemented and would employ the use of water bars, slope breakers (silt fence, staked hay or straw bales, or sand bags), and mulch (straw, hay, erosion control fabric, or some functional equivalent) as necessary; and
- Project staging areas would be not be located within 100 feet of drainages or any other body of water, or wetland or riparian areas, to reduce the potential contamination from spills.

It is not anticipated that waste materials would enter ground or surface waters. BMPs would be used to control the use and disposal of waste materials during and following project construction, including implementation of a spill prevention, containment and control plan. Waste materials from construction equipment would be minimal and are not expected to impact ground or surface waters. Hazardous materials, such as lubricants, would be stored in approved containers and storage facilities. Use of hazardous materials would follow prescribed procedures intended to prevent accidents and spills, and to control and limit the consequences of any spills that might occur.

### **1.8.3.2 Ground Water**

Mitigation measures to minimize potential adverse impacts to ground water recharge include the following.

- Infiltrate water within or as close as possible to facilities that would generate surface water runoff from the impervious surfaces.
- Use biofiltration swales, surface dispersion and infiltration through roadside ditches.

Mitigation measures to minimize potential adverse impacts of vibration on ground water flow to wells or to operation of water wells due to blasting includes the following:

- Verification of water well locations in the vicinity of blasting sites
- Compliance with existing regulations in regard to blasting design, including allowable distances to existing protected structures, including wells, and allowable explosive weights

Mitigation measures to minimize potential adverse impacts to ground water quality include the following.

- Control all pollutants on-site, including removal and legal disposal of construction waste or soils contaminated by construction activity or accidental spills.
- Prepare and maintain accidental spill response plans, on-site clean-up materials storage, and worker training.
- Inspect and maintain on-site septic systems annually.

## 1.8.4 Plants and Animals

### 1.8.4.1 Vegetation

During project construction, BMPs would be employed to reduce peripheral impacts to adjacent native vegetation and habitats and to minimize the construction footprint. In addition, the project proponent would coordinate with the WDFW to mitigate for impacts to shrub steppe and grassland habitat. Mitigation is expected to consist of acquisition of replacement habitat at a 2:1 ratio for shrub steppe and 1:1 ratio for grassland to the extent possible mitigation for shrub steppe and grassland impacts would occur on site. The project proponent would also follow the management recommendations listed above for roads and utility crossings of riparian habitat to the greatest extent possible

WDFW also identified several site reclamation or restoration measures that might further reduce vegetation impacts. A detailed reclamation and site restoration plan would be developed in consultation with the TAC and incorporated into the overall mitigation plan. The following measures could be incorporated into the mitigation plan to facilitate restoration of temporarily disturbed areas in the project:

- To the extent possible, construction should be timed to correspond with the late spring through fall period when soil moisture is lowest to prevent damage to soils and plants in temporary disturbance areas and thus facilitating reclamation efforts in these areas.
- Standards for site restoration should be established to evaluate success of reclamation measures and site restoration. The standards should be based on undisturbed reference areas of the different vegetation types within the project boundaries. The post-construction restoration or reclamation plan for the temporarily disturbed areas should include provisions for continuing active restoration until site stability or the reference standards are achieved.
- Site reclamation and reseeding should occur during the time of year when seed germination and establishment is most likely to be successful, or the next suitable planting period following disturbance. Temporary erosion control measures should be incorporated during reseeding to facilitate establishment of new seedlings.

Due to the absence of known populations of rare plant species within the project area, no impacts are likely to occur and no mitigation measures are warranted.

To avoid, minimize, or reduce the impacts of noxious weeds, the following mitigation measures should be implemented:

- The contractor should be required to clean construction vehicles prior to bringing them in to the project area from outside areas.
- Disturbed areas should be revegetated as quickly as possible with native species.
- Revegetation seed mixes and monitoring should be developed in consultation with WDFW, Kittitas County Weed Control Board, and other interested agencies.
- If hay is used for sediment control or other purposes, hay bales should be certified weed free.
- Noxious weeds that have established themselves as a result of the project should be actively controlled in consultation with the Kittitas County Weed Control Board.

### 1.8.4.2 Wetlands

The applicant proposes to conduct a micro-site analysis for the turbines and project access roads during the JARPA and Critical Areas review process to avoid and/or minimize impacts to water bodies and/or wetlands located within the project area. In addition, the area of temporary construction disturbance,

which has been calculated as a 130-foot radius around each turbine, would be shifted to the extent possible to avoid construction impacts in wetlands. The project access road system would be designed to use existing roads where possible.

Any work adjacent to wetlands would adhere to applicable federal and state regulations and would be addressed in the Washington Department of Ecology Stormwater Construction Discharge Permit, Stormwater Pollution Prevention Plan (SWPPP), and Temporary Erosion and Sedimentation Control Plan (TESCP). Other measures to reduce or control impacts include compliance with applicable requirements of KCCAO regulations (Title 17A), the State Water Code (RCW chapter 90.03), and the State Water Pollution Control Act (RCW chapter 90.48).

Furthermore, if wetland communities were disturbed during construction, the following measures would be implemented:

- Site conditions would be restored and disturbed areas revegetated, as appropriate.
- Areas requiring revegetation would be identified by a qualified restoration ecologist in conjunction with landowners and interested agencies; and
- If needed, a revegetation plan would be developed for wetland and riparian communities. The revegetation plan would include mitigation requirements, design specifications, an implementation plan, maintenance requirements, and a monitoring program.

Temporary impacts would be restored, and permanent impacts replaced through wetland creation or enhancement in accordance with the Kittitas County Critical Area Ordinance (KCCAO Section 17A.04.050, Ord. 94-22 (part), 1994). The Washington Department of Ecology provides wetland creation, restoration, and enhancement ratios based on the wetland categories. These ratios are general guidelines that are adjusted up or down based on the likelihood of success of the proposed mitigation and the expected length of time needed to for the wetlands to reach maturity.

### **1.8.4.3 Wildlife**

Mitigation and monitoring measures that have been implemented at other, newer-generation wind plants, in particular those in Washington and Oregon, represent possible mitigation measures for the Desert Claim project.

