Socioeconomic Report

REDACTED

Dixon Run Solar

Bloomfield Township, Jackson County, Ohio

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EXECUTIVE SUMMARY

On behalf of SunEnergy1 (the Applicant), Environmental Design & Research (EDR) prepared the Socioeconomic Report for the proposed Dixon Run Solar Project, an up to 140 megawatt alternating current (MW_{AC}) solar power generating facility (the Facility) located in Bloomfield Township in Jackson County, Ohio. The materials contained herein are developed in support of the Applicant's submittal (the Application) for a Certificate of Environmental Compatibility and Public Need (the Certificate).

The Facility location is approximately 3.5 miles southeast of the City of Jackson, 5.2 miles north of the Village of Oak Hill, 5.5 miles south of the City of Wellston, and 7.4 miles west of the Village of Vinton (Study Area; Figure 1). Additional unincorporated communities near the Facility include Rocky Hill, Winchester, Ridgeland, Pattonsville, Keystone, Buckeye, Camba, Banner, Clay, Pyro, Rempel, Orpheus, and Vega. The closest metropolitan area in Ohio is Columbus, approximately 60 miles north of the Facility (Figure 2). A full description of the project components (photovoltaic panels, connection lines, access roads, etc.) can be found in Section 4906-4-03 of the Certificate Application. The Facility is anticipated to begin construction in 2022.

This report assesses the potential socioeconomic impacts of the proposed Facility on the nine townships, three counties, and one city within a 5-mile radius of the Facility. Regional socioeconomic conditions and population trends and patterns are evaluated. Potential employment, earnings, and overall economic output related to the Facility are compared to the current socioeconomic conditions within the Study Area.[1]

The construction and operation of the Facility will have positive impacts throughout the statewide economy. Businesses involved in onsite Facility construction and operation, as well as those associated throughout the industrial supply chain, are expected to see a measurable increase in the demand for their services. In addition, the earnings by workers during construction and operation of the Facility are expected to generate additional induced spending, creating a "ripple effect" throughout the economy.

The employment and economic impacts of the Facility were assessed using the Jobs and Economic Development Impact (JEDI) photovoltaics model (version PV05.20.21), a model established by the National Renewable Energy Laboratory (NREL). Estimates derived from the JEDI model show that Facility construction could increase onsite and offsite employment by 680.6 workers statewide, with total earnings of approximately $59.1 million. The operation and maintenance (O&M) of the Facility is estimated to increase onsite and offsite employment demand by an additional 11.5 workers statewide annually, with total annual earnings of approximately $0.6 million. The total value of onsite and offsite industrial production and induced benefits in the statewide economy associated with Facility construction is estimated at $89.5 million and at $1.4 million annually during operation. JEDI model results are provided in Table ES-1.

[1] Economic data used within this report reflect pre-COVID-19 conditions and therefore may not represent current economic conditions.

Table ES- 1. Estimated Statewide Jobs and Economic Impact Analysis

	Jobs (FTE)	Earnings (Millions)	Output (Millions)
Construction			
Project Development and Onsite Labor Total	438.2	$45.0	$45.5
Construction Labor	*420.7*	*$43.9*	-
Construction Related Services	*17.5*	*$1.0*	-
Module & Supply Chain Impacts	91.5	$5.9	$18.0
Induced Impacts	150.9	$59.1	$26.0
Total Construction Impacts	**680.6**	**$59.1**	**$89.5**
Annual Operation			
Onsite Labor Impacts	5.4	$0.3	$0.3
Revenue & Supply Chain Impacts	1.6	$0.1	$0.3
Induced Impacts	4.5	$0.3	$0.9
Total Annual Operation Impacts	**11.5**	**$0.6**	**$1.4**

Source: NREL JEDI model (version PV05.20.21) (USDOE NREL, 2021). Cost values verified by the Applicant in August 2021.
Notes: Earnings and Output values are millions of dollars in 2021 dollars. Construction and operating period jobs are full-time equivalent for one year (1 FTE = 2,080 hours). Impact totals and subtotals are independently rounded, and therefore may not add up directly to the integers shown in this table.

The Facility is anticipated to have a positive impact on local taxing jurisdictions, likely through a payment-in-lieu of taxes (PILOT) agreement and other payments. Taxing jurisdictions located within the Study Area that could receive payments include Oak Hill Union Local School District, Gallia-Jackson-Vinton Joint Vocational School District, Bloomfield Township, and Jackson County. Assuming that a PILOT agreement is implemented, the PILOT amount is anticipated to total $980,000 annually for the lifespan of the Facility. The Facility will not impose significant additional burdens on local services and thus will not increase the costs to the communities in the region.

