

The Economic and Fiscal Benefits of the Cross Winds[®] Energy Park Phase II


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Prepared for:



Prepared By:





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Development Research Partners

Patricia Silverstein, President & Chief Economist

David Hansen, Senior Economist

10184 West Belleview Avenue, Suite 100

Littleton, Colorado 80127

www.DevelopmentResearch.net

303.991.0070

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The Cross Winds® Energy Park is a wind park located in the Akron and Columbia Townships of Tuscola County in the Thumb Area of Michigan. The facility began commercial operation in late 2014. Consumers Energy proposes to expand Cross Winds® Energy Park by constructing up to two additional phases, Phase II consisting of 44 megawatts (MWs) and Phase III consisting of 76 MWs. This report details the expected benefits of the Phase II expansion, which is projected to commence construction as early as December 2016.

Renewable energy investments in Michigan have created significant benefits in the state in the past few years. Wind investments have attracted millions of dollars of investment in the state, helped the state meet clean energy goals, created jobs and benefits for landowners, and provided millions in tax revenue for state and local governments. The planned expansion of the wind farm will generate additional economic and fiscal benefits for the communities, regional economy, and the state. The intent of this study is to analyze the economic and fiscal benefits associated with the proposed construction and operations of Phase II of the Cross Winds® Energy Park.

This analysis estimated the benefits of the Phase II expansion on three geographic levels: the state of Michigan, the Greater Thumb region, and Tuscola County. The Greater Thumb region is defined in this study as a seven-county region consisting of Bay, Genesee, Huron, Lapeer, Saginaw, Sanilac, and Tuscola Counties. The economic benefits in the three geographic areas described in this report are individual, non-additive impacts. Thus, the economic benefits estimated from this study should specify the particular geography when reported.

CONSTRUCTION BENEFITS

The Phase II expansion will cost an estimated \$86 million including major equipment, turbines, materials, engineering, and labor. In addition to construction spending, each study area will benefit from workers that will be required to travel to the site from outside of the Greater Thumb region and Michigan. These workers are referred to as transitory workers. These employees are expected to benefit each of the study regions during the course of the project through their lodging, food, entertainment, and other goods and services expenditures.

Construction benefits are temporary benefits, occurring only during the construction period. The following values reflect the total benefits over the construction period.

Michigan

- The direct economic benefit during the construction of Phase II of Cross Winds® Energy Park and transitory worker spending in Michigan will be an estimated \$22.5 million produced by 22 FTE workers earning \$2.4 million. This activity will support an estimated \$25.9 million in additional output in all industries throughout the state. The production of the \$25.9 million in additional output will require about 18 indirect workers. These workers will have associated earnings of \$1.6 million. All earnings values are included in the total value of output; earnings are not in addition to the value of output.

Combined, the construction of Phase II of the Cross Winds® Energy Park expansion will generate direct and indirect output in Michigan of \$48.4 million produced by 40 workers earning \$4 million during the construction period.

In addition, the direct fiscal benefit in Michigan over the construction period will be \$10,000 in sales and lodging tax revenue.

Greater Thumb Region

- The direct economic benefit during the construction of Phase II of Cross Winds® Energy Park and transitory worker spending in the Greater Thumb region will be an estimated \$11.2 million produced by 16 FTE workers

earning \$1.6 million. This activity will support an estimated \$6.8 million in additional output in all industries throughout the region. The production of the \$6.8 million in additional output will require about eight indirect workers. These workers will have associated earnings of \$657,000.

Combined, the construction of Phase II of the Cross Winds® Energy Park expansion will generate direct and indirect output in the Greater Thumb region of \$18 million produced by 24 workers earning \$2.2 million during the construction period.

Tuscola County

- The direct economic benefit during the construction of Phase II of Cross Winds® Energy Park and transitory worker spending in Tuscola County will be an estimated \$5.6 million produced by one FTE worker earning \$132,000. This activity will support an estimated \$1.4 million in additional output in all industries throughout the county. The production of the \$1.4 million in additional output will require about one indirect worker with associated earnings of \$24,000.

Combined, the construction of Phase II of the Cross Winds® Energy Park expansion will generate direct and indirect output in Tuscola County of \$7 million produced by two workers earning \$156,000 during the construction period.

ON-GOING OPERATIONS BENEFITS

Phase II of the Cross Winds® Energy Park is projected to commence operations by 2018. The impacts of on-going operations for this analysis were based on projected average annual operational costs for Phase II over the first 20 years of the energy park. It should be noted that operating expenses are likely to vary from year to year. Further analysis of these shifting variables is discussed in this study where applicable to recognize the benefits that can be expected on average. Average annual operational expenditures for Phase II of the Cross Winds® Energy Park will total an estimated \$1.7 million each year.

Michigan

- The direct economic benefit of average annual operations of Phase II of the Cross Winds® Energy Park expansion in Michigan will be an estimated \$1.7 million produced by two workers earning \$191,000. The operating activity will support an estimated \$0.9 million of additional output in all industries throughout the state. The production of the \$0.9 million in additional output will require an estimated seven workers. These workers will have associated earnings of \$213,000. All earnings values are included in the total value of output; earnings are not in addition to the value of output.

Combined, average annual operations of Phase II of the Cross Winds® Energy Park expansion will generate an estimated \$2.6 million in direct and indirect output in Michigan each year produced by nine workers earning \$404,000.

Greater Thumb Region

- The direct economic benefit of average annual operations of Phase II of the Cross Winds® Energy Park expansion in the Greater Thumb region will be an estimated \$1.7 million produced by two workers earning \$191,000. The operating activity will support an estimated \$0.5 million of additional output in all industries throughout the region. The production of the \$0.5 million in additional output will require an estimated four workers. These workers will have associated earnings of \$116,000.

Combined, average annual operations of Phase II of the Cross Winds® Energy Park expansion will generate an estimated \$2.2 million in direct and indirect output in the Greater Thumb region each year produced by six workers earning \$307,000.

Tuscola County

- The direct economic benefit of average annual operations of Phase II of the Cross Winds® Energy Park expansion in Tuscola County will be an estimated \$1.7 million produced by two workers earning \$178,000. The operating activity will support an estimated \$0.3 million of additional output in all industries throughout the county. The production of the \$0.3 million in additional output will require an estimated two workers. These workers will have associated earnings of \$63,000.

Combined, average annual operations of Phase II of the Cross Winds® Energy Park expansion will generate an estimated \$2 million in direct and indirect output in Tuscola County each year produced by four workers earning \$241,000.

In addition, the direct fiscal benefit will average \$150,000 each year in county property tax.

FISCAL BENEFIT OF PROPERTY TAX REVENUE

- Consumers Energy is one of the largest property tax payers in Tuscola County. Property tax revenue over the first 20 years of the Phase II expansion will total an estimated \$9.4 million, or an average of \$471,000 annually. This revenue will benefit several tax districts that serve Tuscola County residents including an annual average of \$150,000 for the county, \$129,000 for the Columbia Township including the township administrative fee, \$83,000 for the Intermediate School District, \$93,000 for local school districts excluding the operating levy, and \$16,000 for the local library district.

