Heritage Wind Project

Case No. 16-F-0546

1001.27 Exhibit 27- REDACTED

Socioeconomic Effects

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EXHIBIT 27 SOCIOECONOMIC EFFECTS

On behalf of Heritage Wind, LLC (the "Applicant"), Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services D.P.C has conducted a socioeconomic analysis that quantifies the potential countywide and statewide socioeconomic impacts of the Heritage Wind Project (the "Facility") based on the current socioeconomic conditions of the area. The Facility is located in the Town of Barre (the "Town") in Orleans County (the "County"). Information regarding population, educational attainment and economic conditions within the Town is summarized in Table 27-1.

Table 27-1. Demographic Information

	Town of Barre	Orleans County	New York State
Population			
2017 American Community Survey (ACS) 5-Year Population Estimate	1,866	41,584	19,798,228
% Annual Change (2000-2017)	-0.7%	-0.3%	0.3%
% of population ages 16-64	67.8%	66.1%	66%
Educational attainment			
% high school graduate or higher	88.8%	86.9%	86.1%
% bachelor's degree or higher	16.4%	15.9%	35.3%
Economic Conditions			
Median Housing Value	\$90,500	\$93,600	\$293,000
Median household income	\$58,828	\$49,233	\$62,765
Individuals below poverty level	8.7%	15.9%	15.1%
Labor Force Characteristics			
Unemployment Rate	7.9%	6.5%	6.8%
Labor Force Participation	998	19,224	10,176,202

Source: 2013-2017 American Community Survey 5-Year Estimates, Decennial census

Socioeconomic Profile

Orleans County is in the Finger Lakes region of New York, along the shoreline of Lake Ontario, and shares many economic and demographic characteristics of the region. Like many other counties in the area, Orleans County has experienced a mix of population growth, stagnation and decline over the past 20 years, as has the Town of Barre. Age distribution patterns and educational attainment levels throughout the Town and County are relatively consistent with those in the surrounding areas. The Town of Barre is a rural community, making up only 4.5% of the population in Orleans County. The Town of Barre and Orleans County both have similar median housing values, which are much lower than the median housing value in New York State. Meanwhile, the percent of individuals below poverty level in

the Town of Barre (8.7%) is significantly lower than that of New York State and Orleans County (15.1% and 15.9%, respectively).

While healthcare and social assistance are dominant sectors in both Orleans County and New York State, Orleans County is distinguished by its robust manufacturing and agricultural sectors. In decreasing order, the top five employment sectors in New York State are 1) Health Care and Social Assistance, 2) Educational Services, 3) Retail Trade, 4) Accommodation and Food Services, and 5) Professional, Scientific, and Technical Services (US Census Quarterly Workforce Indicators, 2018). This compares with the five dominant employment sectors in Orleans County, which are 1) Manufacturing, 2) Health Care and Social Assistance, 3) Agriculture, Forestry, Fishing and Hunting, 4) Retail Trade, and 5) Accommodation and Food Services (US Census Quarterly Workforce Indicators, 2018). As referenced in the 2017 U.S. Department of Agriculture (USDA) National Agricultural Survey, Orleans County has 129,573 acres of farmland, which is 51.7% of the County's total land area (Office of the New York State Comptroller, 2019). There are about 498 farm operations in Orleans County, which collectively creates 1,794 jobs (USDA NASS, 2017).

From 2016 through 2026, overall employment in the Western New York region, which includes the Study Area, is projected to grow at 8%, a slightly lower rate than the 12% projected for New York State as a whole. This increase will be concentrated differently across industrial sectors. The five fastest growing sectors forecasted for Western New York are mostly service-related industry sectors and consist of Healthcare Support Occupations, Personal Care and Service Occupations, Community and Social Service Occupations, Healthcare Practitioners and Technical Occupations, and Food Preparation and Serving Related Occupations (NYSDOL, 2016).

Understanding the fiscal health of communities in which a project will be located is essential to assessing the potential economic impacts or benefits of that project. The general fiscal profile for any municipality includes its revenues, expenditures, and long-term debt obligations. Most of the revenue collected is through real property taxes, sales taxes, and state aid. Municipalities (towns, villages, and counties) and school districts, as independent taxing jurisdictions, are responsible for providing specific services and facilities to those who live and work within their boundaries and for levying the taxes needed to pay for those services/facilities. In assessing the economic impact of the Facility, it is informative to review local property tax levies and tax rates for each affected taxing jurisdiction, as municipalities have the most direct control over these revenue sources. The taxing jurisdictions affected by the Facility are Orleans County, the Town of Barre, the Albion Central School District, and Oakfield-Alabama Central School District.

Annual municipal expenditures are recovered in large part through each municipality's tax levy, which is borne by taxable properties. Real property taxes are determined by each property's assessed value, multiplied by the tax rate

established by each taxing jurisdiction. Table 27-2 summarizes the most recent data available for municipal and county property tax levies and rates in the County and Town.

Table 27-2. Property Tax Levy and Municipal Tax Rate¹

	Levy year 2018 (roll year 2017)			Levy	ar 2016)	
	Property Tax Levy	Tax Rate per \$1000 Full Value	Eq. Rate	Property Tax Levy	Tax Rate per \$1000 Full Value	Eq. Rate
Orleans County	\$17,197,890	9.89	98.48	\$16,775,323	9.79	98.25
Town of Barre	\$1,069,313	10.73	100.00	\$1,042,424	10.64	100.00

Source: New York State Office of Real Property Tax Services, 2019

Another significant source of revenue for the County and Town is local sales tax revenue. The current sales tax rate for Orleans County is 8% (4% local tax plus 4% state tax) (New York State Department of Taxation and Finance, 2019). In 2018, the total sales tax revenue for the County was \$16,802,290 (New York State Comptroller).

