The Economic and Fiscal Benefits of the Lake Winds™ Energy Park

Prepared For:

Consumers Energy
Count on Us

Development Research Partners

January 26, 2011

TABLE OF CONTENTS

FORWARD

A New Era in Michigan's Energy Production

On January 14, 2011, Consumers Energy filed a special use land permit application to construct the Lake Winds™ Energy Park (Lake Winds™), a 100-megawatt wind farm in southern Mason County.

Utilizing state-of-the-art turbine technology, the proposed wind farm will help the company meet its obligations under Michigan's renewable portfolio standard requiring 10 percent of the state's energy supply to come from renewable resources such as wind by 2015. By the end of 2012, when Lake Winds™ is expected to begin operations, about eight percent of the power that the utility supplies to customers is expected to come from Michigan renewable sources.

Wind generation is a major part of Consumers Energy's Balanced Energy Initiative, a comprehensive 20-year plan to meet the power needs of the utility's 1.8 million electric customers with a balanced energy portfolio, including energy efficiency, renewable energy, and customer demand management.

Lake Winds™ will provide a significant economic boost to both Mason County and the entire state. Consumers Energy will be investing around $232 million to construct Lake Winds™. The project will provide about 150 jobs during peak construction and eight to 12 full-time jobs once the park begins operations. The state and local benefits during both the construction and operations phases are detailed in this report. Specifically, Mason County residents and businesses will see a total (direct and indirect) economic benefit of over $33 million resulting from Lake Winds™ construction activities as well as around $4 million in annual economic benefit from its on-going operations. Additionally, Lake Winds™ will generate approximately $29 million in property tax revenues for the county, townships, and special districts serving Mason County during the first 20 years of operations.

Consumers Energy is committed to meeting Michigan's future energy needs in a balanced and responsible fashion. The Lake Winds™ Energy Park project reflects this goal while creating considerable short- and long-term economic benefits for the region.

Consumers Energy
January 2011

EXECUTIVE SUMMARY

The Lake Winds™ Energy Park will be Consumers Energy's first wind park. Construction of the wind park is projected to begin in 2011. Consumers Energy estimates that the bulk of the construction will be completed in 2012, with operations starting in late 2012. It will consist of 56, 1.8-megawatt (MW) wind turbines on about 9,300 acres of land in the Riverton and Summit Townships of Mason County, Michigan. About 80 percent of the wind farm will be in Riverton Township with the remainder in Summit Township. The total productive capacity of Lake Winds™ will be 100.8 MW upon completion of the project.

Currently, Consumers Energy provides electricity to 1.8 million customers in Michigan. Five percent of the electricity provided by the utility to its customers in Michigan is from renewable sources including hydroelectricity and waste wood biomass. Consumers Energy projects the percentage of electricity generated from renewable sources will increase to eight percent by the end of 2012 with the addition of the Lake Winds™ Energy Park.

The intent of this study is to analyze the economic and fiscal benefits associated with the proposed construction and projected typical annual operations of the Lake Winds™ Energy Park ("Lake Winds™").

In particular, Consumers Energy recognizes the magnitude and importance of the economic and fiscal benefits of Lake Winds™ to Mason County. This executive summary begins by highlighting the economic and fiscal benefits of construction and annual operations in Mason County and concludes with a summary of all of the study regions contained in this report, including the benefits in Michigan, Mason County, and the Riverton and Summit Townships.

Mason County Highlights

The Lake Winds™ Energy Park will generate significant economic and fiscal benefits in Mason County. These benefits occur when spending related to Lake Winds™ for construction and annual operations occur with local suppliers, businesses, employees, and residents of the county.

Construction Activity

The total estimated project cost for Lake Winds™ is $232 million. This includes $174 million for construction materials, wind turbines and towers, substation equipment, transformers, and other hard costs and capital equipment; $15.3 million in design, planning, and engineering; $5.4 million in initial payments to landowners; $28.3 million of overhead and labor costs; $9 million of contingency; and $300,000 of county permits and fees.

- Construction materials purchases include concrete, rebar, aggregate for roads, equipment, and other materials. Mason County suppliers will capture an estimated $5.7 million of the construction materials purchases.
- Spending for the development, engineering, planning, legal services, environmental studies, and other costs associated with Lake Winds™ will total $15.3 million. About $2.3 million of these costs will be transacted with Mason County-based suppliers.
- Initial landowner payments for easements and any crop losses will total an estimated $5.4 million. These purchases will entirely benefit the residents and landowners of Mason County in the Riverton and Summit Townships where Lake Winds™ will be located.
- Contingency for the Lake Winds™ Energy Park is estimated as four percent of the total project cost, or about $9 million. The contingency will benefit the study regions inasmuch as it is needed for additional materials, planning and other costs, labor, or other costs. While the nature of this spending is unknown, Consumers Energy estimates that 50 percent, or about $4.5 million, will benefit residents and businesses in Mason County.
- Construction employment will peak during the spring and summer months of 2012 with about

150 workers, consisting of all workers contracted through White Construction, Inc., Consumers Energy, and about 12 technical field support workers from the turbine manufacturer, Vestas Americas Wind Technology, Inc.

- Construction of the Lake Winds™ Energy Park through White Construction and Consumers Energy will require about 175,000 hours of work. Over the course of the project, an average of 80 to 85 employees in work-years, defined as one person working full-time for one year, will be working on the wind farm. While the location of the subcontracted labor is yet to be determined, it is estimated that about 15 percent of the workers will be Mason County residents.
- The cost of labor for the Lake Winds™ Energy Park construction will total $28.3 million, including all overhead, wages and salaries, and employee benefits. An estimated $3.9 million of this will benefit residents of Mason County.
- Transitory workers will also spend money in Mason County. Transitory workers will generate about $1.6 million in business activity in the county, including $624,000 in lodging, accommodations, and apartment rent revenue; and $943,000 in retail, food services, and entertainment. Adjusting this spending to reflect only the retailer margin of just under 20 percent (retail spending less cost of goods sold), yields an estimated retailer impact of $185,000. The direct

Direct Economic and Fiscal Benefits of Lake Winds™ Energy Park Construction Activity in Mason County, Michigan

	Total	Mason County
Direct Economic Benefits		
Construction Benefits		
Wind Farm Major Equipment/Construction Materials	$173,975,000	$5,751,000
Design, Engineering, Planning, Other Costs	$15,300,000	$2,330,000
Land Owner Payments (Easements, Loss Compensation)	$5,440,000	$5,440,000
Overhead	$21,050,000	$3,058,000
Payroll	$4,320,000	$633,000
Employee Benefits	$2,880,000	$162,000
Contingency	$9,000,000	$4,500,000
Total Construction Benefits	**$231,965,000**	**$21,874,000**
Construction Employees (Work-Years)	84	12
Transitory Worker Spending		
Lodging		$624,000
Retailer Impacts		$185,000
Total Transitory Worker Spending Benefits		**$809,000**
Transitory Workers From Out of Local Government (Work-Years)		79
Total Direct Economic Benefits of Construction	**$231,965,000**	**$22,683,000**
Direct Fiscal Benefits		
Fees and Permits	$300,000	$300,000
Total Fiscal Benefits	**$300,000**	**$300,000**
Total Direct Economic and Fiscal Benefits	**$232,265,000**	**$22,983,000**

EXECUTIVE SUMMARY

Total Economic Benefit of Lake Winds™ Construction Activity in Mason County, Michigan
($ in millions)

	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Construction Activity				
Value of Output	$21.9	1.4731	$10.3	$32.2
Earnings	$0.8	1.3645	$0.3	$1.1
Employment	12	1.4883	6	18
Transitory Worker Spending				
Value of Output	$0.8	1.3309	$0.3	$1.1
Earnings	$0.2	1.3270	$0.0	$0.2
Employment	11	1.2300	3	14
Total Economic Benefit				
Value of Output	$22.7		$10.6	$33.3
Earnings	$1.0		$0.3	$1.3
Employment	23		9	32

Calculation Notes: Direct x Multiplier = Total Impact
Total Impact - Direct Impact = Indirect & Induced Impact

benefit to the county of spending from transitory workers will total about $809,000 ($624,000 + $185,000).

- Mason County will collect revenues from various special use permits, zoning and land use permits, road use fees, and other project-related permits and fees. The estimated fee and permit revenue for the Lake Winds™ project in Mason County is about $300,000.
- The direct economic and fiscal benefits of construction of the Lake Winds™ Energy Park will total $23 million, consisting of $22.7 million in construction-related spending and $300,000 in fees.
- Based on the RIMS II multipliers estimated by the U.S. Bureau of Economic Analysis for Mason County, $21.9 million in direct construction spending and $809,000 in transitory worker spending in Mason County results in an additional $10.6 million of output for all industries in the county for a total benefit of $33.3 million. This includes $1.3 million in earnings for 32 employees in the county (23 direct employees + 9 indirect employees). All earnings values are included in the total value of output; earnings are not in addition to the value of output.
- The construction benefits are one-time benefits, occurring only during the construction period.

