

**Exhibit H**  
**Socioeconomic Report**  
**Westwood**  
**March 23, 2021**

A REPORT FOR  
ENVIRONMENTAL SERVICES

# Grover Hill Wind Project

Socioeconomic Report

MARCH 23, 2021

PREPARED FOR:



PREPARED BY:

**Westwood**

# Socioeconomic Report

**Grover Hill Wind Project**

Paulding County, Ohio

**Prepared For:**

Starwood Energy Group  
591 West Putnam Avenue  
Greenwich, CT 06830

**Prepared By:**

Westwood Professional Services  
12701 Whitewater Drive, Suite 300  
Minnetonka, MN 55343  
(952) 937-5150

Project Number: R0015695.00

Date: 3/23/2021

# Table of Contents

<b>Executive summary</b> .....	1
<b>Part I: Introduction</b> .....	2
<b>Part II: Socioeconomic Profile</b> .....	3
Population Trends .....	3
Employment statistics .....	4
<b>Part III: Regional Development Impacts</b> .....	8
Housing .....	9
Commercial and Industrial Development .....	10
Transportation .....	10
Local and Regional Plan Compatibility .....	11
Concurrent or secondary uses .....	12
<b>Part IV: Assessing Job and Economic Development Impacts</b> .....	12
Jobs and Economic Development Impact (JEDI) Model .....	12
Methodology .....	14
<b>Part V: Job and Economic Development Impacts on the Statewide Economy</b> .....	15
Statewide Job and Economic Development Impact: Construction .....	16
Statewide Job and Economic Development Impacts: Operations and Management .....	16
Land Lease Payments .....	17
<b>Part VI: Local Tax Revenues</b> .....	17
Legislative Context .....	17
Estimated Payments In Lieu of Taxes .....	18
<b>Part VII: Conclusion</b> .....	18
<b>Part VIII: References</b> .....	20

## Tables

Table 1: County Population Trends and Densities

Table 2: Municipal Population Trends and Densities

Table 3: Local Labor Force and Unemployment

Table 4a: Employment and Payroll by NAICS Sector in the State of Ohio

Table 4b: Employment and Payroll by NAICS Sector in Paulding County, Ohio

Table 4c: Employment and Payroll by NAICS Sector in Putnam County, Ohio

Table 4d: Employment and Payroll by NAICS Sector in Van Wert County, Ohio

Table 5: Study Area Housing Characteristics

Table 6: Summary Results of Job and Economic Impact Analysis

Table 7: Service Payment per Megawatt Schedule

Table 8: Estimated Total PILOT Revenue

## Exhibits

Exhibit 1: Regional Facility Location

Exhibit 2: Study Area (5-Miles)

## Executive summary

This socioeconomic report was prepared in support of the proposed Grover Hill Wind Farm ("the Facility"), a wind powered electric generation facility in Paulding County, Ohio (See Figure 1). The Facility (Figure 2) is proposed to consist of electric generating wind turbines, access roads, electric collection cables, an operations and maintenance facility, a substation, a temporary laydown yard for construction staging, and meteorological towers. The electricity produced at the Facility will be delivered to one point of interconnection (POI) at the Haviland 138 kilovolt (kV) substation. The Facility will have an output capacity of up to 150 megawatts (MW) and will operate at a generating capacity of 30% to 35%, generating a total of approximately 394,200 to 459,900 megawatt hours (MWh) per year to the regional electric power grid. Construction is scheduled to begin in 2022.

This report will evaluate the projected socioeconomic impacts of this Facility on the seven municipalities (villages and townships) within a 5-mile radius from the Facility ("the Study Area" in Figure 1), and for the State of Ohio. Review of past and current demographic and economic characteristics and trends in the Study Area, and of Ohio is discussed throughout this report. The regional economy surrounding the Study Area is dependent in large part on the agricultural industries of Paulding, Van Wert and Putnam Counties as well as significant influence from regional metropolitan areas such as Toledo and Fort Wayne Indiana. Potential impacts to employment, earnings, and economic output consequential to Facility construction and operation are evaluated regarding socioeconomic conditions within the State of Ohio and the Study Area.

Grover Hill Wind Farm is expected to produce a positive economic impact throughout the state, region, and the communities within the Study Area. Lease payments to private landowners, short- and long-term job creation, and tax payments to the county by the Facility will produce income to the counties without requiring significant public services or costs.

## Part I: Introduction

This socioeconomic report was prepared to support the proposed Grover Hill Wind Farm located in Paulding County, Ohio (See Figure 1). The Project, (Figure 2) will consist of electric generating wind turbines, access roads, electric collection cables, an operations and maintenance facility, an electric substation, a temporary construction staging laydown yard, and meteorological towers to collect site weather data. The electricity generated at the Project will be delivered to one point of interconnection (POI) at the Haviland 138 kV substation. The Project will have a nameplate capacity of up to 150.0 megawatts (MW) and will operate at a generating capacity of 30% to 35%, generating a total of approximately 394,200 to 459,900 MWh per year to the regional power grid. Construction is scheduled to begin in 2022.

This report shows forecasted economic impacts to the state and local economy generated by the construction and operation of the Facility. It includes a review of existing demographic and economic characteristics in the area, as well as area trends. State and federal demographic and economic data are also included as needed. Unless noted otherwise, the Study Area for this report includes the following municipalities in Paulding County, Ohio which are within a 5-mile radius of the Facility (the Study Area):

1. Village of Grover Hill, Paulding Co.
2. Latty Township, Paulding Co.
3. Village of Broughton, Paulding Co.
4. Village of Haviland, Paulding Co.
5. Village of Melrose, Paulding Co.
6. Village of Oakwood, Paulding Co.
7. Village of Scott, Both Paulding Co. and Van Wert Co.

Part II of this report provides an examination of population trends within the State of Ohio and the Study Area, from 2000 through 2010, including projected population growth through 2030. In addition, Part II provides data regarding the civilian labor force for 2018 by state and county (latest data available). Part III reviews the types of potential impacts that could be experienced throughout the region, including those regarding housing demand, commercial and industrial employment, and transportation networks. Part IV describes the methods of analysis of potential economic benefits provided within this report, including an overview of the Job and Economic Development Impact (JEDI) Wind Model. This model was created by MRG & Associates, under contract with the National Renewable Energy Laboratory and is an industry standard for economic impact investigation. This is followed by the JEDI results (Part V), which describes the jobs created by the construction and operation of the Facility, as well as a summary of payments to landowners as a result of land leases for turbines. Part VI reviews potential impacts of the Facility from the perspective of local taxing jurisdictions. The findings of this report are summarized in Part VII, followed by Part VIII, a bibliography of cited sources.

## Part II: Socioeconomic Profile

### Population Trends

Census data reveals that these communities have historically experienced either small population growth or decline over the past two decades. The 2018 populations for the State of Ohio and Paulding, Putnam, and Van Wert Counties are shown in Table 1 below. Ohio showed a notable increase in population of 2.96% from 2000 to 2018. All three Ohio counties included in the Study Area showed a decrease in population between 2000 and 2018. Putnam County decreased by 2.72%, Paulding County decreased by 7.55%, and Van Wert County decreased by 4.65%.