These estimates suggest that the construction and operation of the Facility will have a positive economic impact on the communities within the Study Area. Through purchase payments to private landowners, short- and long-term job creation, and payments to the taxing jurisdictions, the Facility will supply a revenue stream to each of these jurisdictions without requiring significant services or expenditures on their behalf.

INTRODUCTION

This report assesses the potential socioeconomic impacts of the proposed Facility on the nine townships, three counties, and one city within a 5-mile radius of the Facility (Study Area; Figure 1). Regional socioeconomic conditions and population trends and patterns are evaluated. Potential employment, earnings, and overall economic output related to the Facility are compared to the current socioeconomic conditions within the Study Area.

Part I of this report presents a socioeconomic profile of the Study Area and Ohio, using population trends, projected population change, and civilian labor force data. Part II reviews potential Facility impacts to regional development, including housing demand, commercial and industrial employment, and transportation networks. Part III describes the methods of analyzing potential economic benefits, including an overview of the JEDI model. The results of the JEDI model are presented in Part IV, 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 acquisition. Part V reviews the potential revenue impacts of the Facility for local taxing jurisdictions.

PART I: SOCIOECONOMIC PROFILE

1. Population

The Facility is located in Bloomfield Township, 3.5 miles southeast of the City of Jackson (Figure 1), and approximately 60 miles south of Columbus (Figure 2). As indicated in Table 1, the area population has not changed significantly since the year 2000. At a local level, approximately two thirds of the communities within the 5-mile Study Area have a declining population and the other half have an increasing population. County populations are expected to continue the overall trend of population of either increasing or decreasing over the next decade (Table 1). While most communities within the Study Area are rural in nature, with under 100 people per square mile, Lick Township and the City of Jackson represent relatively dense urban and suburban communities.

Table 1: Population

Jurisdiction within Study Area	2000 Population	2019 Population	Annual Growth Rate (2000-2019)	Projected 2030 Population	Projected Total Growth (2019-2030)	2019 Population Density (people per square mile)
State of Ohio	**11,353,140**	**11,655,397**	**0.1%**	**11,836,311**	**1.6%**	**282**
Gallia County	**31,069**	**30,088**	**-0.2%**	**29,543**	**-1.8%**	**64**
Huntington Township	1,511	1,720	0.7%	1,863	8.3%	46
Raccoon Township	2,302	2,285	0.0%	2,275	-0.4%	61
Jackson County	**32,641**	**32,450**	**0.0%**	**32,340**	**-0.3%**	**77**
Bloomfield Township	896	830	-0.4%	795	-4.2%	21
Franklin Township	1,913	2,346	1.2%	2,672	13.9%	63
Jefferson Township	3,508	3,516	0.0%	3,521	0.1%	95
Lick Township	2,682	2,581	-0.2%	2,525	-2.2%	103
Madison Township	2,171	1,645	-1.3%	1,428	-13.2%	36
Milton Township	1,119	1,035	-0.4%	991	-4.3%	23
City of Jackson	6,184	6,239	0.0%	6,271	0.5%	655
Vinton County	**12,806**	**13,083**	**0.1%**	**13,248**	**1.3%**	**32**
Wilkesville Township	888	612	-1.6%	510	-16.6%	17

Source: U.S. Census Bureau Decennial Census (2000), ACS 5-Year Estimates (2015-2019), population projections based on respective 2000-2019 growth rates. Tables S0101 and P001.

Although employment related to the construction of the Facility will be substantial, it is relatively short-term and not expected 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 labor force and potential labor impacts associated with the construction and operation of the Facility is discussed in further detail below.

2. Employment

Table 2 illustrates unemployment trends in the counties within the Study Area, as well as Ohio. Annual average unemployment rates have decreased both statewide and county-wide from 2018 to 2019 and increased from 2019-2020. Statewide employment and payroll by NAICS sector for 2020 are provided in Table 3.

Table 2: Local Labor Force and Unemployment

County	Annual Unemployment Rate		
	2018	2019	2020
State of Ohio	**4.5%**	**4.2%**	**8.1%**
Gallia County	6.0%	5.4%	8.0%
Jackson County	6.5%	6.2%	8.7%
Vinton County	6.2%	5.7%	9.1%

Note: Not seasonally adjusted, Source: U.S. Bureau of Labor Statistics, Local Area Unemployment Statistics, 2018, 2019, and 2020.
Note: The sharp increase in unemployment rates shown in 2020 are likely to be largely attributed to the COVID-19 pandemic.

