

3.15 POPULATION, HOUSING AND EMPLOYMENT

3.15.1 Affected Environment

The following description of baseline conditions applies to the Desert Claim project area and to the Wild Horse and Springwood Ranch sites that have been defined as the project areas for Alternatives 1 and 2.

3.15.1.1 Population

The proposed Desert Claim Wind Power Project lies in the northern section of Kittitas County, approximately 8 miles north of the City of Ellensburg. Kittitas County is in the center of Washington State and stretches from the crest of the Cascade Mountains to the Columbia River. It is bounded to the north by Chelan County, to the south by Yakima County, and to the west by King County. The County comprises an area of 2,297 square miles, which makes it the eighth largest county in the state by area.

Kittitas County includes five incorporated cities: Ellensburg, Cle Elum, Roslyn, Kittitas, and South Cle Elum. According to the Washington Office of Financial Management, the county's 2003 population is approximately 35,200, of which 42 percent live in unincorporated areas and 58 percent live in the incorporated areas. Since 1990, the population in unincorporated areas grew by 41.9 percent, while that of the incorporated cities increased 25.2 percent (U.S. Census 2000; WOFM 2003). **Table 3.15-1** shows the population for all cities and unincorporated areas in Kittitas County for 1990, 2000, and 2003.

**Table 3.15-1
Kittitas County Population Data 1990 – 2003**

City/region name	1990*	2000*	2003**	Percent change (90'-03')
Kittitas	26,725	34,000	35,200	31.7%
Unincorporated	10,418	14,120	14,785	41.9%
Incorporated	16,307	19,880	20,415	25.2%
Cle Elum	1,778	1,755	1,775	-0.2%
Ellensburg	12,360	15,460	15,940	29.0%
Kittitas	843	1,105	1,120	32.9%
Roslyn	869	1,017	1,020	17.4%
South Cle Elum	457	543	560	22.5%

*U.S. Census Bureau, 2000

**WOFM 2003

The project area lies within unincorporated Kittitas County. As stated above, the unincorporated areas of the county have, in the past decade, had fewer residents than the cities and towns, but have been growing at a much faster rate. The smallest subdivision available from the U.S. Census (2000) that includes the project vicinity is Census Tract 9753. This census tract contains rural lands extending from State Route 97 to the eastern border of the county. Population in the census tract was approximately 3,038 when counted during the 2000 census. The Desert Claim project and the surrounding area account for a relatively small fraction of the geographic area and population of Census Tract 9753. The distribution of the population in the immediate vicinity of the project is generally very low-density residential properties.

According to the WOFM, population density in the county is 15.3 people per square mile (compared to 2,290 people per square mile for the City of Ellensburg). Most of the population in the direct vicinity of the project area lives in a farming, ranching or scattered rural residential configuration.

3.15.1.2 Housing

According to the U.S. Census (2000), Kittitas County had 16,475 housing units in 2000. Of those, 81.2 percent were occupied and 18.8 percent were vacant (10.9 percent were vacant due to seasonal use). There were 13,215 housing units in 1990 (U.S. Census 1990), reflecting a 10-year increase of 24.7 percent. The most recent census also revealed that of the occupied housing, 58.3 percent was owner occupied and 41.7 percent was renter occupied. Rental vacancy in the county was 6.8 percent, which was higher than the statewide vacancy rate of 5.9 percent. The most recent housing data published by the Washington Office of Financial Management (WOFM 2003) updated the 2000 census figures for the County. The most current housing estimates are shown in **Table 3.15-2** below.

Table 3.15-2
Housing Units by Structure Type, 1990 and 2003

Housing Type	Incorporated Kittitas County (units)		Unincorporated Kittitas County (units)	
	1990	2003	1990	2003
Single Family	4,049	4,883	4,476	6,082
Multi-family	2,517	3,701	217	352
Mobile Home or Trailer	519	580	1,436	1,787
Total	7,085	9,164	6,129	8,221

Source: WOFM April 2003

The county's largest city, Ellensburg, is approximately 8 miles south of the Desert Claim site. According to the U.S. Census (2000), the city had 6,732 total housing units, of which 92.8 percent were occupied and only 0.5 percent were vacant for seasonal, recreational, or occasional use. Total housing units increased by 34.2 percent from 5,015 in 1990 (U.S. Census 1990). Of the current housing stock, 34.6 percent is owner occupied and 65.4 is renter occupied. The rental vacancy rate in Ellensburg is 6.6 percent, slightly lower than the county rate.

