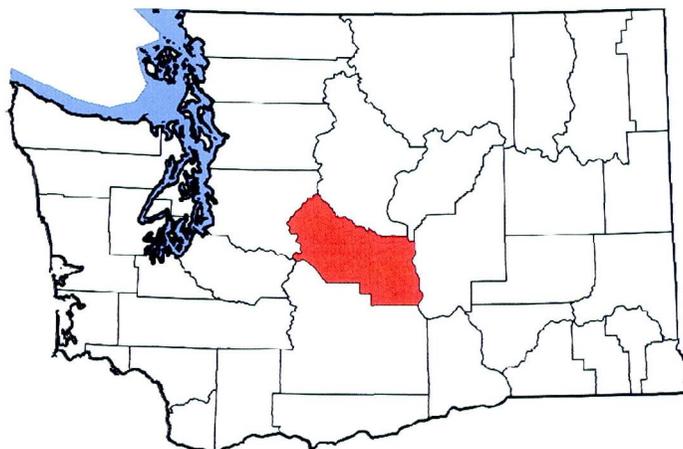


Kittitas County Economic Impacts from the Proposed Desert Claim Wind Power Project



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By

Central Washington University

Ellensburg, Washington

David W. Hedrick, PhD

Richard S. Mack, PhD

Donald Meseck, MBA

Charles S. Wassell, Jr., PhD

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I. Introduction

This report evaluates the economic impacts in Kittitas County expected to result from the construction and operation of the proposed Desert Claim Wind Power Project (DCWPP). Part II describes modeling performed to estimate the direct and indirect income, employment and tax revenues from the proposed project. Part III discusses more qualitative economic benefits associated with the project, such as the diversification of the County's economic base. Part IV discusses the economic benefits Kittitas County has experienced in connection with the recently constructed Wild Horse Wind Power Project.

For purposes of this analysis, we have assumed that the DCWPP will consist of 95 individual wind turbines, each of which has a nameplate rating of 2 MW, for a total project size of 190 MW. The towers and associated facilities will be installed across an approximately 5,200 acre area, 4,080 of which are leased from private landowners and the Washington Department of Natural Resources with the remaining 1,120 acres to be owned by a sister company of the DCWPP.¹ We have assumed that project construction will take approximately 9 to 10 months, after which the facility will remain operational for 20 to 30 years.

We anticipate that the DCWPP will have significant positive impacts on Kittitas County. Up to 160 full and part time jobs will be created in the County during the construction of the project, and approximately 25 full and part time jobs will be created annually during the project's operating life². In addition, the DCWPP will reduce the tax burden on County residents, and will contribute to much-needed economic diversification.

II. Estimated Income, Employment and Tax Revenue from the DCWPP

We have estimated the direct and indirect impacts on income, employment and tax revenues that would result in Kittitas County as a consequence of the DCWPP. The DCWPP will also have economic effects outside of Kittitas County, but they are beyond the scope of our analysis.

A. Modeling Methodology

We have employed two Input-Output models to quantify the economic impacts of the DCWPP: the Jobs and Economic Development Impact (JEDI) model developed by the National Renewable

¹ A map of the project area is provided in [Appendix A](#).

² Neither Federal nor Washington State economic data sources discriminate between full and part time employment. Accordingly, this report will honor this definitional convention when it refers to the number of jobs and employees.

Energy Laboratory, and IMPLAN (Impact Analysis for Planning).³ The bulk of our reported results are derived from the JEDI model, however the JEDI model incorporates multipliers derived from IMPLAN.

Input-Output models were originally designed to trace supply linkages in the economy. For example, they show how purchases of wind turbines not only benefit turbine manufacturers, but also the fabricated metal industries and other businesses supplying inputs to those manufacturers (Goldberg, 2004). By quantifying the inter-sectoral linkages in an economy and calculating where goods and services are either used *within* Kittitas County to produce other goods and services or are exported or sold *outside* Kittitas County, a set of multipliers is derived (Oregon State University, 2006).

Input-Output (or multiplier) analysis is a method of evaluating and summing the impacts of a series of “ripple effects” of any change in demand for a good or service that is produced in an economy. Three impacts are aggregated for each expenditure: direct effects, indirect effects, and induced effects (Goldberg, 2004).

- **Direct Effects:** Direct effects are the on-site or immediate (1st tier) effects created by an expenditure. In constructing a wind power project, entities from the direct effects category receive payments for their goods and services directly from project funds, e.g. turbine manufacturers and project construction crews.
- **Indirect Effects:** Indirect effects refer to the increase in economic activity that occurs when a directly affected (1st tier) entity receives payments for goods and services and is, in turn, able to pay other (2nd tier) vendors, contractors, or manufacturers for goods and services that support the directly affected entity. Entities in the indirect effects category are compensated indirectly from project funds, e.g. steel manufacturers that supply turbine tower manufacturers, and firms that supply building materials to construction crews.
- **Induced Effects:** Induced effects refer to the change in wealth and/or income that is induced by the spending of those persons directly and indirectly (1st and 2nd tiers) employed by the project. Induced effects entities (3rd or lower tier) include food, clothing, and lodging providers for project construction employees.

The sum of the *Direct*, *Indirect*, and *Induced Effects* yields the *Total Effect* from a given expenditure. Wind power projects are comprised of two main phases: construction and operations phases. Our projected economic impacts are subdivided accordingly. It is important to

³ The JEDI model was developed under contract for National Renewable Energy Laboratory by Marshall Goldberg (Goldberg, 2004), and was specifically designed to assess the state and local economic benefits associated with developing wind power projects. IMPLAN, a model originally developed by the U.S. Forest Service to trace supply linkages in a given economy, is a system of software and data used to perform economic impact analysis. Currently the IMPLAN software and data are being managed and updated by the Minnesota IMPLAN Group, Inc., using data collected at federal, state, and local levels (Minnesota IMPLAN, 2003).

note that our analysis is confined to impacts on the Kittitas County economy, and consequently we only consider the total effect of local expenditures.