A Technical Advisory Committee (TAC) could be formed to implement and evaluate a mitigation and monitoring program and determine the need for further studies or mitigation measures once the project is operational. The TAC would be composed of representatives from Washington Department of Fish and Wildlife, U.S. Fish and Wildlife Service, Kittitas County, landowners, and the project owner/developer, and other affected interests such as conservations groups (e.g., Kittitas Audubon Society

The primary impacts associated with the project are expected to be loss of shrub steppe habitat, fatalities of birds, and potential displacement effects on mule deer. The following are potential mitigation measures for these impacts:

- The overall design of the wind plant would minimize perching opportunities for raptors and other birds. For example, tubular towers would be used for the turbines and met towers and use of overhead power lines in the project would be minimized.

- Sensitive wildlife areas such as the riparian corridors and raptor nest sites could be mapped, flagged, and/or identified to all contractors working on-site and could be designated as no disturbance zones during the construction phase.
- During project construction, best management practices could be employed to reduce peripheral impacts to adjacent native vegetation and habitats and to minimize the construction footprint.
- A site management plan could be developed to, at a minimum, identify sensitive wildlife areas (e.g., raptor nests), provide adequate on-site waste disposal, and establish fire management and erosion control procedures.
- Raptor nests within ½ mile of construction areas could be monitored for activity prior to construction to determine the need for construction timing restrictions around active nests.
- All power and communication lines on-site could be buried underground where feasible.
- All overhead power line poles could be equipped with anti perching devices.
- Permanent met towers on-site would be free-standing to minimize the potential for avian collisions with guy wires.
- The modified turbine layout does not have turbine locations within 50 meters from the rim edge of steep slopes within the E1/2 of Sections 26 and 35, T19N, R18E.
- Construction could take place primarily during the summer months, minimizing disturbance to wintering big game from construction activities.

In addition to the above measures, it is anticipated that other measures would be developed during consultation with the USFWS about potential impacts to bald eagles.

A post-construction monitoring study is typically implemented to quantify project impacts to avian and bat species and assess the need for additional mitigation measures, for example unanticipated big game issues. The post-construction monitoring plan would be developed in coordination with the TAC. The monitoring plan would, at a minimum, include a 1-year standardized fatality monitoring program and a standard procedure for O&M personnel to report bird fatalities and injuries over the life of the project.

In addition, consideration could be given to developing, in cooperation with other industry participants, a focused monitoring study that addresses a specific question regarding impacts from wind plants, such as:

- effects of different turbine lighting schemes on avian mortality;
- the impact of the facility on wintering mule deer;
- whether wind turbines attract migrating bats; or
- mechanisms for deterring migrating bats from turbines.

#### **1.8.4.4 Fish**

Mitigation measures discussed in **Section 3.3.5** for surface water could also be implemented to minimize impacts to fish resources. Turbine and project access road locations would be evaluated during the Critical Areas review process, and micro-site analysis would be conducted to identify opportunities to avoid and/or minimize impacts to water bodies and/or wetlands and associated fisheries resources downstream from the project area.

The project would use existing roads where possible. The current road layout was determined to have the least impact upon stream resources. All crossings would be created with appropriately-sized culverts. The optional use of oversized culverts below the normal water line would allow a natural stream bottom to form inside the culvert, further minimizing habitat effects. Any work adjacent to streams would adhere to applicable federal and state regulations and would be addressed in detailed project plans.

BMPs would be initiated to minimize impacts to fisheries resources located downstream from the project area, and appropriate mitigation measures would be developed to account for any potential impacts to fisheries resources. The construction footprint at all stream or water channel crossings should be strictly minimized to avoid peripheral impacts to stream habitat. BMPs would be initiated to retain sediment from disturbed areas and minimize areas of disturbance. In addition, most of the streams are intermittent and therefore are likely to be dry during construction. Mitigation measures would include replacement of any riparian or wetland areas impacted by the project.

Furthermore, if stream communities were disturbed during construction, the following measures would be implemented to avoid adverse impacts to downstream fish communities:

- Construction geotextile and sediment retention systems would be used for soils stabilization at road crossings, riparian areas, and within or along streambanks.
- Construction equipment refueling stations should be a minimum of 100 feet away from any drainage, stream, irrigation channel or riparian area.
- Appropriately sized culverts would be used at all stream crossings, and all stream and channel crossings should be designed to allow continual water flow and ensure fish passage under all conditions..
- Native trees, shrubs, and erosion control grasses would be used in all disturbed riparian areas.

NOAA Fisheries, USFWS, and WDFW would be consulted prior to project construction regarding the possible presence of juvenile steelhead in project-area waters. The consultation could result in additional mitigation measures beyond those listed above.

### **1.8.5 Energy and Natural Resources**

No significant adverse impacts to energy and natural resources would occur and no necessary mitigation measures are required have been identified.

### **1.8.6 Cultural Resources**

Avoidance of identified cultural resource sites is the primary mitigation measure available in any project development context. For wind energy projects in general and the Desert Claim project specifically, the prospects for avoiding cultural sites would be addressed in the final micro-siting of wind turbines and other project facilities, which would occur during final design and prior to construction. For facility locations identified as in conflict with cultural sites, project engineers would evaluate data on site-specific structural and wind characteristics to determine whether it would be feasible to relocate the facilities in question, and thereby avoid direct impact to cultural resources.

No additional mitigation would be necessary if all identified cultural resource sites were avoided in the final layout and construction of project facilities. If final placement of the project elements resulted in unavoidable adverse impacts to a significant resource, then mitigation would be required to retrieve the scientific and historical information that makes the site significant. Appropriate mitigation measures should be tailored to the specific circumstances of the resource and developed in consultation with the Washington State Historic Preservation Officer (SHPO). If the affected resource is prehistoric, then the SHPO would require consultation with the Yakama Indian Nation.

Project construction would potentially demolish or alter the setting and character of existing historic resources. Construction impacts would include out-of-character visual elements, change in use, structural

vibration, and dust. Project operation would also change the historic character of the surrounding area. Historic buildings and structures subject to unavoidable adverse impacts would be documented in accordance with HABS/HAER guidelines and in consultation with OAHP.

At the larger landscape scale, the project would have a visual impact that could be mitigated by producing a cultural landscape history of the footslope region of the Kittitas Valley below the Wenatchee Mountains. As is typical of such studies, the historical narrative could be accompanied by photos showing the character of the historical landscape and how it has evolved into the existing landscape, so that the historical narrative and the photos would serve as a source for comparative historical studies after the project is completed.

