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ECONOMIC DEVELOPMENT IMPACTS OF WIND POWER — SUMMARY OF CASE STUDY RESULTS

Brief

> *"NEA's work for NWCC to identify economic benefits from Lincoln County's wind development provided a good start on quantifying these impacts. Their general methodology captures a number of the primary impacts, but actually understated the benefits. A more in-depth study would uncover additional benefits that are evident to those close to the local communities."*
>
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INTRODUCTION

Interest in wind power development is growing as a means of expanding local economies. Such development holds promise as a provider of short-term employment during facility construction and long-term employment from ongoing facility operation and maintenance (O&M). It may also add to the supply of electric power in the area and support some expansion of the local economy through ripple effects resulting from initial increases in jobs and income.

These ripple effects stem from subsequent expenditures for goods and services made possible by first-round income from the development, and are expressed in terms of a ***multiplier***. If the local economy offers a wide range of goods and services the resulting multiplier can be substantial – as much as three or four. If not, then much of the initial income will leave the local economy to buy goods and services from elsewhere. Loss of initial income to other locales is referred to as a ***leakage***.

While there is a growing body of information about the local impacts of wind power, the economic impacts from existing wind power projects have not been thoroughly and consistently analyzed. Northwest Economic Associates (NEA), under contract to the National Wind Coordinating Committee (NWCC) conducted a study and produced a report entitled "Assessing the Economic Development Impacts of Wind Power." The primary objective of the study was to provide examples of appropriate analysis and documentation of economic impacts from wind power development, using case studies of three existing projects in the United States. The findings from the case studies are summarized in this brief. More detail is available in the report, available on the website www.nationalwind.org. A companion brief summarizing the methodology used by NEA is also available on the NWCC's website.

It should be noted that specific results presented here apply only to the respective locales studied and are not meant to be representative of wind power in general. However, the qualitative findings, discussed below, are likely to be replicated in most areas where wind development occurs.

CASE STUDY OVERVIEW

The three case study areas are Lincoln County, Minnesota; Morrow and Umatilla counties, Oregon; and Culberson County, Texas. In Lincoln County, research focused on the 107 megawatt (MW) Lake Benton I wind plant, which began operation in 1998. In Morrow and Umatilla counties, the 25 MW Vansycle Ridge project, which began operating in 1998, was analyzed. For Culberson County, research focused on the 30 MW Delaware Mountain project, placed in operation in 1999. The three case study areas were chosen to reflect a range of geographic and economic conditions in rural America where suitable conditions exist for wind power development. As such, they share some common characteristics that result in

similar experiences among them. The range of conditions also led to differences in their experiences.

Overall, the three case study areas experienced positive economic impacts from the development of wind power facilities in their communities. These impacts ranged from modest impacts on jobs to more significant impacts such as increased revenue in the form of tax payments by developers. In general, the research illustrates the following:

- Wind development can provide a modest boost to local economic activity.
- New jobs are created by wind development activity. Some short-term jobs are created by construction, while longer-term jobs are generated by ongoing operation and maintenance needs.
- Several beneficial tax effects occur from wind power development, positively impacting local government revenue – unless precluded by state or local policy.
- Land-leasing revenues may significantly increase household incomes.

CASE STUDY RESULTS SUMMARY

The results obtained for the three case studies – based primarily on 1998 IMPLAN data for the counties addressed – are outlined in the following three tables. Again, results will not transfer directly to other locations. Detailed discussions of these results and related background information are included in the complete report.

Table 1 provides an economic snapshot of each county studied. Information presented includes total population, number of jobs (expressed in full-time equivalents), total annual earnings of those employed, rate of un-employment (as a fraction of eligible workers), per capita income (from all sources), and the fraction of the county's population living below the nationally determined poverty level.