**Table 1: County Population Trends and Densities**

County	2000 Pop.	2010 Pop.	2018 Pop.	Percent Change 2010-2018	Est. 2030 Pop.	Percent Change 2018-2030	2018 Population Density (people per square mile)
Paulding County	20,293	19,614	18,760	-7.55%	18,220	-2.90%	44.8
Putnam County	34,726	34,499	33,780	-2.72%	33,860	+0.23%	69.8
Van Wert County	29,659	27,744	28,281	-4.65%	26,190	-7.39%	68.9
State of Ohio	11,353,140	11,536,504	11,689,442	+2.96%	11,615,100	-0.64%	260.8

Source: U.S. Census Bureau, 2000 and 2010 Decennial Census, Census Report, and American Community Survey 5-Year Estimates 2013-2017. Future Population Estimates from Ohio Development Services Agency – Office of Research (Ohio Estimates dated March 2018; Paulding County Estimates dated April 2018)

The population trends experienced by this area from 2010 to 2018 are expected to continue along this trend regardless of the construction of the proposed Facility. Over the next decade, from 2018 to 2030, the total population within the three counties of the Study Area is projected to decrease by 3.16% from 80,821 to 78,270; compared to the projected Ohio statewide decrease of 0.64%.

Paulding County population is projected to decrease in population by 2.9% from 2018 to 2030; Van Wert County population is projected to decline 7.4% and Putnam County is projected to increase in population by 0.2%.

As indicated in Table 2, the majority of local municipalities also demonstrate a general decrease in population from 2000 to 2018. Notable exceptions include small municipalities, such as the Village of Havilland, which experienced a population increase of 12% over the same time span (Table 2). See Table 2 for more specific localized population trends.

**Table 2: Municipal Population Trends and Densities**

Municipality	2000 Pop.	2010 Pop.	2018 Pop.	Percent Change 2000-2018	Est. 2030 Pop.	Percent Change 2018-2030*	2018 Population Density (people per square mile)
Village of Grover Hill, Paulding Co.	412	402	378	-8.25%	367	-2.90%	1,400
Latty Township, Paulding Co.	200	193	184	-8.00%	179	-2.90%	708
Broughton Village, Paulding Co.	166	120	114	-31.30%	111	-2.90%	438
Haviland Village, Paulding Co.	180	215	202	+12.22	196	-2.90%	777
Melrose Village, Paulding Co.	322	275	262	-18.63%	254	-2.90%	1,191
Oakwood Village, Paulding Co.	607	608	590	-2.96%	573	-2.90%	1,405
Scott Village, Paulding & Van Wert Counties	322	286	274	-14.90%	260	-5.15% **	343
<b>Total</b>	2,209	2,099	2,004	-9.28%	1,940	-3.19%	805

Source: U.S. Census Bureau, 2000 and 2010 Decennial Census, Census Report, and American Community Survey 5-Year Estimates 2013-2017.

\*Projections derived from each County's respective 2018 to 2030 % change located in Table 1.

\*\* Scott Village Percent Change 2018-2030 took the average % change rate from Paulding & Van Wert Counties, i.e. -5.15%

Although employment related to the construction of the Facility will be substantial, this employment is expected to be short term and is not anticipated to result in the permanent relocation of construction workers to the area; therefore, the Facility is not anticipated to generate significant population growth within the Study Area. The number of potential short- and long-term employment opportunities associated with the construction and operation of the Facility is discussed in further detail below.

### Employment statistics

Table 3 illustrates the size of the local labor force and level of unemployment in counties located either wholly or partially within five miles of the proposed Facility, as well as across Ohio. Annual average unemployment has generally decreased both statewide and countywide from 2014 to 2018. The annual unemployment rate for all identified Counties has been lower than that of the state since 2016. Table 4a through Table 4d illustrates employment figures in the State of Ohio, and Paulding, Putnam, and Van Wert Counties broken down by sector for 2016. Note that 2018 data was not available during the preparation of this report.

**Table 3: Local Labor Force and Unemployment**

Place	Labor Force	Employed	Unemployed	Unemployment Rate, 2018 (annual) Partial	Unemployment Rate, 2016 (annual)	Unemployment Rate, 2014 (annual)
Paulding County	8,708	8,350	358	4.1%	4.6%	5.5%
Putnam County	18,615	17,988	627	3.4%	3.7%	4.6%
Van Wert County	14,362	13,856	506	3.5%	4.0%	4.9%
State of Ohio	5,754,940	5,491,591	263,349	4.3%	5.0%	4.3%

Note: Not Seasonally Adjusted; Source: U.S. Bureau of Labor Statistics, 2018; U.S. Bureau of Labor Statistics, 2016.; U.S. Bureau of Labor Statistics, 2014.

**Table 4a: Employment and Payroll by NAICS Sector in the State of Ohio**

NAICS Code Description	Paid Employees for Pay Period including March 12, 2016	First-quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
Total for all sectors	4,790,178	53,695,191	218,466,744	252,201
Agriculture, forestry, fishing, and hunting	1,207	8,515	40,091	279
Mining, quarrying, and oil and gas extraction	10,575	160,513	670,009	721
Utilities	23,488	795,921	2,289,648	647
Construction	188,864	2,359,686	11,116,285	19,727
Manufacturing	662,428	9,074,716	36,621,708	14,000
Wholesale Trade	232,886	3,510,084	14,256,812	13,856
Retail trade	573,837	3,517,657	14,781,616	36,020
Transportation and warehousing	176,312	1,978,269	8,372,644	7,497
Information	84,760	1,519,804	6,104,025	4,035
Finance and insurance	255,131	5,582,064	19,152,621	17,335
Real estate and rental and leasing	66,391	857,733	3,253,606	10,361
Professional, Scientific, and technical services	250,766	4,062,533	17,052,928	23,929

Management of companies and enterprises	150,837	4,172,043	14,989,563	2,265
Administrative and support and waste management and remediation services	397,162	2,977,683	13,170,501	13,576
Educational Services	121,226	847,072	3,485,175	3,054
Health care and social assistance	840,716	8,778,022	37,675,991	29,225
Arts, entertainment, and recreation	68,762	482,221	2,506,674	3,817
Accommodation and food services	481,956	1,685,389	7,358,502	24,115
Other services (except public administration)	202,431	1,323,427	5,559,716	27,395
Industries not classified	443	1,839	8,629	347

Source: U.S. Census Bureau, 2016 County Business Patterns.