On-Going Operations

The typical annual operational expenditures for Lake Winds™ will total $2.9 million. This includes about $980,000 for materials and services; $430,000 of landowner rent payments tied to production, the location of the substation, and various meteorological towers; $500,000 for major maintenance; and about $1 million of labor costs for administration and compensation of employees.

Direct Economic Benefits of Typical Annual Operations of Lake Winds™ Energy Park in Mason County, Michigan

	Total	Mason County
Direct Economic Benefits		
Operations Benefits		
Materials and Services	$980,000	$218,000
Land Owner Payments (Minimum Fixed)	$430,000	$410,000
Major Maintenance Reserve	$500,000	$48,000
Administrative Overhead	$20,000	$0
Payroll	$605,000	$272,000
Employee Benefits	$403,000	$70,000
Total Operations Benefits	**$2,938,000**	**$1,018,000**
Employees (FTE)	11	7

EXECUTIVE SUMMARY

- Mason County suppliers will capture an estimated $218,000 of the $980,000 in materials and contract services purchases.
- A significant portion of the operating expenditures will be in the form of rent payments and compensation to the wind farm's landowners based on the value of the energy produced. The minimum in any given year will total about $430,000. However, the annual payments may be significantly higher based on the price of energy. Based on current Consumers Energy price forecasts, over the first 20 years of operations, the value of landowner payments could average as much as $1.1 million per year. Landowners who are also residents of Mason County will capture an estimated $410,000 of the minimum fixed payments.
- In a typical year, Consumers Energy will spend a projected $500,000 for major maintenance activities including major component repairs and replacements, cranes for loading and assembling towers, road improvements, and substation maintenance. The benefit of this maintenance will total about $48,000 in Mason County.
- Consumers Energy will employ an estimated eight to 12 full-time equivalent, permanent workers for the Lake Winds™ Energy Park. About 60 percent of these workers are projected to be residents of Mason County.
- The cost of labor for the Lake Winds™ Energy Park will total over $1 million each year including administrative costs, wages and salaries, and employee benefits. Mason County workers and residents will receive $342,000 in direct economic benefits related to these salaries and employee benefits.
- Property tax revenue on the Lake Winds™ Energy Park will average an estimated $1.4 million per year over 20 years. This $1.4 million will benefit several tax districts that serve Mason County residents and businesses. This includes $505,000 for Mason County's general operations, senior citizens, soldiers and sailors relief fund, jail, Oakview Medical Center, and district library; $77,000 benefiting the Riverton and Summit Townships; and $865,000 benefiting all other districts serving Lake Winds™. The other districts serving Lake Winds™ include the school districts, the rural fire district, West Shore Community College, and various Mason-Lake Intermediate School District education programs.

Lake Winds™ Energy Park 20 Year Property Tax Estimates*
($ in Millions)

Tax District	2013-2022	2023-2032	20 Yr Total
Mason County			
Mason County	$4.8	$2.2	$7.0
Senior Citizens	$0.2	$0.1	$0.3
Soldiers/Sailors Relief Fund	$0.0	$0.0	$0.0
Jail	$0.5	$0.3	$0.8
Oakview Medical Facility	$0.9	$0.4	$1.3
District Library	$0.5	$0.2	$0.7
Riverton Township			
Riverton Twp Operations	$0.7	$0.3	$1.0
Riverton Twp Admin Fee	$0.2	$0.1	$0.3
Summit Township			
Summit Twp Operations	$0.2	$0.1	$0.3
Summit Twp Admin Fee	$0.0	$0.0	$0.0
Other Districts			
Mason-Lake Inter School	$2.2	$1.0	$3.2
Mason-Lake Special Ed	$0.3	$0.1	$0.4
Mason-Lake Voc Ed	$0.9	$0.4	$1.3
WSCC Operations	$2.0	$0.9	$2.9
WSCC Cap Improvements	$0.9	$0.4	$1.3
Rural Fire District	$0.9	$0.4	$1.3
Mason County Central School Debt	$4.4	$2.1	$6.5
Ludington School Debt	$0.2	$0.1	$0.3
Ludington School Bldg/Site	$0.1	$0.0	$0.1
Total	**$19.7**	**$9.3**	**$29.0**
Average	**$2.0**	**$0.9**	**$1.4**

**Numbers may not add due to rounding. Property tax revenue will be subject to changes in tax districts, mill levies, property valuations, and state laws. The numbers reported are not final.*

- Mason County will also benefit from fees for inspections, licenses, and permits associated with Lake Winds™. The typical annual revenue in Mason County will total about $6,000.
- The $2.9 million in output in Mason County in the electric power generation, transmission, and distribution industry results in an additional $700,000 of output for all industries in the county for a total benefit of $3.6 million. This includes $1.3 million in earnings for 23 employees in the county (11 direct employees + 12 indirect employees).
- These benefits will occur annually assuming similar business conditions and tax structures.

Total Economic Benefit of Typical Annual Operations of Lake Winds™ in Mason County, Michigan ($ in millions)

	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Total Economic Benefits of Operations				
Value of Output	$2.9	1.2249	$0.7	$3.6
Earnings	$1.0	1.3153	$0.3	$1.3
Employment	11	2.1055	12	23

Calculation Notes: Direct x Multiplier = Total Impact

Total Impact - Direct Impact = Indirect & Induced Impact

Total Economic and Fiscal Benefits of Lake Winds™ Energy Park

Michigan

- The construction of the Lake Winds™ Energy Park will generate direct and indirect output in Michigan valued at $132.1 million produced by 137 workers earning total payroll of $9.3 million.
- The direct fiscal benefit of the Lake Winds™ Energy Park's construction in Michigan will be $30,000 in sales and use tax revenue from transitory worker spending.
- The typical annual operations of the Lake Winds™ Energy Park will generate direct and indirect output in Michigan valued at $4.6 million produced by 35 workers earning $1.8 million. All earnings values are included in the total value of output; earnings are not in addition to the value of output.
- The typical annual direct fiscal benefit of the Lake Winds™ Energy Park in Michigan will be an estimated $105,000 in fees.

Mason County

- The construction of the Lake Winds™ Energy Park will generate direct and indirect output in Mason County valued at $33.3 million. This value includes $1.3 million in earnings for 32 workers.
- The direct fiscal benefit of construction of the Lake Winds™ Energy Park in Mason County will be $300,000 in fees and permits revenue.
- The typical annual operations of the Lake Winds™ Energy Park will generate direct and indirect output in Mason County valued at $3.6 million produced by 23 workers earning a total of $1.3 million in compensation. All earnings values are included in the total value of output; earnings are not in addition to the value of output.
- Property tax revenue on the Lake Winds™ Energy Park will average an estimated $1.4 million per year over 20 years. This $1.4 million will benefit several tax districts that serve Mason County residents and businesses. This includes $505,000 for Mason County's general operations, senior citizens, soldiers and sailors relief fund, jail, Oakview Medical Center, and district library; $77,000 benefiting the Riverton and Summit Townships; and $865,000 benefiting all other districts serving Lake Winds™. The other districts serving Lake Winds™ include the school

districts, the rural fire district, West Shore Community College, and various Mason-Lake Intermediate School District education programs.

- Mason County will also benefit from fees for inspections, licenses, and permits associated with Lake Winds™. The typical annual revenue in Mason County will total about $6,000.

Riverton and Summit Townships

- The construction of the Lake Winds™ Energy Park will generate direct and indirect output of $13.8 million in Riverton and Summit Townships.
- The direct economic benefit of the Lake Winds™ Energy Park's typical annual operations in Riverton and Summit Townships will be an estimated $2.9 million. This value includes $1 million in earnings for 11 workers.

INTRODUCTION

For the past several years, Michigan has pursued a path towards energy sustainability. Michigan's goals have focused on system reliability, environmental sustainability, and price stability. Michigan has looked to renewable sources of energy as an essential part of this plan.

In 2007, under the direction of Governor Jennifer Granholm, the Michigan Public Service Commission published an energy plan for the state entitled *Michigan's 21st Century Electric Energy Plan*. The report found that renewable sources of energy could diversify the state's energy supply, reduce pollution, decrease reliance on other states for electricity, and contribute to a more reliable energy system.

This plan led to the formation of Michigan's Renewable Energy Standard, a series of legislation introduced into law in October 2008 with the goal of increasing the percent of electricity supplied from renewable sources in the state to 10 percent by 2015. Consumers Energy, in preparation for meeting this target, has initiated several investments in Michigan including plans for the Lake Winds™ Energy Park ("Lake Winds™") in Mason County.