Table 3: Employment and Payroll by NAICS Sector in Ohio (2020)

NAICS code description	Number of full and part-time employees	Annual payroll ($1,000)	Total establishments
Total for all sectors	4,419,135	$244,725,232	290,926
Agriculture, forestry, fishing, and hunting	16,828	$663,724	1,701
Mining, quarrying, oil and gas extraction	9,014	$664,253	842
Utilities	18,436	$1,958,338	642
Construction	218,810	$14,234,000	23,672
Manufacturing	653,059	$42,441,006	15,473
Wholesale trade	225,652	$17,284,035	23,948
Retail trade	531,189	$17,162,075	35,190
Transportation and warehousing	223,126	$11,600,714	9,248
Information	63,878	$5,112,127	5,296
Finance and insurance	225,666	$20,385,743	17,375
Real estate and rental and leasing	62,280	$3,321,704	11,933
Professional, scientific, technical	262,028	$21,569,905	35,246
Management of companies and enterprises	138,110	$16,797,764	2,327
Administrative and support and waste management and remediation services	297,177	$11,783,329	18,420
Educational services	83,370	$3,502,863	3,424
Health care and social assistance	784,900	$41,089,294	32,504
Arts, entertainment, and recreation	61,853	$2,498,896	4,128
Accommodation and food services	404,444	$7,301,851	25,101
Other services (except public admin.)	138,573	$5,306,342	23,951
Industries not classified	742	$47,269	505

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages 2020. Table CB1800.

Employment related to the construction of the Facility will be relatively short-term and is not expected to result in permanent impacts to related statewide employment sectors (e.g., construction and manufacturing). Permanent jobs related to operation and maintenance (O&M) of the Facility include onsite labor and indirect jobs created through revenue, supply chains, and induced impacts. The level of job creation is not anticipated to be significant in comparison to current employment and payroll for related employment sectors (e.g., administrative services and accommodation/food services). Therefore, the Facility is not anticipated to have a significant impact on statewide industrial sectors during construction or operation. The short- and long-term employment opportunities associated with the construction and operation of the Facility are discussed in further detail Part IV.

PART II: REGIONAL DEVELOPMENT IMPACTS

As discussed in further detail below, the Facility is compatible with regional developmental goals and plans and is not expected to have adverse impacts to regional housing, commercial and industrial development, or transportation.

1. Housing

All the counties in the Study Area have a lower median housing value and gross median rent than statewide values. At a local scale, all communities have lower median housing values than statewide values except for Franklin Township and Milton Township. All communities have a lower median rent than statewide values except for the City of Jackson, whose median gross rent is equal to the statewide median rent. There are 5,518 vacant housing units within the Study Area counties, 1,449 of which occur within the Study Area communities (Table 4). Given these figures, 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 throughout the Study Area indicates that the Facility should not have a destabilizing effect on current rental properties.

Table 4: Study Area Housing Characteristics

Jurisdiction	Total housing units	Occupied units	Vacant units	Vacancy rate		Median value (owner-occupied)	Median gross rent
				Home-owner	Rental		
State of Ohio	**5,202,304**	**4,676,358**	**525,946**	**1.4**	**5.3**	**145,700**	**808**
Gallia County	**13,896**	**11,588**	**2,308**	**3.1**	**8.7**	**110,200**	**675**
Huntington Township	656	551	105	0.0	3.4	104,200	683
Raccoon Township	785	713	72	5.2	1.9	108,900	688
Jackson County	**14,852**	**12,780**	**2,072**	**3.4**	**3.6**	**97,400**	**704**
Bloomfield Township	491	345	146	0.0	0.0	144,400	610
Franklin Township	987	865	122	0.0	0.0	174,000	805
Jefferson Township	1,648	1,396	252	2.1	0.0	98,600	736
Lick Township	1,115	1,054	61	0.0	0.0	113,600	742
Madison Township	967	809	158	3.5	0.0	55,300	635
Milton Township	372	355	17	0.0	0.0	154,300	x
City of Jackson	3,042	2,655	387	10.7	6.7	95,100	808
Vinton County	**6,278**	**5,140**	**1,138**	**0.9**	**2.1**	**91,500**	**602**
Wilkesville Township	450	321	129	0.0	0.0	75,300	628

Source: U.S. Census Bureau, American Community Survey 5-Year Estimates 2015-2019. (x)=data unavailable. Table DP04.
Note: The U.S. Census Bureau defines vacant housing as a housing unit with no one living in it at the time of the interview. Vacancy rate is defined as the percent of total housing units vacant for rent or vacant for sale (U.S. Census Bureau). Therefore, housing units may be classified as vacant and not contribute towards a community's vacancy rate.