**Table 4b: Employment and Payroll by NAICS Sector in Paulding County, Ohio**

NAICS Code Description	Paid Employees for Pay Period including March 12, 2016	First-quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
Total for all sectors	297	3,554	26,652	117,218
Agriculture, forestry, fishing, and hunting	1	a	D	D
Mining, quarrying, and oil and gas extraction	2	b	D	D
Utilities	3	b	D	D
Construction	23	77	628	3,410
Manufacturing	36	1,231	11,305	49,786
Wholesale Trade	15	173	1,630	7,267
Retail trade	47	368	1,961	8,500
Transportation and warehousing	17	159	1,269	5,815
Information	4	24	176	712
Finance and insurance	22	107	905	3,972
Real estate and rental and leasing	6	19	80	372
Professional, Scientific, and technical services	14	72	424	1,729
Management of companies and enterprises	1	a	D	D
Administrative and support and waste management and remediation services	9	107	2,057	8,367
Educational Services	1	c	D	D
Health care and social assistance	28	565	3,469	15,022

Arts, entertainment, and recreation	1	a	D	D
Accommodation and food services	25	322	771	3,358
Other services (except public administration)	40	133	523	2,191
Industries not classified	2	a	D	D

a: 0-19 employees

b: 20-99 employees

c: 100-249 employees

D: Withheld to avoid disclosing data for individual companies; data are included in higher level totals

Source: U.S. Census Bureau, 2016 County Business Patterns.

**Table 4c: Employment and Payroll by NAICS Sector in Putnam County, Ohio**

NAICS Code Description	Paid Employees for Pay Period including March 12, 2016	First-quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
Total for all sectors	723	10082	84060	369910
Agriculture, forestry, fishing, and hunting	4	4	30	147
Mining, quarrying, and oil and gas extraction	1	a	D	D
Utilities	122	756	6591	34464
Construction	51	3705	45103	191862
Manufacturing	41	358	3831	16995
Wholesale Trade	102	1059	6147	26826
Retail trade	39	263	2468	10883
Transportation and warehousing	14	67	740	2859
Information	45	241	2615	11101
Finance and insurance	11	31	176	810
Real estate and rental and leasing	36	222	2300	11269
Professional, Scientific, and technical services	2	a	D	D
Management of companies and enterprises	35	742	3345	14293
Administrative and support and waste management and remediation services	7	98	363	1499
Educational Services	58	1076	5687	25472
Health care and social assistance	10	76	244	1495
Arts, entertainment, and recreation	58	809	1828	8376
Accommodation and food services	87	557	2377	10605
Other services (except public administration)	723	10082	84060	369910
Industries not classified	4	4	30	147

a: 0-19 employees

b: 20-99 employees

c: 100-249 employees

D: Withheld to avoid disclosing data for individual companies; data are included in higher level totals

Source: U.S. Census Bureau, 2016 County Business Patterns.

**Table 4d: Employment and Payroll by NAICS Sector in Van Wert County, Ohio**

NAICS Code Description	Paid Employees for Pay Period including March 12, 2016	First-quarter Payroll (\$1,000)	Annual Payroll (\$1,000)	Total Establishments
Total for all sectors	544	9868	82744	352638
Agriculture, forestry, fishing, and hunting	1	a	D	D
Mining, quarrying, and oil and gas extraction	2	a	D	D
Utilities	5	38	958	3752
Construction	43	219	1946	9830
Manufacturing	37	3225	32894	136449
Wholesale Trade	25	314	3098	14587
Retail trade	87	1151	6168	26951
Transportation and warehousing	25	308	3601	13155
Information	7	40	291	1231
Finance and insurance	38	796	13067	55466
Real estate and rental and leasing	13	68	556	2752
Professional, Scientific, and technical services	29	372	2864	13394
Management of companies and enterprises	2	b	D	D
Administrative and support and waste management and remediation services	19	393	1793	8556
Educational Services	5	46	185	714
Health care and social assistance	62	1385	10943	46951
Arts, entertainment, and recreation	9	79	264	1213
Accommodation and food services	48	862	2007	8714
Other services (except public administration)	86	538	1676	7076
Industries not classified	1	a	D	D

a: 0-19 employees

b: 20-99 employees

c: 100-249 employees

D: Withheld to avoid disclosing data for individual companies; data are included in higher level totals

Source: U.S. Census Bureau, 2016 County Business Patterns.

## Part III: Regional Development Impacts

The Study Area, which includes portions of Paulding, Putnam, and Van Wert Counties, is primarily agricultural in nature and predominantly rural. The City of Toledo (northeast of the

Study Area), the City of Fort Wayne, Indiana (west of the Study Area), and the City of Dayton (south of the Study Area), are all significant metropolitan regions and in relative proximity to the Study Area. The regional context for the development of this Facility is discussed in further detail below, concentrating on three primary components: housing, commercial and industrial development, and transportation. In addition, the compatibility of the proposed Facility with regional developmental goals and plans is reviewed.

## Housing

As with all sectors of the economy, the housing market throughout the region has felt the impact of population loss. Owner-occupied vacancy rates in Paulding County (3.5%) and Van Wert County (3.1%) are higher than the Ohio statewide average (1.7%), while the rate for Putnam County (0.8%) is lower. The rental vacancy rate in Paulding County (5.8%) is comparable to the State average (5.8%); Van Wert County (5.6%) is lower than the State average and Putnam County (2.6%) is much lower than the state average (Table 5).

Paulding, Putnam, and Van Wert Counties feature a median monthly gross rent level of \$633, \$677, and \$678, respectively, all of which are below the statewide average of \$764/month. Each county in the Study Area has a lower percentage of households whose rent accounts for more than 35% of their household income, compared to the respective statewide value (38.1%). In addition, the median housing values of Paulding and Van Wert Counties are below the statewide averages of Ohio (\$135,100); however, Putnam County has a higher median housing value than the state, with an average value of \$147,200.

It is estimated that 3,082 housing units within Paulding, Putnam, and Van Wert Counties are currently vacant. Given these figures, in addition to the population projections discussed in Part II of this report, it is not expected that the development of the Facility will have a significant impact on the regional housing market. While the Facility development may not represent a widespread boom for rental property owners, it is worth noting that the availability of vacant rental housing also indicates that the Facility should not have a destabilizing effect on current renters.

**Table 5: Study Area Housing Characteristics**

Municipality / County/State	Total housing units	Occupied Units	Vacant unites	Vacant Rate		Median housing value of owner-occupied units	Median gross rent (month ly)	Percent of household s with gross rent > 35% of household income
				Home - Owner	Rental			
Village of Grover Hill	182	153	29	0.0%	0.0%	\$53,100	\$825	56.8%
Latty Township	68	62	6	0.0%	0.0%	\$91,900	\$775	55.6%
Broughton Village	55	44	11	0.0%	0.0%	\$50,000	*	0.0%
Haviland Village	108	91	17	6.5%	2.4%	\$81,700	\$606	20.6%

Melrose Village	99	72	27	17.3%	0.0%	\$72,100	\$761	14.3%
Oakwood Village	**	**	**	**	**	**	**	**
Scott Village	139	112	27	3.9%	0.0%	\$45,500	\$588	0.0%
Paulding County	8,750	7,589	1,161	3.5%	5.8%	\$92,500	\$633	25.3%
Putnam County	13,857	13,159	698	0.8%	2.6%	\$147,200	\$677	29.0%
Van Wert County	12,726	11,503	1,223	3.1%	5.6%	\$99,000	\$678	34.5%
State of Ohio	5,174,838	4,633,145	541,693	1.7%	5.8%	\$135,100	\$764	38.1%

\*: No sample observations or too few sample observations to compute and estimate.