The Lake Winds™ Energy Park will be Consumers Energy's first wind park. Construction of the wind park is projected to begin in 2011. Consumers Energy estimates that the bulk of the construction will be completed in 2012, with operations starting in late 2012. It will consist of 56, 1.8-megawatt (MW) wind turbines on about 9,300 acres of land in the Riverton and Summit Townships of Mason County. About 80 percent of the wind farm will be in Riverton Township with the remainder in Summit Township. The total productive capacity of Lake Winds™ will be 100.8 MW upon completion of the project.

Currently, Consumers Energy provides electricity to 1.8 million customers in Michigan. Five percent of the electricity provided by the utility to its customers in Michigan is from renewable sources, including hydroelectricity and waste wood biomass. Consumers Energy projects the percentage of electricity generated from renewable sources will increase to eight percent by the end of 2012 with the addition of the Lake Winds™ Energy Park.

The intent of this study is to analyze the economic and fiscal benefits associated with the proposed construction and projected operations of the Lake Winds™ Energy Park.

Renewable Energy in Michigan

According to the latest net generation data published by the U.S. Energy Information Administration, electricity generated from renewable sources comprised about 3.4 percent of the total power generated from all sources in Michigan in 2008. In 2008, Michigan ranked 35th among the states for the percent of net generation through renewable sources. According to the American Wind Energy Association, Michigan ranked 26th in installed wind capacity in July 2010 with 143 MW.

Renewable sources of electric energy fall under several different classes, including hydroelectricity, biomass, solar, wind, and geothermal. Most of Michigan's renewable energy comes from hydroelectricity (43.2 percent) and biomass (52.2 percent). As of 2008, only 4.6 percent of Michigan's total renewable electricity was produced by wind power.

In 2008, two major wind projects came online in Huron County: the 52-MW Harvest Wind Farm and the 69-MW Michigan Thumb Wind Park I. These were the first major utility-scale wind operations in Michigan.

According to the Michigan Public Service Commission, several other major utility-scale wind projects will come online from 2010 to 2012 when Lake Winds™ will commence operations. These include the Blissfield Wind project (81 MW), the Harvest II Wind project (59 MW), the Michigan Wind 2 project (90 MW), the Fowler Ridge Wind Farm II (50 MW), and the Gratiot County Wind project (200 MW). When Lake Winds™ begins its operations, it will be one of the largest wind farms in the state.

INTRODUCTION

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 time 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 area. This analysis estimates the Lake Winds™ Energy Park's impacts on three geographic levels: the state of Michigan, Mason County, and the Riverton and Summit Townships.

The economic and fiscal benefits for this analysis highlight two categories of impacts and activities, including the construction of the Lake Winds™ Energy Park and the on-going business operations of Lake Winds™ once completed. The spending patterns associated with the construction and operations of Lake Winds™ have spin-off effects or multiplicative impacts in the county 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 in turn 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 Lake 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 of Lake Winds™.

As a result, the initial dollars spent by Consumers Energy for construction, business purchases, or payroll will be circulated throughout the local economy a number of times. The number of times that the initial dollars will be 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 according to three measures of economic benefits: regional output, payroll or earnings, and employment.

First, the direct and indirect benefit of the construction activity and on-going operations on the gross output of the study regions are estimated. This includes the value of the output produced by the construction industry in the construction phase and the output produced by Lake Winds™ once operations commence (direct outputs). Additional output throughout all industries in the study regions (indirect outputs) is supported by the direct spending patterns with local suppliers and employees associated with the construction and operations.

Second, the total direct and indirect employment needed in the study regions to produce this level of gross output is determined. These employees may be full-time or part-time, local or non-local workers. It should be noted that the indirect employment supported might represent fractions of jobs, added to reflect whole positions. That is, the indirect spending may support the annual employment of one-half of a

grocery store worker and one-half of a retail apparel store worker. Combined, these two workers represent one indirect employee.

Third, the analysis includes an estimate for the typical direct and indirect payroll or earnings paid to the employees that are producing this level of gross output.

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, and other charges for services. In turn, local governments provides a variety of public services such as police protection, public works, community social and recreational programs, and community development services, to name a few.

This report includes a limited fiscal impact analysis, including direct public revenue estimates only from sales tax, lodging tax, property tax, fees, permits, and licenses. This limited fiscal impact analysis estimates the governmental fees and taxes paid by Consumers Energy due to the Lake Winds™ Energy Park's construction activity, business spending, and operations. The sales tax revenue and lodging tax revenue estimates are based on 2010 sales and use tax rates and tax policies for the state of Michigan. Property tax estimates are based on the value of personal property of Lake Winds™ and are estimated for the Michigan state education levy, Mason County services, and the Riverton and Summit Townships. Fee revenue for permits, inspections, and licenses are estimated at the state and county level.

Methodology

Geographic Interpretation

This analysis estimates the Lake Winds™ Energy Park's benefits on three geographic levels: the state of Michigan, Mason County, and the Riverton and Summit Townships. The economic benefits in the three geographic areas described in this report are individual, non-additive impacts. For example, the economic benefits reported for Mason County are not in addition to the state of Michigan but are a component of the economic benefits in the state of Michigan. Similarly, the economic benefits reported for the townships are not in addition to Mason County but are a component of the benefits in the county. 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 are also governmental entities. The fiscal benefits are discrete to each level of government. For example, Consumers Energy will be paying property tax for Lake Winds™. The property tax revenues will benefit several different taxing entities providing governmental services to Lake Winds™. While any property tax received by Mason County for county services benefits its residents, who are also residents of the state, Mason 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.

> This analysis estimates the Lake Winds™ Energy Park's economic benefits on three geographic levels: the state of Michigan, Mason County, and the Riverton and Summit Townships. The economic benefits in the three geographic areas are individual, non-additive impacts.
> The fiscal benefits are discrete to each level of government.

The total output, employment, and earnings from the construction and operations of Lake Winds™ are estimated using the RIMS II multipliers at a state and county level. As a result, this analysis only

includes multiplier impacts for the state of Michigan and Mason County. Multiplier effects also occur within the townships and are a part of the multiplier effects estimated for Mason County. 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, including 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 study regions and will spend money locally. Construction impacts are one-time impacts, in 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 the operational costs of Lake Winds™ for a "typical" year of operations. For this study, estimated operating impacts for 2013 were determined to be representative of benefits that could be expected on an annual basis. However, some operating expenses will 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 over 20 years of operations.

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, U.S. Energy Information Administration, 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.

While Consumers Energy has chosen several suppliers and a contractor for the construction, many suppliers and contractors for the project have yet to be finalized. In addition, while Consumers Energy has provided projections and estimates of the operations of Lake Winds™, the park has yet to be constructed and plans for the operations have yet to be finalized. Changes in suppliers and other variables for construction and operations of Lake Winds™ 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 2010 dollars.

Report Organization

Following the Introduction, the next two sections of the report describe the economic and fiscal benefits of the construction of Lake Winds™, and the typical annual operations of Lake Winds™ once construction is completed.

Each section is further divided into the direct economic and fiscal benefits of the project, and then 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 Mason County and Michigan.

The construction and operations of Lake Winds™ has significant benefits on various local suppliers in the region. These categories of direct and indirect benefits are combined to establish the overall economic and fiscal benefits of Lake Winds™. These final total values are included in the Summary section of the report.

CONSTRUCTION ACTIVITY

Construction of the Lake Winds™ Energy Park is projected to begin in 2011. Consumers Energy estimates that the bulk of the construction will be completed in 2012, with operations starting in late 2012. At buildout, Lake Winds™ will have 56 wind turbines, with a productive capacity of 100.8 MW. The section of the report details the benefits from construction of the Lake Winds™ Energy Park.

Direct Economic and Fiscal Benefits

The total estimated project cost for Lake Winds™ is $232 million. This includes $174 million for construction materials, wind turbines and towers, substation equipment, transformers, and other hard costs and capital equipment; $15.3 million in design, planning, and engineering; $5.4 million in initial payments to landowners; $28.3 million of overhead and labor costs; $9 million of contingency; and $300,000 of county permits and fees.