There are also numerous short-term housing possibilities in Kittitas County. They include motels, hotels, bed and breakfast inns, guest ranches and cabins, and campgrounds and RV parks. Cabin rentals and other camping areas exist in the county; there are 33 campgrounds in western Kittitas County (Kittitas County 1999) Both the Ellensburg and Cle Elum/Roslyn areas have hotels and motels with 50 rooms or more. **Table 3.15-3** lists the number of lodging facilities in the Ellensburg area and the Cle Elum / Roslyn area.

**Table 3.15-3
Lodging Establishments in Ellensburg and Cle Elum / Roslyn**

Lodging Type	Ellensburg	Cle Elum/Roslyn
Motels/Hotels	11	9
Bed and Breakfast	10	2
Resorts	1	1
Guest Ranches and Cabins	4	2
Campgrounds and RV parks	3	4
Total	29	18

Source: Ellensburg and Cle Elum / Roslyn Chambers of Commerce, 2003.

3.15.1.3 Employment and Local Economy

In 2001 the total Kittitas County labor force was estimated at 17,420 (USBEA 2003). According to the 2000 U.S. Census, 1,556 people were unemployed representing an unemployment rate of 5.7 percent.

Median household income in the county was \$32,546 and the per capita income was \$18,928. Eight hundred-nineteen (819) families and 6,122 individuals were counted as living within poverty status; they represented 10.5 of the families and 19.6 percent of the population in the county (U.S. Census 2000).

Of the 17,420 total employees in Kittitas County, 75 percent (13,102) are wage and salaried employees and the remaining 25 percent (4,318) are self-employed or members of a partnership. Eight percent (1,439) of all employees in the county are in farm related positions and the remaining 92 percent (15,981) are in non-farm positions. Of all non-farming employees, 74 percent (11,778) are in private sector occupations and 26 percent (4,203) are in government and government enterprises. Ninety-three percent (3,900) of government employees are employed by state and local agencies. The military provides jobs for 3 percent (133) and the federal government employs the remaining 4 percent (170) (USBEA 2003). **Table 3.15-4** shows the number of employees, personal income, and total wages per industry.

Nearly half (45 percent) of all private sector employees fall into one of three employment categories: transportation and warehousing, which employs 19 percent (2,257) of private sector workers; 15 percent (1,801) are employed in accommodation and food services; and 11 percent (1,281) are employed in health care and social assistance. Both construction and other services employ 8 percent (918 and 919 respectively). All other employment categories employ 5 percent or less (USBEA 2003). According to the Kittitas County profile produced by the Washington Employment Security Department (2002), the agriculture/forestry/fishing sector is also significant in Kittitas County.

Construction was on the upswing through the 1990s and continues through this decade. Residential construction was particularly active during this time. The demand for housing has been strong in the recent past and continues to be so. From 1970 through 2000 Kittitas County's construction employment grew at an annual average of 2.0 percent. Total full-time and part-time employment in construction as of 2001 was approximately 918 (USBEA 2003).

**Table 3.15-4
Average Monthly Employment and Total Wages in Covered Employment (2001)**

Industry	Average No. of Employees	Percent of Total	Wages Paid (\$)	Percent of Total
Agriculture, Forestry, and Fishing	813	6.87	12,942,368	4.87
Mining	*	*	*	*
Construction	430	3.63	10,462,352	3.94
Manufacturing	685	5.79	18,721,781	7.04
Transportation, Communication, Utilities	432	3.65	17,016,072	6.40
Wholesale Trade	421	3.56	12,463,633	4.69
Retail Trade	2867	24.22	37,972,796	14.28
Finance, insurance, Real Estate	*	*	*	*
Services	2198	18.57	33,496,836	12.60
Government	3717	31.40	116,413,161	43.79
Other	275	2.32	6,384,318	2.40
Total	11,838	100.00	265,873,317	100.00

Source: WOFM, 2003.