\*\*: Data not available for this topic and the selected geography.

Source: U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

## Commercial and Industrial Development

The Environmental Law & Policy Center estimated that the State of Ohio is currently home to 134 wind power supply chain businesses, providing between 2,001 to 3,000 jobs throughout the state (ELPC, 2016; AWEA, 2019). Wind energy technology manufacturing opportunities include rotors, controls, drive trains, generators, and towers. Several of these manufacturers and other wind power-related businesses are in northwest Ohio (AWEA, 2019).

The diversification of Ohio's energy portfolio will have significant and positive economic impacts beyond a reduced dependence on coal imported from outside of the state. A 2018 report produced by Powering Ohio (Synapse Energy Economics, Inc) estimates growth to 5.2 gigawatts of onshore wind and solar production would create 5,500 jobs and boost the State's gross domestic product by over \$2,000,000,000 (Powering Ohio, 2018).

These positive impacts are principally due to the influence of wind energy development on the manufacturing sector. The State of Ohio is uniquely positioned to take advantage of advanced manufacturing opportunities for the development and distribution of wind power technology, over 60 active manufacturing facilities are already operating in Ohio (AWEA, 2019). The National Renewable Energy Laboratory (NREL) estimates that the State of Ohio has enough wind resources to generate nearly 54,920 MW at 80m hub height and 123,328 MW at 100m hub height of offshore wind energy (Oteri, et.al., 2018). Ohio is a prominent location for future wind energy facility development and wind energy component manufacturing.

Specific short- and long-term economic impacts of this Facility on commercial and industrial development throughout the region are described in further detail in Part V of this report.

## Transportation

The region surrounding the Facility features numerous interstates, U.S. and state highways, county and local roadway networks, freight rail lines, and small airports. The main transportation routes to the Facility are U.S. Interstate 69 to the west, U.S. Interstate 75 to the east, U.S. Interstate 80 to the north, and U.S. Route 30 to the south. U.S. Route 30 to the south runs adjacent to the Facility. U.S. Route 127 is located approximately 3.0-miles west of the Project traveling through the Village of Haviland; U.S. Route 127 is transected by State Route

114, which provide direct access into the Facility. State Route 637 transects the Project Area traveling north to south. These and other primary routes facilitate transportation between the Facility and the surrounding metropolitan areas.

Workers coming to and from the site will most likely enter via U.S. Route 127, U.S. Route 30, and State Road 114. Once operational the proposed Facility is not expected to cause any substantial disruption to major transportation corridors serving the Study Area.

Freight rail lines connect several of the municipalities throughout the Study Area. Norfolk and Western Railroad is the sole railroad operator identified in the Study Area. Study Area municipalities connected to freight rail lines include the Villages of Broughton, Melrose, Oakwood, and Latty Township. The rail system may be used for the transportation of a very small number of turbine component and equipment suppliers, but the Applicant does not anticipate making any modifications to the system.

No airports were identified within the Study Area; construction and operation of the Facility will be designed according to Federal Aviation Administration (FAA) standards and are not expected to result in any adverse impacts to the regional air transportation network. The Applicant has filed a notice of proposed construction or alteration (Form 7460-1) with the FAA to confirm the structures will not result in a substantial adverse impact.

### **Local and Regional Plan Compatibility**

The current land use of the Study Area is predominately agricultural. The Facility will be compatible with the existing agricultural land use. Only a select number of administrative authorities (villages, townships, counties, etc.) within the five-mile Study Area have adopted comprehensive land use plans, strategic downtown plans, and/or economic development plans. Each of these are summarized below:

#### **Maumee Valley Planning Organization (MVPO) Comprehensive Economic Development Strategy (CEDS) (2018)**

In late 2012, the MVPO, with financial support from the US Economic Development Authority, finalized a CEDS for Defiance, Fulton, Henry, Paulding, and Williams Counties. An updated version of the CEDS was released in September 2018 and is considered valid until 2023. The CEDS aims to create an action plan to guide economic impacts and promote greater economic prosperity throughout the region. These goals aim to unite local governments, organizations, businesses, and residents to diversify the economy, improve quality of place factors, efficiently utilize resources, and protect the environment. Wind energy is not mentioned specifically in the draft plan; however, an identified strength of region in 2018 was alternative/green energy. Environmental issues were listed as future threat to the region as discussed in the CEDS. Construction of the Facility will assist the region in the pursuit of MVPO's goal to protect the environment. Wind power energy generation produces no emissions and uses virtually no water (AWEA, 2019). Annual savings attributed to wind energy facilities in the State of Ohio avoided use of an estimated 1.9 billion gallons of water and eluded release of 3.3 million metric tons of carbon dioxide into the atmosphere (AWEA, 2019).

#### **Paulding County Community Development Plan (2018)**

The Paulding County Vision Board, comprised of representatives from the County, Villages and Townships, has produced the Paulding County Community Development Plan (Plan). The Plan

describes the County's history, current conditions, and future vision, in turn establishing a roadmap describing the County's process to transform the future vision into reality. Plan goals are centered upon transportation, economic development, housing, and quality of life to align with the County's vision. Wind energy is not mentioned specifically in the draft plan; however, as a strategy to increase employment growth and investment, natural resources can be advertised as an asset of the county to increase the number of employment options.

### **Putnam County**

No Putnam County Comprehensive Plan or other land use plans were identified during review of the Putnam County Government Webpage. No energy facility infrastructure is proposed within the County administrative boundaries. Therefore, the proposed Project's compatibility with local plans could not be evaluated.

### **Van Wert County**

No Van Wert County Comprehensive Plan or other land use plans were identified during review of the Van Wert County Government Webpage. No energy facility infrastructure is proposed within the County administrative boundaries. Therefore, the proposed Project's compatibility with local plans could not be evaluated.

The Facility is in an area that is principally rural in nature with most impacts from the Facility construction and operation occurring on land used for agriculture. The economic benefits of the turbines for local agriculturalists, as well as their overall compatibility with farming practices, will support and aid in the preservation of local farming operations. Furthermore, the jobs and economic development created by Facility may help to create and retain existing local employment opportunities. Therefore, the development of this Facility is compatible with the goals and strategies of existing local and regional plans.

### **Concurrent or secondary uses**

Facility components will be located on portions of leased land with existing rural residential or agricultural uses. These existing uses are expected to continue throughout the lifetime of the Facility.

## **Part IV: Assessing Job and Economic Development Impacts**

### **Jobs and Economic Development Impact (JEDI) Model**

The proposed Grover Hill Wind Farm is anticipated to have positive economic impacts at both local and statewide levels. The development of wind power, like other commercial or economic development projects, have the potential to expand the local, regional, and statewide economies through both direct and indirect means. Income generated from direct employment during the construction and operation phases of the wind farm is returned to the local economies as it is used to purchase goods and services, creating a ripple effect throughout the state.