The project cultural resources mitigation plan would also need to provide for monitoring of construction activities and evaluation and treatment of unanticipated archaeological resources that might be discovered during construction. In the event of an unanticipated discovery, ground-disturbing activity in the immediate area would cease and the resources discovered would be tested for significance, following protocols developed in coordination with OAHP and affected tribes. State regulations require permits from OAHP for any excavation of archaeological sites.

### **1.8.7 Land and Shoreline Use**

Increasing turbine setbacks from the residences adjacent to the central portion of the site could reduce visual and proximity impacts to these residents. Other impacts discussed would not be significant and do not warrant mitigation.

### **1.8.8 Health and Safety**

#### **1.8.8.1 Mechanical Hazards**

Wind turbine generators such as the GEWE 1.5s/sl are equipped with multiple safety systems as standard equipment. As examples: rotor speed is controlled by a redundant pitch control system and an automatic backup disk brake system; critical components have multiple temperature sensors and a control system to shut the system down and take it off-line if an overheat or overspeed condition is detected. Lightning protection is standard.

#### **Tower Collapse**

The selected wind turbine generator/tower combination, the GEWE 1.5sl, would be subjected to engineering review to assure that the design and construction standards are appropriate for the Kittitas County site. Even so, it is possible that during the life of the wind turbine it would be exposed to unanticipated load combinations that could cause failure. For this reason, even with a unit certified to IEC and building code standards, human access should be restricted and high-value facilities should not be built within a distance from each tower equal to 110 percent of the tower height plus half the rotor diameter. Based on the turbine model selected for this project, this would mean a “setback” of 416 feet from each tower. In response to direction from Kittitas County and comments on the Draft EIS, the applicant modified the project to include a 487-foot performance-based safety zone setback. That setback is large enough to provide a sufficient safety zone for potential tower collapse.

Location of wires, transformers, etc., under ground, as proposed, would also eliminate the possibility of certain indirect impacts described above.

## **Blade Throw**

Certification of the wind turbine to the requirements of IEC 61400-1 would assure that the static, dynamic and defined-life fatigue stresses in the blade would not be exceeded under the combined load cases expected at the project site. Nevertheless, it is conceivable that that all or part of a blade could become detached from the turbine. For this reason, even with a unit certified to IEC standards, human access should be restricted, and high-value facilities should not be built, within a distance from each tower equal to 110 percent of the maximum calculated blade throw, which for this project would be 540 ft. for the maximum turbine envelope size. Based on the shorter turbine model preferred by the applicant, the maximum blade throw safety zone would be 487 feet. Consistent with direction from Kittitas County, the applicant modified the project to include this 487-foot performance-based safety zone setback, which is large enough to provide sufficient setback for potential blade throw from the GEWE 1.5sl.

## **Ice Throw**

Ice throw over 100 m has not been documented as a hazard and an ice throw injury has not been reported. GEWE recommends an ice throw exclusion zone with a radius of 125 m on the downwind side of the tower, which they cite as 125% of the largest recorded throw distance (Pligavko, 2003). Note that for large wind turbines such as the GEWE 1.5s/sl, observance of the tower collapse hazard area or the blade throw hazard area restriction would keep unauthorized persons out of the ice throw hazard zone. The 487-foot performance-based safety zone setback, included in the modified proposal is large enough to provide sufficient setback for potential ice throw from the GEWE 1.5sl.

Also, in light of the few days of icing conditions expected at the Kittitas County site, it might be practical to shut down selected turbines when the danger of icing exists. Icing sensor systems are available and could be installed on specified turbines to accomplish this purpose.

## **Fire Hazards**

The applicant's plans for the proposed project include a number of design and operational measures intended to prevent fires and minimize the consequences of any fires that might occur (see discussion in **Sections 2.2** and **3.8.2.1**). The Kittitas County Fire Marshal has established a list of requirements that would mitigate fire hazards associated with the project. Measures to address these requirements are summarized as follows (see also **Section 3.14.5**):

- During the construction period, it would be necessary to give all workers fire safety training and to implement a work plan that minimizes the risk of fire. Appropriate fire suppression equipment must be available to designated employees trained in its use.
- Use of mufflers and spark arrestors on all construction equipment.
- Required construction shutdowns consistent with area-wide industrial precautions, and limitations on "hot" work when necessary.
- In normal operation, regular maintenance, including review of real time and stored temperature sensor readings, would highlight developing problems and facilitate prevention of equipment-caused fire. Large wind generators such as the GEWE 1.5s/sl have such systems as standard equipment.
- Installation and maintenance of a fire suppression system in each turbine nacelle would supplement standard fire prevention measures and eliminate the possibility of burning objects falling to the ground.
- Location of transformers and electrical equipment below ground would harden them against tower collapse, blade throw and vandalism, thereby reducing the fire hazard.

- Establishment of a contract with a local fire district for fire protection service to the project.
- Development and adoption of fire prevention and fire control plans for the project.
- Maintenance of updated emergency contact information and coordination procedures.

### **1.8.8.2 Electrical Hazards**

The following mitigating measures would help minimize potential health and safety risks associated with electrical hazards that might exist with the project:

- Prior to starting construction, the contractor would prepare and maintain a safety plan in compliance with Washington requirements. This plan would be kept on-site and would detail how to manage hazardous materials such as fuel, and how to respond to emergency situations.
- During construction, the contractors would also hold crew safety meetings at the start of each workday to go over potential safety issues and concerns related to working on electrical facilities.
- At the end of each workday, the contractor and subcontractors would secure the site to protect equipment and the general public.
- Employees would be trained, as necessary, in tower climbing, cardiopulmonary resuscitation, first aid, rescue techniques, and safety equipment inspection.
- If implosion bolts are used to connect the conductors, they should be installed in such a way as to minimize potential health and safety risks to workers.
- Project workers should stay on established access roads during routine operation and maintenance activities.
- Vegetation would be trimmed to avoid contact with collection and interconnection lines.
- The project would construct and operate the new collection and transmission lines to meet the National Electrical Safety Code.
- Installation crews would clearly mark the location of all buried collection cables.