An overview of the balance of a municipality's revenues, expenditures and indebtedness reveals its general fiscal health. As illustrated in Table 27-3, from 2017 to 2018, both revenues and expenditures in the Town of Barre and Orleans County increased slightly. While the Town had relatively stable debt levels in this same time period, Orleans County increased its debt (see Table 27-3). While cutting expenditures is one avenue towards a balanced fiscal budget, it is beneficial to combine this with a strategy to increase local revenues.

Table 27-3. Municipal Budgets

	2017	2018
	Orleans	County
Total Revenues & other sources	\$65,925,646	\$75,853,159
Total Expenditures & other uses	\$68,004,059	\$75,696,966
Total Indebtedness	\$11,694,663	\$16,851,426
	Town o	f Barre
Total Revenues & other sources	\$2,746,854	\$3,100,013
Total Expenditures & other uses	\$2,553,798	\$2,920,792
Total Indebtedness	\$3,380,500	\$3,318,000

Source: New York State Comptroller. https://www.osc.state.ny.us/localgov/datanstat/findata/index_choice.htm

¹ Property tax levy reflects the amount of revenue required by the municipality through the property tax base and is equal to total municipal spending minus aid and other revenues. Tax base is equal to the sum of taxable parcel values. Municipal tax rate is determined by dividing the levy by the tax base, such that each taxable parcel produces that amount of property tax per \$1,000 assessed value. For a \$100,000 property in the Town of Barre, property tax liability = (10.73 / 1000) * 100,000, or \$1,073. An equalization rate is the state's measurement of a municipality's level of assessment (LOA). An equalization rate of 100 means that the municipality is assessing property at 100 percent of market value. An equalization rate lower than 100 means that the municipality's total market value is greater than its assessed value.

School districts in New York are subject to a separate budgeting process. There are two school districts servicing the study site: Albion Central School District and Oakfield-Alabama Central School District. The budget for both school districts are shown in Table 27-4. The Albion Central School District experienced a revenue increase from 2017 to 2018 while eliminating its debt completely during the same timespan (New York State Comptroller). Oakfield-Alabama Central School District increased its revenue from 2017 to 2018, while decreasing its debt during the same time period.

Table 27-4. School District Budget

	2017	2018	
	Albion Central School District		
Total Revenues & other sources	\$39,616,129	\$49,563,194	
Total Expenditures & other uses	\$39,723,606	\$54,096,455	
Total Indebtedness	\$4,205,000	\$0	
	Oakfield-Alabama Cent	ral School District	
Total Revenues & other sources	\$20,489,955	\$39,394,749	
Total Expenditures & other uses	\$27,687,947	\$25,426,955	
Total Indebtedness	\$20,625,833	\$17,739,352	

Source: New York State Comptroller. https://www.osc.state.ny.us/localgov/datanstat/findata/index_choice.htm

In the face of budget shortfalls and a statewide property tax cap, municipalities may find it advantageous to maximize other, less traditional forms of revenue. As discussed in greater detail below, wind power projects provide direct benefits to local taxing jurisdictions through Payments in Lieu of Taxes (PILOTs) and Host Community Agreements (HCAs). In addition, wind power projects such as the proposed Facility, generally have other local, regional, and statewide economic benefits. Wind power development, like other commercial development projects, can expand the local, regional, and statewide economies through both direct and indirect means.

Methodology for Jobs and Economic Impact Analysis

The economic impacts of the Facility were assessed countywide and statewide using the Job and Economic Development Impact (JEDI) wind model. The JEDI model was created by the National Renewable Energy Laboratory (NREL)—a government-owned, contractor-operated laboratory funded by the U.S. Department of Energy—to assess the economic impacts of proposed wind energy generating facilities during both the construction and operation phases (USDOE NREL, 2017). This model allows users to estimate jobs, earnings, and economic output by impact level (described below) using facility-specific data provided by the applicant and geographically defined multipliers. These multipliers are produced by IMPLAN Group, LLC using a software/database system called IMPLAN (IMpact analysis for PLANning), a widely-used and widely-accepted general input-output modeling software and data system that tracks each unique industry group in every level of the regional data (IMPLAN Group, 2019). The 2017 multipliers sourced from IMPLAN were the most recently available at the time of the analysis (September 2019).

This Exhibit analyzes three levels of impact that the proposed Facility may have on the economy:

- On-site labor impacts: These are the direct impacts experienced by the companies/individuals residing in New York State engaged in the on-site construction and operation of the Facility. These values represent expenditure of dollars on labor (wages, salaries and associated expenses) by Facility on-site construction personnel as well as operation and maintenance (O&M) personnel. On-site labor impacts do not reflect material expenditures. Most other input-output models consider this level as "direct impacts," referring to changes in jobs, economic activity and earnings associated with the immediate impacts created by the investment, which would include the equipment installed on-site, the concrete used on-site, etc. However, the immediate economic impacts of the physical items used on-site, normally included in direct impacts, typically occur at some geographic distance from the project itself. Because of JEDI's focus on the local impacts of a project, only the labor associated with the on-site location of the Facility (Construction, Construction-Related Services and On-site Labor during Operational Years) is counted at this level.
- Turbine, local revenue, and supply chain impacts: These impacts measure the estimated increase in demand for goods and services in industry sectors that supply or otherwise support the companies engaged in construction and operation (also known as "backward-linked" industries). 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 suppliers of hardware used to make the equipment installed on-site or the concrete used on-site. 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 also counted in this level as a turbine, 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 the reinvestment of earned wages, as measured throughout the first two
 levels of economic impact. This reinvestment can occur anywhere throughout the local, regional, or state
 economy on household goods, entertainment, food, clothing, transportation, etc.

