

Bright Mountain Solar Project

Case No. 2022-00274



TAB 10

TAB 10 ECONOMIC IMPACT

KRS 278.706(2)(j) *An analysis of the proposed facility's economic impact on the affected region and the state.*

An analysis of the proposed Facility's economic impact statewide and in Perry County was prepared on behalf of the Applicant by Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR), pursuant to KRS 278.706(2)(j). The employment and economic impacts of the Facility were assessed using the Jobs and Economic Development Impacts (JEDI) photovoltaics model, a model established by the National Renewable Energy Laboratory (NREL), based on project cost estimates and other inputs provided by the Applicant. The results of this analysis are documented in the Socioeconomic Report, which is included as Attachment I.

The results of the economic impact analysis suggest that construction and operation of the Facility will have a positive economic impact statewide and on Perry County through job creation and resulting induced impacts, supply chain impacts, lease payments to private landowners, and payment-in-lieu-of-taxes (PILOT) payments to local taxing jurisdictions. The Facility will not impose significant additional burdens on local services and thus will not increase costs to the communities in the region.

Bright Mountain Solar Project
Application Tab 10
Case No. 2022-00274



Attachment I – Socioeconomic
Report

Socioeconomic Report

REDACTED

Bright Mountain Solar Project

Perry County, Kentucky

Prepared for:



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EXECUTIVE SUMMARY

On behalf of Bright Mountain Solar, LLC (the Applicant), Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR) prepared the Socioeconomic Report for the proposed Bright Mountain Solar Project, an up to 80-megawatt (MW) solar-powered electric generation facility (the Facility) in Perry County, Kentucky. This report was developed in support of the Applicant's submittal for a certificate to construct a merchant electric generating facility (the Application) pursuant to Kentucky Revised Statute (KRS) 278.706(2)(j). A full description of the project components (photovoltaic panels, collection lines, access roads, etc.) can be found in Tab 2 of the Application.

This report assesses the potential statewide and countywide employment and economic impacts of the Facility. It also assesses potential regional development impacts within a 5-mile radius of the Facility (Study Area). Regional socioeconomic conditions and population trends are evaluated in relation to the potential employment, earnings, and overall economic output of the Facility.¹

The employment and economic impacts of the Facility were assessed using the Jobs and Economic Development Impacts (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 generate demand for approximately 280 full-time equivalent (FTE) jobs statewide, with total earnings of approximately \$19.0 million. The operation and maintenance (O&M) of the Facility is estimated to add approximately an additional 12 FTE jobs statewide annually, with total annual earnings of approximately \$0.6 million. Facility construction is estimated to add a total value of \$29.2 million in onsite and offsite industrial production and induced benefits in the statewide economy. Facility O&M is estimated to add \$1.3 million annually in economic output to the statewide economy through the life of the Facility.

Within Perry County, construction of the Facility is estimated to add approximately 36 FTE jobs with earnings of approximately \$2.4 million, and annual O&M is estimated to contribute approximately an additional 4 FTE jobs to the county economy with annual earnings of approximately \$0.2 million.

The Facility is anticipated to increase revenues for local taxing jurisdictions, likely through a payment-in-lieu-of-tax (PILOT) agreement, in which payments would be made annually for the lifespan of the Facility. In addition, participating landowners will receive land lease payments, which will have a positive impact on the region, to the extent that landowners spend the payments locally. The Facility will not impose significant additional burdens on local services and thus will not increase costs to the communities in the region.

These estimates suggest that construction and operation of the Facility will have a positive economic impact statewide and on the jurisdictions within the Study Area. Through job creation and resulting induced impacts, supply chain impacts, lease payments to private landowners, and PILOT payments to local taxing jurisdictions, the Facility will benefit the economy without requiring significant services or expenditures by local jurisdictions.

¹ Socioeconomic profile data used within this report reflect conditions in 2020 and 2021, during a time influenced by the COVID-19 pandemic, and therefore may not represent current socioeconomic conditions.

1.0 INTRODUCTION

This report assesses the potential socioeconomic impacts of the proposed Facility on the three counties and one city within a 5-mile radius of the Facility (Study Area; Figure 1). Regional socioeconomic conditions and population trends are evaluated in relation to potential employment, earnings, and overall economic output of the Facility. This report was developed pursuant to KRS 278.706(2)(j), which requires an analysis of the Facility's economic impact on the affected region and the state.

