

The Economic Impact of the Installation and Operation of Wind Energy Towers on the Huerfano County Economy.

**Submitted to
John Galusha, County Administrator,
Huerfano County,
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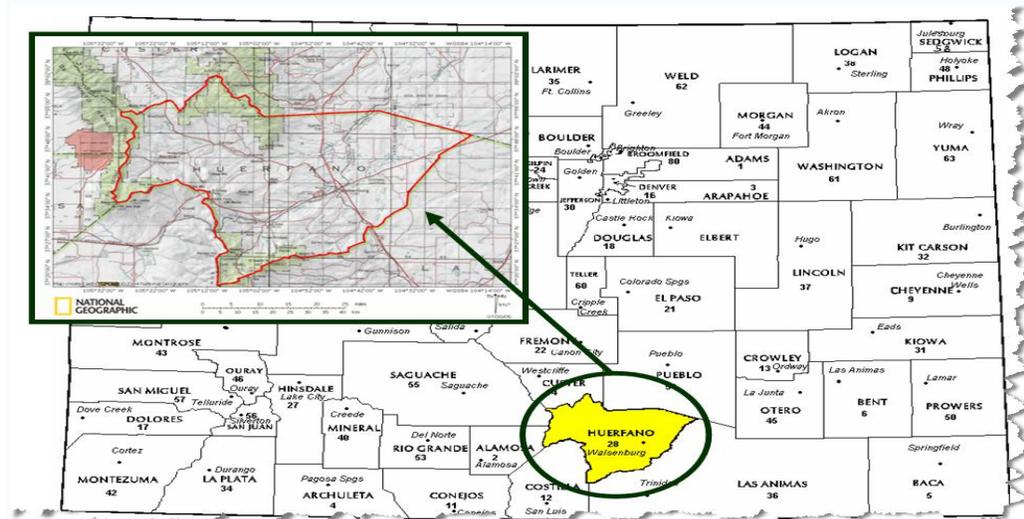
Executive Summary

The economic impact of the Pole Canyon Wind project on the Huerfano County economy has been divided into two components; 1) the impact of the construction of 150 wind energy towers, and 2) the impact of the ongoing operation of the wind towers and the rent paid to landowners. The results of this study indicate that:

- The initial construction of the wind towers will add \$5.9 million to the Huerfano County economy. This impact can also be viewed in terms of local job creation, or in terms of local tax generation. For example, construction activity will create approximately 58 jobs and approximately \$54,000 in local taxes (\$21,000 in city/county sales taxes and \$33,000 in local property taxes). These data can be used to provide an estimated economic impact per tower built. For example, each tower adds approximately \$40,000 to the local economy (\$5.9 million/150 towers). Similarly, each tower adds approximately \$360 to local sales and property tax revenue. Or, one more job is created locally when three more towers are built. It is important to keep in mind that this impact is based on the percent of construction that will be done by Huerfano County resident workers. We do not measure the impact of all construction since construction workers from outside the county will complete some work. In this way, we more precisely capture the impact of wind tower construction on Huerfano County.
- The impact of the ongoing operation of the wind energy towers and the rent paid to area landowners will add \$4.2 million annually to the Huerfano County economy. This impact may also be presented in terms of additional jobs and taxes. For example, ongoing activity will support 14 more local jobs and contribute approximately \$268,000 to local taxes (\$104,000 in city/county sales tax and \$164,000 in property taxes). These data can be used to estimate the yearly economic impact of operating each wind tower in the county. For example, the operation of each tower adds \$28,000 to the local economy (\$4.2 million/150). Similarly, the operation of each tower adds approximately \$1,800 to local sales and property taxes. Or, the operation of 10 towers supports one more local job.
- If you have any questions about the specifics of the report, please contact Professor Kevin Duncan (719.549.2228 or, kevin.duncan@colostate-pueblo.edu)

Background of Huerfano County

Huerfano County is one of the famously picturesque counties in Colorado. Geographically it is located in the south central Colorado Mountains region. The Sangre de Cristo Mountains, the Wet Mountains, and the Spanish Peaks surround it. The county was established in 1861 and named after the Huerfano River (which was named for Huerfano Butte). The place is full of natural attractions like San Isabel National forest, Great Sand Dunes National Park, the Great Dikes of Spanish Peaks, the Wet Mountains, California Peak, Mt. Mesta and Sierra Blanca. The average monthly temperature varies from 33.6 degrees in January to 83 degrees in July. The county elevation is 6,600 and has average annual precipitation of 14 inches. There are over 300 days of sunshine each year. The pollution-free Huerfano County also has a windy atmosphere.



The area of 1,593 square miles is filled with 7,837 people according to the U.S. census Bureau's 2007 estimated population data. The Huerfano and Cuchara rivers occupy nearly 2 square miles. La Veta, Walsenburg, Cuchara, and Gardner can be summarized as the four major population centers in Huerfano County. Walsenburg is the County seat and is located at the

intersections of Interstate 25, Highway 160, Highway 69 and Colorado 10.