Each of these three levels of impact can be measured in terms of three indicators:

- Jobs: Jobs refer to the increase in employment demand because of project 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 this analysis, this term refers to the total number of year-long 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 described above.

Output: Output refers to the value of industry production in the state 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.

Using the JEDI model to calculate the number of jobs and economic output from a proposed facility is a two-step

process. The first step requires facility-specific data inputs (e.g., year of construction, size of facility, turbine size, and

location). These facility-specific data are used to provide a baseline set of assumptions to produce a conservative

estimate of the total positive jobs and economic impacts likely to be produced by the facility. For purposes of the JEDI

model, the Applicant has assumed the following inputs:

Location: Orleans County and New York State

Year of Construction: 2021

Total Project Nameplate Capacity: 184.6 MW

Number of Projects: 1

Number of Turbines: 33

Using the facility-specific data provided, the JEDI model creates a list of default values, which include facility cost

values, financial parameter values, tax values, lease payment values, and local share of spending values. These default

values are derived from research on large-scale wind facilities by NREL and stem from various sources, including

interviews and surveys of leading project owners, developers, engineering and design firms, and construction firms

active in the wind energy sector (USDOE NREL, 2020). The second step of the JEDI model methodology requires the

review and, if warranted, the customization of default facility cost values and financial parameter values to reflect the

most accurate estimates. In this case, the Applicant reviewed the following default facility cost values (subtotaled by

categories in the JEDI model) to determine whether they were on par with the real costs as experienced by the

Applicant's team of development and financial experts: Equipment during Construction, Balance of Plant Construction,

Labor during O&M, Materials and Services during O&M, Financial Parameters, Tax Parameters, Land Lease

Parameters, and Payroll Parameters. The Applicant's team then made specific adjustments to improve accuracy (see

Table 27-5).

Table 27-5. Adjustments Made to JEDI Model Cost Inputs

JEDI Cost Items (Annual Estimates)	Default Value	Adjusted Value	Change
Construction Equipment Costs	\$181,521,368	\$	
Construction Materials Costs	\$38,037,558	\$	
Construction Labor Total Costs	\$22,443,281	\$	
Development/Other Costs	\$6,770,256	\$	
Sales Tax for Construction Materials and Equipment	\$8,005,446	\$	
Operating/Maintenance Labor Costs	\$1,030,248	\$	
Operating/Maintenance Materials and Services	\$5,437,752	\$	
Sales Tax for Operating/Maintenance Materials and Equipment	\$160,002	\$	
Total Revenues for Local Tax Jurisdictions ²	\$3,350,952	\$	
Land Payments (during Operation)	\$554,400	\$	

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018); Cost values verified by the Applicant in November 2019.

More detailed lists of estimated non-payroll expenditures to be made both within New York State and within Orleans County are demonstrated in Table 27-6 (Construction Period) and Table 27-7 (Operation and Maintenance Period).

Table 27-6. Estimate of Annual Direct Non-Payroll Expenditures during Construction³

Construction Cost Item	Project Expenditures	State Share	Statewide Expenditures	County Share	County Expenditures
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018); Cost values verified by the Applicant in November 2019.

² This value includes the annual estimate for Year 1 and therefore does not take into consideration inflation or escalation rates. Additional information regarding PILOT agreements and the HCA is included in Section (i) below.

³ Table 27-6 is representative of all non-payroll expenditures during construction and therefore does not include labor costs.

Table 27-7. Estimate of Annual Direct Non-Payroll Expenditures during Operation and Maintenance⁴

Operation and Maintenance Cost Item	Project Expenditures	State Share	Statewide Expenditures	County Share	Countywide Expenditures
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$
	\$	%	\$	%	\$

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018); Cost values verified by the Applicant in November 2019.

Summary Results of Jobs and Economic Impact Analysis

This analysis utilized the most recent IMPLAN multiplier data that was readily available for both New York State (2017), and Orleans County (2017) to estimate potential impacts on a statewide and countywide basis. A summary of this analysis, estimated for both the construction and O&M phases of the proposed Facility, are presented in Tables 27-8 and 27-9.

⁴ Table 27-6 is representative of all non-payroll expenditures during O&M and therefore does not include labor costs.

Table 27-8. Summary Results of Statewide Jobs and Economic Impact Analysis

	Jobs	Earnings (Millions)	Output (Millions)
Construction Impacts			
Project Development and Onsite Labor Total	205	\$15.3	\$15.7
Construction & Interconnection Labor	201	\$14.7	_
Construction-Related Services	5	\$0.6	-
Turbine & Supply Chain Impacts	218	\$16.3	\$51.3
Induced Impacts	90	\$6.3	\$16.8
Total Impacts	514	\$37.9	\$83.9
Annual Operation and Maintenance Impacts			
Onsite Labor Impacts	8	\$0.8	\$0.8
Local Revenue & Supply Chain Impacts	14	\$1.1	\$4.8
Induced Impacts	10	\$0.8	\$2.0
Total Impacts	31	\$2.6	\$7.5

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018)

Notes: Earnings and Output values are millions of dollars in year 2019 dollars. Construction and operating jobs are full-time equivalent for a period of one year (1 FTE = 2,080 hours). Wind farm workers include 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.