The Cross Winds® Energy Park is a 62-turbine wind park located in the Akron and Columbia Townships of Tuscola County in the Thumb Area of Michigan. The facility began commercial operation in late 2014. Consumers Energy proposes to expand Cross Winds® Energy Park by constructing up to two additional phases, Phase II consisting of 44 megawatts (MWs) and Phase III consisting of 76 MWs. This report details the expected benefits of the Phase II expansion, which is projected to commence construction as early as December 2016. The potential benefits of the proposed Phase III were not analyzed for this report.

Renewable energy investments in Michigan have created significant benefits in the state in the past few years. Wind investments have attracted millions of dollars of investment in the state, helped the state meet clean energy goals, created jobs and benefits for landowners, and provided millions in tax revenue for state and local governments. The planned expansion of the wind farm will generate additional economic and fiscal benefits for the communities, regional economy, and the state. The intent of this study is to analyze the economic and fiscal benefits associated with the proposed construction and operations of Phase II of the Cross Winds® Energy Park.

RENEWABLE ENERGY IN MICHIGAN

The price of wind energy continues to decline nationwide, becoming a cost competitive source of energy when levelized costs¹ are considered. Based on surveys, the average levelized cost of wind has declined over 56 percent from 2009 to 2014. According to a recent release from the American Wind Energy Association, more wind capacity was installed in 2015 than any other electric-generating technology, including natural gas. Clearly, wind energy has become an increasingly important way for states to meet demand for new capacity and has become an integral part of a reliable and diversified energy system.

Wind is a critical component of Michigan's clean energy economy. Wind facilities contribute significantly toward Michigan's Renewable Portfolio Standard. Net generation from wind energy has increased by an annualized rate of 68 percent each year from 2010 to 2015, increasing from about 360 MW to nearly 4,780 MW. Michigan produces the 12th-most wind electricity among the states as of 2015. As wind has increased, the share of the state's net generation from renewable sources has increased from 3.3 percent to 7.7 percent in 2014. The state is now ranked among the top cleantech leaders according to the Cleantech Leadership Index, ranking 14th in the 2016 index.

By investing in wind energy, Consumers Energy upholds its commitment to provide a balanced use of energy resources and support the state's efforts to integrate renewable energy sources into the energy system. Wind power infrastructure contributes to cleaner air in Michigan and brings millions of dollars in investment into the state.

ECONOMIC AND FISCAL BENEFITS DEFINED

Economic Benefits

Economic impact analysis is the analytical approach used to assess the measurable direct and indirect benefits resulting from a project over a specific period. Only those benefits that can be measured or quantified are included. Intangible benefits, such as enhancement of community character or diversification of the job base, are not included. Further, economic impact analysis highlights that activity which occurs within a specified geographic

¹ Levelized cost measures competitiveness of different generating technologies from initial investment through operations and maintenance. Cost represents unsubsidized cost. Reference the U.S. Department of Energy, Energy Information Administration.

area. This analysis estimates the benefits of the expansion of the Cross Winds® Energy Park on three geographic levels consisting of the state of Michigan, the Greater Thumb region, and Tuscola County.

The spending patterns associated with investment and business operations have spin-off effects or multiplicative impacts in the county, region, and state. Therefore, multiplier analysis is used to trace the impacts on businesses, organizations, and individuals affected by the construction activity and on-going operations.

The multiplicative impacts are discussed in terms of “indirect” and “induced” economic benefits (often collectively referred to as simply indirect benefits). For example, when Consumers Energy purchases supplies from a local vendor, that local vendor provides payroll to its employees and makes purchases from other vendors. These other vendors in turn provide payroll to their employees, and so on, providing the indirect benefit of the initial dollar spent. On a separate but similar spending track, when Consumers Energy employees working at Cross Winds® spend their paychecks at local businesses, these local businesses provide payroll to their employees, make purchases from other vendors, and so on, creating the induced benefit.

As a result, the initial dollars spent by Consumers Energy for construction, business purchases, and employee compensation will be circulated throughout the local economy a number of times. The number of times that the initial dollars are circulated throughout the local economy may be estimated using economic multipliers. An economic multiplier summarizes the total impact that can be expected within a specific geographic area due to a given industry’s level of business activity. Generally, larger multipliers are associated with industries that (1) spend more dollars locally, (2) pay high salaries, and/or (3) sell their goods and services outside of the local area.

The indirect and induced jobs and income flows generated by the direct local spending patterns are estimated using the Regional Input-Output Modeling System II (RIMS II) multipliers developed by the Bureau of Economic Analysis of the U.S. Department of Commerce. The RIMS II multipliers are the most widely used and respected for economic impact analysis. These multipliers are geographic and industry specific, and are used to estimate the total benefits of a project.

Three types of economic benefits are derived from the RIMS II multipliers. First, the direct and indirect impact of the energy park on the gross output of the region is estimated. This is the total value produced by local firms and residents resulting from the value of the output produced by the industry directly. Gross output consists of the value of both intermediate goods and final products, so this is a larger value than gross domestic product (GDP). Second, the total direct and indirect employment needed in the region to produce this level of output is determined. These employees may be full-time or part-time, local or non-local workers. Further, the indirect employment supported might represent fractions of jobs, added to reflect whole positions. Third, the analysis presents an estimate for the typical direct and indirect earnings associated with this level of production.

Fiscal Benefits

Fiscal impact analysis estimates the direct public revenues and public costs resulting from a project over a specific time period. A project may generate a broad array of public revenues ranging from sales tax, use tax, property tax, franchise fees, licenses and permits, other charges for services, and governmental transfers. In turn, state and local governments and special districts provide a variety of public services such as police and fire protection, public works, community social and recreational programs, education, and water and sanitation services, to name a few.

A comprehensive fiscal impact analysis includes estimates for all sources of public revenues and service costs for the governmental taxing entities serving the area or project being analyzed. A comprehensive fiscal impact analysis is beyond the scope of this project. Rather, this report only includes estimates of direct public revenue generated from sales tax, lodging tax, and property tax related to Cross Winds® Energy Park’s construction activity and typical annual business operations. The sales tax revenue and lodging tax revenue estimates are based on

current sales and use tax rates and tax policies for the state of Michigan. Property tax estimates are based on the value of real and personal property of the Cross Winds® Energy Park expansion.

METHODOLOGY

Geographic Selection

This analysis estimates the expansion benefits on three geographic levels, consisting of the state of Michigan, the Greater Thumb region, and Tuscola County. The Greater Thumb region is defined as a seven-county region consisting of Bay, Genesee, Huron, Lapeer, Saginaw, Sanilac, and Tuscola Counties. The economic benefits in the three geographic areas described in this report are individual, non-additive impacts. For example, the economic benefits reported for the Greater Thumb region are not in addition to the state of Michigan benefits, but are a component of the economic benefits in the state of Michigan. Similarly, the economic benefits reported for Tuscola County are not in addition to the Greater Thumb region benefits, but are a component of the benefits in the Greater Thumb region. Thus, the economic benefits estimated from this study should specify the particular geography when reported.

The fiscal benefits reported in this study are narrower in concept. The three geographic areas analyzed in this study either represent a single governmental entity or consist of several governmental entities. The fiscal benefits are discrete to each level of government. For example, Consumers Energy will be paying property tax for the turbines in the Cross Winds® expansion. The property tax revenues will benefit several different taxing entities providing governmental services to the facility. While any property tax received by Tuscola County for county services benefits its residents, who are also residents of the state, Tuscola County property tax revenue is only counted as a direct fiscal benefit to the county, not the state of Michigan as a whole. Thus, the fiscal benefits estimated in this study should specify the particular governmental entity when reported.