Huerfano County occupies 1,590.87 square miles land of Colorado and has got only 4.94 people per square mile. The population grew by 19.3% between 1996 and 2006. The unemployment rate is 6.1% in 2008, and 4.9% in 2007. According to the U.S. 2000, 16.1% of the population holds a bachelors degree. The poverty rate in 2005 was 22.8 and the per capita personal Income was \$21,353 in 2006. The median household income was \$28,334 in 2005. According to the industry overview in 2007, the total employment was 2,022 and the average wage for a job in a year is about \$20,164 in 2007. The percentage of manufacturing jobs in the county is 5.6% with 0.7% in transportation and warehousing and 1.6% in finance and insurance. Fourteen percent of county jobs are related to agriculture and 9% are related to tourism.

Demographic Data of Huerfano County

Population (2007)	7,837
Number of persons per square mile	4.94
Percent with Bachelor Degree or Higher (2000)	16.1%
Unemployment Rate (2008)	6.1%
Per Capita Income (2006)	\$21,353
Median Household Income	\$28,334
Poverty Rate	22.8

Background of Wind Energy Industry

Wind energy is another form of solar energy that humans have been using for thousands of years. Four thousand years ago wind energy was used to carry ships across oceans. Wind has been used to grind grain and people have also used wind energy to pump water from wells for cattle and generate electricity at the farmhouse. Wind turbines have provided an important source of power for rural homes in some countries. In 1930s, the wind energy process was replaced with fossil fuels and large hydroelectric projects. Since the wind generation equipment is efficient and

highly reliable, the operation cost is cheaper than coal or hydropower generation. The wind industry became one of the fastest growing industries with the development of wind power in Germany, Canada, Denmark and the United States during 1973-1986.

Installed Wind Power as of December, 2006

Country	Megawatts
Germany	20,621
Spain	11,615
United States	11,603
India	6,270
Denmark	3,136

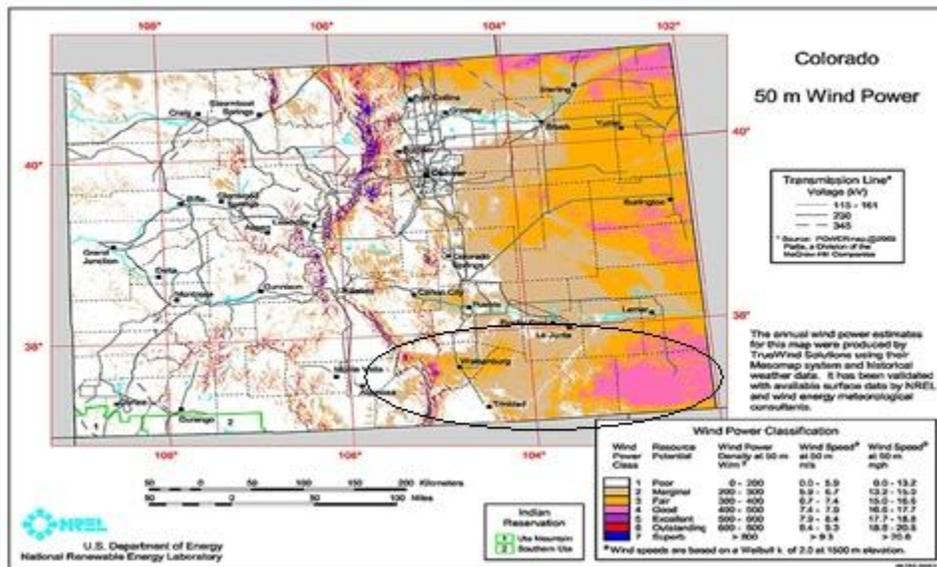
As the data collected at the end of 2006 indicate, Germany has the largest installed wind capacity in the world and followed by Spain, the United States, India and Denmark. More than 300,000 people are currently employed in the global wind industry and it has a 25% growth rate in the past few years. Almost 50 countries are operating the 75,000 megawatts of wind turbines and they generate more than 1% of the electricity used worldwide. Additionally, approximately 150 million tons of carbon dioxide are not released into the atmosphere due to wind generation.

Background of Colorado

Colorado has incredible and great wind resources. In 1998, Public Service Company served 100 kilowatt-hours of electricity (with an average 600 kilowatt-hours of electricity provide per month). According to a Pacific Northwest Laboratory study, Colorado's winds can generate 481 billion kilowatt – hours of electricity annually, which can provide enough power to the entire state for long time. Now, Colorado is going to be one of the nation's leading suppliers

of this valuable and efficient energy source. The biggest wind farm in Colorado, and one of the largest in the nation, is located on a cattle ranch in the southeastern Colorado. The wind turbines near Lamar, Colorado, are part of the 162-MW Colorado Green Wind Farm. Each turbine produces 1.5 megawatts of electricity.

In the figure below clearly shows the windiest parts of Colorado are around the region of Huerfano County. The areas that are shaded pink are the regions that are ideal locations for the wind farm.