Table 27-9. Summary Results of Countywide Jobs and Economic Impact Analysis

	Jobs	Earnings (Millions)	Output (Millions)
Construction Impacts			
Project Development and Onsite Labor Total	4	\$0.3	\$0.3
Construction & Interconnection Labor	4	\$0.3	
Construction-Related Services	0	\$0.0	_
Turbine & Supply Chain Impacts	12	\$0.6	\$2.0
Induced Impacts	6	\$0.3	\$0.8
Total Impacts	21	\$1.1	\$3.1
Annual Operation and Maintenance Impacts			
Onsite Labor Impacts	8	\$0.7	\$0.7
Local Revenue & Supply Chain Impacts	13	\$0.5	\$3.4
Induced Impacts	6	\$0.3	\$0.9
Total Impacts	27	\$1.5	\$4.9

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018)

Notes: Earnings and Output values are millions of dollars in year 2019 dollars. Construction and operating jobs are full-time equivalent for a period of one year (1 FTE = 2,080 hours). Wind farm workers include 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.

(a) Construction Workforce

Based upon JEDI model computations, it is anticipated that construction of the proposed Facility will generate employment of an estimated 205 FTE onsite Construction and Construction-Related positions for New York State residents, 201 of which will be for Construction and Interconnection labor and 5 of which will be Construction-Related Services (engineers and other professional services). At the county level, the Facility is estimated to generate employment of an estimated 4 FTE onsite Construction and Construction-Related positions for County residents, all of which will be for Construction and Interconnection labor.

The Applicant's construction management team has further evaluated the estimated peaks of 402 FTE statewide construction jobs and 8 FTE countywide construction jobs to provide the following estimated distribution of average work force, by discipline, for each quarter during the construction year 2021. The results are summarized in Tables 27-10 and 27-11.

Table 27-10. Estimated Quarterly Statewide Labor Averages

Quarterly Period	Construction and Interconnection Labor Quarterly Average FTE Jobs	Construction-Related Services (Engineers and Other Professional Services) Quarterly Average FTE Jobs
Q1 (Jan-Mar)	34	4
Q2 (Apr-Jun)	235	5
Q3 (Jul-Sep)	402	6
Q4 (Oct-Dec)	134	4

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018); Quarterly averages verified by the Applicant in December 2019.

Table 27-11. Estimated Quarterly Countywide Labor Averages

Quarterly Period	Construction and Interconnection Labor Quarterly Average FTE Jobs	Construction-Related Services (Engineers and Other Professional Services) Quarterly Average FTE Jobs
Q1 (Jan-Mar)	1	0
Q2 (Apr-Jun)	5	0
Q3 (Jul-Sep)	8	0
Q4 (Oct-Dec)	3	0

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018); Quarterly averages verified by the Applicant in December 2019.

(b) Construction Payroll and Non-Payroll Expenditures

The JEDI model estimates a total of \$15.3 million for annual earnings of the 205 onsite construction jobs for New York State residents; \$0.3 million of which is the estimated for annual earnings of the 4 onsite construction jobs for Orleans County residents. These estimates of the annual construction earnings by trade—which were evaluated by the Applicant's construction management team—are listed in Tables 27-12 and 27-13. Estimated earnings represent total wages and salary compensation paid to New York State and Orleans County employees (i.e., wages plus 41% average annual overhead costs including SSI, Medicare, workers' compensation, and disability). Project Development and Onsite Labor earnings are realized by New York State and Orleans County residents who are engaged in the construction of the Facility, including the Construction, Engineering and Professional Services trades. Turbine, Local Revenue, and Supply Chain earnings are estimated for New York State and Orleans County residents based on the increased demand for goods and services in industry sectors that supply or otherwise support the companies engaged in construction and operation (known as "backward-linked industries"). Induced earnings reflect the estimated increase in household spending by onsite employees due to an increase in their earnings, which is subsequently used to purchase local goods and services, creating a ripple effect throughout the County and State.

Table 27-12. Annual Earnings by Trade Statewide During Construction Period (in \$ Millions)

Trade	Project Development and Onsite Labor Turbine & Supp		
	Earnings	Chain Earnings	Induced Earnings
Agriculture	\$0.0	\$0.0	\$0.0
Mining	\$0.0	\$0.0	\$0.0
Construction	\$14.7	\$11.0	\$4.4
Manufacturing	\$0.0	\$4.9	\$1.3
Fabricated Metals	\$0.0	\$0.0	\$0.0
Machinery	\$0.0	\$0.0	\$0.0
Electrical Equipment	\$0.0	\$0.0	\$0.0
Transport., Communication & Utilities	\$0.0	\$0.0	\$0.0
Wholesale Trade	\$0.0	\$0.0	\$0.0
Retail Trade	\$0.0	\$0.0	\$0.0
Finance, Insurance, and Real Estate	\$0.0	\$0.0	\$0.0
Misc. Services	\$0.0	\$0.0	\$0.0
Engineering & Professional Services.	\$0.6	\$0.2	\$0.2
Government	\$0.0	\$0.1	\$0.4
Total	\$15.3	\$16.1	\$6.3

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018)

Note: Earnings are independently rounded, and therefore may not add up directly to the integers shown in this table.