The total output, employment, and earnings from the construction and operations of Phase II of the Cross Winds® Energy Park are estimated using the RIMS II multipliers at a state, regional, and county level. As a result, this analysis only includes multiplier impacts for the state of Michigan, the Greater Thumb region, and Tuscola County. Multiplier effects also occur at the local level such as townships or municipalities. These effects are a part of the multiplier effects estimated for the larger areas; however, the specific amount of these effects cannot be separated from the county numbers and are not included for this reason.

Categories of Impacts

The economic and fiscal benefits for this analysis were calculated within the framework of two categories of impacts and activities, construction activity and on-going business operations.

Construction impacts focus on the benefits of spending on materials, labor, and other costs for the project, and the benefits of transitory workers who will travel to the site from outside of the region and will spend money locally. Construction impacts are one-time impacts, meaning that the benefit of construction activity accrues only in the years in which construction activity occurs. If there is no construction activity in a given year, there are no associated economic and fiscal benefits.

The impacts of on-going operations for this analysis were based on average annual operational costs of Phase II of the Cross Winds® Energy Park. For this study, Consumers Energy supplied projections of its average annual operations for the energy park expansion. It should be noted that operating expenses are likely to vary from year to year.

Project Parameters and Study Variables

Development Research Partners estimated the economic and fiscal benefits described in this report based on primary data supplied by Consumers Energy. When necessary, data from a variety of standard secondary sources was used including the U.S. Bureau of Labor Statistics, U.S. Bureau of Economic Analysis, U.S. Census Bureau, state of Michigan, and others. Development Research Partners made every attempt to collect necessary additional or missing information and believes the information used in this report is from sources deemed reliable but is not guaranteed.

It should be noted that while the turbine vendor has been selected, other suppliers and contractors for the construction of the facility have yet to be finalized. In addition, while Consumers Energy has provided projections and estimates for the Cross Winds® Energy Park expansion, the park has yet to be constructed and plans for its operations have yet to be finalized. Changes in suppliers and other variables for the construction and operation of the expansion may change the benefits reported in this study. The parameters used in this impact analysis were carefully considered and selected to accurately report and avoid overstating potential economic and fiscal benefits. However, the economic and fiscal benefits estimated in this report are entirely dependent on the project assumptions and are not guaranteed.

Some numbers in the study may not add exactly due to rounding. In general, numbers reported in the text of the report are rounded to the nearest hundred thousand if over \$1 million. Figures that are less than \$1 million are rounded to the nearest thousand. This analysis considers the economic and fiscal benefits in nominal dollars, meaning the cost of escalation is included in the values for construction and operations. That is, the cost of the project is stated as the actual dollar cost during the future year. However, employment benefits were estimated in 2016 dollars so as not to overstate employment.

Report Organization

Following the Introduction, the next two sections of the report describe the economic and fiscal benefits of constructing Phase II of the Cross Winds® Energy Park and the on-going average annual operations of the facility once construction is completed.

Each section is further divided into the direct economic and fiscal benefits of the project, followed by the total economic benefits once multiplier effects are considered. Multiplier effects include the indirect and induced impacts on output, employment, and earnings supported by the direct spending from the construction activity and operations for Michigan, the Greater Thumb region, and Tuscola County.

The construction and operations of the Cross Winds® expansion will have significant benefits on the various local suppliers in the region. These categories of direct and indirect benefits are combined to establish the overall economic and fiscal benefits of Phase II of the expansion. These final total values are included in the Summary section of the report.

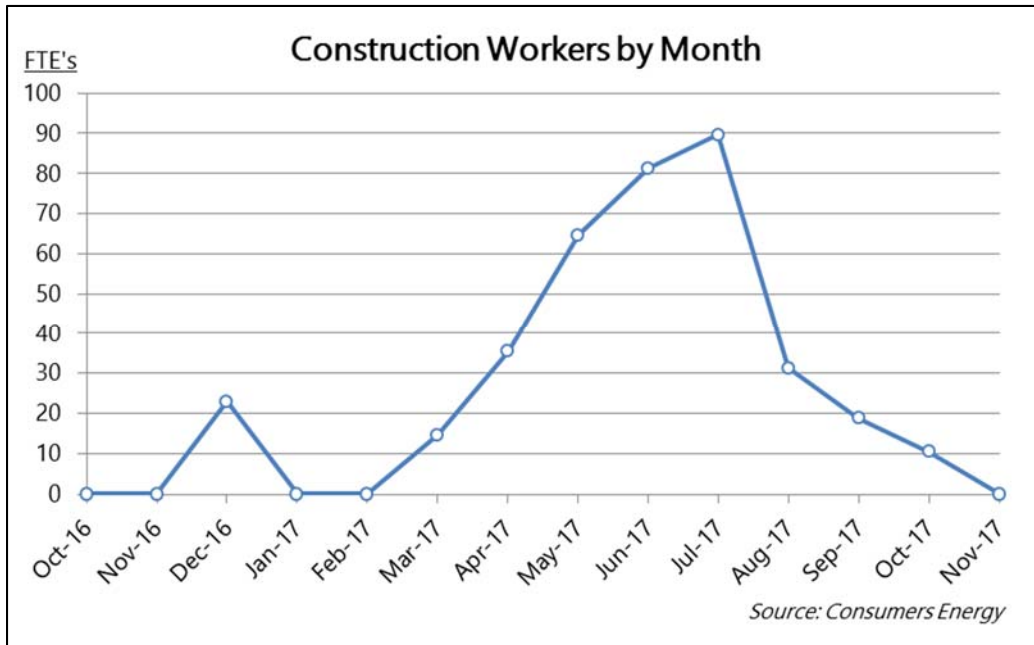
Construction of Phase II of the Cross Winds® Energy Park is projected to begin as early as December 2016, with activity peaking in summer 2017. At buildout, Phase II of Cross Winds® will have 19 turbines and a productive capacity of about 44 MWs. Phase II of the Cross Winds® Energy Park will cost an estimated \$86 million. Detailed spending is described below and summarized in Table 1.