Section 2.0 of this report presents a socioeconomic profile of the Study Area and Kentucky, using population trends, projected population change, and civilian labor force data. Section 3.0 reviews potential Facility impacts to regional development, including housing demand, commercial and industrial employment, transportation networks, and land use plans. Section 4.0 describes the methods of analyzing potential economic benefits, including an overview of the JEDI model. The results of the JEDI model are presented in Section 5.0, which describes the jobs created by construction and operation of the Facility, as well as a summary of payments to landowners as a result of land leases. Section 6.0 reviews the potential revenue impacts of the Facility for local taxing jurisdictions.

2.0 SOCIOECONOMIC PROFILE

This section presents a socioeconomic profile of the Study Area and Kentucky, using population data, projected population change, and civilian labor force data.

2.1 Population

The Facility is located in Perry County, approximately 5 miles northwest of the City of Hazard (Figure 1). Between 2010 and 2021, Kentucky exhibited a relatively-stable population, with an average annual growth rate of only 0.3%. Within the Study Area, populations have also remained relatively stable, with all Study Area counties declining in population from 2010 to 2021 at average annual rates of change between 0.1% and 0.6%, as shown in Table 1. The City of Hazard was the only Study Area community to grow in population during this period, increasing in population by 807, which is an average annual growth rate of 1.6%. The projected populations shown in Table 1 are based on the respective 2010-2021 growth rates.

Most of the Study Area is sparsely populated relative to the state overall, with under 100 people per square mile. The main population node in the Study Area is the City of Hazard, which is the county seat of Perry County and is the most densely-populated jurisdiction within the Study Area, with approximately 748 people per square mile.

Table 1: Population

Jurisdiction within Study Area	2010 Population	2021 Population	Annual Growth Rate (2010-2021)	Projected 2030 Population	Projected Total Growth (2021-2030)	2020 Population Density (people per square mile)
State of Kentucky	4,339,367	4,494,141	0.3%	4,657,060	3.0%	111
Breathitt County	13,878	13,652	-0.1%	13,431	-1.3%	28
Leslie County	11,310	10,622	-0.6%	9,993	-4.9%	27
Perry County	28,712	28,421	-0.1%	28,134	-0.8%	83
City of Hazard	4,456	5,263	1.6%	5,236	15.3%	748

Source: Decennial Census (U.S. Census Bureau, 2010), ACS 5-Year Estimates Data Profiles (American Community Survey, 2021) Table P1.

Note: 2021 Census Data was not available for Breathitt County, Leslie County, Perry County, and the City of Hazard at the time of data collection, so 2020 Decennial Census data was utilized.

Although employment related to 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 population growth within the Study Area. The labor force and potential labor impacts associated with construction and operation of the Facility are discussed in further detail below.

2.2 Employment

Table 2 details unemployment trends in Kentucky, Breathitt County, Leslie County, and Perry County. Annual average unemployment rates have decreased both statewide and within Study Area counties from 2019 to 2023. Statewide employment and payroll by North American Industry Classification System (NAICS) sector for 2022 are provided in Table 3.

Table 2: Labor Force and Unemployment

Area	Annual Unemployment Rate				
	2019	2020	2021	2022	May 2023 (Preliminary)
State of Kentucky	5.6%	5.3%	4.3%	3.9%	3.8%
Breathitt County	10.0%	9.9%	8.6%	7.3%	6.3%
Leslie County	9.4%	10.5%	8.1%	6.6%	5.8%
Perry County	11.9%	8.6%	6.3%	5.0%	4.4%

Note: Not seasonally adjusted.

Source: Local Area Unemployment Statistics (U.S. Department of Labor Bureau of Labor Statistics, 2019-2022)

Table 3: Employment and Payroll by NAICS Sector in Kentucky 2022

NAICS code description	Number of full and part-time employees	Annual payroll (\$1,000)	Total establishments
Total for all sectors	1,580,147	\$91,879,751	123,915
Agriculture, forestry, fishing and hunting	9,042	\$420,814	1,258
Mining, quarrying, oil and gas extraction	7,335	\$649,716	454
Utilities	6,819	\$681,914	347
Construction	79,473	\$5,422,781	10,926
Manufacturing	243,108	\$17,168,761	544
Wholesale trade	74,061	\$6,061,566	8,366
Retail trade	207,484	\$7,264,799	16,152
Transportation and warehousing	121,802	\$7,970,929	3,966
Information	20,771	\$1,572,834	2,580
Finance and insurance	74,601	\$6,369,790	7,564
Real estate and rental and leasing	20,180	\$1,125,666	4,869
Professional, scientific, technical	80,253	\$6,568,131	16,272
Management of companies and enterprises	20,632	\$2,476,765	781
Administrative and support and waste management and remediation services	118,399	\$5,266,965	7,677
Educational services	18,597	\$761,632	1,453
Health care and social assistance	253,494	\$15,641,218	20,270
Arts, entertainment, and recreation	21,203	\$748,666	1,656
Accommodation and food services	160,318	\$3,740,863	8,962
Other services (except public admin.)	42,282	\$1,905,178	9,402
Industries not classified	294	\$60,763	416

Source: Quarterly Census of Employment and Wages (U.S. Department of Labor Bureau of Labor Statistics, 2022). Table CB1800.