Table 27-13. Annual Earnings by Trade Countywide During Construction Period (in \$ Millions)

Trade	Project Development and Onsite Labor	Turbine & Supply	
	Earnings	Chain Earnings	Induced Earnings
Agriculture	\$0.0	\$0.0	\$0.0
Mining	\$0.0	\$0.0	\$0.0
Construction	\$0.3	\$0.3	\$0.0
Manufacturing	\$0.0	\$0.0	\$0.0
Fabricated Metals	\$0.0	\$0.0	\$0.0
Machinery	\$0.0	\$0.0	\$0.0
Electrical Equipment	\$0.0	\$0.0	\$0.0
Transport., Communication & Utilities	\$0.0	\$0.0	\$0.0
Wholesale Trade	\$0.0	\$0.0	\$0.0
Retail Trade	\$0.0	\$0.0	\$0.0
Finance, Insurance, and Real Estate	\$0.0	\$0.0	\$0.0
Misc. Services	\$0.0	\$0.0	\$0.0
Engineering & Professional Services.	\$0.0	\$0.0	\$0.0
Government	\$0.0	\$0.0	\$0.2
Total	\$0.3	\$0.4	\$0.2

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018)

Note: Earnings are independently rounded, and therefore may not add up directly to the integers shown in this table.

For a full list of estimated annual direct non-payroll expenditures likely to be made in the vicinity of the Facility during the period of construction, see Table 27-6.

(c) Secondary Employment and Economic Activity Generated by Facility Construction

As estimated by the JEDI model, turbine manufacturing and supply chain industries could in turn generate an additional 218 jobs (with a total \$16.3 million in earnings) in New York State and 12 jobs (with a total \$0.6 million in earnings) in Orleans County over the course of Facility construction. In addition, Facility construction could induce demand for 90 jobs (with a total \$6.3 million in earnings) statewide and 6 jobs (with a total \$.3 million in earnings) countywide through the spending of additional household income. The total estimated impact of 514 new jobs statewide during construction could result in up to \$37.9 of earnings, assuming a 2021 construction schedule and wage rates consistent with statewide averages. County residents are estimated to obtain 21 of those construction jobs, resulting in up to \$1.1 million of earnings countywide. Facility construction labor wages for similar positions within New York State are approximately \$25 per hour for laborers and \$41 per hour for construction supervision (U.S. Department of Labor, 2018). 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. The basis for economic multiplier factors used to determine this economic output through the JEDI model is described in the Methodology for Jobs and Economic Impact Analysis section. As described in this section, output provides a general measurement of the amount of profit earned by manufacturers, retailers, and service providers connected to a given project. The value of economic output associated with Facility construction is estimated to be \$83.9 million statewide and \$3.1 million countywide. Between workers' additional household income and industries' increased production, the impacts associated with the Facility are likely to be experienced throughout many different sectors and regions of the statewide economy.

Adverse economic impacts resulting from a potential change in price of electricity caused by the addition of the proposed Facility are not anticipated. Further discussion of potential economic impacts associated with the analysis of the price of electricity with the addition of the proposed Facility to the state electric grid, based on the New York State Independent System Operator's (NYISO) analysis in the System Reliability Impact Study (SRIS), is contained in Exhibit 5 of this Application. Quantifying the economic impact of a relatively small renewable energy facility, such as Heritage Wind, on energy pricing is extremely difficult due to the different scales of measurement and a variety of external factors. For example, while the JEDI model assesses economic benefits at the statewide or countywide level, the SRIS determines impacts at the NYISO regional level. Furthermore, an array of external factors, such as the recently passed Climate Leadership and Community Protection Act, further complicate assessing the potential economic impacts caused by electricity price changes due to this Facility.

(d) Workforce, Payroll, and Expenditures During Facility Operation

Based upon JEDI model computations, the operation and maintenance of the proposed Facility is estimated to generate 8 full-time jobs for New York State residents with combined estimated annual earnings of approximately \$0.8 million. Orleans County residents are anticipated to hold all 8 of these onsite operational jobs. These 8 positions have been verified as reasonable by the Applicant based on actual job numbers at other facilities in New York, and are anticipated to be comprised of technicians, project management and administrative personnel (see Table 27-14). Projected wage rates are anticipated to be consistent with statewide median wages, which are estimated to be approximately \$19.01 for administrative personnel, \$23.60 for wind turbine technicians, and \$52.84 for managers (U.S. Department of Labor, 2018). Table 27-14 provides an overview of annual wages of each full-time job position. These 8 full-time local jobs generated by the wind energy facility comprise the Facility's onsite long-term employment impact.

Table 27-14. Hourly and Annual Wages of Onsite Labor during Operational Years

Positions	Number of Positions	Hourly Wage per Job	Annual Wages per Job ⁵
Administrative/Secretarial	2	\$18.60	\$38,688.00
Technicians	2	\$29.06	\$60,444.80
Site Management	4	\$46.50	\$96,720.00

Source: Jobs and Economic Development Impact Model (USDOE NREL, 2018)

Note: Wages and number of positions are independently rounded, and therefore may not equate directly to the totals shown.