DIRECT ECONOMIC AND FISCAL BENEFITS

Construction Spending

- Major equipment purchases of turbines, substation equipment, and construction materials including concrete, rebar, aggregate for roads, equipment, and other materials, comprise over 63 percent of the total construction cost, or about \$54.4 million. Most of the turbine equipment and parts will be purchased outside of the state. Most of the local benefits from the equipment and material purchases will be for construction materials such as concrete, rebar, and aggregate. Based on expected spending patterns, Michigan suppliers will capture an estimated \$4.3 million of the construction materials purchases. Based on an analysis of the distribution of likely supplier industries within Michigan from Hoover's business data, about 20 percent, or \$849,000 in spending, will likely be transacted in the Greater Thumb region. Of the \$849,000 spent in the Greater Thumb region, suppliers located in Tuscola County may capture an estimated \$49,000.
- Spending on the development, engineering, planning, legal services, environmental studies, labor contract costs, and other soft costs associated with Cross Winds® Phase II will total about \$20.5 million. The majority of these costs will be transacted with Michigan-based suppliers and will total an estimated \$11.4 million. Based on the distribution of likely supplier industries in Michigan, about \$5.5 million will be spent in the Greater Thumb region with \$2.3 million benefiting Tuscola County.
- Initial landowner payments for easements and any potential crop loss or damages from the wind farm's operations will total an estimated \$1.8 million. All of these payments benefit the residents and landowners of the Greater Thumb region and Tuscola County.
- Contingency for Cross Winds® Phase II is about 6 percent of the total project costs, or \$5 million. The contingency will benefit the study regions inasmuch as it is needed for additional materials, planning, labor, or other expenses. While the nature of this spending is unknown, Consumers Energy estimates that 50 percent, or about \$2.5 million, will be spent in Michigan. Included in this amount is an estimated \$1.3 million in spending in Tuscola County that is also a benefit to the Greater Thumb region.
- Construction of Cross Winds® Phase II will require an estimated 90,000 hours of work. Based on the construction period, the project will require about 27 full-time equivalent employees, defined as one worker working full-time for one year. On a monthly basis, an average of about 43 workers will be on the job from the start of construction to October 2017. Employment is expected to peak in summer 2017 at about 90 workers. It is estimated that about 75 percent of the workers, or about 20 of the total full-time equivalent workers for the project, will be filled by Michigan residents. According to data from the U.S. Census Bureau for construction occupations in the region and data from the Local Employment and Household Dynamics data system, an estimated 14 FTE's will be residents of the Greater Thumb region. The Greater Thumb region is where many local craft labor unions are located that could provide labor for the project. Based on the occupations of employed persons in the region, Tuscola County residents will capture enough work for one FTE employee.
- Compensation for the 27 FTE workers on the project including all wages, salaries, and employee benefits is an estimated \$4.3 million based on average annual wages for workers in industries likely to be employed on the

project. Narrowing compensation to just the benefit of earnings likely to be spent in Michigan or locally, the earnings impact in the state is an estimated \$2.4 million.² An estimated \$1.6 million is estimated for the Greater Thumb region including \$126,000 benefiting Tuscola County residents.



Transitory Worker Spending

Cross Winds® Phase II will require workers to travel to the site from outside of the state and region. These workers are referred to as transitory workers. These employees are expected to spend a significant amount of money in the area during the course of the project for lodging, food, entertainment, and other goods and services.

- Cross Winds® Phase II construction will require 27 FTE workers for the project. The economic benefit in Michigan of 75 percent of these workers (20 workers) is included in the benefits of the labor costs described in the Construction Spending section. The remaining workers will travel to the site from outside of Michigan, living and spending money in the state during the construction period. The lodging and retail spending of these workers represent additional benefits to the state.
- Based on the reimbursement rates set by the U.S. General Services Administration for the area, the transitory workers will spend an average of \$51 per day for meals and incidental expenses. The additional benefit in Michigan of this spending will be an estimated \$107,000 for food and other expenditures. Adjusting this spending to reflect only the retailer margin of about 30 percent, yields an estimated retailer benefit of \$32,000.
- Michigan will also benefit from out-of-state worker spending on lodging. Transitory workers will often use a variety of lodging options, including hotels, motels, RV parks, and if staying for significant periods of time during the project, apartments. This analysis assumes that 50 percent of the worker days will be captured in apartments and 50 percent will be captured in short-term options like hotels, motels, and RV parks. The Cross

² Earnings impacts are based on the portion of total compensation (including wages, salaries, and benefits) that is likely to be spent locally and includes wages and salaries, paid leave, and supplemental pay. Health insurance benefits are also included for the state. Earnings were estimated based on data from the U.S. Bureau of Labor Statistics, National Compensation Survey.

Winds® expansion will benefit Michigan by an estimated 700 room nights of demand based on an average of 1.5 persons per room and will capture about 27 rental months in area apartments based on 1.5 persons per apartment. Based on an average room rate for hotels/motels of \$101.50 per night in cities in proximity to the site (such as Bay City, Caro, and Cass City) and average rent for apartments of \$500 per month, the additional benefits to Michigan from transitory worker spending on lodging is an estimated \$84,000.

Note that the same assumptions for hotel versus apartment lodging, persons per room, and lodging and rental rates were also used for the analysis of transitory worker spending in the Greater Thumb region and Tuscola County below.

- Transitory worker spending will also benefit the Greater Thumb region. Transitory workers benefiting the region are defined as Michigan workers that do not reside in the region or within the Detroit-Warren-Livonia metropolitan statistical area, which is considered a commutable distance for this analysis. In addition to the seven out-of-state workers, another three workers will travel to the site from various parts of Michigan. While the earnings benefit of these workers is included in the labor benefits to the state, they are not included in the labor benefits to the region. Instead, the additional benefit to the region of spending from transitory workers is included, totaling about \$159,000 for meals and incidentals. Adjusting this spending to reflect only the retail margin yields an estimated retailer benefit of \$47,000.
- Based on the same assumptions outlined for the state, businesses within the Greater Thumb region will benefit from about 1,040 room nights of demand from transitory workers in area hotels/motels and about 40 rental months in area apartments. The benefit of transitory worker spending on lodging is an estimated \$125,000.
- Based on the availability of hotels and motels in Bay and Tuscola counties from Hoover's business data, an estimated 15 percent of the transitory worker spending in the Greater Thumb region will likely be captured in Tuscola County and represents additional benefits to the county. The additional benefit to Tuscola County of spending on meals and incidental expenses from transitory workers will total an estimated \$24,000. Adjusting this spending to reflect only the retail margin yields an estimated retailer benefit of \$7,000.
- Businesses within Tuscola County will benefit from an estimated 160 room nights of demand from transitory workers at area hotels/motels and about six rental months in area apartments. The benefit of transitory worker spending on lodging is an estimated \$19,000.

Fiscal Benefits

Sales and use taxes are imposed at a state level in Michigan. However, purchases of materials and equipment for Cross Winds® will be exempt from sales and use taxes.

Transitory worker spending will generate sales and use tax revenues for the state. Based on the 6 percent sales and use tax rate and 6 percent lodging use tax rate in the state, sales and use tax revenue from transitory worker spending will total about \$10,000 during the construction period.

Total Direct Economic and Fiscal Benefits

- The total direct economic and fiscal benefit of construction of Phase II of the Cross Winds® Energy Park expansion in Michigan will be an estimated \$22.5 million over the construction period, including all materials and services, planning, landowner payments, construction management, labor, and transitory worker spending benefits.

- The direct economic benefit in the Greater Thumb region will be an estimated \$11.2 million. The direct economic benefit to Tuscola County is an estimated \$5.6 million.
- The economic and fiscal benefits of the construction activity are temporary impacts, occurring only during the construction period.