The employment (job) and economic impacts of the proposed Facility were assessed using the Job and Economic Impact (JEDI) wind model which was developed by the National Renewable

Energy Laboratory (NREL), a national laboratory of the United States Department of Energy (USDOE). The JEDI model provides a means to estimate the jobs and economic development impacts from proposed wind power generation projects during both construction and operation phases of a proposed project (USDOE NREL, 2017). The economic impacts include the earnings and economic output from onsite jobs, local revenue/supply chain jobs, and induced jobs. The model calculates the identified indicators for each level of impact using project-specific data provided by the Applicant and geographically defined multipliers. The multipliers incorporated into the current model are produced by IMPLAN Group, LLC using a database software system called IMPLAN (Impact analysis for PLANing), which is a widely-used and accepted general input-output modeling software that tracks unique industry groups at various levels of the regional data (IMPLAN Group, 2018).

Using the JEDI wind model, this report analyzes three levels of impact that the proposed Facility may have on the economy:

### **On-site labor impacts**

On-site labor is a direct economic impact experienced by individuals and companies residing in the State of Ohio participating in the construction and operation of the proposed Facility. These metric values represent the expenditure of dollars on labor (wages, salaries, and associated expenses) for onsite construction and operation and maintenance (O&M) personnel. On-site labor impacts do not reflect material expenditures, such as physical items used onsite (installed equipment, the concrete supplies, etc.), as these economic impacts typically occur at some geographic distance from the project itself. The JEDI model on-site labor analysis focuses on the local impacts of the labor associated with the on-site location of the Facility (Construction and Construction- Related Services).

### **Local revenue and supply chain impacts**

These impacts measure the estimated increases in demand for goods and services in commercial sectors that provide supplies and support companies engaged in Facility construction and operation. These measures account for the demand for goods and services such as turbine components, project analysis, legal services, financing, insurance, etc. Most other input-output models consider this level as "indirect impacts", referring to economic impacts associated with linked sectors in the economy that are upstream of the direct impacts, such as hardware suppliers of the installed equipment or the raw materials delivered and used onsite. However, because of JEDI's focus on the local impacts of the Facility, labor for components of this Facility (e.g. turbine manufacturers) occurring at off-site locations is included in this level as a local revenue and supply chain impact.

### **Induced impacts**

Induced impacts measure the estimated effect of increased household income resulting from the project. Induced impacts reflect reinvestment of earned wages, as measured throughout the first two levels of economic impact. This reinvestment can occur anywhere within the local, regional, or state economy, through the purchase of household goods, entertainment, food, clothing, transportation, etc.

These three levels of impact can be measured in terms of three indicators: jobs (as expressed by an increase in employment demand), earnings, and economic output associated with each level of economic impact. These indicators are described in further detail:

**Jobs**

Jobs reference the increase in employment demand resulting from Facility development. These positions are measured across each level of impact, so that they capture the estimated number of jobs on site, in supporting industries, and in the businesses that benefit from household spending. For the purposes of the current analysis, “jobs” refers to the total number of full-time equivalent (FTE) positions created by the Facility. Persons employed for less than full time or less than a full year are included in this total, each representing a fraction of an FTE position (e.g. a half-time, year-round position is 0.5 FTE).

**Earnings**

This measures the wages and salary compensation paid to the employees included above.

**Output**

Output refers to the value of industry production in the economy, across all appropriate sectors, associated with each level of impact. For the manufacturing sector, output is calculated by total sales plus or minus changes in inventory. For the retail sector, output is equal to gross profit margin. For the service sector, it is equal to sales volume. For example, output would include the profits incurred by those businesses that sell electrical transmission line, concrete, or motor vehicle fuel to the Applicant.

**Methodology**

Calculating the number of jobs and economic output from a proposed facility using the JEDI model is a two-step process. The first step requires Facility-specific data inputs (such as year of construction, size of Facility, turbine size and location). These facility-specific data were used to provide a baseline set of assumptions that would produce a conservative estimate of the total positive jobs and economic impacts produced by this Facility. Note that the Applicant presents a turbine layout of up to 23 turbines for permitting purposes, with the exception of the economic analysis for the socioeconomic report; this layout is presented and analyzed throughout the rest of the Ohio Power Siting Board (OPSB) Application. The socioeconomic report analyzes the total number of positive jobs and economic impacts produced by the Facility based on a 23-turbine layout to avoid overestimating the Facility's economic benefits in the OPSB Application.

- Location: Ohio
- Year of Construction: 2022
- Total Project Nameplate Capacity: up to 150 MW
- Number of Projects: 1
- Number of Turbines: up to 23

Using this Facility-specific data, the JEDI model creates a list of default values, which includes project cost values, default financial parameter values, default tax values, default lease payment values, and default local share of spending values. These default values are derived from 10 years of research by NREL, and stem from various sources, including interviews and surveys from leading project owners, developers, engineering and design firms, and construction firms

active in the wind energy sector. The second step of the JEDI model methodology requires the review, and if warranted, the customization of default project cost values and financial parameter values to more reasonable estimates. The Applicant reviewed the default project cost values subtotaled by each of the following categories in the JEDI model: equipment during construction, balance of plant construction, labor during operation & maintenance, materials and services during operation & maintenance, financial parameters, tax parameters, land lease parameters and payroll parameters and determined whether they were appropriate for the project under review. As a result of that review, adjustments were made to specific default values. The remaining JEDI default values were reviewed and determined to be reasonable estimates based on the Applicant's previous experience in wind energy development.

## Part V: Job and Economic Development Impacts on the Statewide Economy

The job and economic impact analysis presented here used the most currently available (2016) multiplier data specific to Ohio to estimate potential impacts on a statewide basis. An economic impact analysis was performed for the Grover Hill Wind Farm (the Facility) to be constructed in 2022 with an output capacity of up to 150.0 MW and an assumed up to 23 turbines, sized at a maximum of 6.0 MW. The results of this analysis, estimated for both the construction and operation phases of the proposed Facility, are illustrated in Table 6 and summarized in the narrative that follows.

**Table 6: Summary Results of Job and Economic Impact Analysis**

Project Phase	Jobs	Earnings (Millions)	Output (Millions)
<b>Construction</b>			
Project development and Onsite Labor - Total	84	\$5.15	\$5.77
Construction & Interconnection Labor	(77)	(\$4.57)	
Construction Related Services	(7)	(\$0.58)	
Turbine & Supply Chain Impacts	267	\$15.83	\$48.89
Induced Impacts	144	\$7.87	\$24.46
<b>Total Impacts</b>	<b>504</b>	<b>\$28.84</b>	<b>\$79.12</b>
<b>Annual Operation</b>			
Onsite Labor Impacts	8	\$0.51	\$0.51
Local Revenue and Supply Chain Impacts	12	\$0.72	\$2.52
Induced Impacts	6	\$0.33	\$1.03
<b>Total Impacts</b>	<b>26</b>	<b>\$1.57</b>	<b>\$4.06</b>

Source: NREL JEDI Model Notes: Earnings and Output values are millions of dollars in year 2020 dollars. Construction and operating jobs are full-time equivalent for a period of one year (1 FTE = 2,080 hours). Wind farm workers includes field technicians, administration, and management. Economic impacts "During operating years" represent impacts that occur from wind farm operations/expenditures. The analysis does not include impacts associated with spending of wind farm "profits" and assumes no tax abatement unless noted. Totals may not add up due to independent rounding. Results are based on User modifications to default values.