2. Commercial and Industrial Development

Diversification of Ohio's energy generation portfolio will have significant and positive economic impacts. At both regional and national levels, the state is noted to have a relatively high capacity for both distributed and utility-scale solar photovoltaic systems. During the third quarter of 2020, the Solar Energy Industries Association (SEIA) reported that Ohio had 360 MW of installed solar capacity, with $815.3 million of total

solar investment and $100.75 million of that invested in 2019 alone. At a national level, Ohio ranked 28th in the U.S. for installed solar capacity (SEIA, 2020). Furthermore, there is tremendous capacity for growth due to an established manufacturing base and trained workforce, central location and reliable transportation infrastructure, and a diverse array of research centers and technical advisory services (Environmental Law & Policy Center, 2016). The SEIA projects that Ohio's installed solar capacity will grow to 1,904 MW by 2025.

The SEIA estimated that Ohio is currently home to 268 companies providing jobs in the solar industry, 105 of which are solar supply chain businesses including component and equipment manufacturers (SEIA, 2020). Many of the state's plastic and glass manufacturers have taken advantage of the growing demand for solar by becoming suppliers for these components and equipment (Environmental Law & Policy Center, 2016). The 2019 Solar Jobs Census reports that Ohio ranks in the top seven states for solar jobs, with 7,282 workers in the solar industry (a 1.7% increase since 2018). Most of these jobs (57%) were for installation, while the remainder were for manufacturing (28%), wholesale trade distribution (10%), O&M (3%), and other fields (3%). Since 2018, jobs in the field of installation and operations have increased, while jobs in the manufacturing and distribution fields have decreased slightly (The Solar Foundation, 2019). Although the rate of job growth in Ohio's solar industry is beginning to plateau (solar jobs increased by 21.2% in 2016, 11.8% in 2017, 10.5% in 2018, and 1.7% in 2019), the steady and continued solar industry growth reflects the industry's stable foothold in the state. Given the pandemic-led economic disruption underway at the time of submission of this Application, additional employment in the solar industry sector may be especially beneficial.

The State of Ohio has developed a renewable energy portfolio requirement, applicable to entities that provide electricity to customers in the state (see Section 4928.64 of the Ohio Revised Code). The requirement calls for annually increasing percentages of renewable energy, with a goal of 8.5% renewable energy by 2026. Development of the proposed Facility is compatible with that goal. According to the U.S. Energy Information Administration, rooftop and utility scale solar generation accounted for one-tenth of Ohio's total renewable energy portfolio in 2019. Utility scale solar made up about half of Ohio's total solar generation (U.S. Energy Information Administration, 2021). Specific short- and long-term economic impacts of this Facility on commercial and industrial development throughout the region are described in further detail in Parts IV and V of this report.

3. Transportation

The primary transportation routes to the Facility are State Route 327, which runs north-south along the western border of the Facility, and U.S. Route 35. which runs northeast-southwest along the southwestern border of the Facility. One local road, Luther Jones Road, intersects the Facility. Delivery routes have not been finalized but are anticipated to come from the west by way of U.S. Route 36 to State Route 327. The proposed Facility is not expected to cause any substantial disruption to major transportation corridors serving the Study Area, as most solar photovoltaic components and equipment are relatively small and require only relatively low impact means of transport. For more information about roads, refer to the Route Evaluation Study included with the Certificate Application.

One rail line, part of the Ohio South Central Railroad, runs through the Study Area. The rail line runs north-south and bisects the western portion of the 5-mile Study Area west of State Route 93. The rail line is owned by Indiana Eastern Railroad, LLC. The rail system is not anticipated to be used for the transportation of any Facility components.

One public airport, James A. Rhodes Airport, is located within the Study Area, 2.1 miles west of the Facility. Operation of the Facility is not expected to result in any adverse impacts to the regional air transportation network. For more information about airports, refer to the Certificate Application.

4. Local and Regional Plans

The Facility will be in Bloomfield Township, Jackson County, Ohio. A total of three counties, nine townships, and one city are within the surrounding 5-mile Study Area. Available plans within these jurisdictions are summarized as follows.