3.15.2 Environmental Impacts of the Proposed Action

In general, most of the potential population, housing and employment impacts attributed to the proposal would result from the construction phase of the project. Because the work force required for construction and operation of the project would be relatively small (in the context of total countywide economic activity), the project is not expected to significantly impact population, housing, or employment throughout the county. Any impacts would be localized and temporary. In most cases the impacts would generally be considered beneficial as well.

The modified proposal described in Section 2.2 of the Final EIS would result in the same type and level of population, housing and employment impacts as the original proposal identified in the Draft EIS. Potential impacts for this element of the environment are determined by factors such as the size of the capital investment represented by the project and the work force requirements for construction and operation. The subtle shifts in the locations of project facilities, relative to the project plans described in the Draft EIS, would not cause corresponding changes in project costs or labor requirements. Similarly, construction of the project in phases, if it occurred, would not significantly change the types of impacts; while each phase of construction could involve somewhat smaller numbers of employees, the longer construction period would likely result in similar levels of employment overall.

3.15.2.1 Population

The proposed project would not have a noticeable impact on population in Kittitas County or the City of Ellensburg. Typically, population changes associated with a development action are the result of changes in the local labor market, specifically in-migration to fill new jobs. The impacts on population from a project such as Desert Claim would depend on the level of worker relocation and in-migration needed to meet the project's labor demands. The proposed project would employ an estimated 150 workers during construction (approximately one-half are assumed to be existing residents and part of the local labor

market) and 10 during operations. Desert Claim has indicated that, where possible, local workers would be hired for construction and operation positions. Both of these factors would limit worker in-migration to the project area. Therefore, employment opportunities would not be sufficient to increase the population significantly. The discussion of labor sources and potential employment impacts in **Section 3.15.2.3** provides the basis for this conclusion.

3.15.2.2 Housing

Potential impacts to housing from the proposed project could either be direct or indirect. Direct impacts would include any loss of or displacement from housing by families or individuals. The proposed project would be built completely on private land at least 1,000 feet from any existing homes. No housing units would be destroyed or displaced by the project and, therefore, there would be no direct impacts on housing.

Indirect impacts on housing could result from changes to housing units, availability or cost caused by the project. These changes are typically the result of changes to employment and population in a region. A large, long-term construction project could cause a change in housing availability and cost if significant numbers of workers moved into the region and occupied available housing units. This could result in lower vacancy rates and some upward pressure on housing costs.

The proposed project's estimated employment demand and opportunities would be modest and would not attract significant numbers of new residents to the local area or cause these types of effects to the local housing market (see **Section 3.15.2.3** for additional discussion). The expected 9-12 month construction schedule is also relatively short compared to other projects of a similar capital investment size. It is likely that some construction workers (not currently living in the area) would stay in local hotels or motels, and others would commute from other population centers such as Yakima or the greater Seattle area. Therefore, the proposed project is not expected to have a significant indirect impact on housing in Kittitas County. Based on available information, there is currently adequate housing, both permanent and temporary, for the estimated number of non-resident workers.

3.15.2.3 Employment and Economic Issues

Economic issues associated with wind energy development focus on the effects on employment, income, and taxes, and the provision of public services. Economic impacts can be grouped under the construction and operation phases of wind project development. These phases are generally distinct; effects associated with construction are transitory, while operation-related effects are more permanent. There could be an amalgamation of these effects during construction and operation phases if other wind energy developments concurrently come online within the vicinity at the same time.

According to the SEPA Rules (WAC 197-11-448), the economic effects of proposals are not "environmental impacts." This information about economic impacts is provided for information purposes only and is not technically part of the EIS for purposes of SEPA compliance. More detailed, additional information about the economic development impacts of wind power projects is available in a recent report prepared for the National Wind Coordinating Committee (Northwest Economic Associates, 2003).