Construction Spending

- Major equipment purchases make up approximately 65 percent to 70 percent of the total construction cost. Consumers Energy is purchasing wind turbines and towers from Vestas Americas Wind Technology, Inc. (Vestas) located in Colorado. Consumers Energy also signed a contract with GE-Prolec Transformers Inc., which will supply electric transformers for a new substation that will serve Lake Winds™. Most of the equipment from both of these purchases will be manufactured outside of Michigan.
- Construction materials purchases include concrete, rebar, aggregate for roads, equipment, and other materials. Based on expected spending patterns, Michigan suppliers will capture an estimated $11 million of construction materials purchases, including spending with Mason County suppliers totaling about $5.8 million. Of the $5.8 million spent in Mason County, suppliers located in the Riverton and Summit Townships will capture about $3.2 million.
- Spending on the development, engineering, planning, legal services, environmental studies, and other costs associated with Lake Winds™ will total $15.3 million. The majority of these costs will be transacted with Michigan-based suppliers and will total an estimated $13.6 million. Of this, about $2.3 million will be spent in Mason County with $1.3 million benefiting suppliers located in the Riverton and Summit Townships.
- Initial landowner payments for easements and any potential crop loss or damages from the wind farm's operations will total an estimated $5.4 million. These payments will entirely benefit the residents and landowners of Mason County in the Riverton and Summit Townships where the energy park will be located.
- Contingency for the Lake Winds™ Energy Park is estimated as four percent of the total project cost, or about $9 million. The contingency will benefit the study regions inasmuch as it is needed for additional materials, planning and other costs, labor, or other expenses. While the nature of this spending is unknown, Consumers Energy estimates that 75 percent, or about $6.8 million, will be spent in Michigan. Included in this amount is an estimated $4.5 million in spending in Mason County. Isolating the benefits further to the township level yields an estimated $2.7 million in benefits to individuals and businesses located in the Riverton and Summit Townships.
- Construction of the Lake Winds™ Energy Park will require about 175,000 hours of work. In addition, about 12 Vestas employees will be temporarily located at the site during the construction phase to provide technical field support as a part of their contract. Employment will peak during the spring and summer months of 2012 with about 150 workers. Over the course of the project an average of 80 to 85 employees in work-years, defined as one person working full-time for one year, will be working on the wind farm, not including the Vestas workers.

While the location of the subcontracted labor is yet to be determined, it is estimated that about 75 percent of the workers will be Michigan residents. More specifically, this may include an estimated 15 percent that are Mason County residents, including about four percent from Riverton and Summit Townships.

- The cost of labor for the Lake Winds™ Energy Park construction will total $28.3 million including all overhead, wages and salaries, and employee benefits. An estimated $20.7 million of this will be paid to individuals and businesses that are residents of Michigan. This will include $3.9 million directly benefiting Mason County individuals and businesses and $1.2 million benefiting Riverton and Summit Townships' residents.
- Included in the cost of labor are employee benefits for the construction workers. Consumers Energy and White Construction, Inc. estimate that about 40 percent of the labor costs will be in the form of employee benefits and other non-wage compensation.

  Employee benefits include such items as paid leave and supplemental pay, health and dental insurance, retirement programs, and various legally required benefits (Social Security, Medicare, federal and state unemployment insurance, and workers compensation) as defined by the U.S. Bureau of Labor Statistics in the National Compensation Survey for the employer costs for employee compensation datasets. Data was used for the natural resources, construction, and maintenance occupational group.

  To estimate the benefits to Michigan, this analysis assumes that 100 percent of the paid leave and supplemental pay expenditures paid to the Michigan residents represent direct monetary flows to the employees and will directly benefit the state. Further, the employee insurance expenditures, portions of the legally required benefits, but none of the retirement benefits, are assumed to be spent in Michigan. Overall, Michigan is estimated to capture about 66 percent of the employee benefits spending on its resident workers.

  To estimate the benefits to Mason County, this analysis assumes that 100 percent of the paid leave and supplemental pay expenditures represent direct monetary flows to the employees and will directly benefit the county. Portions of the employee health insurance expenditures are also included as benefits to the county. Mason County is estimated to capture about 38 percent of the employee benefits spending on its resident workers.

  To estimate the employee benefits to the townships, this analysis assumes that 100 percent of the paid leave and supplemental pay expenditures to the workers who are residents of either township will benefit the townships. The townships will capture an estimated 25 percent of the employee benefits spending on its resident workers.

Transitory Worker Spending

The Lake Winds™ project will require workers to travel to the site from outside of Mason County and Michigan. 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.

- The Lake Winds™ Energy Park construction will require an average of 80 to 85 Consumers Energy and White Construction contracted employees in work-years. The economic benefit in Michigan of about 75 percent of these workers is included in the benefits of the labor costs described in the Construction Spending section. The remaining 25 percent of the workers will travel to the site from outside Michigan and will count as transitory workers during the construction period. In addition, Vestas will send about 12 workers in 2012 to the site from out-of-state to provide technical field support. The lodging and retail

spending of these employees represents additional benefits to the state than otherwise described. Based on the reimbursement rates set by the U.S. General Services Administration for the area, the transitory workers will spend an average of $46.00 per day for meals and incidental expenses. The additional benefit in Michigan of transitory worker spending will be an estimated $333,000 for food, entertainment, and other expenditures. Adjusting this spending to reflect only the retailer margin of just under 20 percent (retail spending less cost of goods sold), yields an estimated retailer benefit of $65,000.

- Michigan will also benefit from the out-of-state worker spending on lodging. Transitory workers will often use a variety of lodging options, including hotels/motels, RV parks, and apartments. This analysis assumes that half of the worker days will be captured in apartments and half will be captured in hotels/motels in the area. Michigan will capture an estimated 2,400 room nights of demand in hotels/motels based on an average of 1.5 persons per room and will capture 80 rental months in area apartments based on 1.5 persons per apartment. Based on an average room rate for hotels/motels of $70 per night and average rent for apartments of $640 per month, the additional benefit to Michigan from transitory worker spending on lodging is an estimated $220,000.

- Transitory workers will also benefit Mason County. Transitory workers benefiting Mason County are defined as any worker that does not already reside in the county. In addition to 25 percent of the workers traveling to the site from outside Michigan and the Vestas workers, about 60 percent of the workers will travel to the county from various parts of Michigan. While the benefit of these workers is included in the labor benefits to the state, they are not included in the benefits to the county. As a result, the additional benefit to the county of spending on food, entertainment, and other retail expenditures from transitory workers will total about $943,000. Adjusting this spending to reflect only the retailer margin of just under 20 percent (retail spending less cost of goods sold), yields an estimated retailer benefit of $185,000.

- Based on the same assumptions described above, Mason County will capture an estimated 6,800 room nights of demand in area hotels/motels and about 228 rental months in area apartments. The additional benefit to the county from spending on lodging from transitory workers will total about $624,000.

- Whereas minimal retail and lodging facilities are in the Riverton and Summit Townships, no transitory worker benefits were calculated for these areas.

Fiscal Benefits

Fiscal benefits from the construction of the Lake Winds™ Energy Park include the generation of state sales and use taxes and county-level revenues. The estimated fiscal benefits are as follows:

- Sales and use taxes are imposed at a state level in Michigan. However, purchases of materials for the Lake Winds™ Energy Park will be exempt from sales and use taxes.

- Transitory worker spending will generate sales and use tax revenue for the state. Based on the six percent sales and use tax rate and six percent lodging use tax rate in the state, sales and use tax revenue from transitory worker spending will generate about $30,000 in revenue during the construction of the Lake Winds™ Energy Park.

- Mason County will collect revenues from various special use permits, zoning and land use permits, road use fees, and other project-related permits and fees. The estimated fee and permit revenue for the Lake Winds™ project in Mason County is about $300,000.

Total Direct Economic and Fiscal Benefits

The total direct economic and fiscal benefits of constructing the Lake Winds™ Energy Park in

CONSTRUCTION ACTIVITY

Michigan will be an estimated $57.8 million including all materials and services, planning, landowner payments, labor, contingency, and transitory worker spending benefits. Also included is a direct fiscal benefit of $30,000 in sales and use tax revenue from transitory worker purchases. The direct economic and fiscal benefits in Mason County will be $23 million including $22.7 million of construction and transitory worker-related benefits and $300,000 in fees and permits revenue. Isolating the benefit to just the townships, the benefit to the Riverton and Summit Townships will total $13.8 million in construction and transitory worker benefits.