Gallia County Strategic Plan, 2012

Gallia County envisions having a thriving economy, improved infrastructure and transportation, and a focus on strengthening the local employment sector. There is a large focus on building a stronger, sustainable business and industry base for Gallia County. The overarching theme is directed toward creating good jobs for residents, building a strong supply chain to support regional industry, expanding the county's capacity to attract and maintain strong businesses, and supporting and helping grow local businesses. The Strategic Plan identified the goal to develop a strategy to work more closely with local leaders of surrounding counties on community and economic development opportunities. Specifically, the plan specifies a goal of attracting a minimum of one non-traditional business (technology, defense, etc.) to Gallia County (Gallia County, 2012). Though the Facility is not located in Gallia County, the Project may provide non-traditional work opportunities for its residents. The Facility is not expected to hinder the goals of the Gallia County Strategic Plan.

Vinton County: Future Focus 2020, 2016

Vinton County envisions a future with increased job creation/retention/expansion, business accessibility to a variety of capital sources, promotion of land use planning, and preservation/conservation of agriculture. Vinton County's goals strive to accommodate growth responsibly by integrating new and ongoing development in a way that respects the environment, supports community values, and considers long-term effects on water and other resources. The county hopes to build off its state-of-the-art technology infrastructure, enabling access to the latest advancements and use of information technology by government, businesses, and residents while not detracting from the aesthetics or impacting public health (Vinton County, 2020). Though the Facility is not located in Vinton County, the Project may provide work opportunities for its residents. The Facility is not expected to hinder the goals of the Vinton County Future Focus 2020 plan.

5. Concurrent or Secondary Uses

The Applicant has no plans for concurrent or secondary use of the Facility. The public will be prohibited from entering the Facility, which will be enclosed by perimeter fencing. On occasion, guided tours of the

Facility by qualified personnel may allow designated members of the public to enter one or more of the solar fields for limited periods of time. Additionally, "no entry" and "high-voltage equipment" warning signs will be displayed around the Facility.

PART III: MEASURING ECONOMIC IMPACTS

1. Calculating Economic Benefits

Quantifying the economic impacts of the proposed Dixon Run Solar Project is essential to understanding the potential benefits that the Facility could have on the statewide economy. Solar power development, like other commercial development projects, can expand the economy through both direct and indirect means. Income generated from direct employment during the construction and operation of the Facility will subsequently be used to purchase local goods and services, creating a ripple effect throughout the economy. This report analyzes three levels of impact that the proposed Facility may have on the economy:

- **Onsite labor impacts:** Direct impacts experienced by the companies/individuals residing in Ohio and engaged in the construction and operation of the Facility. This value estimates the dollars spent on labor and professional services by project developers, consultants, and construction contractors, as well as on O&M personnel. Onsite labor impacts do not reflect material expenditures.
- **Module and supply chain impacts:** 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 project components, project analysis, legal services, financing, and insurance.
- **Induced impacts:** The estimated effect of increased household income resulting from the Facility. Induced impacts reflect the reinvestment of earned wages, as measured throughout the first two levels of economic impact. This reinvestment can occur anywhere within the economy, such as on household goods, entertainment, food, clothing, and transportation.

Each of these three categories can be measured in terms of three indicators: jobs (as expressed through the increase in employment demand), the amount of money earned through those jobs, and the overall economic output associated with each level of economic impact. These indicators are described in further detail below:

- **Jobs:** The increase in employment demand as a result of the development of the Facility. These positions are measured across each level of impact, such 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). Figures in this analysis are rounded to the nearest whole number.
- **Earnings:** Wages and salary compensation paid to the employees described above.

- **Output:** The value of industry production in the state or local 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 cable or motor vehicle fuel for use in the Facility.

2. Methodology

The employment and economic impacts of the Facility were assessed using the Jobs and Economic Development Impact (JEDI) photovoltaics model (version PV05.20.21). 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 (USDOE), to assess the economic impacts of proposed solar energy generating facilities during both the construction and operation phases (USDOE NREL, 2020). This model allows users to estimate jobs, earnings, and economic output by impact level (described below) using Facility-specific data provided by the Applicant (such as year of construction, size of project, module type, and location) 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, 2020). The most currently available IMPLAN multipliers (2019) for Ohio were used during the time of analysis (August, 2021).

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. For purposes of the JEDI model, the Applicant has assumed the following Facility-specific inputs:

- Project Location: State of Ohio
- Year of Construction: 2022 - 2023[2]
- System Application: Utility-Scale
- Capacity: 243 MW_{DC} (140 MW_{AC})
- Module Material: Crystalline Silicone
- System Tracking: Fixed
- Base Installed System Cost: **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**
- Annual direct O&M Cost: **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**
- Money Value (Dollar Year): 2021

Using this Facility-specific data, the JEDI model then creates a list of default values, which include project cost values, default tax values, default land purchase payment values, and default statewide share of spending values. These default values are derived from 10 years of research by NREL, and stem from various

[2] This analysis assumes a 2022 construction year, however, the exact year(s) of construction has yet to be finalized.

sources, including interviews and surveys of leading project owners, developers, engineering and design firms, and construction firms active in the solar energy sector.