The DCWPP may also have more remote economic effects that are much more difficult to quantify. For example, as an energy source that does not directly produce greenhouse gas emissions, the DCWPP may avoid future costs associated with greenhouse gas mitigation. We did not consider these kinds of remote economic effects in our analysis.

As with all Input-Output models, our results hinge upon the particular multipliers utilized. Multipliers, in short, reflect the total impact on economic activity (i.e., employment, output, earnings, and personal consumption) from a nominal change in expenditures. Output is the total value of goods and services produced within the local economy as a result of the Project. The majority of Input-Output analyses make use of IMPLAN software, demographic data, and associated multipliers. We use IMPLAN as well as JEDI, a specialized Input-Output model that applies specifically to the broader wind power industry. JEDI provides estimates of wind power project economic impacts at the State and County levels. Following a procedure recommended by Goldberg (personal communication, 2008), we aggregated the IMPLAN sectors into 14 industries and calculated Kittitas County specific multipliers for subsequent JEDI analyses.⁴ [Appendix B](#) contains the particular multipliers utilized in our Input-Output analysis.

As with all economic forecasts, ours is predicated upon a number of assumptions that enable efficient and conclusive analysis. First, we provide projected *gross outcomes*, rather than *net outcomes*. That is, they do not reflect alternative expenditures of project funds, nor losses that may accrue to other sectors in the presence of the DCWPP. Second, Input-Output analyses are fundamentally static in nature – they do not account for potential socioeconomic changes in response to project expenditures (e.g., opening of a Kittitas County blade manufacturing facility in response to a burgeoning wind power sector). Related to this, results are sensitive to the particular multipliers used in the analyses; these, in turn, depend critically upon local spending patterns and demographics. If there are increased (decreased) locally sourced expenditures, then local economic impacts will be commensurately greater (lower). Finally, neither JEDI nor IMPLAN are intended to be precise forecasting tools; rather, they provide reasonable assessments of how expenditures may impact a particular economy. It is worth emphasizing that Input-Output models are primarily utilized for macroeconomic analysis, and therefore modeling results may become increasingly unrepresentative as the scale of the economy under investigation becomes smaller.

⁴ There are actually 15 aggregated industries, one of which is an “other” category that is largely immaterial to the wind power industry and to Kittitas County. The remaining 14 aggregated industries are: (1) agriculture; (2) construction; (3) electrical equipment; (4) fabricated metals; (5) finance, insurance, and real estate; (6) government; (7) machinery; (8) mining; (9) other manufacturing; (10) other services; (11) professional services; (12) retail trade; (13) transportation, communication, and public utilities; and (14) wholesale trade.

B. Income and Employment

Construction Phase

The construction of the DCWPP site will result in a significant amount of employment and spending during the assumed 9 to 10 month construction phase of the project. The following impact estimates are based upon general project data, given in Table 1, provided by enXco and from values drawn from analyses of similar projects, including data from Lawrence Berkeley Laboratories and Marshall Goldberg and Associates.⁵

Table 1 Overall Project and Construction Phase Data

Project Descriptive Data	
Project Location	Kittitas
Year of Construction	2010
Project Size - Nameplate Capacity (MW)	190
Turbine Size (KW)	2,000
Number of Turbines	95
Construction Cost (\$/KW)	\$1,920
Money Value - Current or Constant (Dollar Year)	2008
Project Acreage	
DNR Land	1,529
Private Owners	2,551
A Future Affiliate of enXco	1,120
Total	5,200

Summarized in Table 2, our results suggest that up to 160 jobs would be created in Kittitas County during the construction of the DCWPP. Essentially all of the directly created jobs are in the construction industry, including road and site preparation, foundation work, tower erection, and construction management.

⁵ See citations in Appendix C.

Table 2 Construction Impacts from the DCWPP

	Jobs⁶	Earnings	Output
Direct Impacts	85.5	\$2,062,000	\$11,096,000
Construction Sector Only	85.2	\$2,050,000	
Manufacturing Sector Only	0.1	\$7,000	
Other Industry Sectors	0.2	\$5,000	
Indirect Impacts	29.5	\$953,000	\$2,493,000
Induced Impacts	44.6	\$613,000	\$3,711,000
Total Impacts (Direct, Indirect, Induced)	159.6	\$3,628,000	\$17,300,000

Given total Kittitas County non-farm plus covered agricultural employment of 15,389 and current unemployment of 724 workers⁷, these construction phase jobs would provide a significant short-run improvement in conditions within the County’s labor market. Similarly, gross County income would increase by up to \$3.6 million during the construction phase, or approximately 0.4%. Total output, or the total value of goods and services of the local economy, would increase by \$17.3 million. While the construction phase economic impacts are significant and beneficial, they are one-time temporary effects and therefore their importance should not be overemphasized.

Operations Phase

The operation and maintenance of the DCWPP will provide significant employment and income for Kittitas County residents for the 20-30 year duration of the project. Assumptions used in this phase are shown in Table 3.

Table 3 Operations and Maintenance Phase Data

Annual Operations and Maintenance Cost (\$/kW)	\$10.00 ⁸
Payroll Parameters⁹	
Field Salaries (technicians, other)	\$20.00/hr
Administrative	\$14.49/hr
Management	\$38.19/hr

⁶ Jobs in this table refer to both full and part time jobs in Kittitas County during the construction period – approximately nine to ten months.