Table 1: Direct Economic and Fiscal Benefits of Phase II Construction Activity of the Cross Winds® Energy Park

	Total Project	Direct Economic Benefits		
		Tuscola County	Greater Thumb Region	Michigan
Direct Economic Benefits				
Construction Benefits				
Wind Farm Major Equipment/Construction Materials	\$54,359,000	\$49,000	\$849,000	\$4,343,000
Design, Engineering, Planning, Other Labor Contract Costs	\$20,498,000	\$2,308,000	\$5,496,000	\$11,363,000
Land Owner Payments (Easements, Loss Compensation)	\$1,830,000	\$1,830,000	\$1,830,000	\$1,830,000
Payroll	\$2,588,000	\$109,000	\$1,370,000	\$1,941,000
Employee Benefits (Earnings Portion)	\$1,725,000	\$17,000	\$210,000	\$453,000
Contingency	\$5,000,000	\$1,250,000	\$1,250,000	\$2,500,000
Total Construction Benefits	\$86,000,000	\$5,563,000	\$11,005,000	\$22,430,000
Construction Employees (Work-Years)	27	1	14	20
Transitory Worker Spending				
Lodging and Apartments		\$19,000	\$125,000	\$84,000
Retailer Impacts*		\$7,000	\$47,000	\$32,000
Total Transitory Worker Spending Benefits		\$26,000	\$172,000	\$116,000
Transitory Workers From Out of Local Government (Work-Years)		1	10	7
Total Direct Economic Benefits of Construction	\$86,000,000	\$5,589,000	\$11,177,000	\$22,546,000
Direct Fiscal Benefits				
Sales Tax on Transitory Worker Retail Purchases		--	--	\$6,000
Lodging Use Tax		--	--	\$4,000
Total Fiscal Benefits				\$10,000
Total Direct Economic and Fiscal Benefits	\$86,000,000	\$5,589,000	\$11,177,000	\$22,556,000
<i>*Retail margin after subtracting the cost of goods sold and freight. Based on total retail spending of \$24,000 in Tuscola County, \$159,000 in the Greater Thumb region, and \$107,000 in Michigan.</i>				

DIRECT, INDIRECT, AND INDUCED BENEFITS

The construction activity will have temporary multiplicative impacts on the county, regional, and state economies during the construction period. Multiplicative impacts are based on the value of output, or revenues received in various affected industries from the construction expenditures and the transitory worker spending. These industries include the construction industry, the retail trade industry, the hotels and motels industry, and the real estate industry.

Michigan

- Value of Output:** The direct value of output associated with Phase II of the Cross Winds® Energy Park expansion includes \$22.4 million in construction spending and \$126,000 in transitory worker spending in Michigan. Based on the RIMS II multipliers construction and transitory worker spending will likely support \$25.9 million in additional output in all industries throughout the state. This consists of the value of the local spending of the employees (the induced benefit) and state-based supplier companies and their employees (the indirect benefit). Therefore, the total direct and indirect benefit of construction will be an estimated \$48.4 million in total state output (\$22.5 million direct output + \$25.9 million indirect and induced output), as shown in Table 2.
- Employment:** During the buildout period, construction of Phase II of Cross Winds® will directly employ about 20 FTE workers in Michigan. Transitory worker spending will result in the direct employment of two workers in the state. Construction and transitory worker employment and spending will support an additional 18 indirect workers in the state. Therefore, the Phase II construction will support the employment of 40 workers in Michigan (22 direct employees + 18 indirect employees).
- Earnings:** The direct benefit of earnings in Michigan from construction workers and those supported by transitory worker spending is an estimated \$2.4 million. This includes the value of wages and salaries for the employees as well as a portion of employee benefits. Based on the relationships revealed through the RIMS II multipliers, the 18 indirect employees supported by the expansion in the state will have associated earnings of about \$1.6 million. In total, the direct and indirect employees supported by the Phase II expansion will have estimated earnings of \$4 million (\$2.4 million direct earnings + \$1.6 million indirect and induced earnings). All earnings values are included in the total value of output; earnings are not in addition to the value of output.

Table 2: Total Economic Benefit of the Cross Winds® Energy Park Phase II Construction Activity in Michigan				
	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Construction Activity				
Value of Output (\$M)	\$22.4	2.1512	\$25.8	\$48.2
Earnings (\$M)	\$2.4	1.6812	\$1.6	\$4.0
Employment	20	1.8433	17	37
Transitory Worker Spending				
Value of Output (\$M)	\$0.1	1.8327	\$0.1	\$0.2
Earnings (\$M)	\$0.0	1.8528	\$0.0	\$0.0
Employment	2	1.5477	1	3
Total Economic Benefit				
Value of Output (\$M)	\$22.5		\$25.9	\$48.4
Earnings (\$M)	\$2.4		\$1.6	\$4.0
Employment	22		18	40
<p><i>Source: Development Research Partners, based on multipliers for Michigan from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II), 2007 U.S. Benchmark I-O Data and 2013 Regional Data.</i></p> <p><i>Calculation Note: Direct x Multiplier = Total Impact</i></p> <p><i>Total Impact - Direct Impact = Indirect & Induced Impact</i></p> <p><i>Numbers may not add exactly due to rounding.</i></p>				

Greater Thumb Region

- Value of Output:** The direct value of output associated with Phase II of the Cross Winds® Energy Park expansion includes \$11 million in construction spending and about \$172,000 in transitory worker spending in the Greater Thumb region. Based on the RIMS II multipliers construction and transitory worker spending will likely support \$6.8 million in additional output in all industries throughout the region. This consists of the value of the local spending of the employees (the induced benefit) and regional-based supplier companies and their employees (the indirect benefit). Therefore, the total direct and indirect benefit of construction will be an estimated \$18 million in total regional output (\$11.2 million direct output + \$6.8 million indirect and induced output), as shown in Table 3.
- Employment:** During the buildout period, construction of Phase II of Cross Winds® will directly employ about 14 FTE workers in the Greater Thumb region. Transitory worker spending will result in the direct employment of another two workers in the region. Construction and transitory worker employment and spending will support an additional eight workers in the region. Therefore, the Phase II construction will support the employment of 24 workers in the Greater Thumb region (16 direct employees + 8 indirect employees).
- Earnings:** The direct benefit of earnings in the Greater Thumb Region from construction workers and those supported by transitory worker spending is an estimated \$1.6 million. This includes the value of wages and salaries for the employees as well as a portion of employee benefits. Based on the relationships revealed through the RIMS II multipliers, the eight indirect employees supported by the expansion in the Greater Thumb region will have associated earnings of about \$657,000. In total, the direct and indirect employees supported by the Phase II expansion will have estimated earnings of \$2.2 million (\$1.6 million direct earnings + \$0.6 million indirect and induced earnings). All earnings values are included in the total value of output; earnings are not in addition to the value of output.

Table 3: Total Economic Benefit of the Cross Winds® Energy Park Phase II Construction Activity in the Greater Thumb Region				
	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Construction Activity				
Value of Output (\$M)	\$11.0	1.6066	\$6.7	\$17.7
Earnings (\$M)	\$1.6	1.4015	\$0.6	\$2.2
Employment	14	1.5250	7	21
Transitory Worker Spending				
Value of Output (\$M)	\$0.2	1.4658	\$0.1	\$0.3
Earnings (\$M)	\$0.0	1.4792	\$0.0	\$0.0
Employment	2	1.3322	1	3
Total Economic Benefit				
Value of Output (\$M)	\$11.2		\$6.8	\$18.0
Earnings (\$M)	\$1.6		\$0.6	\$2.2
Employment	16		8	24
<i>Source: Development Research Partners, based on multipliers for Greater Thumb region from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II), 2007 U.S. Benchmark I-O Data and 2013 Regional Data.</i> <i>Calculation Note: Direct x Multiplier = Total Impact</i> <i>Total Impact - Direct Impact = Indirect & Induced Impact</i> <i>Numbers may not add exactly due to rounding.</i>				