Economic Links and the Local Economy

To understand how the local economy is affected by some external change, such as a wind power project, it is useful to develop an overall snapshot of the local economy at a particular point in time. Such a snapshot would show that some parts or sectors of the local economy are linked to each other. Using production agriculture as an example, a farmer buys seeds and fertilizer from the seed grower industry and agricultural chemicals industry, plants with a tractor and equipment purchased from a farm implement dealer, which buys its tractors and farm equipment from the farm machinery manufacturing sector. These sectors are referred to as *backward linkages*. Typically, a farmer will sell his production to a processor, such as grain into flour milling, vegetables into frozen or canned products, or apples into juice or sauce. These further processing steps are generally called *forward linkages*.

Most economic sectors need to make purchases of goods and services for needed production outside the local area. Purchases made outside the local economy are called “imports.” Money spent on imports represents a “leakage” from the local economy. Likewise, farmers and other businesses do not sell all of their production to other businesses and consumers within the local area. Products sold to businesses and consumers outside the local area are called “exports.” Money received for these exports are called “new money” and increases the size of the local economy through a multiplier effect.

The extent to which exports are able to expand the local economy depends to a great extent on how much of the money received from exports remains within the local economy. As money is received for exports, the local supplier in turn spends that money. To the extent that there are other local businesses on which this local supplier depends, less of this money leaves the local economy to buy imports. If there only a few local businesses from which needed purchases can be made, then much of the money will be “leaked” from the local economy.

As other local businesses receive a portion of the money from the first supplier, they also spend the money either within or outside the local economy. The more money that is circulated within the local economy, the larger the local impact from the initial payment received for the export. This round-by-round spending pattern associated with local export production is called the *multiplier process*. The size of this multiplier effect depends on how local businesses are linked with each other as well as how much leakage there is to outside regions for purchasing imports. If the local economy has numerous linked sectors, then multipliers tend to be higher.

Multipliers break this initial external change of wind power project within the local economy into three components: *direct*, *indirect*, and *induced effects*. The *direct effect* refers to those changes—via business purchases of goods and services—in output, employment, and/or income that represent the construction and operation of the wind power project. *Indirect effects* refer to the purchases of materials, supplies, and services of those firms that provide direct services to the wind power project. The *induced effects* refer to the additional impact from consumption spending of employees from the wind power project (construction and operation) and indirect-related sectors. Within the local economy, these secondary effects—indirect and induced—result from these subsequent rounds of spending and re-spending with the local economy.

Construction Impacts

In order to measure the effect that the construction of a wind power project has on the local economy, one has to first identify the mix of things (inputs) necessary to construct a wind power project. This recipe of ingredients—measured in dollars—relates to what is generally used in constructing the project. These

items include turbines, towers, rotor assembly, wiring, and concrete, as well as the labor and management skills required for site preparation and installation of the equipment. Prior studies have estimated that about 80 percent of the construction costs of wind energy projects are for the equipment (e.g., rotor assembly, tower, generator, etc) and its installation. Most (if not all) of these equipment items and the specialized skills needed for their installation are generally imported from outside the rural host area. The remaining 20 percent or the “balance of station” is for site preparation and installation of equipment. This involves the construction of roads, pouring the concrete foundations for towers and operations buildings, and so forth. In contrast to wind energy project installation and equipment, these activities provide the greatest opportunities for local input suppliers and workers.

Depending upon the size of the proposed project, the construction phase can affect the job base and personal income within the host region. Additional jobs stemming from project construction are likely to be limited and brief in duration. Other areas with wind power projects have found that most of the construction workers came from within the region. In the case of Desert Claim, it is estimated that approximately one-half of the needed construction workers would come from within a reasonable commuting distance of the project area (i.e., from Kittitas and Yakima Counties) with the balance from surrounding labor markets (primarily the Tri-Cities and/or the Seattle metropolitan area). Local trade and service sectors might be indirectly and positively affected due to purchases by construction workers; some manufacturing business (i.e., concrete) could also be affected. Likewise, the construction phase would generate local personal income that would positively affect the trade and services sectors of the economy.