⁷ Source: Labor Market and Economic Analysis Division, Washington State Employment Security Department.

⁸ Construction cost and operations and maintenance cost values were taken from Lawrence Berkeley National Laboratory (2007).

⁹ Hourly rates are JEDI default values. See Goldberg, et al. (2004) and National Renewable Energy Laboratory (2008).

We estimate the following annual economic impacts in Kittitas County during the operations phase:

Table 4 Annual Impacts During Operations Phase¹⁰

	Jobs¹¹	Earnings	Output
Direct Impacts	13.9	\$693,000	\$1,876,000
Indirect Impacts	3.1	\$145,000	\$286,000
Induced Impacts	8.0	\$148,000	\$655,000
Total Impacts (Direct, Indirect, Induced)	24.9	\$986,000	\$2,817,000

The operations phase would increase County employment by approximately 25 full and part time jobs on a persistent basis, and annual income of County residents would increase by approximately \$1.0 million. Changes in Kittitas County output would accordingly be \$2.8 million.¹²

The direct employment impacts – primarily project workers including field technicians, administration, and management – flow from direct O&M expenditures. In total, the operations phase jobs would contribute to a persistent reduction in the County unemployment rate of up to 0.2%.

Outside of direct plant employment, the bulk of the operations phase impacts derive from landowner lease payments. Forty turbines will be located on land leased from private landowners. Based upon estimated lease payments furnished by enXco, we estimated approximately \$600,000 in annual local lease payments.¹³ These local expenditures are recycled through the local economy on non-project-related items, and thereby contribute to County economic activity in other sectors (e.g., retail trade).¹⁴ The impacts of these expenditures are included in the results shown in Table 4.

¹⁰ Economic impacts “during the operations phase” represent impacts that occur from plant operations and expenditures. In our estimation of the impacts during the operations phase of the project we include annual property tax receipts generated by the project, exclusive of any property tax exemptions that may be available.

¹¹ Jobs in this table refers to both full and part time annual employment in Kittitas County. Numbers do not add up due to rounding error.

¹² This measure of output does not include the value of the electricity produced by the Project. Nor, does it include expenditures on goods and services generated by the Project that are made outside Kittitas County.

¹³ For the 29 turbines on leased DNR land, the state school fund will receive an additional \$435,000 annually. These funds are beneficial at the state level, but have no immediate local impact. They are therefore not included in this report.

¹⁴ There are relatively few private landowners receiving land-lease payments, and the spending patterns of these landowners may not be representative of average Kittitas County citizens. Consequently, for the purposes of

C. Tax Revenues

The DCWPP will result in significant tax benefits to Kittitas County jurisdictions and citizens. The vast majority of increases in public revenues stem from property taxes upon the facility.

Sales Tax

Purchases of wind power equipment and its installation are currently exempt from sales taxes, as legislated by the State of Washington (RCW 82.08.02567; RCW 82.12.02567; WAC 458-20-263). This exemption expires on June 30, 2009, but the Washington Legislature is considering a bill that would extend the exemption. In light of the uncertainty about the sales tax, we have not included sales tax in our analysis of tax revenues.

Property Tax

Property subject to taxation is comprised of real property (land and structures) and personal property (capital equipment used in businesses). In the case of the DCWPP, all wind generation turbines, towers, foundations, and intrasite transmission linkages are classified as personal property, since they are subject to removal upon decommissioning of the facility. In 2007 the Washington State legislature passed measure SSB 6141 exempting wind-based power generation installations from the impact of Initiative 747, the initiative which had previously mandated that property tax revenue increases are limited to one percent per year. Because they are not subject to Initiative 747, the facility is treated as new construction, and tax revenues from wind installations are added to the gross revenues of the county in the first year. After that, the additional revenues are used to lower the millage rates for taxing districts.

There is one further complication to the estimation of increases in tax revenues. The method used to assess the value of wind projects differs, depending upon whether the assessment is made by the Washington State Department of Revenue in Olympia or by the Kittitas County Assessor. Assessments of personal property associated with public utilities that operate across county lines are calculated by the Property Tax Division of the Washington State Department of Revenue, but assessments of equipment of utilities that operate solely within one county are calculated by the county. The methodologies behind the two types of assessments are wholly different; namely, the county assessments are based upon comparable values, whereas the central assessments are based upon income flows. (Conversation on August 18, 2008 with Neil Cook, Washington State Department of Revenue.) According to Klickitat County Assistant Assessor Michael McBride, state assessments have typically ranged from 11% to 15% less than local county assessments.

For purposes of this analysis, we have conservatively assumed that the project would be assessed using the central assessment method. Although we do not have the requisite income data to directly calculate the centrally assessed value, we are able to calculate the locally assessed value

determining O&M impacts, we have conservatively assumed that only 20% of the \$600,000 received by private landowners is spent locally.

and estimate the centrally assessed value. The locally assessed value for each of the first ten years of the capital equipment associated with a wind facility is calculated in Kittitas County as 50% of the initial capital equipment cost. The reason behind the 50% reduction is to account for depreciation over the first ten years¹⁵. The estimation of a value for central assessment was then calculated by reducing the local assessment by 15%. This reflects the most conservative end of the 11%-15% reduction, as explained above. Therefore, we assumed that the total central assessment would be 85 percent of the “completely locally assessed” value.