### **Statewide Job and Economic Development Impact: Construction**

Based upon JEDI model computations, it is anticipated that construction of the proposed Facility will directly generate employment of an estimated 84 FTE onsite construction and construction-related service positions for Ohio residents, which will be for Construction and Interconnection Labor and Construction Related Services. The JEDI model estimates in a total of \$5.15 million for annual earnings of the 84 onsite construction jobs. Turbine manufacturing and supply chain industries could in turn generate an additional 276 jobs across the State of Ohio over the course of Facility construction. In addition, Facility construction could induce demand for 144 jobs statewide through the spending of additional household income. Based on the results of the model, the total impact of potentially 504 new jobs could result in up to \$28.84 million of earnings, assuming a 2022 construction schedule and wage rates consistent with statewide averages. Facility construction labor wages for similar construction positions within the region range from an average of \$18.64 per hour for construction laborers, \$31.11 for electricians, and \$45.85 for construction managers (Bureau of Labor Statistics, 2019). Local, regional, and statewide employment during the construction phase will primarily benefit those in the construction trades, including equipment operators, truck drivers, laborers, and electricians. Facility construction will also require workers with specialized skills, such as crane operators, turbine assemblers, specialized excavators, and high voltage electrical workers. It is anticipated that many of the highly- specialized workers will come from outside the area and will remain only for the duration of construction.

In addition to jobs and earnings, the construction of the Facility is expected to have a positive impact on statewide economic output, a measurement of the value of goods and services produced and sold by backward-linked industries. As described in the definition above, output provides a general measurement of the amount of profit earned by manufacturers, retailers, and service providers connected to a given project. Based on the results of the model, the value of economic output associated with Facility construction is estimated to be \$79.12 million. Between workers' additional household income and industries' increased production, the impacts associated with the Facility are likely to be experienced throughout many different sectors of the statewide economy. Pursuant to Section 5727.75 of the Ohio Revised Code (ORC), the Facility may qualify for tax incentives based on the degree to which it employs in-state construction labor (see Part VI). At the time of the publication of this report, it is anticipated that in excess of 50% of construction labor will be Ohio-domiciled.

### **Statewide Job and Economic Development Impacts: Operations and Management**

Based upon JEDI model computations, the operation and maintenance of the proposed Facility is estimated to generate 8 full-time equivalent onsite jobs with combined estimated annual earnings of approximately \$0.51 million. These 8 jobs are anticipated to be comprised of project management, technician, and administrative personnel. Wage rates are projected to be consistent with statewide averages which are estimated to be \$18.86 per hour for payroll and

timekeeping clerks, \$25.55 per hour for industrial engineering technicians, and, \$51.21 for industrial production Managers (Bureau of Labor Statistics, 2017). These 8 full-time onsite jobs generated by the wind energy Facility comprise the Facility's direct long-term employment impact.

Operations and maintenance should also generate new jobs in other sectors of the economy through supply chain impacts and the expenditure of new and/or increased household earnings. Increased employment demand throughout the supply chain is estimated to result in approximately 12 jobs with annual earnings of approximately \$0.72 million. In addition, it is estimated that 6 jobs with associated annual earnings of \$0.33 million will be induced through the increased household spending associated with Facility operation. In total, while in operation, this Facility is estimated to generate demand for 26 jobs per year with annual earnings of approximately \$1.57 million. Total economic output could also increase by an estimated \$4.06 million as a result of Facility operations and maintenance.

### Land Lease Payments

Operation of the Facility will result in payment to local landowners in association with the lease agreements executed to host Facility components. These annual lease and easement payments will offer direct benefits to participating landowners, which will be in addition to any income generated from the surrounding land use (e.g. agricultural production). The Applicant estimates that these payments will total approximately \$608,000 on an annual basis each year the Facility is in operation, although this value is contingent upon project details still in development (e.g., turbine choice and layout). The Facility will also generate lease payments during the construction phase of an estimated \$315,000. These lease payments will have a beneficial impact on the local economy during construction. Further, these lease payments will have a positive impact on the region, to the extent that landowners will spend their revenue locally.

## Part VI: Local Tax Revenues

### Legislative Context

Wind energy projects in the State of Ohio can be exempted from tangible personal property and real property tax payments if they meet certain conditions. These conditions are enumerated in Section 5727.75 of the ORC. Operators of these exempted projects, known as qualified energy projects (QEP), are instead required to make annual payments in lieu of taxes (PILOT). In order to be certified as a QEP by the state, a project must meet certain criteria, including:

- an application for certification of the energy project as a QEP that complies with the requirements under Section 5727.75 of the ORC and OAC 122:23-1 must be submitted to the director of the Ohio Development Services Agency (ODSA) on or before December 31, 2022;
- an application under Section 4906.20 of the ORC must be submitted to the Ohio Power Siting Board (OPSB) on or before December 31, 2022;
- the county commissioners of a county in which property of the project is located must have adopted a resolution approving the application submitted to ODSA or the county commissioners must pass a resolution declaring the county an alternative energy zone (AEZ);

- at least 50% of the full-time equivalent construction and installation employees, as defined in Section 5727.75(F)(6) of the ORC, must be Ohio-domiciled; and
- Construction must begin by January 1, 2023.

If an applicant is granted exemption from taxation for any of the tax years 2011 through 2023, the QEP will be exempt from taxation for tax year 2024 and all ensuing years if the property was placed into service before January 1, 2024. The amount of PILOT to be paid annually to the county treasurer can range between \$6,000 and \$9,000 (ORC Section 5727.75(G)(2)). The amount is assessed per megawatt (MW) of nameplate capacity and scaled based on the percentage of construction/installation FTE equivalent employees who are domiciled in Ohio. The assessment distribution is provided in Table 7 below. County commissioners may require an additional service payment, provided the total of the additional payment combined with the PILOT assessment do not exceed \$9,000 per MW.

**Table 7: Service Payment per Megawatt Schedule**

Annual Service Payment per Megawatt of Nameplate Capacity	Ratio of Ohio-Domiciled Full-Time Equivalent Employees
\$6,000	75% or more
\$7,000	60% to 74%
\$8,000	50% to 59%

### Estimated Payments In Lieu of Taxes

Turbines for the Grover Hill Wind Farm are anticipated to be sited outside of any municipality jurisdiction within Paulding County. The Facility will be constructed in two school districts: Wayne Trace Local School District and Paulding Exempted Village School District. Table 8 displays the total estimated overall PILOT revenues to be distributed. The first \$6,000 to \$8,000 per MW collected will be distributed taxing units in the county, and any additional service payment above the first \$6,000 to \$8,000 goes into the county's general fund in accordance with Section 5727.75 of the ORC.