The second step of the JEDI model methodology requires the review, and if warranted, the customization of default project cost values to more reasonable estimates. Although the JEDI model is based on thorough research by NREL, default project costs are occasionally significantly different from more accurate project cost estimates for a specific project.

The Applicant reviewed the default project cost values and statewide shares subtotaled by each of the following categories in the JEDI model shown in Table 5. The Applicant made specific adjustments to improve accuracy. It should be noted that the JEDI default project costs for "Construction Materials & Equipment" and "Construction – Other" were found to be significantly higher than the realistic cost estimates for the Facility.

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Table 5: Adjustments Made to JEDI Model Cost Inputs

Facility Expenditure Categories	JEDI Default Value	Adjusted Value	Change
Construction Materials & Equipment	$248,623,158	[redacted]	[redacted]
Construction Labor Total	$52,985,263	[redacted]	[redacted]
Construction - Other	$85,591,579	[redacted]	[redacted]
Construction Materials and Equipment Sales Tax	$0	[redacted]	[redacted]
Operating/Maintenance (O&M) Labor	$1,306,800	[redacted]	[redacted]
O&M Materials and Services	$871,200	[redacted]	[redacted]
O&M Materials/Equip. Sales Tax	$0	[redacted]	[redacted]
Local Property Tax Payments	$0	[redacted]	[redacted]
Construction Worker Hourly Wage	$21.39	[redacted]	[redacted]
O&M Technician Hourly Wage	$21.39	[redacted]	[redacted]
Construction Worker Employer Overhead	45.6%	[redacted]	[redacted]
O&M Technician Employer Overhead	45.6%	[redacted]	[redacted]

Source: JEDI model (USDOE NREL, 2016); Cost values verified by the Applicant in August 2021.

<END CONFIDENTIAL INFORMATION>

a. Capital and Intangible Costs

In addition to the aforementioned construction costs specified as inputs for the JEDI analysis, the Applicant provided additional capital and intangible cost details.

i. Estimated Capital and Intangible Costs by Alternative

The total estimated capital and intangible costs of the Facility are **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**. As described in Section 4906-4-04 of the Application, the Applicant has not proposed alternative project areas. Therefore, no cost comparison between alternatives is available.

ii. Cost Comparison with Similar Facilities

Installed project costs compiled by the U.S. Department of Energy's Lawrence Berkeley National Laboratory (Berkeley Laboratory) in December 2019 indicate that the capital costs of the Facility are consistent with recent industry trends. The Berkeley Laboratory compilation shows that capacity weighted- average installed costs in 2018 averaged roughly $1,640/kW_{AC}$ (Bolinger, Seel, & Robson, 2019).

By way of further comparison, solar facilities installed in 2018 with capacities from 100 to 200 MW had a median cost of around $1,400/kW_{AC}$ (Bolinger, Seel, & Robson, 2019). These costs are lower than the average cost estimated for the Facility, which could be attributed to locational and system size differences. The estimated cost of the Facility is not anticipated to substantially different from other Facilities completed by the Applicant.

iii. Present Worth and Annualized Capital Costs

Capital costs will include development costs, construction design and planning, equipment costs, and construction costs. The costs will be incurred within a year or two of start of construction. Therefore, a present worth analysis is essentially the same as the costs presented above **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**. As alternative project areas and facilities were not considered in this Application, the capital cost information in this section is limited to the proposed Facility.

b. Operation and Maintenance Expenses

In addition to the aforementioned O&M costs specified as inputs for the JEDI analysis, the Applicant provided additional O&M cost details.

i. Estimated Annual Operation and Maintenance Expenses

For the first two years of commercial operation, O&M costs are estimated to be **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**, which includes an estimated **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>** of staffing costs.

ii. Operation and Maintenance Cost Comparisons

O&M costs are a significant component of the overall cost of solar projects but can vary widely between facilities. The Berkeley Laboratory has compiled O&M cost data for 48 installed utility-scale[3] solar power projects in the United States, totaling 900 MW_{AC} of capacity, with commercial operation dates of 2011 through 2018. In general, facilities installed more recently have incurred lower O&M costs than those installed in 2011. Specifically, capacity-weighted average O&M costs for projects constructed in 2011 was approximately $32/kW_{AC}$-year, and then decreased to $19/kW_{AC}$year- for projects constructed in 2018 (Bolinger, Seel, & Robson, 2019). According to the

[3] The authors of this report considered "utility-scale" to be any project above 5 MW_{AC}. This Facility's nameplate capacity is substantially larger.