Tax Districts and Revenues

The DCWPP is comprised of both public and private lands that are parts of differing taxing districts. Accordingly, calculation of tax liabilities requires looking at the jurisdictions of component land parcels and the value of the project in the jurisdictions. Table 5 reports this value of the project by jurisdiction, their mix of millage, and the tax liability per district. We estimate for the first year following construction, all taxing districts will receive combined revenue of \$1,259,236.

Table 5: Estimated Desert Claim Tax Liability

Taxing District	Value of Project in District	Mill Rate	Tax
State Schools	\$155,040,000	\$2.187856	\$339,205
County Current	\$155,040,000	\$0.920835	\$142,766
County Roads	\$155,040,000	\$1.125328	\$174,471
Hospital #1 Levy	\$155,040,000	\$0.001929	\$299
Hospital #1 Bond	\$155,040,000	\$0.250840	\$38,890
Fire #2 Levy	\$77,520,000	\$1.377273	\$106,766
Fire #2			\$107,000 ¹⁶
Ellensburg School #401 Levy	\$146,880,000	\$1.890419	\$277,665
Ellensburg School #401 Bond	\$146,880,000	\$0.424322	\$62,324
Cle Elum/Roslyn School #404 Levy	\$8,160,000	\$0.845079	\$6,896
Cle Elum/Roslyn School #404 Bond	\$8,160,000	\$0.361910	\$2,953
			\$1,259,236

With the exception of the \$339,205 allocated to State schools, the remainder goes to local tax districts. Because of the ownership pattern of the DCWPP lands, the project falls into three different tax codes; two county school districts, Ellensburg and Cle Elum/Roslyn, will receive revenues. Entities funded by voter-approved levies and bonds (shaded in the table) receive fixed funding from the County, therefore these entities would not themselves receive any additional

¹⁵ Conversation with Marsha Weyand, Kittitas County Assessor, August 12, 2008; the Office of the Klickitat County assessor is using the same method. In an August 18, 2008 discussion Assistant Assessor Michael McBride explained that the value of the equipment would be re-assessed after the first ten years.)

¹⁶ Via contract, enXco will make this separate annual payment to cover fire protection of those units which lie outside the normal Fire District #2 boundaries.

funds as a direct consequence of the DCWPP. However, the mill rates for these levies could be reduced and this would benefit County taxpayers.¹⁷ After the first year, barring appreciation or depreciation of the project for tax purposes and assuming the Initiative 747 revenue threshold was not met, the DCWPP would be liable for approximately \$656,442 in taxes for state schools, county roads, and county general funds, plus up to \$602,794 in additional taxes as determined by the aforementioned reduction in mill rates.

III. Qualitative Benefits to Kittitas County's Economy

In addition to the quantitative benefits discussed above, the DCWPP will also result in at least two kinds of qualitative benefits to the Kittitas County economy: the first is the diversification of the economic base, and the second is its impact of retaining agriculture in the county.

As for diversifying the economic base of Kittitas County, the DCWPP will have a positive impact. Kittitas County, like many rural areas, is heavily dependent on a few economic sectors to improve the employment prospects and income of its citizens over time. Sectors that export goods and services to buyers outside the area are especially important because their revenues generate the direct impacts on output, employment, and income presented earlier; these sectors are often referred to as the economic base. When these key sectors are subject to substantial fluctuation caused by atypical weather (e.g., drought events) or changes in overall economic activity in the nation or overseas, they have a magnified impact, through their indirect and induced effects, on the performance of the local economy.

We provide two examples of the importance of a diversified economic base. The production of Kittitas County's primary export crop – timothy hay – suffered during the drought of 1994. The resulting declines in hay exports led to reduction in farmers' incomes and consequently their spending on fertilizer, chemicals and seed from local businesses. It also reduced the amount farmers and their employees spent on retail goods and services within the community further depressing the local economy. Similarly, state budget cuts in the early 1980's and again in the early 1990's forced cutbacks at Central Washington University that negatively impacted the local economy.

Until recently, the two sectors mentioned above, agriculture and state government, dominated the economic base of Kittitas County. Therefore, diversification of the economic base has been a constant theme amongst local government leaders. The Ellensburg Business Development Authority (EBDA) and the Economic Development Group of Kittitas County (EDGKC) are non-profit organizations expressly created to attract and foster the development of new industries and

¹⁷ There may be significant income effects from these tax rate reductions on Kittitas County residents and institutions; however, we do not attempt to estimate these impacts. As an ancillary benefit, voter-funded districts may receive additional funds in the future because funding obligations would be spread over a larger tax basis (i.e., voters may be more likely to approve levies/bonds that have a lesser impact on their personal finances).

business to help diversify the economic base. Significant diversification has occurred through the private sector with the development and construction of the Suncadia resort complex.

The DCWPP and other wind power projects offer additional opportunities to promote diversification of Kittitas County's economy. The jobs created by these industries are especially beneficial because the fluctuations in revenue from wind power production are relatively small and largely independent of economic shocks to other sectors in the County's economic base. Analogous to investing in a diversified portfolio of stocks to reduce changes in the value of a portfolio, the County minimizes the fluctuations in the local economy by decreasing its reliance on a limited number of industries.

Some insight into the likely DCWPP impacts on the Kittitas County economic base can be gained from Table 6, which summarizes non-farm plus covered agricultural employment and employment growth over the previous five years. In 2007, total covered employment in the economy averaged about 15,400 jobs. Summing the sectors that generate the County's exports (i.e. the economic base): agriculture; leisure and hospitality; state and federal government (including CWU); manufacturing; transportation, warehousing, and utilities; and natural resources and mining and construction; yields an estimate of about 8,800 jobs in those sectors. Three sectors, state government, leisure and hospitality, and agriculture, account for about 6,300 jobs or about 71% of this economic base. Note that we purposefully overestimate the size of the economic base – it includes jobs in areas such as construction, transportation, and warehousing that are likely the result of rather than the source of export earnings; therefore, the impacts of the DCWPP on diversification and the size of the base are likely understated. The ongoing operations phase adds 26 jobs or 0.3% to the County's economic base.