Annual non-payroll expenditures made during operations and maintenance are shown in detail in Table 27-7. These expenditures would total approximately \$3.4 million statewide and a majority (\$3.2 million) is anticipated to be spent at the county level. This includes materials and services purchased for the operation and maintenance of the Facility, sales tax, payments to local landowners, and payments to tax jurisdictions, i.e., PILOT agreement payments (see Section (i) below).

Payment to local landowners would be made in association with lease agreements executed to host Facility components executed with certain adjacent properties. These annual lease payments would offer direct benefits totaling \$ annually to participating landowners, a portion of which may be spent locally. Further, as the construction and operation of the Facility is not anticipated to result in any substantive changes to land use (see Exhibit 4), this income would be in addition to any income generated from the current use of the land (e.g., agricultural and/or timber production).

(e) Secondary Employment and Economic Activity Generated by Facility Operation

Operation and maintenance should also generate new jobs in other sectors of the statewide economy through secondary employment, consisting of turbine, local revenue, and supply chain impacts and the expenditure of new and/or increased household earnings. These impacts apply to both existing statewide and countywide businesses, as well as future statewide and countywide economic development. In total, while in operation, the Facility is estimated to generate a secondary employment demand of 24 jobs statewide with annual earnings of approximately \$1.9 million and 19 jobs countywide with annual earnings of approximately \$.8 million. This secondary employment is estimated to have an economic output of \$6.8 million annually statewide and \$4.3 million annually countywide. Total economic output is projected to increase by an estimated \$7.5 million statewide and \$4.9 million countywide as a result of Facility operation and maintenance (see Tables 27-8 and 27-9).

⁵ Note that hourly and annual wages of onsite labor during operational years do not include total employer costs (employee wages plus 41.0% average annual overhead costs including SSI, Medicare, workers' compensation, and disability). Total employer costs are represented in the total of annual earnings of onsite labor during operational years (see Tables 27-9 and 27-10).

(f) Incremental School District Operating and Infrastructure Costs

The Facility is not expected to result in any additional operating or infrastructure costs to the Albion Central School District and Oakfield-Alabama Central School District. Although it is possible that some of the long-term Facility operation employees may have school-aged children, increases in school district services and expenditures would likely be recovered through those employees' property tax payments and the respective district's state aid. Moreover, as discussed in Section (i) below, the affected school district will receive a considerable share of the PILOT Agreement payments. These payments will more than offset any possible increase in expenses incurred by the districts because of Facility employee children entering the school district.

(g) Incremental Municipal, Public Authority, or Utility Operating and Infrastructure Costs

The Facility is not expected to impose any additional operating or infrastructure costs on local municipalities, authorities, or utilities. The only water use and wastewater treatment requirements will be at the O&M facility. This facility will be using an existing private well and will be constructing an individual sewage treatment system. However, in the unlikely event the Facility imposes additional demands on municipal services, the cost of meeting those demands will be recovered through fees and payments. For example, if long-term Facility operation employees live in the Town of Barre, their required services will be paid for through property taxes and utility fees. Additionally, the substantial increase of funds available to the Town and County through the PILOT and HCA will largely outweigh any additional costs associated with the anticipated 8 full time operational workers that may choose to reside in the area.

Although transportation of major facility components during construction could potentially impact certain roadways, the Applicant has committed to addressing/mitigating these impacts in accordance with a Road Use Agreement (RUA). Negotiations for completing this agreement is currently underway. The RUA will be referenced and required under the final Host Community Agreement which is also currently in process. The RUA will require the Applicant to restore any roadways impacted by the transportation of facility components during construction and operation of the Facility. By these agreements, the Town will not incur any additional highway maintenance costs related to the Facility other than normal wear and tear associated with the use of non-oversized/overweight vehicles required to transport workers and equipment to and from the Facility Site for operation and maintenance purposes.

(h) Jurisdictions that Will Collect Taxes or Benefits

The Facility is anticipated to result in economic benefits for the following taxing jurisdictions:

- Orleans County
- Town of Barre
- Albion Central School District
- Oakfield-Alabama Central School District

(i) Incremental Amount of Annual Taxes or Payments

In exchange for a partial real property tax exemption, the Applicant expects to execute a PILOT Agreement, which will require annual PILOT payments to each taxing jurisdiction identified in Table 27-15 for the next 25 years. Although the terms of the PILOT Agreement have not been finalized, like other wind projects in New York State, the Applicant plans to enter into a PILOT with an estimated total annual payment rate of \$9,000 per megawatt installed during the term of the PILOT. Over the expected 25-year term of the PILOT, the estimated annual PILOT amount would total \$1,663,200 per year, compounding 2% annually for Years 1-14 and 2.5% for Years 15-25. The total amount will be distributed across four taxing jurisdictions. Within the \$9,000/MW PILOT estimate, the Applicant expects a portion of that rate to be allocated to an HCA with the host municipality (Town of Barre). However, at the time of this report, the exact amount of the HCA is unknown due to ongoing negotiations with the Town. In addition to the PILOT Agreement, as part of the HCA, the Applicant has proposed an additional \$250,000 paid to the Town by the commencement of operation. The Applicant also estimates that a total of \$75,000 will be paid annually to the Barre Fire District.