Mitigating measures available to address potential telecommunications interference associated with electromagnetic or physical conditions that might exist with the project include the following:

- Conduct a study of potential microwave interference prior to final location of turbines, and move or eliminate turbines that would block microwave pathways.
- Conduct baseline monitoring of television reception quality in the near vicinity of the project and investigate claims of diminished signal quality as a result of the project. Means to accomplish this can range from contracted studies by qualified professionals to simple before-and-after videotaping.

### **1.8.8.3 Shadow Flicker**

Several types of mitigation measures are available to address shadow flicker impacts. In general, they involve (1) potential changes to project operations or (2) physical modifications that could be undertaken at receptor locations.

Because shadow flicker can only occur when turbine blades are moving, shadow flicker could (in principle) be prevented by shutting down specific turbines at times when weather and sun conditions would otherwise result in shadow flicker at specific receptor locations. Implementing this measure in practice would likely be quite difficult, however. An operational measure discussed in the Draft EIS and identified in some comments on the Draft EIS would be to develop a telephone hotline system. The viability of this option with respect to project operational costs, logistical feasibility and flexibility

appears to be uncertain at best. If such a system were to be included in the terms of a development agreement, Kittitas County would need to take responsibility as the initial point of contact for such calls. Given the short duration of most shadow flicker events and the early-morning and late-afternoon times at which they would occur, it is likely that the shadow flicker event would have ceased by the time an operational response could be made.

Several practical options exist for controlling or preventing shadow flicker at the receptor location, rather than at the source. Consequently, an alternative set of mitigation measure would be for the applicant to develop and implement a program including the following possible actions at affected receptor locations:

- distribute educational materials to potentially affected receptors with instructions on how to block or reduce shadow flicker, such as turning on lights in the affected room;
- provide curtains, blinds or shutters on windows at affected receptor locations; and/or
- plant trees at receptor locations where they could block or screen shadow flicker at affected windows.

### **1.8.9 Noise**

Several noise mitigation measures were included in the project design. These measures include the following:

- Obtain and enforce a warranty from the selected turbine manufacturer that the maximum continuous sound power level produced by each turbine under all wind conditions would not exceed 104 dBA measured at the hub height.
- Establish minimum setbacks from individual wind turbines to nearby residences of 1,000 feet. This setback has been included in the project design.
- Provide sufficient spacing between wind turbine towers to minimize array and wake losses (i.e., energy losses created by turbulence between and among the turbines).
- Orient rotors on the “upwind” side of the turbine tower to avoid the low-frequency sounds associated with the passage of the blades through the tower’s wind shadow.

With these design features incorporated in the proposed action, no significant noise impacts were identified through the analysis of predicted sound levels at receptor locations. Because a number of local residents would experience some increased noise under some conditions and because there is a degree of uncertainty associated with the impact predictions, however, some additional noise mitigation measures would be appropriate for consideration. Specific applicable measures could include:

- Implement a noise-monitoring program under which baseline (pre-project) and with-project noise conditions would be determined and documented.
- Establish a process for responding to, evaluating and resolving noise complaints that might arise during project operation.

### **1.8.10 Aesthetics, Light and Glare**

The following mitigation measures remain applicable to varying degrees for consideration on the proposed project (or Alternative 1 or 2):

#### Visual Integration:

- To the extent this has not already been accomplished, relocate selected turbines to create distinct visual units, breaking the project into distinct groupings of turbines and leaving some open space between these groups (Nielsen, 2002).
- Limit the number of turbines in each cluster to 10-15 turbines (Brittan, 2002).
- Relocate selected turbines to better follow and reinforce the natural topography. This approach is most appropriate for the turbines that occur near ridgetops, turbines 105-117 and 70-82.
- Relocate selected turbines to establish clear visual order through geometric arrangements with uniform spacing. This approach is most appropriate for the remaining turbines that occupy the very gradual slopes of the alluvial fans.
- Construct required ancillary structures of local materials and maximize their fit in the vernacular landscape by studying local building types and siting them sensitively.
- Use native shrub-steppe vegetation around buildings and equipment boxes to integrate the structures into surrounding landscape.
- Use existing roads to access turbines. Minimize or eliminate new road building. Consider use of all-terrain vehicles for maintenance.
- Do not piggyback advertising, cell antennas, or other clutter on the turbines. Do not prominently display the logo of the manufacturer on the nacelle.
- Sculpt natural landforms and plant foreground screening native vegetative along some nearby roads and around residences with expected significant visual impacts.
- Use low-reflectivity, neutral-color finishes for turbines, equipment boxes, substation equipments, and operations and management building. Earth-tone finish would blend in best with the surrounding landscape.
- Use only minimum required lighting on turbines (aviation warning lighting) required by the FAA, and minimize security lighting at the substation. Make any ground level security lighting motion-sensitive so that most of the time it does not impact the night landscape.
- Use lighting devices designed to be least visible from ground level.
- Synchronize blinking of aviation warning night lighting and maximize period in light off condition.

#### Ecological restoration and management of disturbed areas during and after construction:

- Keep construction time to a minimum.
- Remove construction debris.
- Locate construction staging and storage areas away from adjacent county roads.
- Replace native vegetation disturbed in non-road surface areas or non-turbine areas.
- Seed or cover temporarily stockpiled materials and disturbed sites to keep down dust and prevent soil erosion.

#### Equipment maintenance:

- Maintain uniform, high-quality turbine towers, nacelles, and blades. Any replacements should maintain uniform height, model, color, etc.
- Remove or promptly repair all parts of non-functioning turbines.
- Keep operation and maintenance area turbines clean.
- Keep vehicles and maintenance equipment on site away from residences and public access areas.
- Community outreach and education of local residents and visitors on wind energy:
- Work with the affected community to refine turbine siting and design.

- Build a facility for information displays in Ellensburg and near the project.
- In association with WSDOT and Kittitas County, provide signs and safe areas for public viewing with interpretation signs.
- Build an interpretive/recreational trail connection among the turbines to encourage public education and enjoyment and to achieve multiple public benefits from the project.

Information and education related to the project and wind energy:

- Notify the local community of the timing and duration of construction.
- Build a facility for information displays in Ellensburg or near the project.
- In association with WSDOT and Kittitas County, provide signs and safe areas for public viewing with interpretation signs.