Table 6

Kittitas County: Nonfarm plus Covered Agricultural Employment and Job Growth in Major Industries (2002-2007)				
Industry	Annual Avg. Employment in 2002	Annual Avg. Employment in 2007	Job Change	Percent Change
<i>Total</i>	<i>13,313</i>	<i>15,389</i>	<i>2,076</i>	<i>15.6%</i>
Basic Sectors				
Agriculture	683	739	56	8.2%
Natural Resources, Mining, and Construction	680	1,380	700	102.9%
Leisure and Hospitality	1,780	2,240	460	25.8%
State Government	2,850	3,290	440	15.4%
Federal Government	180	160	-20	-11.1%
Manufacturing	630	690	60	9.5%
Transportation, Warehousing, and Utilities	340	310	-30	-8.8%
Subtotal	7,143	8,809	1,666	23.3%
Non-Basic Sectors				
Professional and Business Services	390	490	100	25.6%
Educational and Health Services	1,030	1,090	60	5.8%
Wholesale Trade	520	540	20	3.8%
Local Government	1,940	2,080	140	7.2%
Retail Trade	1,750	1,720	-30	-1.7%
Information and Financial Activities	540	660	120	22.2%
Subtotal	6,170	6,580	410	6.7%

It is also important to underscore that overall economic growth contributes to needed diversity throughout the local economy. For example, as the economic base of an area grows, resident demand for retail trade and services increases. This new demand increases the number and size of the retail stores, banks, insurance agencies, with the local economy. The employment and income generated by the increased activity in these businesses leads to further indirect and induced effects within the local economy. In addition, the increased size and diversification of the non-basic sectors expand the spending linkages within the local economy and the size of the area's employment, earnings, and output multipliers; in short, more money is retained and recirculated locally. An added benefit is that over time, these changes increase the economic impacts of any subsequent economic development within the local economy. Increasing the size and complexity

of the non-basic sectors, or “deepening”, may be especially important to stem the outflow of jobs from smaller areas as the nature of retail trade changes. The growing importance of “big box” stores and internet shopping may make communities with limited retail especially vulnerable to job loss. While such effects are difficult to measure and not the subject of this analysis, it is interesting to note that between 2002 and 2007 that the retail sector in Kittitas County experienced job losses as the economic base grew. These job losses have spurred local government and community members to attract larger and more integrated retail trade companies to the area.

An expanding local economy also increases the attractiveness to firms and industries choosing a location for their operations. The location decisions of firms are not only dependent on the proximity to its markets but also to its suppliers (agglomeration economies) and a trained labor force. As an area grows, the likelihood that the requisite suppliers and trained employees will be present as needed to operate a successful enterprise also increases. Carefully managed growth can also increase the amenities, such as recreational and cultural activities, that attract firm owners and their employees.

The DCWPP will also help to preserve Kittitas County's agricultural base by providing additional lease income to farmers and ranchers while allowing their continued agricultural use of the project properties. The Project's role in preserving Kittitas County's agricultural component to its economic base has both quantitative and qualitative aspects. Agriculture is the historic base of the Kittitas County economy. First, as noted above in Table 6, it is quantitatively the fourth largest employer of the seven basic industries, and the preservation of its direct employment and the associated indirect and induced effects are of course important in itself. However its qualitative importance to the “definition” of the county far exceeds this quantitative impact. That is, the agricultural base, as epitomized by timothy hay production, the Ellensburg Rodeo, and the Kittitas County Fair, is the primary defining characteristic of the valley. The valley is considered to be an attractive place to live and to visit because of this continuing agricultural heritage. As long as the place carries this spirit it will remain far more than merely a low density residential area that is adjunctive to the county's cities and towns. Wind farms in Kittitas County are serving to preserve its spirit of an agricultural base.

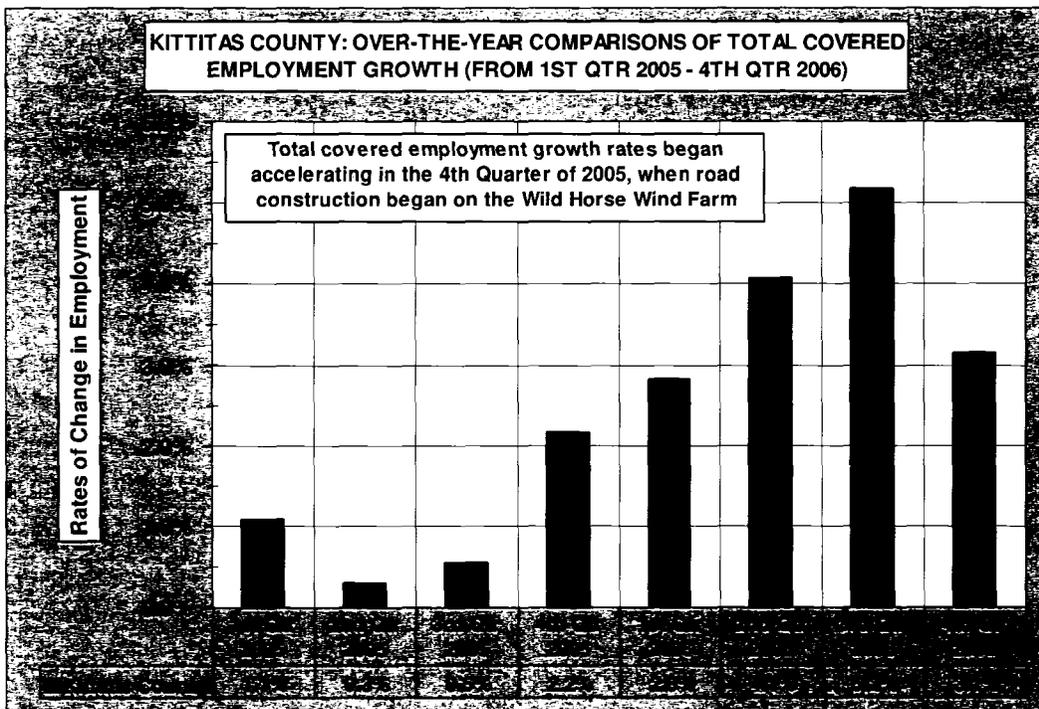
IV. Empirical Impacts of the Wild Horse Wind Power Project on Kittitas County's Economy