Berkeley Laboratory, this decrease could be the result of utility companies capturing economies of scale as their solar operations grow over time.

The O&M costs for the Facility are estimated to be approximately **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**, depending on the maturity of the project each year of its life cycle. These estimated O&M costs exclude any other ongoing expenses related to environmental monitoring, property taxes, land royalties, reverse power, and insurance. These costs will be lower than the average costs compiled by the Berkeley Laboratory, as described above. The O&M costs for the Facility are not anticipated to be significantly different from other facilities the Applicant operates.

iii. Present Worth and Annualized Operation and Maintenance

The annual O&M costs will be subject to real and inflationary increases. Therefore, these costs are expected to increase with inflation after the first two years. The net present value of the O&M costs per kW_{AC}, assuming a 40-year Facility life, inflation rate of **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**, and **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>** discount rate, is approximately **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**. As alternative project areas and facilities were not considered in this Application, the O&M cost information in this section is limited to the Facility.

c. Cost of Delays

Monthly delay costs would depend on various factors. If the delay were to occur during construction, costs would include lost construction days and those associated with idle crews and equipment. If the delay were to occur in the permitting stage, the losses would be associated with the time value of money resulting from a delay in the timing of revenue payments. While these values are subject to negotiation with potential counterparties and power purchase agreement discussions, this is estimated to be approximately **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**.

PART IV: ECONOMIC IMPACT ON THE OHIO ECONOMY

The results of the socioeconomic analysis, including the potential impact of the Facility on industries throughout the state, are provided in Table 6.

Table 6: Estimated Statewide Jobs and Economic Impact Analysis

	Jobs (FTE)	Earnings (Millions)	Output (Millions)
Construction			
Project Development and Onsite Labor Total	438.2	$45.0	$45.5
Construction Labor	*420.7*	*$43.9*	-
Construction Related Services	*17.5*	*$1.0*	-
Module & Supply Chain Impacts	91.5	$5.9	$18.0
Induced Impacts	150.9	$59.1	$26.0
Total Construction Impacts	**680.6**	**$59.1**	**$89.5**
Annual Operation			
Onsite Labor Impacts	5.4	$0.3	$0.3
Revenue & Supply Chain Impacts	1.6	$0.1	$0.3
Induced Impacts	4.5	$0.3	$0.9
Total Annual Operation Impacts	**11.5**	**$0.6**	**$1.4**

Source: NREL JEDI model (version PV05.20.21) (USDOE NREL, 2021) Cost values verified by the Applicant in August 2021
Notes: Earnings and Output values are millions of dollars in 2021 dollars. Construction and operating period jobs are full-time equivalent for one year (1 FTE = 2,080 hours). Impact totals and subtotals are independently rounded, and therefore may not add up directly to the integers shown in this table.

1. New Jobs in the Ohio Economy

Demand for new jobs associated with the Dixon Run Solar Project will be created during both construction and operation. The money injected into the statewide economy through the creation of these jobs will have long-term, positive impacts on individuals and businesses in Ohio.

2. Statewide Economic Impact: Construction Phase

Based upon JEDI model computations, it is anticipated that construction of the proposed Facility could directly generate an estimated 438.2 onsite construction and project development personnel FTE positions, with a projected wage rate of **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>** and **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>** employer payroll overhead. Module and supply chain industries could in turn generate an additional 91.5 FTE jobs over the course of Facility construction. In addition, Facility construction could induce demand for 150.9 FTE jobs through the spending of additional household income. The total impact of 680.6 new FTE jobs could result in up to approximately $59.1 million of earnings, assuming a 2022 construction start. Facility construction will primarily benefit those in the construction trades, including laborers and electricians. Facility construction will also require workers with specialized skills, such as panel assemblers, specialized excavators, and electrical workers with high voltage experience.

In addition to jobs and earnings, the construction of the Facility is expected to have a positive impact on economic output, a measurement of the value of goods and services produced and sold by backward-linked

industries. The value of economic output associated with construction of the Facility is estimated to be $89.5 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.

3. Statewide Economic Impact: Operation and Maintenance Phase

Based upon JEDI model computations, the O&M of the proposed Facility is estimated to generate 5.4 direct FTE jobs with estimated annual earnings of approximately $0.3 million. Wage rates for the direct operational employees are projected to be **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>** with **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>** employer payroll overhead, higher than Ohio averages which are estimated to be approximately $23.85 per hour for installation, maintenance, and repair occupations (U.S. Department of Labor Bureau of Labor Statistics, 2020). Assuming a **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>** discount rate and a **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>** inflation rate, the net present value of the O&M earnings through the 40-year lifespan of the Facility is estimated to total approximately **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**.