Table 27-15. Estimated Annual and Total PILOT Amounts

Taxing Jurisdictions Receiving PILOTs	Tax Rate per \$1000 Full Value	Number of Turbines within Jurisdiction	Estimated Annual Installed Capacity (MW) within Jurisdiction ⁶	Averaged Tax Rates for Jurisdictional Types Across Study Area	Payment per MW	Annual PILOT Estimate for Year 1	25-Year PILOT Total Estimate ⁷
Town of Barre	10.73	33	184.80	10.73	\$2,409	\$445,152	\$14,479,164
Albion Central School District	16.78	32	179.20	19.47	\$4,371	\$783,268	\$25,476,851
Oakfield- Alabama Central School District	22.16	1	5.60	19.47	\$4,371	\$24,477	\$796,152
Orleans County	9.89	33	184.80	9.89	\$2,220	\$410,303	\$13,345,660
Facility Total	N/A	33	184.80	N/A	\$9,000	\$1,663,200	\$54,097,826

Notes: All values in this table, apart from number of turbines within jurisdictions, are independently rounded, and therefore may not directly add up to the totals shown. All calculations utilized unrounded values.

The structure of the PILOT Agreements, as outlined above, will be guaranteed for the 25-year period of the agreements. Upon expiration of the PILOT Agreements, tax payments will be dependent upon the depreciated value of the Facility's generating assets and the appraised value of the Facility at that time.

(j) Comparison of Incremental Costs and Incremental Benefits

As discussed above, the Facility is not expected to result in any incremental costs to local tax jurisdictions but will instead result in significant benefits through implementation of PILOT Agreements.

(k) Equipment or Training Deficiencies in Local Emergency Response Capacity

The local emergency responders are not expected to have equipment to respond to a fire, hazardous substance, or medical emergency beyond the first aid, medical emergency and fire vehicles and equipment typically found at rural fire departments. Exhibit 18, along with the Preliminary Health and Safety Plan, and Emergency Action Plan (EAP), provides specific details on the emergency equipment that the Applicant will keep on site to respond to a fire or medical emergency, including any specialized equipment required to respond to emergencies unique to wind energy generating facilities. These documents also contain fire and emergency responder training and communication plans that will address any training deficiencies.

⁶ Annual nameplate capacity within jurisdictions is calculated by multiplying the number of turbines located within each jurisdiction by the turbine nameplate capacity (5.6 MW/turbine).

⁷ The 25-Year PILOT total estimate was calculated using compounded annual interest rates of 2% for Years 1-14 and 2.5% for Years 15-25.

Local first responders (i.e., town fire departments, Orleans County Emergency Services Department) were provided with a copy of the preliminary EAP on November 18, 2019. These agencies will also be provided with copies of the final EAP. The final EAP will include a list of all fire and emergency medical equipment that will be maintained at the Facility and describe the emergency response training provided to Facility personnel. Local emergency responders are not expected to have the equipment or training to climb the turbine tower and assist in lowering injured/ill individuals to the ground. Responsibility for this task rests solely with the Applicant and/or affiliated workers. Once the Facility is operational, the nacelle of each turbine and each trained turbine technician will likely be equipped with an emergency descent for use in lowering sick or injured employees to the ground.

(I) Consistency with State Smart Growth Public Infrastructure Criteria

The New York State Smart Growth Public Infrastructure Policy Act is meant to maximize the social, economic, and environmental benefits from public infrastructure development by minimizing the impacts associated with unnecessary sprawl. State infrastructure agencies, such as the New York State Department of Transportation (NYSDOT), shall not approve, undertake, or finance a public infrastructure project, unless, to the extent practicable, the project is consistent with the smart growth criteria set forth in New York Environmental Conservation Law (ECL) § 6-0107.

Although the Facility will not result in the construction or operation of public infrastructure and will not result in unnecessary sprawl, approvals from the NYSDOT may be required due to facility components traveling on and crossing state highways. Therefore, this section provides a detailed statement regarding the Facility's consistency with smart growth criteria. As discussed below, the Facility is consistent with five of the ten criteria, while the remaining five criteria do not apply to the Facility.

1) Criterion 1: To advance projects for the use, maintenance, or improvement of existing infrastructure

The purpose of the Facility is to create an economically viable wind-powered electrical-generating facility that will provide a source of renewable energy to the New York State grid, and in doing so, improve the State's existing energy infrastructure. Facility components include up to 33 wind turbines, access roads, collection lines, permanent meteorological towers, an O&M building, a laydown area, a collection substation that will include a point of interconnection (POI) substation, and a short overhead transmission line between the collection substation and the POI substation. While these Facility components are not public infrastructure and are generally not expected to promote the operation of public infrastructure, the Facility will contribute up to 184.6 MW of renewable energy to the New York State grid, generating enough electricity to meet the average annual consumption of a multitude of households in New

York State. The Facility will also use portions of existing State highway infrastructure to transport equipment. These activities are not anticipated to have any long-term detrimental impacts on existing infrastructure.

After careful consideration of its contribution to and utilization of the New York State power grid, and its utilization of the transportation routes identified above, it has been determined the Facility and any necessary changes associated with its construction and operation are consistent with this smart growth criterion.

2) Criterion 2: To advance projects located in municipal centers

"Municipal centers" are defined in the Smart Growth Act as "areas of concentrated and mixed land uses that serve as centers for various activities, including, but not limited to, central business districts, main streets, downtown areas, brownfield opportunity areas, downtown areas of local waterfront revitalization program areas, transit-oriented development, environmental justice areas, and hardship areas," as well as "areas adjacent to municipal centers, which have clearly defined borders, are designated for concentrated development in the future in a municipal or regional comprehensive plan, and exhibit strong land use, transportation, infrastructure and economic connections to a municipal center; and areas designated in a municipal or comprehensive plan, and appropriately zoned in a municipal zoning ordinance, as a future municipal center."