**Table 8: Estimated Total PILOT Revenue**

Total Facility Capacity (MW)	PILOT at \$6,000/MW	PILOT at \$7,000/MW	PILOT at \$8,000/MW	PILOT at \$9,000/MW
150	\$900,000	\$1,050,000	\$1,200,000	\$1,350,000

## Part VII: Conclusion

The socioeconomic effects of the Grover Hill Wind Farm, when assessed in light of regional and local economic trends, will have a positive impact on the communities within the Study Area and across the State of Ohio. Lease payments, short- and long-term job creation, and PILOT revenues will benefit private landowners, businesses, and taxing jurisdictions, and the county. The Facility is not expected to generate significant expenditures from these beneficiaries;

therefore, it will have a positive impact on the social and economic conditions of these communities and across Ohio.

**Total Statewide Economic Benefit**

The construction of the Grover Hill Wind Farm is expected to produce a total of \$26.7 million in employment earnings and \$73.1 million in total economic output. Subsequently, each year the Facility is operational it is expected to generate approximately \$1.5 million in earnings and \$3.8 million in total economic output.

**Statewide Employment Benefits**

During the construction period, the Facility is expected to support demand for a total of 475 onsite, supply chain, and induced employment positions. It is expected to support a total of 25 positions during each year of its operation.

**Land Lease Revenues**

The development of the Facility will result in \$1,100,000 in annual lease payments made to participating landowners.

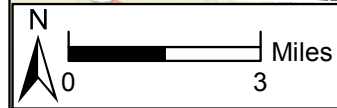
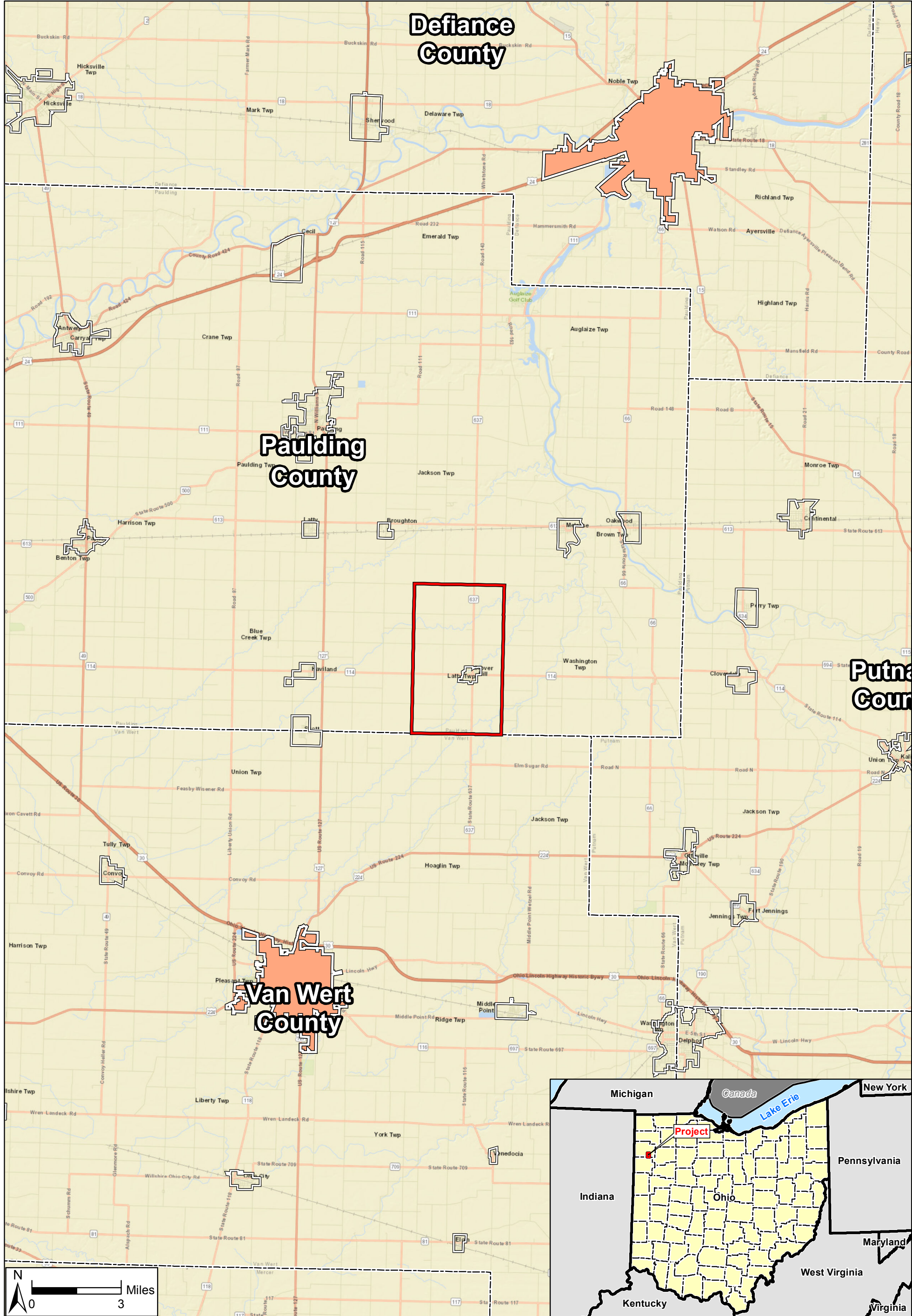
**Property Tax Revenues**

Construction of the proposed Grover Hill Wind Farm will increase local government revenues through payments in lieu of taxes (PILOT). It is estimated that annual PILOT revenues could amount to approximately \$900,000 to \$1.35 million to be distributed for the benefit of the county and the local taxing units.