Direct, Indirect, and Induced Benefits

The Lake Winds™ Energy Park construction activity will have multiplicative impacts on the county and state economies. Multiplicative impacts for the county and state 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,

Table 1: Direct Economic and Fiscal Benefits of Construction Activity of Lake Winds™

	Total	Riverton & Summit Townships	Mason County	Michigan
Direct Economic Benefits				
Construction Benefits				
Wind Farm Major Equipment/Construction Materials	$173,975,000	$3,171,000	$5,751,000	$11,028,000
Design, Engineering, Planning, Other Costs	$15,300,000	$1,310,000	$2,330,000	$13,580,000
Land Owner Payments (Easements, Loss Compensation)	$5,440,000	$5,440,000	$5,440,000	$5,440,000
Overhead	$21,050,000	$953,000	$3,058,000	$16,021,000
Payroll	$4,320,000	$201,000	$633,000	$3,265,000
Employee Benefits	$2,880,000	$34,000	$162,000	$1,432,000
Contingency	$9,000,000	$2,700,000	$4,500,000	$6,750,000
Total Construction Benefits	**$231,965,000**	**$13,809,000**	**$21,874,000**	**$57,516,000**
Construction Employees (Work-Years)	84	4	12	63
Transitory Worker Spending				
Lodging and Apartments		$0	$624,000	$220,000
Retailer Impacts*		$0	$185,000	$65,000
Total Transitory Worker Spending Benefits		**$0**	**$809,000**	**$285,000**
Transitory Workers From Out of Local Government (Work-Years)			79	28
Total Direct Economic Benefits of Construction	**$231,965,000**	**$13,809,000**	**$22,683,000**	**$57,801,000**
Direct Fiscal Benefits				
Sales and Use Tax on Lake Winds™ Purchases		--	--	*Exempt*
Sales Tax on Transitory Worker Retail Purchases		--	--	$20,000
Lodging Use Tax		--	--	$10,000
Fees and Permits	$300,000	--	$300,000	--
Total Fiscal Benefits	**$300,000**	**$0**	**$300,000**	**$30,000**
Total Direct Economic and Fiscal Benefits	**$232,265,000**	**$13,809,000**	**$22,983,000**	**$57,831,000**

**Retail margin after subtracting the cost of goods sold and freight. Based on total retail spending of $943,000 in Mason County and $333,000 in Michigan.*

the hotels and motels industry, and the real estate, rental, and leasing industry.

Values for the retail trade industry were derived from the retailers' profit margins as opposed to the total retail spending. The difference represents the cost of goods sold, dollars that generally exit the region as retailers pay for their inventory.

RIMS II multipliers are available on a county and state level. As a result, this analysis only includes multiplier impacts for the state of Michigan and Mason County. Multiplier effects also occur within the townships and are a part of the multiplier effects estimated for Mason County. However, the specific amount of these effects cannot be separated from the county numbers and are not included for this reason.

Michigan

- ***Value of Output:*** The total direct value of output associated with the Lake Winds™ Energy Park includes $57.5 million in construction and capital equipment spending and $285,000 in transitory worker spending. Note that the entire $553,000 in transitory worker spending ($220,000 lodging + $333,000 retail) does not have multiplier impacts in Michigan. Based on an analysis of the retail margins associated with worker spending on retail categories, only about 20 percent of the retail spending actually goes towards local wages and indirect business purchases. The remaining 80 percent received by the retailers represents the cost of goods sold, dollars that generally exit the economy as the retailers pay for their inventory. Combining the retail spending with 100 percent of the lodging spending yields a total direct benefit of transitory worker spending of $285,000.

  The direct output of $57.8 million in the state of Michigan in industries that will be affected by the construction activity and transitory worker spending for the Lake Winds™ Energy Park will support $74.3 million in additional output in all industries throughout the state. This includes the value of output supported by the local spending of the construction workers (the induced benefit) and the local supplier companies and their employees (the indirect benefit). Therefore, the total direct and indirect benefit of construction of Lake Winds™ is $132.1 million in total state output ($57.8 million direct output + $74.3 million indirect and induced output), as shown in Table 2.

- ***Employment:*** Construction of the Lake Winds™ Energy Park will directly employ about 60 to 65 construction workers in Michigan. Transitory worker spending will result in the direct employment of another four workers in the state. Based on the RIMS II multipliers, the production of the $74.3 million in indirect and induced output in all industries throughout the state will

Table 2: Total Economic Benefit of Lake Winds™ Construction Activity in State of Michigan
($ in millions)

	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Construction Activity				
Value of Output	$57.5	2.2871	$74.0	$131.5
Earnings	$4.7	1.9658	$4.5	$9.2
Employment	63	2.0743	68	131
Transitory Worker Spending				
Value of Output	$0.3	1.8583	$0.3	$0.6
Earnings	$0.1	1.8896	$0.0	$0.1
Employment	4	1.5332	2	6
Total Economic Benefit				
Value of Output	$57.8		$74.3	$132.1
Earnings	$4.8		$4.5	$9.3
Employment	67		70	137

Calculation Notes: Direct x Multiplier = Total Impact
Total Impact - Direct Impact = Indirect & Induced Impact

require about 70 employees. Therefore, the construction of the Lake Winds™ Energy Park will support the employment of 137 workers (67 direct employees + 70 indirect employees), as shown in Table 2.

- ***Earnings:*** The workers directly involved in the construction of Lake Winds™ from Michigan will earn an estimated $4.7 million in wages, salaries, and employee benefits. Employees directly supported by transitory worker spending will earn an estimated $80,000. Based on the industry relationships revealed through the RIMS II multipliers, the 70 indirect employees that produce the $74.3 million in indirect and induced output have associated earnings of about $4.5 million. As a result, the 137 direct and indirect employees have estimated annual earnings of $9.3 million ($4.8 million direct earnings + $4.5 million indirect earnings), as shown in Table 2. All earnings values are included in the total value of output; earnings are not in addition to the value of output.
- The benefits of construction are one-time benefits occurring only during the construction period.

Mason County

- ***Value of Output:*** The total direct value of output associated with the Lake Winds™ Energy Park includes $21.9 million in construction and capital equipment spending and $809,000 in transitory worker spending in Mason County. Note that the entire $1.6 million in transitory worker spending ($624,000 lodging + $943,000 retail) does not have multiplier impacts in Mason County. Based on an analysis of the retail margins associated with worker spending on retail categories, only about 20 percent of the retail spending actually goes towards local wages and indirect business purchases. The remaining 80 percent received by the retailers represents the cost of goods sold, dollars that generally exit the economy as the retailers pay for their inventory. Combining the retail spending with 100 percent of the lodging spending yields a total direct benefit of transitory worker spending of $809,000.

The direct output of $22.7 million in Mason County in industries that will be affected by the construction activity and transitory worker spending for the Lake Winds™ Energy Park will support $10.6 million in additional output in all industries throughout the county. This includes the value of output supported by the local spending of the construction workers (the induced benefit) and the local supplier companies and their employees (the indirect benefit). Therefore, the total direct and indirect benefit of the construction of Lake Winds™ is $33.3 million in regional total output ($22.7 million direct output + $10.6 million indirect and induced output), as shown in Table 3.

Table 3: Total Economic Benefit of Lake Winds™ Construction Activity in Mason County, Michigan
($ in millions)

	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Construction Activity				
Value of Output	$21.9	1.4731	$10.3	$32.2
Earnings	$0.8	1.3645	$0.3	$1.1
Employment	12	1.4883	6	18
Transitory Worker Spending				
Value of Output	$0.8	1.3309	$0.3	$1.1
Earnings	$0.2	1.3270	$0.0	$0.2
Employment	11	1.2300	3	14
Total Economic Benefit				
Value of Output	$22.7		$10.6	$33.3
Earnings	$1.0		$0.3	$1.3
Employment	23		9	32

Calculation Notes: Direct x Multiplier = Total Impact
Total Impact - Direct Impact = Indirect & Induced Impact

CONSTRUCTION ACTIVITY

- ***Employment:*** Construction of the Lake Winds™ Energy Park will directly employ about 10 to 15 construction workers from Mason County. Transitory worker spending will result in the direct employment of another 11 workers in the county. Based on the RIMS II multipliers, the production of the $10.6 million in indirect and induced output in all industries throughout the county will require about nine employees. Therefore, the construction of the Lake Winds™ Energy Park will support the employment of 32 workers (23 direct employees + 9 indirect employees) in Mason County, as shown in Table 3.
- ***Earnings:*** The workers directly involved in the construction of Lake Winds™ from Mason County will earn an estimated $800,000 in wages, salaries, and employee benefits. Employees directly supported by transitory worker spending will earn an estimated $220,000. Based on the industry relationships revealed through the RIMS II multipliers, the nine indirect employees that produce the $10.6 million in indirect and induced output have associated earnings of about $300,000. As a result, the 32 direct and indirect employees have estimated annual earnings of $1.3 million ($1.0 million direct earnings + $300,000 indirect earnings), as shown in Table 3. All earnings values are included in the total value of output; earnings are not in addition to the value of output.
- The benefits of construction are one-time benefits occurring only during the construction period.

ON-GOING OPERATIONS

Direct Economic and Fiscal Benefits

The Lake Winds™ Energy Park is projected to commence operations in late 2012, with the facility fully operational by 2013. The intent of this analysis of the Lake Winds™ Energy Park's operations is to highlight the benefits of a typical operating year. For this study, estimated operating benefits for 2013 were determined to be representative of benefits that could be expected on an annual basis. Some variables will vary from year to year such as property tax revenues and landowner payments. Further analysis for these shifting variables is discussed in this study where applicable to recognize the benefits that can be expected on average over 20 years of operations.