Pole Canyon Wind LLC

The office of Pole Canyon is in Denver. In April 2008, Pole Canyon Wind LLC received a feasibility permit from Huerfano County to add three 60-meter wind-monitoring towers to the two 30-meter towers already in place on the 5,820-acre site west of town and north of Colorado 69. We will estimate the impact of the construction and operation of 150 towers in the County.

Economic Impact on Huerfano County

The wind towers that will be built within the next 2 to 3 years in Huerfano County will help the local economy of the county. It will provide new sources of short-term employment during the construction phase. Long-term employment associated with the operation of the facilities will increase income in the county as well. In order to determine economic impact of Huerfano wind towers, it is important to calculate the county multiplier and initial and ongoing impact of construction of the towers. As Dr. Duncan's recommended, the Input-Output Model for Planning (IMPLAN) is the preferred model to use in Huerfano wind farm economic analysis.

John Galusha, Huerfano County Administrator, provided data for the project. It is estimated that 20 to 30 percent of the 150-200 construction workers involved in the initial phase will reside in the county. We assume that county residents will hold 45 of these jobs. Once the construction is completed, 8 people will be hired to operate/maintain the facilities and rent (\$4,000 per tower) will be paid to area landowners.

Employment and Output Impact during Construction

	Direct	Indirect	Induced	Total
Employment Impact	45	5.3	7.7	58
Output Impact	\$4,720,627	\$480,655	\$725,369	\$5,926,650

As the above table explains, 45 construction jobs will support 13 additional jobs in the county during the construction phase of the project. Similarly, the local impact of the construction phase will be \$5,926,65. Indirect effects are due to the effect of initial construction on local suppliers. The induced effect is due to the additional spending by local households who experience increases in income associated with construction.

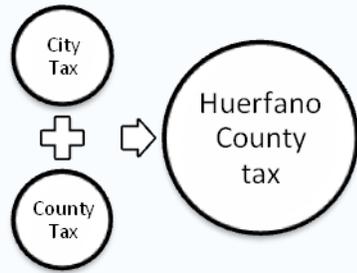
Ongoing Employment and Output Impact

	Direct	Indirect	Induced	Total
Employment Impact	8	3.3	2.8	14.1
Output Impact	\$3,545,897	\$419,966	\$262,937	\$4,228,800

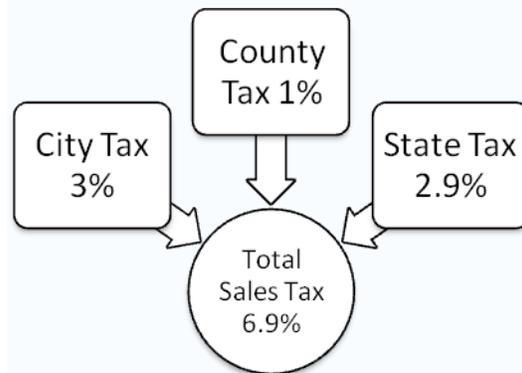
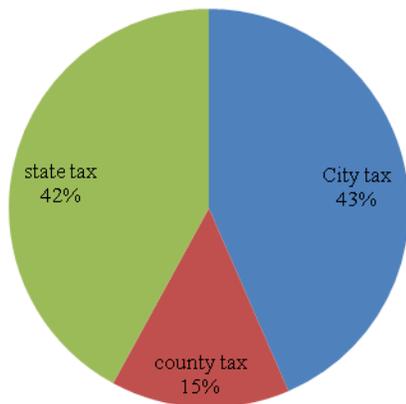
The ongoing impact is based on 8 employees and \$600,000 in rent (\$4,000 per tower for 150 towers). According to the table above, 8 support an additional 6.1 local jobs. The monetary equivalent of the 8 jobs is \$3,545,897. The total effect of this is \$4,228,800.

Tax Impact

The total sales tax rate of Huerfano County is 6.9%. Huerfano County charges 3% and the city tax is 1%. The diagram below indicates the division of the total sales tax in the county.



Total sales Tax



During Construction

Total Sales Tax rate	6.9%	Indirect Business Taxes		\$36,566
City Tax	3%	Total Huerfano County Tax	58%	\$21,208.28
County Tax	1%			
State Tax	2.9%	State Tax	42%	\$15,357.72
		Total Property Tax		\$32,675

The county and city tax makes up to 58% of the total sales tax. During the construction phase \$21,208.28 will stay in the county. The rest (42%, or \$15,357) of sales taxes will go to the state. The property tax of the county will be \$32,675.

Ongoing

Total Sales Tax rate	6.9%	Indirect Business Taxes		\$179,319
City Tax	3%	Total Huerfano County Tax	58%	\$104,005.02
County Tax	1%			
State Tax	2.9%	State Tax	42%	\$75,313.98
		Total Property Tax		\$160,235

The ongoing tax impact has a large impact on Huerfano County. Based on the method described above, \$104,005.02 will stay to the Huerfano County. The state will receive \$75,313.9. Additionally, the increase in property tax will be \$160,235.

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