To better understand potential impacts of the Desert Claim Wind Power Project on the Kittitas County economy, it will help to look at industries that posted employment gains during the construction phase of the Wild Horse Wind Power Project (WHWPP) in Kittitas County. Road construction began on the WHWPP on October 17, 2005. By August 31, 2006: 116 turbine foundations had been completed; 80 base and mid-tower sections had been erected; and 70 tops,

nacelles, and blades had been installed. The 127-turbine, 229 megawatt facility was commercially on-line by December 2006. Most of the construction occurred during a period encompassing about five quarters.

How did the Kittitas County labor market fare during this five quarter timeframe? One of the best sources of employment information is the Washington State Employment Security Department's Quarterly Census of Employment and Wage (QCEW) data, which is also referred to as "covered" employment and wage data. Covered employment is estimated to exceed 85 percent of total employment in the State of Washington. Total covered employment in Kittitas County increased by 130 jobs in 2005 (from an annual average of 12,490 in 2004; to 12,620 in 2005); by 480 in 2006, to 13,100 jobs; and by another 730 in 2007, to an annual average of 13,830 jobs. The Kittitas County labor market over the past five years has grown faster than the State's. Between 2002 and 2007 Washington's non-farm employment grew 10.5 percent, while Kittitas County's labor market, including covered agricultural employment, increased by 15.6 percent. However, the County's expansion was driven by two industries: state government education (i.e., CWU) and construction. Several economic factors and events come into play when evaluating changes in the local labor economy. Nevertheless, it is apparent that total covered employment growth in Kittitas County began accelerating in the 4th Quarter of 2005 (see Figure 1), the same period that road construction began on the WHWPP.