Economic Benefits

The operational expenditures for the wind farm in 2013 will total $2.9 million in 2010 dollars. This includes about $980,000 for materials and services; $430,000 of landowner rent payments tied to production, the location of the substation, and various meteorological towers; $500,000 for major maintenance; and about $1 million of labor costs for administration and compensation for employees.

- Annual operations of Lake Winds™ require a variety of materials and services, including vehicles, fuel, insurance, tools, supplies, and other services. Based on the expected spending patterns, Michigan suppliers will capture an estimated $584,000 of the $980,000 in materials and contract services purchases, including spending with Mason County suppliers totaling about $218,000. Of the $218,000 spent in Mason County, suppliers located in the Riverton and Summit Townships will capture about $50,000.

- A significant portion of the operating expenditures will be in the form of rent payments and compensation to the wind farm's landowners. While Consumers Energy will own the turbines, substation, transmission lines, and other assets, it will not own most of the land on which the wind farm will be located. Landowners with wind turbine units on or within 650 feet of their property will receive payments tied to the revenue of the producing units or a minimum annual fixed payment of $7,200, whichever is higher. Consumers Energy will also compensate landowners with permanent meteorological towers on their property. Other surrounding landowners without wind turbines or meteorological towers on their property will receive compensation totaling $5 per acre.

  The total value of these landowner payments will vary each year based on the actual Lake Winds™ operations and the value of the energy produced. The minimum in any given year will total about $430,000. However, the annual payments may be significantly higher based on the price of energy. Based on current Consumers Energy price forecasts, over the first 20 years of operations, the value of landowner payments could average as much as $1.1 million per year.

  Based on the annual minimum payments, landowners who are also residents of Michigan will capture an estimated $422,000 each year, including $410,000 in payments to landowners who are also residents of Mason County. All of the $410,000 in payments in Mason County will benefit landowners who are also residents of either Riverton or Summit Townships.

- Consumers Energy will spend about $500,000 annually for major maintenance activities including major component repairs and replacements, cranes for loading and assembling towers, road improvements, and substation maintenance. Based on expected spending patterns, about $126,000 will be transacted with Michigan suppliers, including a projected $48,000 in Mason County. Isolating the benefits further to the townships, the benefit to the Riverton and Summit Townships will total $31,000.

- Consumers Energy will employ an estimated eight to 12 full-time equivalent, permanent workers at the Lake Winds™ Energy Park. All of

these workers will be Michigan residents, including about 60 percent that are projected to be residents of Mason County. The exact number of employees that will also be residents of the Riverton and Summit Townships is unknown, but it is assumed that one worker will be from the townships to ensure that the potential benefit is not overlooked.

- The cost of labor for the Lake Winds™ Energy Park will total over $1 million each year including all administrative costs, wages and salaries, and employee benefits. Consumers Energy estimates that about 40 percent of the labor costs will be in the form of employee benefits and other non-wage compensation.

  Employee benefits include such items as paid leave and supplemental pay, health and dental insurance, retirement programs, and various legally required benefits (Social Security, Medicare, federal and state unemployment insurance, and workers compensation) as defined by the U.S. Bureau of Labor Statistics in the National Compensation Survey for the employer costs for employee compensation datasets. Data was used for the natural resources, construction, and maintenance occupational group.

- To estimate the value of wages and employee benefits in Michigan, this analysis assumes that 100 percent of the paid leave and supplemental pay expenditures represent direct monetary flows to the employees and will directly benefit the state. Further, the employee insurance expenditures, portions of the legally required benefits, but none of the retirement benefits, are assumed to be spent in Michigan. Overall, Michigan is estimated to capture about 66 percent of the employee benefits spending. Of the $1 million in salaries and employee benefits, Michigan workers and residents will receive about $890,000.

- To estimate the value of wages and employee benefits in Mason County, this analysis assumes that 100 percent of the paid leave and supplemental pay expenditures represent direct monetary flows to the employees and will directly benefit the county. Portions of the employee health insurance expenditures are also included as benefits to the county. Mason County is estimated to capture about 38 percent of the employee benefits spending. Therefore, about $342,000 in wages and employee benefits will benefit the workers that are also residents of Mason County.

Table 4: Direct Economic Benefits of Typical Annual Operations of Lake Winds™ Energy Park

	Total	Riverton & Summit Townships	Mason County	Michigan
Direct Economic Benefits				
Operations Benefits				
Materials and Services	$980,000	$50,000	$218,000	$584,000
Land Owner Payments (Minimum Fixed)	$430,000	$410,000	$410,000	$422,000
Major Maintenance Reserve	$500,000	$31,000	$48,000	$126,000
Administrative Overhead	$20,000	$0	$0	$20,000
Payroll	$605,000	$91,000	$272,000	$605,000
Employee Benefits	$403,000	$15,000	$70,000	$265,000
Total Operations Benefits	**$2,938,000**	**$597,000**	**$1,018,000**	**$2,022,000**
Employees (FTE)	11	1	7	11

- To estimate the value of wages and employee benefits in the townships, this analysis assumes that 100 percent of the paid leave and supplemental pay expenditures will benefit the townships. The townships will capture an estimated 25 percent of the employee benefits spending. Therefore, about $106,000 in wages and employee benefits will benefit the worker residing in one of the townships.

Fiscal Benefits

The operations of the Lake Winds™ Energy Park will generate property taxes and state and county fees, permits, and licenses revenues. The estimated fiscal benefits are as follows:

- Consumers Energy will pay property tax for all of its personal property on the wind farm. The personal property employed at Lake Winds™ will be classified as industrial personal property, meaning that it will be exempt from the six-mill state education tax levy and the school districts' operating levies. However, Lake Winds™ will still generate property tax revenue for the county, townships, and other local tax districts.

  Total property tax revenue from the Lake Winds™ Energy Park in 2013 will be an estimated $2.5 million. Under Michigan's tax code, the personal property of Lake Winds™ will depreciate about five percent each year to a floor of thirty percent of the original valuation. As a result, property tax revenue will decrease from $2.5 million in 2013 to about $800,000 in year 15 of operations, assuming no change in the mill levies.

- Consumers Energy projects the Lake Winds™ Energy Park will generate a total of $29 million in property tax revenue over the 20 years from 2013 to 2032, representing average property tax revenue of $1.4 million per year. This $1.4 million in revenue will benefit several tax districts that serve Mason County residents and businesses, including an average of $505,000 for Mason County's general operations, senior citizens, soldiers and sailors relief fund, jail, Oakview Medical Center, and district library; $63,000 for the Riverton Township's operations; $14,000 for the Summit Township's operations; and about $865,000 for all other taxing districts.

Table 5: Property Tax Districts Serving the Lake Winds™ Energy Park

Tax District	Mill Levy (2010)	20 Year Average Revenue*
Michigan		
State Education Tax	6.0000	*Exempt*
Mason County		
Mason County	5.0967	$350,000
Senior Citizens	0.2220	$15,000
Soldiers/Sailors Relief Fund	0.0030	$0
Jail	0.5800	$40,000
Oakview Medical Facility	0.9646	$66,000
District Library	0.4947	$34,000
Riverton Township		
Riverton Twp Operations	0.9187	$51,000
Riverton Twp Admin Fee		$12,000
Summit Township		
Summit Twp Operations	0.9029	$12,000
Summit Twp Admin Fee		$2,000
Other Districts		
Mason-Lake Intermediate School	2.3751	$163,000
Mason-Lake Special Ed	0.2760	$19,000
Mason-Lake Voc Ed	0.9209	$63,000
WSCC Operations	2.1175	$145,000
WSCC Capital Improvements	0.9732	$67,000
Rural Fire District	0.9824	$67,000
Mason County Central School District - Operating	16.5729	*Exempt*
Mason County Central School District – Debt	5.7900	$321,000
Ludington Area Schools - Operating	18.0000	*Exempt*
Ludington Area Schools – Debt	0.9400	$13,000
Ludington Area Schools – Bldg/Site	0.5000	$7,000
Total		**$1,447,000**

Property tax revenues will be subject to changes in tax districts, mill levies, property valuations, and state laws. The numbers reported are not final.
**Districts that will receive less than $500 in revenue on average are rounded to $0. This affects the Soldiers/Sailors Relief Fund that will receive about $200 annually over 20 years.*

- Table 5 details the average annual property tax revenue whereas Table 6 estimates the revenue by district in 10-year increments.