## Part VIII: References



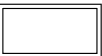

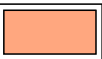
- American Wind Energy Association (AWEA). 2019. Ohio State Fact Sheet. Available at: <https://cleanpower.org/wp-content/uploads/2021/01/Ohio-clean-energy-factsheet.pdf>
- Environmental Law & Policy Center (ELPC). 2016. Ohio Solar Energy & Wind Power Supply Chain Businesses. Available at: <http://elpc.org/newsroom/publications/>
- IMPLAN Group LLC. 2018. General Information About Multipliers. Available at: <https://implanhelp.zendesk.com/hc/en-us/articles/115009505707-Genreal-Information-About-Multipliers> (Accessed January 2021).
- Maumee Valley Planning Organization. September 2018. Comprehensive Economic Development Strategy. Available at: [https://74a300a9-7224-4c99-ac46-3fcef8fd72cc.filesusr.com/ugd/94103b\\_ffbf5ecfdfac43b283d662e68d75d102.pdf](https://74a300a9-7224-4c99-ac46-3fcef8fd72cc.filesusr.com/ugd/94103b_ffbf5ecfdfac43b283d662e68d75d102.pdf)
- Ohio, State of. 2012. Section 5727. Ohio Revised Code. Available at: <http://codes.ohio.gov/orc/5727> (Accessed July 2020).
- Ohio Department of Administrative Services – GIS Support Center. August 2016. School Districts in Ohio. Available at: <https://education.ohio.gov/getattachment/Topics/Data/Ohio-Educational-Directory-System-OEDS/2016-School-District-Map.pdf.aspx>
- Ohio Development Services Agency – Office of Research. April 2018. Population Projections – Paulding County. Available at: <https://development.ohio.gov/files/research/P6064.pdf>
- Ohio Development Services Agency – Office of Research. March 2018. Projected 2030 County Population. Available at: <https://development.ohio.gov/files/research/P6095.pdf>
- Oteri, Frank, Ruth Baranowski, Ian Baring-Gould, and Suzanne Tegen. 2018. 2017 State of Wind Development in the United States by Region. Golden, CO: National Renewable Energy Laboratory. NREL/ TP-5000-70738. <https://www.nrel.gov/docs/fy18osti/70738.pdf>
- Paulding County Vision Board. July 2018. Community Development Plan. Available at: [https://74a300a9-7224-4c99-ac46-3fcef8fd72cc.filesusr.com/ugd/94103b\\_o8b22dcd6f1e469c9a48de6eb4e02da7.pdf](https://74a300a9-7224-4c99-ac46-3fcef8fd72cc.filesusr.com/ugd/94103b_o8b22dcd6f1e469c9a48de6eb4e02da7.pdf)
- Powering Ohio. May 2018. A Vision for Growth and Innovative Energy Investment. Available at: [http://www.poweringohio.org/files/2018/05/Powering-Ohio\\_FINAL-WEB.pdf](http://www.poweringohio.org/files/2018/05/Powering-Ohio_FINAL-WEB.pdf)
- U.S. Census Bureau. 2019. American Community Survey County- Household, Population and NAICS Characteristics (web database portal). Available at: <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed March 2020.
- U.S. Department of Energy (USDOE) National Renewable Energy Laboratory (NREL). 2018. Jobs and Economic Development Impact (JEDI) model release W12.23.16. Available at: <https://www.nrel.gov/analysis/jedi/wind.html> (Accessed June 2018).

U.S. Department of Labor (USDOL) Bureau of Labor Statistics (BLS). 2019. Statewide Data.  
County Data. Available at: <https://www.bls.gov/lau/#cntyaa>



Data Source(s): Westwood (2020); ESRI WMS World Streets Basemap (Accessed 2018); U.S. Census Bureau (2018).

Legend

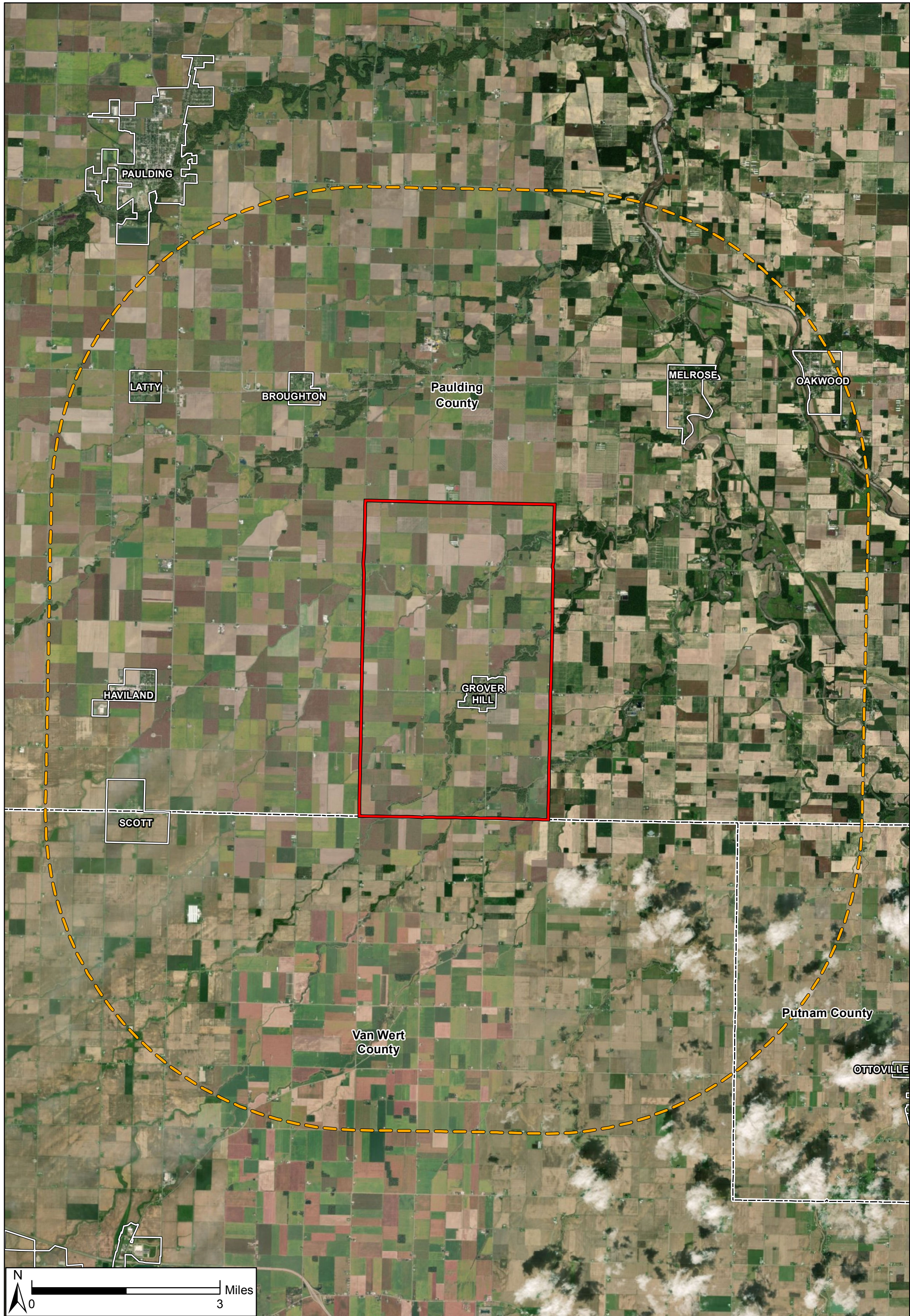
-  Project Boundary
-  County Boundary
-  City Boundary
-  State Boundary
-  City with Population exceeding 10,000

**Westwood**

Toll Free (888) 937-5150 [westwoodps.com](http://westwoodps.com)  
Westwood Professional Services, Inc.



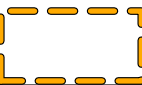
**Grover Hill Wind**  
Paulding County, Ohio

Regional Facility Location



Data Source(s): Westwood (2020); ESRI WMS  
World Imagery Basemap (Accessed 2020); U.S.  
Census Bureau (2018).

Legend

- |   |                            |   |                 |
|---|----------------------------|---|-----------------|
|  | Project Boundary           |  | City Boundary   |
|  | Study Area (5-Mile Buffer) |  | County Boundary |

**Grover Hill Wind**  
Paulding County, Ohio

Study Area (5-Miles)

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**5/3/2021 11:34:01 AM**

**in**

**Case No(s). 20-0417-EL-BGN**

Summary: Application - 11 of 40 (Exhibit H - Socioeconomic Report ) electronically filed by Christine M.T. Pirik on behalf of Grover Hill Wind, LLC