### **1.8.11 Recreation**

The impact analysis did not identify significant adverse impacts on recreation resources and no mitigation measures are required or identified for consideration.

### **1.8.12 Ground Transportation**

#### **1.8.12.1 Construction**

Construction traffic impacts should be mitigated through the development and approval of a Construction Traffic Management Plan that would address transportation and access concerns during the construction period. The plan would be subject to review and acceptance by Kittitas County and would be incorporated in the development agreement required by Kittitas County's review process for wind power facilities. The review process for development agreement conditions would include other agencies with jurisdiction and expertise (such as WSDOT and the Kittitas County Sheriff's Department). The plan would define access routes and procedures to be used by various types of construction equipment and material shipments, approved hours of operation for construction traffic, safety provisions and other management requirements. It would identify any permanent or temporary improvements to road surfaces necessary to accommodate transporters with low clearances, and any needed temporary improvements to intersections to accommodate the turning radius of transporters.

Gates at project access roads should be set back far enough from the edge of the public road to accommodate the length of trucks entering or leaving the project area so they do not encroach upon the public road when gates are being opened or closed. In addition, the area between the gates and the public roads should be paved in order to keep gravel off of the public road and the pavement edges flared to provide an adequate turning radius for entering and exiting trucks.

The potential cumulative impact associated with turbine components being delivered to different project sites at the same time could be avoided by conditioning the required vehicle permits to limit the number of trips per day or require contractors to coordinate deliveries.

#### **1.8.12.2 Operation**

Wind farm operations would likely generate some number of tourist trips to the project area that would need to be accommodated and managed. Monitoring of tourist activity associated with the project would be desirable, since the magnitude of tourism is unknown.

Prior to the beginning of power generation, it is recommended that the applicant prepare a Tourism Management Plan that describes how tourists visiting the site would be accommodated. The goal of the plan would be to encourage and accommodate tourist activity while minimizing the impacts to safe vehicle circulation on constricted county roads. This plan should identify tourist routes, outline a directional and information signage plan, and establish the location and number of roadside interpretive sites that would be constructed and maintained by the applicant. The plan would be subject to review and acceptance by Kittitas County in conjunction with a development agreement. The review process for the development agreement would include other agencies with jurisdiction and expertise (such as WSDOT and the Kittitas County Sheriff's Department).

In review comments on the Draft EIS, Kittitas County Public Works suggested that a tourist kiosk should be located along the SR-97 corridor or along Smithson Road adjacent to the Desert Claim project area. Operation and maintenance of this facility would be a project responsibility, and plans should allow for increased capacity if warranted by increased tourism use.

### **1.8.13 Air Transportation**

#### **1.8.13.1 VFR Traffic Pattern**

As discussed in **Section 3.13.2.1**, some of the proposed Desert Claim wind turbines would conflict with the current use of standard left-hand traffic patterns for VFR traffic at Bowers Field. Specifically, 27 of the proposed wind turbines would exceed the VFR traffic pattern maximum allowable obstruction height and would represent potential hazards to Category D VFR traffic near Bowers Field (see **Figure 3.13-2**). There are two general options to resolve this conflict. One would be to modify the proposed project in such a manner that no turbines would exceed the maximum allowable height in relation to VFR traffic. The other would be to consider modifications to the VFR traffic pattern that would direct the traffic away from the portion of the project at issue.

#### **Project Modifications**

Possible measures to eliminate the VFR traffic conflict by modifying the physical characteristics of the proposed project include the following:

1. remove the 10 turbine locations at issue from the proposed project layout, reducing the scope of the project to approximately 110 turbines and the project capacity to approximately 165 MW;
2. shift some or all of the 10 proposed turbine locations to other locations that would not be in conflict with the VFR traffic pattern; or
3. revise the capacity and height of the turbines to be installed at some or all of the 10 turbine locations, to result in structure elevations that did not exceed the VFR traffic pattern allowable height limits.

To a degree, the modified project configuration that is evaluated in the Final EIS reflects implementation of items 2 and 3 above. A number of turbine locations that were originally proposed for the southeastern part of the project area were shifted to other areas within the project boundary, reducing the potential for conflict with the VFR traffic pattern. The applicant also selected a turbine model with a lower total height of 340 feet (rather than the 393 feet analyzed in the Draft EIS). Both of these actions reduced the number of turbines exceeding the maximum allowable structure height from 27 (per the layout evaluated in the Draft EIS) to 10 in the modified layout.

## **Traffic Pattern Modification**

An alternative approach to resolving the potential conflict between the 10 wind turbine locations and the existing VFR traffic pattern would be to modify the traffic pattern. As discussed in **Section 3.13.2.1**, a left-hand traffic pattern is now used for VFR traffic operating from all four Bowers Field runways. This results in the protected airspace for the VFR traffic patterns extending up to 4 miles north from Bowers Field and overlapping with the southeastern portion of the Desert Claim project area. The Draft EIS described a potential traffic pattern modification of prescribing right-hand traffic patterns for both Runways 7 and Runway 11, effectively shifting all visual traffic using these runways to the south and/or west of Bowers Field. However, comments on the Draft EIS maintained that a change to a right traffic pattern would have an unnecessary impact on the overwhelming majority of small aircraft that operate to and from Bowers Field.

Kittitas County and the EIS team subsequently investigated other options for procedural modifications that would resolve the potential project conflict with the VFR traffic pattern. This investigation indicated that existing procedures specified the same traffic pattern altitude (TPA), approximately 2,600 feet AMSL or 840 feet above the elevation of the airport, for all categories of aircraft in the Bowers Field VFR traffic pattern. This condition is contrary to typical practice used in many airports across the nation, in which one TPA is specified for small (piston-driven) aircraft and a higher-level TPA is established for turbojet and large aircraft. Consequently, raising the Bowers Field traffic pattern altitude for large/jet-powered aircraft would take into account the higher terrain north of the airport, would be consistent with standard practice at other airports and would improve safe operating conditions for large/jet-powered aircraft using Bowers Field (i.e., it would reduce noise impacts from such craft by raising their approach elevation), and would be a more logical solution to the VFR traffic pattern conflict.