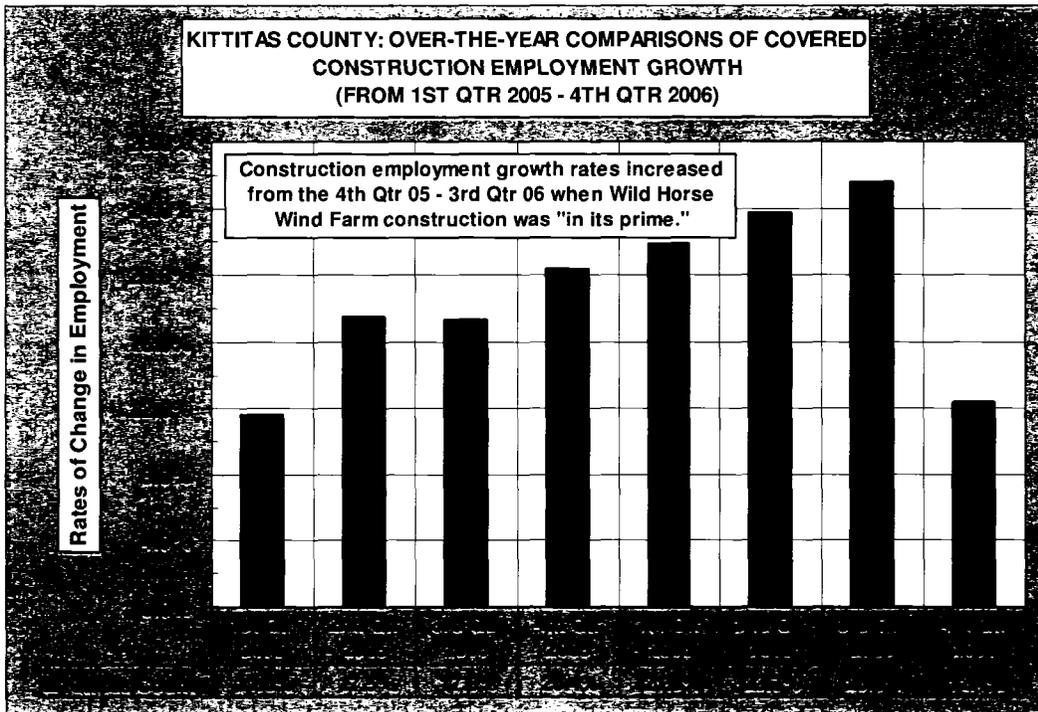
Figure 1



Impacts of WHWPP Construction on the Kittitas County Construction Industry

Construction was one of the industries that showed robust employment growth countywide over the last several years. The two-digit North American Industry Classification System (NAICS) code for construction is 23. This category includes the major subsectors of NAICS 236 (Building Construction), NAICS 237 (Heavy and Civil Engineering), and NAICS 238 (Specialty Trades). In aggregate, the Kittitas County construction businesses added 150 jobs in 2005 (from an annual average of 840 jobs in 2004 to 990 in 2005) and they netted an even more impressive 200 new jobs in 2006, to a new total of 1,190 jobs. However, the growth rate for the local construction industry decreased sharply in 2007 as only 40 new jobs were generated, yielding an annual average employment level of 1,230. Many economic developments were simultaneously occurring in Kittitas County during this period in addition to WHWPP construction. For example: residential construction was booming in Ellensburg and Cle Elum; major buildings were being built on the Central Washington University (CWU) campus, such as the Music Education Building, the new Student Union and Recreation Center, etc.; and golf course and building construction were underway at the Suncadia Resort in Roslyn, WA. But, construction employment growth rates increased from the 4th Quarter 2005 through the 3rd Quarter 2006 – a period when the WHWPP construction was fully underway. For example between the 3rd Quarters of 2005 and 2006 local construction employment jumped from 1,103 jobs to 1,385 jobs, respectively – a substantial 25.6-percent increase (see Figure 2). This is evidence of the positive impact this project had on the local construction industry, and on the Kittitas County economy as a whole. By most estimates the Wild Horse Project accounted for approximately 80 of the new construction jobs generated in the years 2005 and 2006; this is a significant portion of the county-wide growth during the two years.

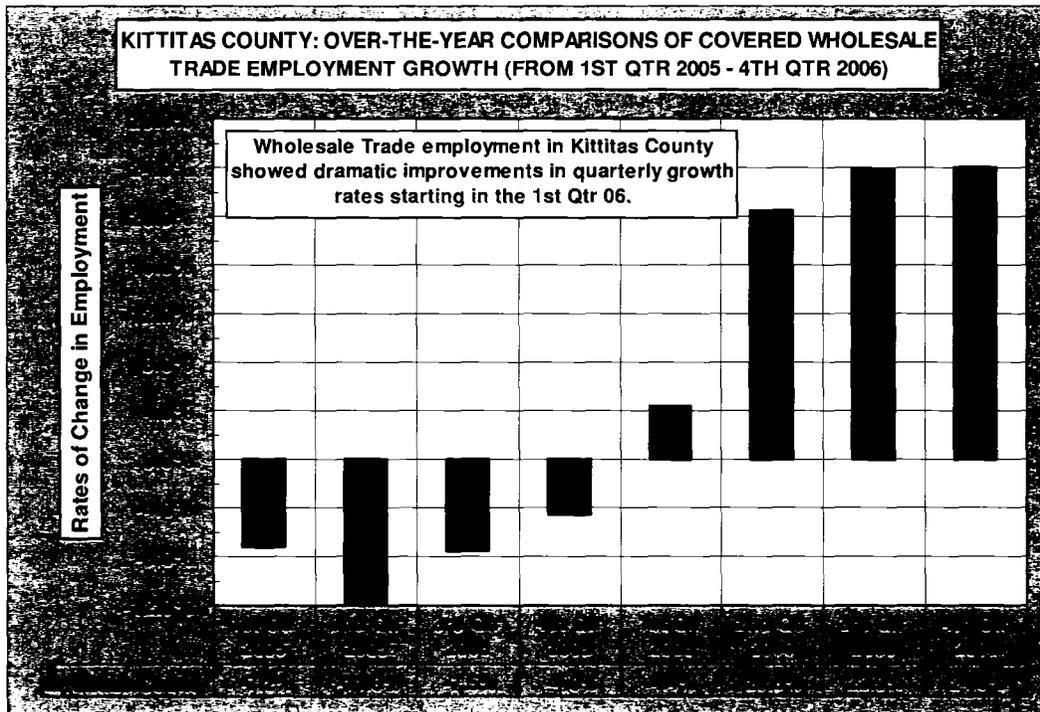
Figure 2



Impacts of WHWPP Construction on the Kittitas County Wholesale Trade Industry

Another, smaller Kittitas County industry that benefited from construction of the WHWPP was Wholesale Trade (NAICS 42). This industry is comprised of Merchant Wholesalers (Non-Durable Goods) or NAICS 424, Merchant Wholesalers (Durable Goods) or NAICS 423, and Electronic Markets and Agents/Brokers or NAICS 425. In Kittitas County, the majority of wholesale trade employment comes from the wholesaling of Timothy Hay (NAICS 424), and employment in this subsector was not influenced by wind farm construction. However, the Wholesale Trade of Durable Goods (i.e., motor vehicle parts; lumber and construction materials; brick stone, and related construction materials; electrical and electronic goods, etc.) helped to push employment in this aggregated Wholesale Trade category upwards. Hence, Wholesale Trade employment in Kittitas County showed dramatic improvements in over-the-year quarterly growth rates starting in the 1st Quarter of 2006. In fact, between the 4th Quarters of 2005 and 2006 local Wholesale Trade employment jumped from 400 jobs to 496 jobs, respectively – a substantial 24.0-percent increase (see Figure 3).