Table 6: Lake Winds™ Energy Park 20 Year Property Tax Estimates*
($ in Millions)

Tax District	2013-2022	2023-2032	20 Yr Total
Mason County			
Mason County	$4.8	$2.2	$7.0
Senior Citizens	$0.2	$0.1	$0.3
Soldiers/Sailors Relief Fund	$0.0	$0.0	$0.0
Jail	$0.5	$0.3	$0.8
Oakview Medical Facility	$0.9	$0.4	$1.3
District Library	$0.5	$0.2	$0.7
Riverton Township			
Riverton Twp Operations	$0.7	$0.3	$1.0
Riverton Twp Admin Fee	$0.2	$0.1	$0.3
Summit Township			
Summit Twp Operations	$0.2	$0.1	$0.3
Summit Twp Admin Fee	$0.0	$0.0	$0.0
Other Districts			
Mason-Lake Inter School	$2.2	$1.0	$3.2
Mason-Lake Special Ed	$0.3	$0.1	$0.4
Mason-Lake Voc Ed	$0.9	$0.4	$1.3
WSCC Operations	$2.0	$0.9	$2.9
WSCC Cap Improvements	$0.9	$0.4	$1.3
Rural Fire District	$0.9	$0.4	$1.3
Mason County Central School Debt	$4.4	$2.1	$6.5
Ludington School Debt	$0.2	$0.1	$0.3
Ludington School Bldg/Site	$0.1	$0.0	$0.1
Total	**$19.7**	**$9.3**	**$29.0**
Average	**$2.0**	**$0.9**	**$1.4**

**Numbers may not add due to rounding. Property tax revenue will be subject to changes in tax districts, mill levies, property valuations, and state laws. The numbers reported are not final.*

- Mason County and the state will also benefit from fees for inspections, licenses, and permits associated with Lake Winds™. The revenue in 2013 to the state from these fees, licenses, and permits will total a projected $105,000. Mason County revenue in 2013 will total about $6,000.

Direct, Indirect, and Induced Benefits

The annual operations of the Lake Winds™ Energy Park will have multiplicative impacts on the county and state economies. Multiplicative impacts for the county and state are based on the value of output, or revenues received in the electric power generation, transmission, and distribution industry. This analysis assumes that the company's total value of output is equal to its total expenditures. While revenues from production at Lake Winds™ will include a renewable energy surcharge (used to help finance renewable projects in Michigan) and will be used to pay for the project's large upfront financing costs, the benefits from these expenditures were included in the Construction Activity section of the report.

RIMS II multipliers are available on a county and state level. As a result, this analysis only includes multiplier impacts for the state of Michigan and Mason County. Multiplier effects also occur within the townships and are a part of the multiplier effects estimated for Mason County. However, the specific amount of these effects cannot be separated from the county numbers and are not included for this reason.

Michigan

- ***Value of Output:*** The impact analysis assumes that the value of Lake Winds™ output is equal to its known expenditures (excluding fees and taxes) of $2.9 million. Based on the electric power generation, transmission, and distribution industry relationships revealed through the RIMS II multipliers, the presence of Lake Winds™ and its employees supports $1.7 million in additional output in all industries throughout the state. This includes the value of output supported by the local spending of Lake Winds™ employees (the induced benefit) and the local supplier companies and their employees (the indirect benefit). Therefore, the total direct and indirect benefit of the typical annual operations of Lake Winds™ is $4.6 million in total state output ($2.9 million direct output + $1.7 million indirect and induced output), as shown in Table 7.

As revealed in Table 4, Lake Winds™ will spend about $2 million in Michigan each year for goods and services (including labor) used as inputs into its production of the $2.9 million in direct output. It is this local spending that creates the spin-off effects of Lake Winds™, ultimately supporting the statewide production of $1.7 million in indirect output from all industries.

- ***Employment:*** Annual operations of the Lake Winds™ Energy Park will directly employ about eight to 12 employees in Michigan. Based on the RIMS II multipliers, the production of the $1.7 million in indirect and induced output in all industries throughout the state will require about 24 employees. Therefore, the annual operations of the Lake Winds™ Energy Park will support the employment of 35 workers (11 direct employees + 24 indirect employees), as shown in Table 7.

- ***Earnings:*** The workers directly involved in the annual operations of Lake Winds™ in Michigan will earn an estimated $1 million in wages, salaries, and benefits. Based on the industry relationships revealed through the RIMS II multipliers, the 24 indirect employees that produce the $1.7 million in indirect and induced output have associated earnings of about $800,000. As a result, the 35 direct and indirect employees have estimated annual earnings of $1.8 million ($1 million direct earnings + $0.8 million indirect earnings), as shown in Table 7. All earnings values are included in the total value of output; earnings are not in addition to the value of output.

- These benefits will occur annually assuming similar business operations and tax structures.

Table 7: Total Economic Benefit of Typical Annual Operations of Lake Winds™ in State of Michigan ($ in millions)

	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Total Economic Impacts of Operations				
Value of Output	$2.9	1.5825	$1.7	$4.6
Earnings	$1.0	1.7626	$0.8	$1.8
Employment	11	3.2206	24	35

Calculation Notes: Direct x Multiplier = Total Impact

Total Impact - Direct Impact = Indirect & Induced Impact

Mason County

- ***Value of Output:*** The direct annual output of $2.9 million in Mason County in the electric power generation, transmission, and distribution industry for the Lake Winds™ Energy Park will support $700,000 in additional output in all industries throughout Mason County. This includes the value of output supported by the local spending of Lake Winds™ employees (the induced benefit) and the local supplier companies and their employees (the indirect benefit). Therefore, the total direct and indirect benefit of the typical annual operations of Lake Winds™ is $3.6 million in total county output ($2.9 million direct output + $0.7 million indirect and induced output), as shown in Table 8.

- ***Employment:*** Annual operations of the Lake Winds™ Energy Park will directly employ about 8 to 12 employees in Mason County. Based on the RIMS II multipliers, the production of the $700,000 in indirect and induced output in all industries throughout the county will require about 12 employees. Therefore, the annual operations of the Lake Winds™ Energy Park will support the employment in Mason County of 23 workers (11 direct employees + 12 indirect employees), as shown in Table 8.

- ***Earnings:*** The workers directly involved in the annual operations of Lake Winds™ in Mason County will earn an estimated $1 million in wages, salaries, and benefits. Based on the industry relationships revealed through the RIMS II multipliers, the 12

indirect employees that produce the $700,000 in indirect and induced output have associated earnings of about $300,000. As a result, the 23 direct and indirect employees have estimated annual earnings of $1.3 million ($1 million direct earnings + $0.3 million indirect earnings), as shown in Table 8. All earnings values are included in the total value of output; earnings are not in addition to the value of output.

- These benefits will occur annually assuming similar business operations and tax structures.

Table 8: Total Economic Benefit of Typical Annual Operations of Lake Winds™ in Mason County, Michigan
($ in millions)

	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Total Economic Benefits of Operations				
Value of Output	$2.9	1.2249	$0.7	$3.6
Earnings	$1.0	1.3153	$0.3	$1.3
Employment	11	2.1055	12	23

Calculation Notes: Direct x Multiplier = Total Impact
Total Impact - Direct Impact = Indirect & Induced Impact

Construction Activity

- ***Michigan:*** The direct economic benefit of the Lake Winds™ Energy Park's construction and transitory construction worker spending in Michigan will be an estimated $57.8 million produced by 67 workers (in work-years) earning $4.8 million. The construction activity and transitory worker spending will support an additional $74.3 million of output in all industries in Michigan. The production of the $74.3 million in additional output for all industries in the state will require about 70 workers, referred to as the indirect workers. These workers will have associated earnings of approximately $4.5 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 the Lake Winds™ Energy Park will generate direct and indirect output in Michigan valued at $132.1 million produced by 137 workers earning a total of $9.3 million in compensation.

  The direct fiscal benefit of the Lake Winds™ Energy Park in Michigan will be $30,000 in sales and use tax revenue from transitory worker spending.

- ***Mason County:*** The direct economic benefit of the Lake Winds™ Energy Park's construction and transitory construction worker spending in Mason County will be an estimated $22.7 million produced by 23 workers (in work-years) earning $1 million. The construction activity and transitory worker spending will support an additional $10.6 million of output in all industries in the county. The production of the $10.6 million in additional output for all industries in the county will require about nine workers, referred to as the indirect workers. These workers will have associated earnings of approximately $300,000. 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 the Lake Winds™ Energy Park will generate direct and indirect output in Mason County valued at $33.3 million produced by 32 workers earning a total of $1.3 million in compensation.

  The direct fiscal benefit of construction of the Lake Winds™ Energy Park in Mason County will be $300,000 in building fees and permits.