Wind power projects are also a source of supplemental revenues for local landowners. Wind power companies typically lease rather than purchase land from landowners. Although each developer’s lease contract has unique features, there are many common aspects. Each megawatt (MW) of turbine capacity generally requires 25 to 50 acres total area, with the landowner losing the use of about two to four percent (i.e., 0.5 to 2 acres per turbine) of this area. Because the wind turbine occupies a small amount of the overall project area, farming and ranching operations are not greatly affected. Payments to landowners are often calculated as a percentage of the gross revenues of the wind project, generally one to three percent. Typical annual royalty payments to landowners range from \$2,500 to \$4,000 per turbine (or approximately \$50 to \$160 per acre). At that rate, total royalty payments for the Desert Claim proposal would be approximately \$450,000 per year.

Direct effects of the Desert Claim project would relate to site preparation and installation of a maximum 120 wind turbines. The input parameters for the construction phase include between approximately 150 total and 75 local construction jobs. Using an input-output modeling¹ framework, the total economic effects of construction of the Desert Claim Wind Power Project are illustrated in **Table 3.15-5**.

¹ In order to estimate the economic impacts resulting from the Desert Claim Wind Power Project, an input-output model was employed. This economic model is utilized to measure the indirect effects of project development—both construction and operation—on the local economy, in terms of additional industry output, employment, and income. The model here is based on IMPLAN (“**IM** impact analysis for **PLAN**ning”), a system of software and data used to perform economic impact analyses.

**Table 3.15-5.
Desert Claim Construction-Phase Economic Impacts**

Impact Type	Jobs	Labor Income	Other Value Added	Total Value Added
Direct	75	\$2,883,000	\$772,000	\$3,655,000
Indirect	16	\$433,000	\$285,000	\$718,000
Induced	24	\$502,000	\$489,000	\$991,000
Total	115	\$3,818,000	\$1,546,000	\$5,364,000

Construction costs for Desert Claim were estimated to total approximately \$180 million, or \$1 million per MW of installed capacity. Of this total, roughly \$144 million represents expenditures for major equipment (turbines, blades, and towers). The remaining \$36 million represents outlays for activities such as structural construction (foundations, pads, and roads), project engineering, project/contractor management and related activities.

As shown in **Table 3.15-5**, the construction phase is estimated to directly employ a local workforce of 75. Spending on labor and materials would indirectly result in an additional 40 full and part-time jobs during the construction phase. Labor income (wages and salaries and proprietor income) would be over \$3.8 million due to local hiring of construction workers and the increases in services needed to support the work.

The amount of other value added—composed of corporate profits, property rents, and net interest -- is estimated at over \$1.5 million. The landowner royalty payments of \$450,000² is included under property rents but is expected to have limited multiplier effects. These lease payments represent an addition to household income for a select number of households within the area. It would be largely speculative to project how much of this additional income would be re-circulated within the local economy, saved or invested. In a larger context, the additional household income from lease payments represents less than 1 percent of 2002 total personal income of \$730 million in Kittitas County.

Operation Impacts

Once the wind power project becomes operational, economic effects would primarily derive from household income received by resident workers and leaseholders, along with additional local expenditures for fuel and some supplies needed for maintenance. The estimated level of operation and maintenance workers (approximately 10 positions) would have a “ripple effect” throughout the local economy that would primarily affect the trade and services sectors.

As shown in **Table 3.15-6**, the operational phase of the project would annually support, directly and indirectly, a total of 22 full and part-time jobs. Collectively, these jobs would have an annual payroll of nearly \$900,000. Other value added—corporate profits, property rents, and net interest -- is estimated at nearly \$2 million annually.

² Royalty payments to the landowner begin during the construction phase and would continue annually during the operation phase.