In conjunction with adoption of its updated airport master plan, Kittitas County requested the FAA to raise the Traffic Pattern Altitude for large/jet-powered aircraft using Bowers Field to 3,300 feet AMSL (1,540 feet above the airport elevation), while retaining the TPA of 2,600 feet for smaller aircraft. Kittitas County did this for health and safety reasons (i.e., to provide a safer approach for jet-powered aircraft and to reduce the noise impacts from such aircraft). One benefit of this change, however, is that it places the few large/jet aircraft that might utilize a Category D VFR traffic pattern well above the obstructions created by the 10 wind turbines in question, thereby resolving this issue. This revised Traffic Pattern Altitude proposal is also consistent with current aviation safety practices nationwide

### **1.8.13.2 Marking and Lighting**

Marking and/or lighting of the proposed wind turbines would be required to meet FAA safety requirements, as mitigation for the potential safety hazards represented by tall obstructions. Proposed measures to meet these requirements are incorporated into the project description, as indicated in **Section 2.2.2**. **Figure 3.13-4** shows the proposed lighting configuration for the Desert Claim project. Under this plan 48 of the total 120 wind turbines, or 40 percent, would be equipped with flashing, white medium-intensity lights for use during daylight hours and flashing red lights for evening/night hours. Experience with FAA reviews of prior lighting plans indicates this configuration should meet the FAA requirements and provide safe lighting for both daytime and nighttime use.

## **1.8.14 Public Services and Utilities**

### **1.8.14.1 Fire Protection and Emergency Medical Services**

In order to provide fire service coverage to the entire project area, the developer would contract with Kittitas County Fire District No. 2 or another jurisdiction to provide service to the area not currently served by a fire service entity. The Kittitas County Fire Marshal has indicated that this service contract should be executed prior to the start of construction. Water supplies for firefighting would be established at designated locations within the project area, the planning for which would occur in conjunction with Fire District No. 2.

During construction of the project, power equipment would be equipped with safety features that would reduce the potential for fire hazards, including spark arrestors and/or approved mufflers, fire extinguishers and shovels. Equipment shutdowns would be required during periods of general industrial fire precautions in the local area, and limitations regarding “hot” work with electrical equipment and facilities would be observed. In order to prevent fires caused by catalytic converters on vehicles, designated parking areas would be created for workers’ vehicles. These areas would be free of combustibles. Designated worker smoking areas would also be established to reduce the potential for fire. In addition, development of a worker-oriented fire prevention program would provide additional knowledge of wildfire prevention and control practices to workers.

Any secured areas (i.e., buildings or gates) should require provision of a “knox box,” a fire service access box containing master keys, which would facilitate access to the site by fire and emergency medical crews. In addition, the developer would provide fire, emergency medical, police agencies, and KITTCOM with emergency response information relating to:

- the design of the project, including the detailed maps of project access roads, on-site facilities, and wind turbines, and an addressing plan;
- emergency contact information; and
- procedures for rescue operations should an incident occur inside a turbine or nacelle (including available on-site emergency rescue equipment).

The Kittitas County Fire Marshal has also suggested that the applicant prepare a long-term plan to provide for fire risk reduction on the project site, to be approved by the Fire Marshal and the affected fire departments.

The applicant should execute an agreement with the Ellensburg Fire Department addressing training and equipment related to potential high-angle rescue needs at the project site, unless those needs are provided internally through project resources.

During both construction and operation of the project, refuse containers would be located in areas that would reduce the potential for on-site debris. With the exception of natural vegetation, no burning of debris would be allowed without written permits from issuing agencies (DNR and DOE). All flammable liquids would be stored according to 1997 Uniform Fire Code and inspected by the responsible agency.

### **1.8.14.2 Law Enforcement**

The applicant would employ methods for on-site security (including private security patrols). This would meet the applicant’s needs for operational security at the site, and would also reduce the potential for calls to local law enforcement services.

### **1.8.14.3 Other Services and Utilities**

Mitigation measures for schools, water supply, sewer and stormwater, solid waste, energy and communications services are not necessary, given the insignificant impacts identified for these services and utilities.

### **1.8.15 Population, Housing and Employment**

The Desert Claim Wind Power Project is not expected to create any adverse impacts on population, housing, or employment. Population and housing supply and cost typically follow changes in employment levels. According to this analysis, employment increases would be minimal in the context of the rest of the local labor market, and would not result in significant changes in either population or housing. Accordingly, no mitigation measure are necessary to offset impacts to employment, population, or housing.

### **1.8.16 Fiscal Conditions**

No adverse fiscal impacts associated with the proposed project have been identified, and no mitigation measures are necessary.

## **1.9 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS**

The SEPA rules direct lead agencies to summarize significant adverse environmental impacts that cannot or will not be mitigated. Each section of **Chapter 3** of the Final EIS includes a discussion of significant unavoidable adverse impacts; these are summarized below.

### **1.9.1 Earth Resources**

Unavoidable erosion impacts as a result of construction of the Desert Claim Wind Power Project would include some increase in soil loss during construction. Provided the mitigation measures offered in **Section 3.1.5.1** were properly followed, however, it is anticipated that erosion and sediment transport would be contained within the construction areas, and the resulting impacts would be insignificant. The risk of landslide activity in Landslide Hazard Zone 1 would remain high, but localized, regardless of whether the project were constructed. Construction of the project would not increase the existing landslide hazards on or immediately adjacent to the project area, however, provided that the mitigation measures presented in **Section 3.1.5.2** were implemented. With those mitigation measures, potential impacts associated with landslide hazards would be insignificant. Development of the project would have no influence on the level of seismic hazard applicable to the project vicinity. Based on project design features and standard measures for erosion control and stormwater management, no significant unavoidable adverse impacts to earth resources are expected.

### **1.9.2 Air Quality**

Vehicle and fugitive dust emissions during construction are the only likely impacts to air quality associated with the proposed project. Both impacts would be temporary, limited to the expected 9-month construction schedule (or a longer construction schedule with multiple phases), and would be minor in the context of other rural-residential, industrial and agricultural activities in the Kittitas Valley. With application of the standard control measures typically used in large construction projects, air quality

impacts during construction would be insignificant. Project operations and maintenance activities would produce minimal air pollutants and would result in insignificant impacts to air quality.