Tuscola County

- Value of Output:** The direct value of output associated with Phase II of the Cross Winds® Energy Park expansion includes \$5.6 million in construction spending and \$26,000 in transitory worker spending in Tuscola County. Based on the RIMS II multipliers construction and transitory worker spending will likely support \$1.4 million in additional output in all industries throughout the county. This consists of the value of the local spending of the employees (the induced benefit) and county-based supplier companies and their employees (the indirect benefit). Therefore, the total direct and indirect benefit of construction will be an estimated \$7 million in total local output (\$5.6 million direct output + \$1.4 million indirect and induced output), as shown in Table 4.
- Employment:** During the buildout period, construction of Phase II of Cross Winds® will directly employ about one FTE worker in Tuscola County. Transitory worker spending will result in some local spending but this spending will only support a fraction of a job. Construction and transitory worker employment and spending will support an additional worker in the county. Therefore, the Phase II construction will support the employment of two workers in Tuscola County (1 direct employee + 1 indirect employee).
- Earnings:** The direct benefit of earnings in Tuscola County from construction workers and those supported by transitory worker spending is an estimated \$132,000. This includes the value of wages and salaries for the employees as well as a portion of employee benefits. Based on the relationships revealed through the RIMS II multipliers, the indirect employee supported by the expansion in the county will have associated earnings of about \$24,000. In total, the direct and indirect employees supported by the Phase II expansion will have estimated earnings of \$156,000 (\$132,000 direct earnings + \$24,000 indirect and induced earnings). All earnings values are included in the total value of output; earnings are not in addition to the value of output.

Table 4: Total Economic Benefit of the Cross Winds® Energy Park Phase II Construction Activity in Tuscola County				
	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Construction Activity				
Value of Output (\$M)	\$5.6	1.2563	\$1.4	\$7.0
Earnings (\$M)	\$0.1	1.1821	\$0.0	\$0.1
Employment	1	1.2300	1	2
Transitory Worker Spending				
Value of Output (\$M)	\$0.0	1.2237	\$0.0	\$0.0
Earnings (\$M)	\$0.0	1.2247	\$0.0	\$0.0
Employment	0	1.1482	0	0
Total Economic Benefit				
Value of Output (\$M)	\$5.6		\$1.4	\$7.0
Earnings (\$M)	\$0.1		\$0.0	\$0.1
Employment	1		1	2
<p><i>Source: Development Research Partners, based on multipliers for Tuscola County from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II), 2007 U.S. Benchmark I-O Data and 2013 Regional Data.</i></p> <p><i>Calculation Note: Direct x Multiplier = Total Impact</i></p> <p><i>Total Impact - Direct Impact = Indirect & Induced Impact</i></p> <p><i>Numbers may not add exactly due to rounding.</i></p>				

Phase II of the Cross Winds® Energy Park is projected to commence operations by 2018. The impacts of on-going operations for this analysis were based on projected average annual operational costs for Phase II provided by Consumers Energy. These projections were paired with estimates of average landowner payments and property tax revenue to estimate the operating activity that will likely take place on average over the first 20 years of the energy park. It should be noted that operating expenses are likely to vary from year to year. Further analysis of these shifting variables is discussed in this study where applicable to recognize the benefits that can be expected on average.

DIRECT ECONOMIC AND FISCAL BENEFITS

	Total Operations
Direct Economic Benefits	
Operations Benefits	
Materials and Services	\$491,000
Land Owner Payments	\$177,000
Major Maintenance Reserve	\$154,000
Variable O&M	\$124,000
State and local taxes	\$471,000
Payroll	\$149,000
Employee Benefits	\$99,000
Total Operations Benefits	\$1,665,000
Employees (FTE)	2

Economic Benefits and Local Spending

Average annual operational expenditures for Phase II of the Cross Winds® Energy Park will total an estimated \$1.7 million each year, as detailed in Table 5. The following bullet points detail the local spending activity estimated for each category of spending for Phase II of Cross Winds®. While the multiplier benefits of the average annual operations are derived from the output of Phase II, assumed to be the amount of sales needed to cover costs for the facility, an analysis of local spending activity gives insight into how the benefits work their way through the economy.

- Annual operations for Phase II of the energy park will require materials and services including parts, insurance, consulting services, and administrative costs. These purchases will generate local spending activity. Of the \$491,000 for materials and services, an estimated \$277,000 is expected to be captured by Michigan-based suppliers each year. Based on an analysis of the distribution of likely supplier industries within Michigan from Hoover’s business data, an estimated \$144,000 will likely be transacted in the Greater Thumb region. Of the regional spending, suppliers located in Tuscola County may capture an estimated \$134,000.
- A portion of the local economic benefits of Phase II will be from rent payments and compensation to landowners. While Consumers Energy will own the turbines, substation, transmission lines, and other assets, in many cases it will not own the land on which the wind farm will be located. Landowners with wind turbine units will receive compensation tied to the production of the wind farm. Those with permanent

meteorological towers on their property will receive a fixed rent. Some landowners in close proximity but without wind turbines or meteorological towers on their property will also receive compensation.

The total value of these landowner payments will vary each year based on the value of the energy produced. Based on current Consumers Energy forecasts, the value of landowner payments to Tuscola County residents will be a minimum of \$176,800 per year over the first 20 years of operations.

- Consumers Energy will reserve about \$154,000 annually for major maintenance activities after a long-term service agreement with the turbine manufacturer ends. Based on expected spending patterns, an estimated \$40,000 will be spent in Michigan each year including \$20,000 in the Greater Thumb region and an estimated \$10,000 in Tuscola County.
- The cost of labor for Phase II operations will average an estimated \$248,000 each year after the long-term service agreement. The labor for Phase II represents the additional employees required to operate the whole Cross Winds® site. Current Cross Winds® employees will assist in supervision, maintenance activities, and administrative work for the expansion. Labor costs for the expansion will consist of an estimated \$149,000 for wages and salaries and \$99,000 for employee benefits.
- Employee benefits include such items as paid leave and supplemental pay, insurance, retirement, and various legally required benefits (Social Security, Medicare, federal and state unemployment insurance, and workers compensation). Narrowing compensation to just the value of wages and employee benefits likely to be spent in each study region, the direct benefit of earnings to the state is an estimated \$191,000, with an estimated \$191,000 benefiting the Greater Thumb region and \$178,000 benefiting Tuscola County.
- The expansion will require about two more permanent employees at the Cross Winds® Energy Park. Both of these workers will be Michigan residents and are expected to be residents of the Greater Thumb region. Based on commuting patterns for employees within Tuscola County from the U.S. Census Bureau's Local Employment and Household Dynamics dataset, one worker will likely be a resident of Tuscola County.

Fiscal Benefits

Phase II operations of the Cross Winds® Energy Park will generate property tax revenue for state and local governments. Consumers Energy is one of the largest property tax payers in Tuscola County.

Rank	Taxpayer	Taxable Value
1	Tuscola Bay Wind LLC	\$167,891,900
2	Consumers Energy	\$127,673,437
3	ITC Transmissions	\$60,246,144
4	Detroit Edison Co	\$34,593,327
5	Dairy Farmers of America	\$19,699,500
6	POET LLC	\$13,119,714
7	Thumb Electric	\$5,972,864
8	Michigan Sugar	\$4,371,351
9	Walmart Stores	\$3,921,985
10	Russell Family Land Co LLC	\$3,335,684

Source: Tuscola County.