- ***Riverton and Summit Townships:*** ***The direct economic benefit of the Lake Winds™ Energy Park's construction in Riverton and Summit Townships will be an estimated $13.8 million produced by four workers (in work-years) earning $235,000 in compensation.***

Table 9: Total Economic Benefit of Lake Winds™ Energy Park Construction Activity
($ in millions)

	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Michigan				
Value of Output	$57.8		$74.3	$132.1
Earnings	$4.8		$4.5	$9.3
Employment	67		70	137
Mason County				
Value of Output	$22.7		$10.6	$33.3
Earnings	$1.0		$0.3	$1.3
Employment	23		9	32
Riverton and Summit Townships				
Value of Output	$13.8		*Not Estimated*	
Earnings	$0.2		*Not Estimated*	
Employment	4		*Not Estimated*	

Calculation Notes: Direct x Multiplier = Total Impact
Total Impact - Direct Impact = Indirect & Induced Impact

On-Going Operations

- ***Michigan:*** The direct economic benefit of the Lake Winds™ Energy Park's typical annual operations in Michigan will be an estimated $2.9 million produced by 11 workers earning $1 million. The operating activity will support an additional $1.7 million of output in all industries in Michigan. The production of the $1.7 million in additional output for all industries in the state will require about 24 workers, referred to as the indirect workers. These workers will have associated earnings of approximately $800,000. All earnings values are included in the total value of output; earnings are not in addition to the value of output.

  Combined, the typical annual operations of the Lake Winds™ Energy Park will generate direct and indirect output in Michigan valued at $4.6 million produced by 35 workers earning a total of $1.8 million in compensation.

  The typical annual direct fiscal benefit of the Lake Winds™ Energy Park in Michigan will be an estimated $105,000 in fees.

- ***Mason County:*** The direct economic benefit of the Lake Winds™ Energy Park's typical annual operations in Mason County will be an estimated $2.9 million produced by 11 workers earning $1 million. The operating activity will support an additional $700,000 of output in all industries in Mason County. The production of the $700,000 in additional output for all industries in the county will require about 12 workers, referred to as the indirect workers. These workers will have associated earnings of approximately $300,000. All earnings values are included in the total value of output.

  Combined, the typical annual operations of the Lake Winds™ Energy Park will generate direct and indirect output in Mason County valued at $3.6 million produced by 23 workers earning a total of $1.3 million in compensation.

  Lake Winds™ will generate average property of $1.4 million per year. This $1.4 million will benefit several tax districts that serve Mason County residents and businesses, including an average of $505,000 for Mason County's general operations, senior citizens, soldiers and sailors relief fund, jail, Oakview Medical Center, and district library; $77,000 for the Riverton and Summit Townships; and about $865,000 for all other taxing districts.

  In addition to property tax revenue, Mason County will receive about $6,000 annually for inspections, permits, and licenses.

Table 10: Total Economic Benefit of Typical Annual Operations of Lake Winds™ Energy Park
($ in millions)

	Direct Impact	Multiplier	Indirect & Induced Impact	Total Impact
Michigan				
Value of Output	$2.9	1.5825	$1.7	$4.6
Earnings	$1.0	1.7626	$0.8	$1.8
Employment	11	3.2206	24	35
Mason County				
Value of Output	$2.9	1.2249	$0.7	$3.6
Earnings	$1.0	1.3153	$0.3	$1.3
Employment	11	2.1055	12	23
Riverton and Summit Townships				
Value of Output	$2.9		*Not Estimated*	
Earnings	$1.0		*Not Estimated*	
Employment	11		*Not Estimated*	

Calculation Notes: Direct x Multiplier = Total Impact
Total Impact - Direct Impact = Indirect & Induced Impact

- ***Riverton and Summit Townships:*** ***The direct economic benefit of the Lake Winds™ Energy Park's typical annual operations in Riverton and Summit Townships will be an estimated $2.9 million produced by 11 workers earning $1 million.***

REFERENCES

American Wind Energy Association. U.S. Projects Database, Michigan Existing and Under Construction Wind Energy Projects. September 9, 2010. http://www.awea.org/la_usprojects.cfm.

Consumers Energy. www.consumersenergy.com

Hotels.com, Nearest hotels to Scottville and Ludington, MI. http://www.hotels.com (Accessed January 2011).

Ludington & Scottville Area Chamber of Commerce, Lodging/Accommodations. http://www.ludington.org/index/php?option=com_wrapper&view=wrapper&Itemid=143 (Accessed January 2011).

Michigan Association of Planning. "Harvesting the Wind Huron County, Michigan." http://www.planningmi.org/downloads/harvesting_the_wind_huron_county_michigan_ppt.pdf.

Michigan Department of Energy, Labor & Economic Growth, Michigan Public Service Commission. "Michigan's 21st Century Electric Energy Plan." January 2007. http://www.michigan.gov/mpsc/0,1607,7-159-16370_17060---,00.html.

Michigan Department of Energy, Labor & Economic Growth, Michigan Public Service Commission. "Renewable Energy Contract Summary." http://www.dleg.state.mi.us/mpsc/renewables/Summary_of_PA_295_Renewable_Energy_Contracts_with_COD.pdf (Accessed January 2011).

Michigan Department of Energy, Labor & Economic Growth. "Synopsis of Michigan Renewable Energy Legislation 2009-2010 Pending or Passed Legislation." http://www.michigan.gov/mpsc/0,1607,7-159-16393---,00.html. (Accessed January 2011).

Michigan Economic Development Corporation. "Sector Spotlight: Wind Energy Brochure." http://www.michiganadvantage.org/cm/files/Brochures/Wind_Energy.pdf (Accessed January 2011).

Michigan Department of Treasury. http://www.michigan.gov/treasury

Michigan State University, Land Policy Institute. "Projected Impacts of Renewable Portfolio Standards on Wind Industry Development in Michigan." December 2007. http://www.landpolicy.msu.edu/modules/php?name=Pages&sp_id=338#wepublications

National Renewable Energy Laboratory. "Michigan Wind Resources." October 2004. http://www.michigan.gov/documents/michigan_wind_map_04_multi_105417_7.pdf.

Noble Environmental Power. "Noble Environmental Power Builds Michigan's Newest Windpark." July 2008. http://www.noblepower.com/pressroom/index.html

RentLinx.com. Michigan State Housing Development Authority, Michigan Housing Locator. http://michiganhousinglocator.rentlinx.com/MI/Ludington (Accessed January 2011).

REFERENCES

U.S. Department of Commerce, Bureau of Economic Analysis. Regional Input-Output Modeling System II Multipliers, 2002 Annual Input-Output Table for the Nation and 2007 regional data.

U.S. Department of Labor, Bureau of Labor Statistics. National Compensation Survey, "Employer Costs for Employee Compensation, September 2010." http://www.bls.gov/ncs/

U.S. Department of Energy, Energy Information Administration. "State Renewable Electricity Profiles 2008 – Michigan." August 2010. http://www.eia.doe.gov/cneaf/solar.renewables/page/state_profiles/r_profiles_sum.html.

U.S. Department of Energy, Energy Information Administration. "Renewable Energy Annual 2008, Renewable Electric Power Sector Net Generation by Energy Source and State, 2008." August 2010. http://www.eia.doe.gov/cneaf/solar.renewables/page/rea_data_rea_sum.html.

U.S. General Services Administration. Per Diem Rates 2009/2010. http://www.gsa.gov/portal/category/100120

DEVELOPMENT RESEARCH PARTNERS

Development Research Partners specializes in economic research and analysis for local and state government and private-sector businesses. Founded in 1994, Development Research Partners combines extensive experience in real estate economics and economic development to provide clients with reliable consulting services in four areas of expertise:

- **Economic and Demographic Research**
  Research in support of business and community activities, ranging from community profiles to evaluating and forecasting economic and market conditions.
- **Industry and Workforce Studies**
  Specialized research projects including industry cluster research, industry trends analysis, workforce needs and gap analysis, and strategic competitive analysis.
- **Fiscal and Economic Impact Analysis**
  Comprehensive analysis and analytical tools to evaluate and forecast site-specific activities and model public-private sector relationships.
- **Real Estate Economics**
  Preparation of strategic market data and analysis for prospective real estate development and public-private partnerships.

Development Research Partners
Patricia Silverstein, President
David Hansen, Research Economist
Lisa Strunk, Research Economist
Emily Stuart, Research Economist
10184 West Belleview Avenue
Suite 100
Littleton, Colorado 80127
www.DevelopmentResearch.net
303.991.0070

Development
Research Partners

Economic and Demographic Research

Industry Studies

Fiscal and Economic Impact Analysis

Real Estate Economics

10184 West Belleview Avenue
Suite 100
Littleton, Colorado 80127
www.DevelopmentResearch.net
303.991.0070