**Table 3.15-6
Desert Claim Operation Phase Economic Impacts**

Impact Type	Jobs	Labor Income	Other Value Added	Total Value Added
Direct	10	\$591,000	\$1,794,000	\$2,385,000
Indirect	4	\$124,000	\$41,000	\$165,000
Induced	8	\$168,000	\$154,000	\$322,000
Total	22	\$883,000	\$1,989,000	\$2,872,000

In general, the Desert Claim project would not provide a large number of ongoing new jobs, nor would it effect a major change in the local population. Given its small size relative to the local economy, a wind energy project would not have a substantial impact on other economic development issues within rural regions, such as consumer spending leakage, workforce availability, and youth flight.

Potential Tourism Development

Tourism is an increasingly important component of the Washington State economy. Washington State is recognized domestically and internationally as a destination for travelers. Kittitas County, among others, has a growing tourism-related sector in the local economies. Annual visitor and traveler spending in Kittitas County (in 2001) was estimated at \$75 million (Dean Runyan Associates, 2002) and supports about 1,330 jobs, or 11 percent of total non-farm employment.

Current research and surveys have generally found that wind farms have either no effect on tourism numbers or a positive effect (Australian Wind Energy Association, 2003). Some studies indicate that a wind farm can be an asset to the local tourism base, particularly if the wind energy company provides an interpretive center. There may be some limited effects from associated increased tourism during the first few years of the wind farm operating due to “novelty” value. An interpretive center could potentially increase visitors to the local area and could indirectly increase tourism spending. This potential effect has not been quantified. Additional discussion of potential tourism interest is provided in **Sections 3.11.2 and 3.12.2.**

3.15.3 Impacts of the Alternatives

3.15.3.1 Alternative 1: Wild Horse Site

The construction and operation of the Wild Horse project would result in an influx of temporary and full-time workers that could impact the availability of local housing and the construction labor force. The evaluation of potential impacts to population and employment is based on a recent study prepared for the Phoenix Economic Development Group by ECONorthwest (2002). That report addresses two prospective wind energy projects in Kittitas County; thus, the results from that study were adjusted to apply to Alternative 1 only.

The construction impacts are expected to occur over approximately a 1-year period. The total number of full and part-time jobs created by the project is estimated to be from 150 to 180 jobs. Of the total jobs created during construction, approximately half (about 75 to 80) are expected to be direct construction jobs within the local labor market. Relative to the current size of the local economy, this temporary increase would not be a significant change.

Temporary housing would be needed for those workers who would relocate during construction of the project. As noted in **Section 3.15.2.2**, the local area appears to have an adequate supply of temporary housing to accommodate workers from outside the area. Thus, the impact to the local housing market is not expected to be significant.

3.15.3.2 Alternative 2: Springwood Ranch Site

Impacts from construction and operation of Alternative 2 on population, housing and employment would be similar in nature to those described for the proposed action and Alternative 1. The primary difference in this case would involve the magnitude of the potential impacts, however, because Alternative 2 involves a considerably smaller wind energy project with less capital investment. The number of construction workers and the duration of the construction period would be about the same as for the proposed action. The total labor income and local expenditures during the construction period would be considerably smaller, as would lease payments to landowners during project operation; based on the relative numbers of turbines (40 to 45 for Alternative 2, compared to 120 for the proposed action), the total economic impact of Alternative 2 would likely be 35 to 40 percent of the level indicated for the proposed action.

3.15.3.3 No Action Alternative

Under the No Action Alternative the proposed project would not be built. No wind turbines would be installed in the Desert Claim project area, no land lease payments would be made, and no additional construction or operation jobs associated with this proposal would be available. 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. Two other wind farms unrelated to the Desert Claim project are proposed for other sites in Kittitas County. One or both of these other projects could conceivably proceed to development under the no action alternative.

3.15.4 Cumulative Impacts

Cumulative impacts for all elements of the environment are addressed in **Chapter 4**.

3.15.5 Mitigation Measures

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 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.

3.15.6 Significant Unavoidable Adverse Impacts

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.