### **1.9.3 Water Resources**

The analysis of surface water resources identified several types of potential impacts to surface water bodies and associated riparian areas from the modified project layout. The existence of these potential surface water impacts relates primarily to access road crossings of streams, and secondarily to several mapped turbine locations that are near streams. Ground disturbance at streams would be small in extent, and most of the disturbance would be temporary; disturbed stream bank areas would be restored with native vegetation. Permanent culverts of sufficient size would be installed at all stream crossings, resulting in no long-term changes to stream character, discharge capacity or flow patterns. Potential surface water impacts associated with erosion and sedimentation would be avoided or minimized through use of best management practices that are standard requirements for construction activities. With appropriate mitigation that would be required under the terms of the applicable permits, all of the potential temporary and permanent surface water impacts identified in **Section 3.3.2** would be avoided, counteracted through restoration, or offset through provision of compensatory stream enhancement or development. Similarly, there would be no significant, unavoidable adverse impacts to ground water recharge, discharge or supply from the project. Impervious surfaces resulting from construction of permanent facilities would be small in extent and would have a negligible effect on local runoff and ground water recharge patterns. Project construction and operation would not result in discharges that degraded ground water quality. If blasting were necessary in some locations for construction of project facilities, it would be conducted according to regulations that protect wells and structures from significant impacts. Therefore, no significant unavoidable adverse impacts to water resources are expected as a result of the proposed project.

### **1.9.4 Plants and Animals**

#### **1.9.4.1 Vegetation**

There would be approximately 88 acres (less than 2 percent of the project area) of unavoidable displacement of existing vegetation in the project area. These impacts are not considered significant because they would not result in elimination of an entire vegetation type in the project area, loss of 10 percent or more of a priority habitat in the project area, or a decrease in species richness resulting from the loss of a plant population in the project area. No significant unavoidable adverse impacts to rare plants from construction, operation or decommissioning of the proposed project are expected. Similarly, the project is not expected to result in significant unavoidable adverse impacts related to potential introduction or spread of noxious weeds.

#### **1.9.4.2 Wetlands**

With appropriate mitigation, all potential temporary and permanent wetland impacts identified in **Section 3.4.2.2** would be avoided, counteracted through restoration, or offset through provision of compensatory wetland enhancement or development at the appropriate ratios. Therefore, no significant unavoidable adverse impacts to wetlands are expected as a result of the proposed project.

### **1.9.4.3 Wildlife**

Due to the relative lack of knowledge regarding migratory routes, population levels and trends, and reproductive patterns, it is difficult to assess with certainty any large-scale adverse impacts of wind plants on bat species such as hoary and silver-haired bats. Fatalities of these species occur at existing wind plants and are likely at the proposed wind project, unless the cause of their vulnerability to turbines is identified and possibly mitigated for; fatalities are currently unavoidable. Bat mortality at the proposed project area is expected to be insignificant at the local scale. However, it is unknown if cumulative impacts of all three Kittitas wind projects, in synergy with other wind plants in the Pacific Northwest and North America, could be a significant population sink to species such as hoary and silver-haired bats.

### **1.9.4.4 Fish**

With appropriate mitigation, as required by the existing regulatory framework, potential impacts to fish habitat and/or fish populations would be minor and temporary. The extent of temporary disturbance of stream beds and banks that represent possible fish habitat would be minimized during construction, best management practices would be used to control erosion and sedimentation from disturbed areas, and the disturbed areas would be restored following construction. Road crossings at streams would be designed to maintain stream flow and fish passage at all times, preventing possible flow-related impacts to fish over the long term. Therefore, no significant unavoidable adverse impacts to fish resources are expected as a result of the proposed project.

## **1.9.5 Energy and Natural Resources**

No significant unavoidable adverse impacts to energy or natural resources would occur from the construction, operation or decommissioning of the project.

## **1.9.6 Cultural Resources**

If the Desert Claim project were developed according to the current layout, five identified cultural resource sites would experience unavoidable adverse impacts associated with turbine, access road, and electrical collection system construction (see Table 3.6-2). Three of those sites are historic sites with structural remains and extensive debris scatters and concentrations and two are prehistoric sites that include high-density artifact concentrations and tools that provide valuable evidence for land use on the higher-elevation footslopes in the Yakima River basin. As indicated above, it might be possible to avoid the potential direct impacts to these sites through relocation of project facilities during final micro-siting; the applicant, in consultation with OAHP, has agreed to perform such micro-siting to eliminate these impacts. Any remaining direct impacts to significant cultural resources that cannot feasibly be avoided could be mitigated through a mitigation plan developed in consultation with the Washington SHPO. Significant indirect impacts to cultural resources in the project vicinity are not anticipated, although there could be changes in the visual setting associated with some of these sites. A cultural landscape history review could be implemented as mitigation for these changes. Because the potential significant adverse impacts that have been identified could be avoided or otherwise mitigated through data recovery and archiving, no significant unavoidable adverse impacts to cultural resources have been identified.

### **1.9.7 Land and Shoreline Use**

The scale of the wind turbines would be significantly larger than other land uses; this contrast is unavoidable because of the nature of wind power facilities. Effects on overall land use patterns in the project area would not be significant. Impacts to residences located proximate to the turbines could be reduced, but not eliminated, through increased setbacks.

### **1.9.8 Health and Safety**

All of the potential health and safety environmental impacts that derive from the electromechanical nature of a wind energy facility could be mitigated at the proposed site by prevention, establishment of safety zones and proper operating procedures. In particular, the potential health and safety impacts that derive from the possible mechanical hazards of a wind turbine (tower collapse, blade throw and ice throw) would be mitigated by incorporation of a 487-foot performance-based safety zone in the modified project layout. Therefore, the potential impacts could be mitigated to insignificant levels, and no significant unavoidable impacts would remain.

The potential health and safety impacts of the electrical facilities of the proposed project would be low, and similar to those from the existing electrical transmission and distribution lines in the project area. Nearby residents and other members of the public would be isolated from project electrical safety hazards, and would not experience elevated electric and magnetic fields associated with project facilities. Electromagnetic or physical interference with telecommunications is not expected to be significant, and could be resolved through mitigation if it occurred. Therefore, no significant adverse unavoidable impacts related to electrical systems would remain after mitigation.