Facility O&M also should 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 1.6 FTE jobs with annual earnings of approximately $0.1 million. In addition, it is estimated that 4.5 FTE jobs with associated annual earnings of $0.3 million will be induced through the increased household spending associated with Facility operations. These impacts may include restaurant, hospitality, and other tourism-derived local spending from employees and visitors to the Facility. In total, while in operation, the Facility is estimated to generate demand for 11.5 FTE jobs with annual earnings of approximately $0.6 million. Total annual economic output is estimated to increase by $1.4 million as a result of Facility O&M.

4. Land Purchase Payments

In addition to the economic benefits of Facility-related jobs and economic output, construction of the Facility will also result in the direct payment to local landowners in association with the purchase of land to host facility components. The Applicant estimates that these payments will total approximately **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>**. These payments will have a direct benefit to landowners and a positive impact on the region, to the extent that landowners will spend their revenue locally.

PART V: LOCAL TAX REVENUES

1. Legislative Context

Solar energy projects in Ohio can be exempt from tangible personal property and real property tax payments if they meet certain conditions. These conditions are enumerated in Section 5727.75 of the Ohio

Revised Code (ORC). Operators of these exempt projects, known as qualified energy projects (QEP), are instead required to make annual payments in lieu of taxes (PILOT). To be certified as a QEP by the State, a project must specific criteria, including the following:[4]

- An application for certification of the energy project as a QEP that complies with the requirements under Section 5727.75 of the ORC and Chapter 122:23-1 of the Ohio Administrative Code (OAC) must be submitted to the director of the Ohio Department of Development (ODOD) on or before December 31, 2024;
- An application under Section 4906.20 of the ORC must be submitted to the Ohio Power Siting Board (OPSB) on or before December 31, 2024;
- The county commissioners of the county in which property of the project is located must have adopted a resolution approving the application submitted to ODOD or the county commissioners must pass a resolution declaring the county an alternative energy zone (AEZ);
- Construction (defined as either the date the application for a certificate is filed with OPSB or the date the contract for construction or installation is entered, whichever is earlier) must begin by January 1, 2025.

If an applicant is granted exemption from taxation for any of the tax years 2011 through 2025, the QEP will be exempt from taxation for tax year 2026 and all ensuing years, as long as the property is placed into service before January 1, 2026. The amount of PILOT to be paid annually to the county treasurer is assessed per megawatt (MW) of nameplate capacity, at the rate of $7,000/MW. County commissioners may require an additional service payment if the total of the additional payment and the PILOT do not exceed $9,000/MW.

2. Estimated Payments In Lieu Of Taxes

The model assumed that the Applicant would execute a PILOT agreement, which would require annual PILOT payments to Jackson County. An average annual payment of $7,000/MW was assumed. These funds would then be apportioned by Jackson County. The Facility is expected to achieve commercial operation as early as 2023 and have a lifespan of approximately 40 years.

CONCLUSION

The Facility will have a positive impact on the communities within the Study Area. Land purchase payments, short- and long-term job creation, and PILOT revenues will benefit private landowners, Facility employees, businesses, and taxing jurisdictions. The Facility is not expected to generate significant expenditures on behalf of these beneficiaries; therefore, it will have a positive impact on the social and economic conditions of these communities, as summarized below.

1. Total Local Economic Benefit: The construction of the Facility is expected to produce an estimated $59.1 million in employment earnings and $89.5 million in total economic output. Subsequently, each

[4] The criteria listed are from the new version of ORC Section 5727.75, which goes into effect on September 30, 2021.

year the Facility is operational it is expected to generate approximately $0.6 million in earnings and $1.4 million in total economic output. The total economic output includes induced impacts from employment earnings being reinvested in the local economy, such as on household goods, entertainment, food, clothing, and transportation.

2. Local Employment Benefits: During construction, the Facility is expected to support demand for a total estimate of 680.6 onsite, supply chain, and induced employment positions. It is expected to support an estimated total of 11.5 positions during each year of its operation.
3. Land Purchase Revenues: The Facility will result in approximately **<BEGIN CONFIDENTIAL INFORMATION>** [redacted] **<END CONFIDENTIAL INFORMATION>** in total payments made to participating landowners.
4. Local Government Revenues: The Facility will increase local government revenues. PILOT revenues could amount to approximately $980,000 per year to be distributed to local taxing jurisdictions.

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FIGURES