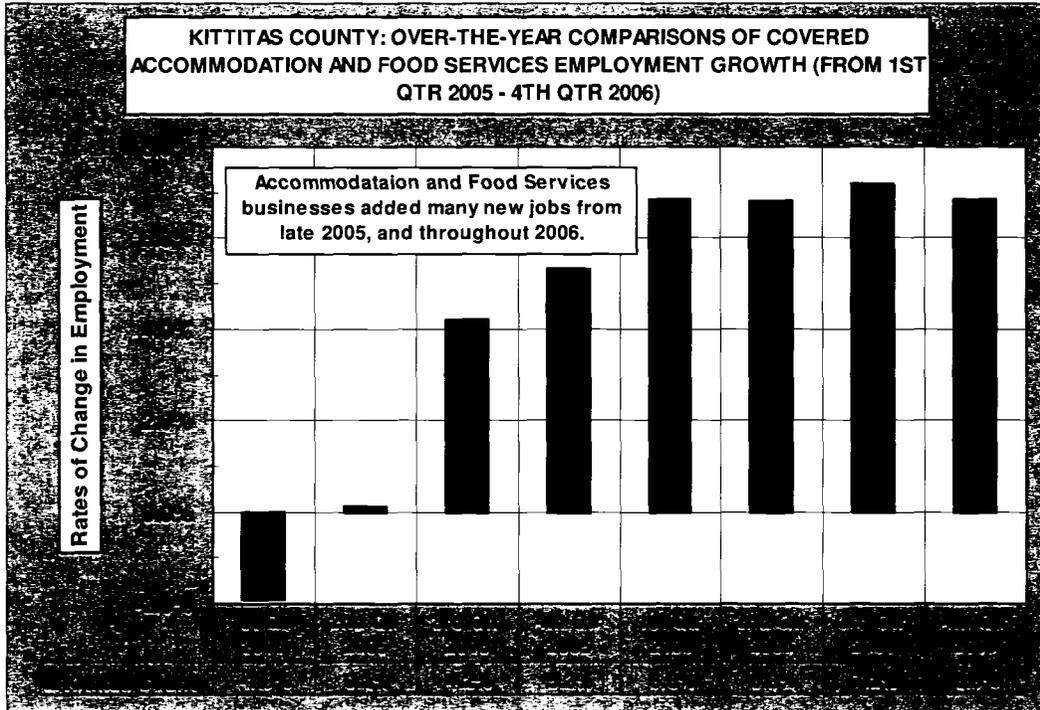
Figure 3



Impacts of WHWPP Construction on the Kittitas County Accommodation and Food Services Industry

The third Kittitas industry that posted substantial job increases during the construction phase of the WHWPP was Accommodation and Food Services. Most of the job growth in this category (NAICS 72) was in restaurants, and to a lesser degree, hotels. This is primarily due to out-of-town construction workers and contractors eating and drinking in local restaurants and taverns, and staying in local hotels and motels. Accommodation and Food Services added many new jobs from late 2005 and into 2006. For example, between the 3rd Quarters of 2005 and 2006 Accommodation and Food Services employment jumped from 1,704 jobs to 1,826 jobs respectively, in Kittitas County – a solid 7.2-percent over-the-year increase (see Figure 4).

Figure 4



Summary of the Empirical Evidence of WHWPP Impacts

To the extent that the WHWPP and the proposed DCWPP are of comparable size and are in close proximity, one would expect similar local impacts from their construction and continued operation. While the evidence provided above is circumstantial, it is consistent with our employment predictions for the DCWPP.

Appendix B: Selected Assumptions Used in I-O Analysis

Sector	Employee Compensation (Earnings)				Employment			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Agriculture	0.21	0.09	0.06	0.35	10.10	3.81	2.62	16.53
Mining	0.02	0.04	0.06	0.11	5.89	1.58	2.60	10.07
Construction	0.14	0.08	0.05	0.27	5.02	3.13	2.43	10.59
Other Manufacturing	0.31	0.06	0.08	0.45	7.71	2.61	3.60	13.91
Fabricated Metals	0.15	0.06	0.04	0.26	5.41	2.45	2.00	9.87
Machinery	0.15	0.05	0.03	0.24	8.91	1.84	1.58	12.33
Electrical Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transportation, Communications, and Private Utilities (TCPU)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wholesale	0.33	0.06	0.07	0.46	8.09	2.50	3.34	13.93
Retail Trade	0.77	0.02	0.12	0.91	16.38	0.59	5.75	22.72
Finance, Insurance, and Real Estate (FIRE)	0.33	0.06	0.07	0.47	17.51	2.75	3.50	23.76
Other Services	0.14	0.05	0.04	0.23	6.57	2.23	2.06	10.86
Professional Services	0.25	0.09	0.09	0.43	9.42	3.99	4.10	17.51
Government	0.31	0.08	0.07	0.46	17.16	3.32	3.53	24.01
Other	0.02	0.02	0.01	0.05	3.50	0.69	0.40	4.58

Sector	Output				Personal Consumption Expenditures (PCE)
	Direct	Indirect	Induced	Total	
Agriculture	1.00	0.39	0.22	1.61	5.797
Mining	1.00	0.13	0.21	1.35	0.017
Construction	1.00	0.22	0.30	1.52	0
Other Manufacturing	1.00	0.25	0.16	1.41	204.366
Fabricated Metals	1.00	0.19	0.13	1.32	0
Machinery	0.00	0.00	0.00	0.00	0.137
Electrical Equipment	0.00	0.00	0.00	0.00	0.0972
Transportation, Communications, and Private Utilities (TCPU)	1.00	0.30	0.20	1.50	68.162
Wholesale	1.00	0.21	0.28	1.48	42.296
Retail Trade	1.00	0.23	0.29	1.52	117.645
Finance, Insurance, and Real Estate (FIRE)	1.00	0.22	0.17	1.39	108.447
Other Services	1.00	0.28	0.29	1.57	314.138
Professional Services	1.00	0.32	0.34	1.66	9.103
Government	1.00	0.06	0.47	1.53	10.443
Other	1.00	0.06	0.03	1.10	

Appendix C: References

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