The model analysis conducted for the shadow flicker issue indicated that the proposed project would be capable of causing shadow flicker for some time during the year at an estimated 65 residences near the project area. While these receptor locations would experience shadow flicker only under specific weather and wind conditions and for relatively limited daily durations, the affected individuals would likely consider these impacts to be significant. Shadow flicker impacts would represent a nuisance or annoyance effect; shadow flicker experienced in the vicinity of the project is not expected to result in adverse public health or safety consequences. Mitigation measures are available that would drastically reduce or eliminate the shadow flicker impacts. Therefore, with mitigation, the proposed project would not create significant unavoidable health and safety impacts associated with shadow flicker.

### **1.9.9 Noise**

The analysis of predicted noise levels indicated that low noise impacts would occur at almost all receptor locations near the project at higher wind speeds (8 m/s). Medium noise impacts were identified at two of the agricultural residences in the project vicinity at higher wind speeds, either due to overall sound levels exceeding 50 dBA or due to projected sound level increases of 5 to less than 10 dBA. At lower wind speeds (4 m/s), all receptors would experience low impacts based solely on the with-project noise level, although impacts for almost one-fourth of the receptors (8 of 34) were characterized as medium due to the level of increase over the existing condition. No high (i.e., significant, for purposes of SEPA analysis) adverse impacts were identified for any receptor location under either wind condition. The analysis also concluded that low-frequency noise impacts were not anticipated and that the potential for significant impacts from tonal noise is low. Based on the above conclusions, the Desert Claim project would not result in significant unavoidable adverse noise impacts. Adoption of mitigation measures involving noise monitoring and a noise-complaint resolution process would provide additional assurance that noise impacts in operation would not exceed allowable levels.

### **1.9.10 Aesthetics, Light and Glare**

Development of the project as proposed would result in significant unavoidable adverse impacts to the visual environment, especially for nearby rural residents in the northwest quadrant of the Kittitas Valley, including part of the Northwest Valley Visual Assessment Unit and the lower foothills of the Table Mountain Slope Visual Assessment Unit. Project facilities, primarily the wind turbines, would be a dominant element of the visual environment for residents and others within short-range viewing distance of the project. Wind turbines would be visible to varying degrees from portions of several other visual assessment units in the Kittitas Basin, although in these cases the views of the turbines would be more distant and the level of visual impact would generally be low. These impacts are summarized in **Section 3.10.2.2**. With considerable efforts to mitigate the project through visual integration, ecological restoration, sound maintenance, and community information from siting through operation, the visual impact has been or could be reduced to a degree. This mitigation process would not, however, lead to a project that would be invisible. On the contrary, it would yield a project that would be quite noticeable but that fit better with the landscape of the Kittitas Basin and the aesthetic values of the people who live there.

### **1.9.11 Recreation**

The construction or operation of the proposed project is not expected to create any significant adverse impacts to recreation. The expected effects of the Desert Claim Wind Power Project on recreational activities and opportunities would be limited to possible ambient noise and congestion in some locations during construction, the potential elimination of the possible opportunity for permission-only hunting on project-area lands, possible minor distraction or annoyance effects on recreational users of adjacent lands, and the creation of a possible point of interest for tourists visiting the area. The possible increase in traffic due to the proposed project is discussed in more detail in **Section 3.12 (Transportation)** of this document. While these impacts would be unavoidable, as discussed in **Section 3.11.2** they would not be significant and/or would not be adverse.

### **1.9.12 Ground Transportation**

Development of the Desert Claim Wind Power Project would generate a relatively small increase in vehicle traffic on the local road system during the construction period. It is not likely that this increase in volumes would be noticeable to the average motorist, or would result in a decreased level of service. Physical impacts to roadways from construction disturbance and the transport of turbine components and construction equipment would be mitigated through required terms of the development agreement. Traffic volumes generated directly by project operations and maintenance activities would be negligible. Assuming that a tourism management plan is implemented, potential tourist traffic resulting from public interest in the project is not expected to generate large traffic volumes on local roads, and would not result in traffic interference or safety hazards. Therefore, no significant unavoidable adverse impacts to the local ground transportation system would result from the construction or operation of the project.

### **1.9.13 Air Transportation**

Some of the proposed turbine locations within the Desert Claim project area would conflict with the protected airspace currently associated with the existing VFR traffic pattern. Specifically, 10 of the proposed turbines would exceed the maximum allowable height for structures within the traffic pattern airspace, and represent a potential adverse impact on those air traffic operations. The significance of the potential impact is unclear, because in practical terms the conflict involves operation by a category of aircraft that rarely use Bowers Field and which are not included in the critical family of aircraft identified in the County's current Airport Master Plan. The airspace conflict could be resolved and the potential

operations impact could be avoided through several possible means. Those include further modifying the project plan to remove or relocate the remaining 10 turbines and/or to install smaller turbines in selected locations. Changes of this type are already reflected to a degree in the modified project configuration evaluated in the Final EIS, which relocated 17 of the 27 turbines that were identified in the Draft EIS as creating a conflict, and by selecting a smaller turbine as compared to the maximum turbine envelope. Another option for resolving the remaining conflict would be to raise the VFR Traffic Pattern Altitude (TPA) for large/jet-powered aircraft. The available mitigation measures are discussed in detail in **Section 3.13.5**. Because either set of mitigation measures would result in insignificant impacts, there are no significant unavoidable adverse impacts to air transportation associated with the project. Independent of this project, Kittitas County airport management has taken action to raise the TPA for large/jet-powered aircraft. Upon acceptance by the FAA, this action would result in satisfactory resolution of the potential penetration of the 10 wind turbines into the currently-defined Category D VFR traffic pattern, with no adverse effects on aircraft operations or the community.

#### **1.9.14 Public Services and Utilities**

Construction and operation of the Desert Claim project would result in negligible impacts for most types of public services and facilities. Some concerns with respect to the need for fire protection services were identified, as were mitigation measures that would resolve these concerns. Therefore, with mitigation, no significant unavoidable adverse impacts to public services and utilities would be expected.

#### **1.9.15 Population, Housing and Employment**

The population, housing and employment impacts of the Desert Claim Wind Power Project are not expected to be significant, and would not likely be viewed as adverse.

#### **1.9.16 Fiscal Conditions**

No significant unavoidable adverse impacts are expected. Anticipated local government revenues associated with the project are likely to be significantly higher than expected service costs.