- Property tax revenue over the first 20 years of the expansion will total an estimated \$9.4 million, or an average \$471,000 annually based on estimates of the cost of the facility, the size and number of turbines, and current

state and local tax structures.³ In Michigan, wind turbines and generating equipment are classified as industrial personal property and are exempt from the state education tax levy. Additionally, Tuscola County and the school district exempt wind facilities from the local school operating levies. However, Phase II will generate revenue for the county, townships, and other local tax districts.

This revenue will benefit several tax districts that serve Tuscola County residents including an annual average of \$150,000 for the county, \$129,000 for the Columbia Township including the township administrative fee, \$83,000 for the Intermediate School District, \$93,000 for local school districts excluding the operating levy, and \$16,000 for the local library district.

Table 7 details the average annual property tax revenue over the first 20 years of operations. Table 8 presents estimates of total revenue by district in 10-year increments.

District	Revenue
State Education	<i>Exempt</i>
County	\$150,000
Township	\$129,000
School and Other Local Districts	
Tuscola Intermediate School District	\$83,000
Total Local Schools	\$93,000
Library	\$16,000
Total	\$471,000

Note: Property tax revenue will be subject to changes in tax districts, mill levies, property valuations, and state laws. The numbers reported are not final.

District	2015 to 2024	2025 to 2034	20-Year Total
State Education	<i>Exempt</i>	<i>Exempt</i>	<i>Exempt</i>
County	\$2.0	\$1.0	\$3.0
Township	\$1.7	\$0.9	\$2.6
School and Other Local Districts			
Tuscola ISD	\$1.1	\$0.6	\$1.7
Total Local Schools	\$1.2	\$0.6	\$1.8
Library	\$0.2	\$0.1	\$0.3
Total	\$6.2	\$3.2	\$9.4

Note: Property tax revenue will be subject to changes in tax districts, mill levies, property valuations, and state laws. The numbers reported are not final.

DIRECT, INDIRECT, AND INDUCED BENEFITS

The annual operations of Phase II of the Cross Winds® Energy Park will have multiplicative impacts on the state, regional, and county economies. Multiplicative impacts are based on the value of output in the electric power generation, transmission, and distribution industry. This analysis assumes that the total value of output is equal to its total expenditures. These benefits will occur annually assuming similar business operations and tax structures.

Michigan

- **Value of Output:** Based on the industry relationships revealed through the RIMS II multipliers, \$1.7 million in direct output for Phase II operations will support \$0.9 million in additional output in all industries throughout the state. This includes the value of output supported by the spending of the employees (the induced benefit)

³ Estimates based on current mill levies for potential districts serving the Phase II facilities including Tuscola County, the Columbia township, Tuscola ISD, the Unionville and Cass City school districts, and the Fairgrove Library District. Actual revenue will depend on the final location of the turbines.

and the local supplier companies and their employees (the indirect benefit). Therefore, the total direct and indirect benefit of average annual operations of Cross Winds® Phase II is \$2.6 million in total state output (\$1.7 million direct output + \$0.9 million indirect and induced output), as shown in Table 9.

- **Employment:** Phase II operations will require two additional employees at Cross Winds® Energy Park. Based on the RIMS II multipliers, the production of the \$0.9 million in indirect and induced output in all industries throughout the state will require about seven employees. Therefore, the annual operations of Cross Winds® Phase II will support employment of nine workers (2 direct employees + 7 indirect employees).
- **Earnings:** The employees for Phase II operations will have associated earnings (wages plus a portion of employee benefits) of \$191,000 directly benefiting the state economy. Based on the relationships revealed through the RIMS II multipliers, the seven employees that produce the \$0.9 million in indirect and induced output have associated earnings of about \$213,000. As a result, the nine direct and indirect employees have estimated earnings of \$404,000 (\$191,000 direct earnings + \$213,000 indirect earnings). All earnings values are included in the total value of output; earnings are not in addition to the value of output.

Table 9: Total Economic Benefit of Average Annual Phase II Operations of the Cross Winds® Energy Park in Michigan				
	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Value of Output (\$M)	\$1.7	1.5318	\$0.9	\$2.6
Earnings (\$M)	\$0.2	2.1144	\$0.2	\$0.4
Employment	2	4.3788	7	9

Source: Development Research Partners, based on multipliers for Michigan from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II), 2007 U.S. Benchmark I-O Data and 2013 Regional Data.

Calculation Note: Direct x Multiplier = Total Impact

Total Impact - Direct Impact = Indirect & Induced Impact

Numbers may not add exactly due to rounding.

Greater Thumb Region

- **Value of Output:** Based on the industry relationships revealed through the RIMS II multipliers, \$1.7 million in direct output for Phase II operations will support \$0.5 million in additional output in all industries throughout the Greater Thumb region. This includes the value of output supported by the spending of the employees (the induced benefit) and the local supplier companies and their employees (the indirect benefit). Therefore, the total direct and indirect benefit of average annual operations of Cross Winds® Phase II is \$2.2 million in total regional output (\$1.7 million direct output + \$0.5 million indirect and induced output), as shown in Table 10.
- **Employment:** Phase II operations will require two additional employees at Cross Winds® Energy Park. Based on the RIMS II multipliers, the production of the \$0.5 million in indirect and induced output in all industries throughout the Greater Thumb region will require about four employees. Therefore, the annual operations of Cross Winds® Phase II will support employment of six workers (2 direct employees + 4 indirect employees).
- **Earnings:** The employees for Phase II operations will have associated earnings (wages plus a portion of employee benefits) of \$191,000 directly benefiting the regional economy. Based on the relationships revealed through the RIMS II multipliers, the four employees that produce the \$0.5 million in indirect and induced output have associated earnings of about \$116,000. As a result, the six direct and indirect employees have

estimated earnings of \$307,000 (\$191,000 direct earnings + \$116,000 indirect earnings). All earnings values are included in the total value of output; earnings are not in addition to the value of output.

Table 10: Total Economic Benefit of Average Annual Phase II Operations of the Cross Winds® Energy Park in the Greater Thumb Region				
	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Value of Output (\$M)	\$1.7	1.3061	\$0.5	\$2.2
Earnings (\$M)	\$0.2	1.6066	\$0.1	\$0.3
Employment	2	2.9692	4	6

Source: Development Research Partners, based on multipliers for Greater Thumb region from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II), 2007 U.S. Benchmark I-O Data and 2013 Regional Data.

*Calculation Note: Direct x Multiplier = Total Impact
Total Impact - Direct Impact = Indirect & Induced Impact
Numbers may not add exactly due to rounding.*

Tuscola County

- Value of Output:** Based on the industry relationships revealed through the RIMS II multipliers, \$1.7 million in direct output for Phase II operations will support \$0.3 million in additional output in all industries throughout Tuscola County. This includes the value of output supported by the spending of the employees (the induced benefit) and the local supplier companies and their employees (the indirect benefit). Therefore, the total direct and indirect benefit of average annual operations of Cross Winds® Phase II is \$2 million in total county output (\$1.7 million direct output + \$0.3 million indirect and induced output), as shown in Table 11.
- Employment:** Phase II operations will require two additional employees at Cross Winds® Energy Park. Based on the RIMS II multipliers, the production of the \$0.3 million in indirect and induced output in all industries throughout Tuscola County will require about two employees. Therefore, the annual operations of Cross Winds® Phase II will support employment of four workers (2 direct employees + 2 indirect employees).
- Earnings:** The employees for Phase II operations will have associated earnings (wages plus a portion of employee benefits) of \$178,000 directly benefiting the county economy. Based on the relationships revealed through the RIMS II multipliers, the two employees that produce the \$0.3 million in indirect and induced output have associated earnings of about \$63,000. As a result, the four direct and indirect employees have estimated earnings of \$241,000 (\$178,000 direct earnings + \$63,000 indirect earnings). All earnings values are included in the total value of output; earnings are not in addition to the value of output.