Table 1: County Economic Snapshot (1998)

County	Lincoln	Culberson	Morrow	Umatilla
Population	6,429	2,975	10,995	70,548
Jobs	3,523	1,565	5,344	39,267
Employee Earnings	$62.9M	$33.4M	$114.4M	$970.0M
Unemployment Rate	3.5%	10.2%	12.0%	6.4%
Per Capita	$19,935	$14,803	$16,841	$22,024
Rate Below Poverty Level	12%	32.6%	7.0%	15.6%

Table 2 summarizes quantitative results related to the three wind projects. Aggregate personal income is shown for the construction phase (usually less than one year), and as annual amounts for the O&M phase. Local employment figures are also presented for the two phases. The O&M jobs are expected to continue through the life of the project. Also shown are annual property tax payments from the wind plant and annual payments to landowners hosting the wind turbines.

Table 2: Economic Development Impacts

County	Lincoln	Culberson	Morrow	Umatilla
Wind Plant	*107 MW*	*30 MW*	*<----25 MW (shared)---->*	
Personal Income ($)				
Construction	98,400	391,300	105,400	
O&M	909,200	346,100	103,600	
Employment (jobs)				
Construction	8	26	4	
O&M	31	11	6	
Taxes (annual $)				
O&M only	611,200	387,300	241,580	
Landowner Revenues (annual $)				
O&M only	501,125	51,000	64,300	

Table 3 presents the Table 2 information on a relative basis normalized to the wind-plant size. Care should be taken in applying these numbers, since results at any location are unlikely to scale in proportion to project size. Nonetheless, the relative numbers provide some insight into the range of impacts that might be expected from a new wind plant. They also show that relative impacts can vary substantially from one location to another.

Table 3: Relative Economic Development Impacts

County	Lincoln	Culberson	Morrow Umatilla
Wind Plant	***107 MW***	***30 MW***	***<----25 MW (shared)---->***
Personal Income ($/MW)			
Construction	920	13,040	4,220
O&M	8,500	11,540	4,140
Employment (jobs/MW)			
Construction	0.08	0.87	0.16
O&M	0.29	0.37	0.24
Taxes (annual$/MW)			
O&M only	5,710	12,910	9,660
Landowner Revenues (annual $/MW)			
O&M only	4,680	1,700	2,570

COMMON ECONOMIC EXPERIENCES

- A modest to moderate boost in economic activity was attributable to the construction phase of these projects. The areas also benefit from continuing O&M activities, with the amount directly related to both the size of the development and the presence of other wind projects in the area. These cumulative effects of multiple projects (previous or planned) can be important in the decision of developers to perform O&M with a local rather than an outside workforce.
- Tax effects, particularly property taxes that support local entities, were important in all cases. The assessed value of the tax base increases as a result of the development, causing a redistribution of the tax burden as other local taxpayers pay less tax than they otherwise would. This increase in household income, in an amount equal to the taxes paid by the project owner, directly affects the local trade and services sector and, to a lesser extent, other local economic sectors.
- The annual revenue received by landowners was a significant source of household income and had a significant total effect on the local economies.
- The counties had less-diversified, natural resource based economies, so comparatively few economic sectors were represented, leading to low sector multipliers and high leakages of direct expenditures to economies outside the local area.
- The wind power projects had few links to existing sectors in the local economies from O&M activities, except for households, which provide labor, and a few purchased supplies. This implies that long-term local effects will occur primarily in the trade and services sectors, where household incomes are spent.
- Owners from outside the study area provided all capital investment for the case study projects. The annual income generated by the capital investment therefore leaves the local area.

MAJOR DIFFERENCES

- Rates of economic expansion varied among the case study areas. Wind power development proved to be relatively more important to the two counties with depressed economies.
- The case study areas differed in diversification, affecting the size of multipliers and the amount of leakage that occurs with new investments.
- The presence of local accommodations varied, which affects the extent to which expenditures from non-resident workers could be captured.
- Tax policies differed among the areas, affecting their ability to capture benefits.

The differences reflect whether taxing authorities charge wind projects based on production value or as depreciating real property.

Broad General Conclusions

Economic benefits from wind power development will vary quantitatively from region to region, depending on a number of factors as discussed above. However the findings of these case studies strongly indicate that wind development will in general have at least these three impacts:

- New jobs will be created, in both the construction and the O&M phases.
- New tax revenues will be injected into the local economy, unless precluded by state or local policy.
- New household income will be generated from lease payments tied to wind energy production, assuming landowners and the developer have entered into an appropriate agreement.

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