Large-scale wind energy projects, such as the Facility, require extensive land; moreover, the requirement for setbacks from residences and other structures restricts large-scale wind energy generating facilities to comparatively isolated rural areas. No municipal centers are found within the Facility Site. Therefore, this criterion does not apply to the Facility.

3) Criterion 3: To advance projects in developed areas or areas designated for concentrated infill development in a municipally approved comprehensive land use plan, local waterfront revitalization plan and/or brownfield opportunity area plan

See discussion of Criterion 2 above. Large-scale wind energy projects such as the Facility cannot be located within areas designated for concentrated infill development nor are they well-suited to developed waterfront areas and/or brownfield opportunity areas. No developed areas, areas designated for concentrated infill development, waterfront areas, or brownfield opportunity areas are located within the Facility Site. Therefore, this criterion does not apply to the Facility.

4) Criterion 4: To protect, preserve and enhance the state's resources, including agricultural land, forests, surface and groundwater, air quality, recreation and open space, scenic areas, and significant historic and archaeological resources.

The Facility will generate up to 184.6 MW of renewable energy while largely preserving the vacant, agricultural and forested land that comprises the Facility Site. This Application provides a detailed analysis of the potential environmental impacts and benefits, including analyses specifically associated with agricultural land, forests, surface and groundwater, air quality, recreation and open space, scenic areas, and significant historic and archaeological resources. In addition, a Visual Impact Assessment (VIA) has been prepared which assesses potential visual impacts within a 10-mile radius of the Facility Site. As documented throughout this Application, the Applicant will continue to work with local stakeholders to identity potential opportunities for avoidance, minimization, and mitigation to preserve the state's resources. Based on these analyses, the Applicant believes that the Facility has avoided and minimized impacts to these resources to the maximum extent practicable (based on the layout as currently proposed), and that any remaining impacts are outweighed by mitigation and the benefit provided by the Facility's generation of up to 184.6 MW of renewable energy. Therefore, the Facility is consistent with this criterion.

5) Criterion 5: To foster mixed land uses and compact development; downtown revitalization; brownfield redevelopment; the enhancement of beauty in public spaces; the diversity and affordability of housing in proximity to places of employment, recreation, and commercial development; and the integration of all income and age groups.

See response to Criterion 2 above. The nature of wind projects requires that the Facility be sited in a rural area that does not include any areas that would potentially experience compact development, downtown revitalization, or an increase in more affordable and convenient housing, etc. (e.g., villages and cities). Therefore, this criterion is not applicable.

6) Criterion 6: To provide mobility through transportation choices including improved public transportation and reduced automobile dependency

The Facility is does not directly or indirectly affect transportation options. Therefore, this criterion is not applicable.

7) Criterion 7: To coordinate between state and local government and inter-municipal and regional planning

The Applicant has conducted extensive public outreach to local government and planning agencies throughout the development and review of the Facility. This has included the public outreach conducted in accordance with the requirements of the Article 10 process and the Public Involvement Program (PIP) plan prepared specifically for the Facility, which includes frequent stakeholder consultation and other forms of engagement, public education, public meetings, ample notification periods, and public comment periods at key milestones. The Applicant also has reached out individually to each of the local governments that will be directly affected by the Facility. Moreover, the Article 10 process specifically requires outreach and coordination between the Applicant and state agencies with a role in reviewing the Application for the proposed Facility. To the extent applicable, these outreach efforts and municipal/agency consultations satisfy the criterion related to coordination between state and local governments.

8) Criterion 8: To participate in community-based planning and collaboration

The Applicant has conducted and will continue to conduct extensive public outreach to community-based organizations throughout the development and review of the Facility. This has included the public outreach conducted in accordance with the requirements of the PIP. See response to Criterion 7 for additional detail. These outreach efforts satisfy the criterion related to participation in community-based planning and collaboration.

9) Criterion 9: To ensure predictability in building and land use codes

The Applicant has no role in or authority over the development or enforcement of building or land use codes in the Town of Barre. Therefore, this criterion does not apply to this Facility.

10) Criterion 10: To promote sustainability by strengthening existing and creating new communities which reduce greenhouse gas emissions and do not compromise the needs of future generations by among other means, encouraging broad-based public involvement in developing and implementing a community plan and ensuring the governance structure is adequate to sustain its implementation

The Facility is consistent with New York State policies designed to encourage initiatives that reduce greenhouse gas emissions and contribute to the transition of New York's energy markets by encouraging renewable alternatives. The production of renewable wind energy by the Facility promotes the reduction of greenhouse gas emissions by providing an alternative energy source to fossil fuels. Therefore, the Facility supports this smart growth criterion.

11) Smart Growth Attestation

The Smart Growth Act requires that the chief executive officer of a state infrastructure agency (or his or her designee) attest in writing that the project under review, to the extent practicable, meets the relevant smart growth criteria in ECL § 6-0107(2). As previously noted, the Facility will not result in the construction or operation of public infrastructure as that term is used in the Smart Growth Act. As a result, the requirement to obtain an attestation from the chief executive officer of a state infrastructure agency does not apply to the Facility.

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