Table 11: Total Economic Benefit of Average Annual Phase II Operations of the Cross Winds® Energy Park in Tuscola County

	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Value of Output (\$M)	\$1.7	1.1811	\$0.3	\$2.0
Earnings (\$M)	\$0.2	1.3526	\$0.1	\$0.3
Employment	2	2.0036	2	4

Source: Development Research Partners, based on multipliers for Tuscola County from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II), 2007 U.S. Benchmark I-O Data and 2013 Regional Data.

Calculation Note: Direct x Multiplier = Total Impact

Total Impact - Direct Impact = Indirect & Induced Impact

Numbers may not add exactly due to rounding.

CONSTRUCTION ACTIVITY

- Michigan:** The direct economic benefit during the construction of Phase II of Cross Winds® Energy Park and transitory worker spending in Michigan will be an estimated \$22.5 million produced by 22 FTE workers earning \$2.4 million. This activity will support an estimated \$25.9 million in additional output in all industries throughout the state. The production of the \$25.9 million in additional output will require about 18 indirect workers. These workers will have associated earnings of \$1.6 million. All earnings values are included in the total value of output; earnings are not in addition to the value of output.

Combined, the construction of Phase II of the Cross Winds® Energy Park expansion will generate direct and indirect output in Michigan of \$48.4 million produced by 40 workers earning \$4 million during the construction period.

In addition, the direct fiscal benefit in Michigan over the construction period will be \$10,000 in sales and lodging tax revenue.

- Greater Thumb Region:** The direct economic benefit during the construction of Phase II of Cross Winds® Energy Park and transitory worker spending in the Greater Thumb region will be an estimated \$11.2 million produced by 16 FTE workers earning \$1.6 million. This activity will support an estimated \$6.8 million in additional output in all industries throughout the region. The production of the \$6.8 million in additional output will require about eight indirect workers. These workers will have associated earnings of \$657,000.

Combined, the construction of Phase II of the Cross Winds® Energy Park expansion will generate direct and indirect output in the Greater Thumb region of \$18 million produced by 24 workers earning \$2.2 million during the construction period.

- Tuscola County:** The direct economic benefit during the construction of Phase II of Cross Winds® Energy Park and transitory worker spending in Tuscola County will be an estimated \$5.6 million produced by one FTE worker earning \$132,000. This activity will support an estimated \$1.4 million in additional output in all industries throughout the county. The production of the \$1.4 million in additional output will require about one indirect worker with associated earnings of \$24,000.

Combined, the construction of Phase II of the Cross Winds® Energy Park expansion will generate direct and indirect output in Tuscola County of \$7 million produced by two workers earning \$156,000 during the construction period.

Table 12: Total Economic Benefit of Phase II Construction of the Cross Winds® Energy Park

	Direct Impact	Indirect & Induced Impact	Total Impact
Michigan			
Value of Output (\$M)	\$22.5	\$25.9	\$48.4
Earnings (\$M)	\$2.4	\$1.6	\$4.0
Employment	22	18	40
Greater Thumb Region			
Value of Output (\$M)	\$11.2	\$6.8	\$18.0
Earnings (\$M)	\$1.6	\$0.6	\$2.2
Employment	16	8	24
Tuscola County			
Value of Output (\$M)	\$5.6	\$1.4	\$7.0
Earnings (\$M)	\$0.1	\$0.0	\$0.1
Employment	1	1	2
<p><i>Source: Development Research Partners, based on multipliers for Michigan from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II), 2007 U.S. Benchmark I-O Data and 2013 Regional Data.</i></p> <p><i>Calculation Note: Direct x Multiplier = Total Impact</i></p> <p><i>Total Impact - Direct Impact = Indirect & Induced Impact</i></p> <p><i>Numbers may not add exactly due to rounding.</i></p>			

ON-GOING OPERATIONS

- Michigan:** The direct economic benefit of average annual operations of Phase II of the Cross Winds® Energy Park expansion in Michigan will be an estimated \$1.7 million produced by two workers earning \$191,000. The operating activity will support an estimated \$0.9 million of additional output in all industries throughout the state. The production of the \$0.9 million in additional output will require an estimated seven workers. These workers will have associated earnings of \$213,000. All earnings values are included in the total value of output; earnings are not in addition to the value of output.

Combined, average annual operations of Phase II of the Cross Winds® Energy Park expansion will generate an estimated \$2.6 million in direct and indirect output in Michigan each year produced by nine workers earning \$404,000.

- Greater Thumb Region:** The direct economic benefit of average annual operations of Phase II of the Cross Winds® Energy Park expansion in the Greater Thumb region will be an estimated \$1.7 million produced by two workers earning \$191,000. The operating activity will support an estimated \$0.5 million of additional output in all industries throughout the region. The production of the \$0.5 million in additional output will require an estimated four workers. These workers will have associated earnings of \$116,000.

Combined, average annual operations of Phase II of the Cross Winds® Energy Park expansion will generate an estimated \$2.2 million in direct and indirect output in the Greater Thumb region each year produced by six workers earning \$307,000.

- Tuscola County:** The direct economic benefit of average annual operations of Phase II of the Cross Winds® Energy Park expansion in Tuscola County will be an estimated \$1.7 million produced by two workers earning \$178,000. The operating activity will support an estimated \$0.3 million of additional output in all industries throughout the county. The production of the \$0.3 million in additional output will require an estimated two workers. These workers will have associated earnings of \$63,000.

Combined, average annual operations of Phase II of the Cross Winds® Energy Park expansion will generate an estimated \$2 million in direct and indirect output in Tuscola County each year produced by four workers earning \$241,000.®

In addition, the direct fiscal benefit will average \$150,000 each year in county property tax.

Table 13: Total Economic Benefit of Average Annual Phase II Operations of the Cross Winds® Energy Park			
	Direct Impact	Indirect & Induced Impact	Total Impact
Michigan			
Value of Output (\$M)	\$1.7	\$0.9	\$2.6
Earnings (\$M)	\$0.2	\$0.2	\$0.4
Employment	2	7	9
Greater Thumb Region			
Value of Output (\$M)	\$1.7	\$0.5	\$2.2
Earnings (\$M)	\$0.2	\$0.1	\$0.3
Employment	2	4	6
Tuscola County			
Value of Output (\$M)	\$1.7	\$0.3	\$2.0
Earnings (\$M)	\$0.2	\$0.1	\$0.3
Employment	2	2	4
<i>Source: Development Research Partners, based on multipliers for Michigan from the U.S. Department of Commerce, Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II), 2007 U.S. Benchmark I-O Data and 2013 Regional Data.</i>			
<i>Calculation Note: Direct x Multiplier = Total Impact</i>			
<i>Total Impact - Direct Impact = Indirect & Induced Impact</i>			
<i>Numbers may not add exactly due to rounding.</i>			

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