Employment related to 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), as shown in Table 3. Permanent jobs related to operation and maintenance (O&M) of the Facility include onsite labor and indirect jobs created through increased revenues, 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), as shown in Table 3. 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 construction and operation of the Facility are discussed in further detail in Section 5.0.

3.0 REGIONAL DEVELOPMENT IMPACTS

The Facility is located in eastern Kentucky, approximately 5 miles northwest of Hazard. Historically, the regional economy was primarily driven by coal mining and logging. Mountaintop removal was the primary method for coal mining operations, which is a form of surface mining in which the land on top of the coal seam is removed to access the seam. There are many mountaintop removal sites in the area that are no longer actively mined, including the proposed site for the Facility. As discussed in further detail below, the Facility is not expected to have adverse impacts to regional housing, commercial and industrial development, or transportation.

3.1 Housing

The potential impact of the Facility on housing in the Study Area was evaluated using U.S. Census Bureau housing data, including vacancy rates, median gross rents, and median housing values. Of the 1,931 vacant housing units within Perry County, 233 vacant units are within the City of Hazard (Table 4). All jurisdictions within the Study Area exhibited lower median values and median gross rents than statewide values. It is not anticipated that the development of the Facility will generate significant demand for owner-occupied or rental properties, and the availability of vacant housing in the jurisdictions that overlap the Study Area indicates that the Facility should not have a destabilizing effect on the current regional housing market.

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 Kentucky	1,988,420	1,748,475	239,945	1.3	5.5	\$155,100	\$826
Breathitt County	6,528	5,506	1,022	0.8	3.3	\$52,700	\$476
Leslie County	4,926	3,688	1,238	0.7	3.6	\$70,800	\$661
Perry County	13,183	11,252	1,931	4.2	8.8	\$75,500	\$694
City of Hazard	2,207	1,974	233	15.6	2.8	\$117,600	\$666

Source: ACS 5-Year Estimates (U.S. Census Bureau, 2017-2021). 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 census. Vacancy rate, on the other hand, is defined as the percent of total housing units that are vacant while also being for rent or for sale (U.S. Census Bureau, 2021). Therefore, housing units may be classified as vacant and not contribute towards a community's vacancy rate.

3.2 Commercial and Industrial Development

Kentucky has exhibited relatively little activity related utility-scale solar projects, and applications for utility-scale solar facilities began to be submitted to the Kentucky Public Service Commission's Electric Generation and Transmission Siting Board (the Board) in 2020. The state of Kentucky was ranked 43rd amongst all the other states for solar energy, and the industry has invested \$276 million in Kentucky, with \$116 million invested in 2022 alone. According to the Solar Energy Industries Association (SEIA), the total solar capacity in Kentucky is 162 MW, with 86 MW being installed in 2022 (SEIA, 2023). Since 2020, Kentucky has experienced significant solar job growth, at a rate of 18.9% with a total of 1,485 solar jobs in 2021 (Interstate Renewable Energy Council, 2022). In 2022, utility-scale solar development slowed down in the U.S. due to

supply chain concerns and new tariffs on solar panels. However, Kentucky still experienced a solar job growth rate of 7.4% with a total of 1,595 solar jobs in 2022 (Interstate Renewable Energy Council, 2023).

The first proposed utility-scale solar project in Kentucky, which applied to the Board in January 2020, was approved in 2021. The anticipated growth projection for solar the state is 1,340 MW over the next 5 years. There are 38 solar companies within the state, including 10 manufacturers, 15 installers/ developers, and 13 others (SEIA, 2023).

In October 2021, Governor Andy Beshear announced the “KYE³: Designs for a Resilient Economy” program, which puts forth strategies to achieve resiliency through an emphasis on energy, environment, and economic development. The “E³ Design Goals” include manufacturing a resilient economy, fueling a diversified economy, building the next generation infrastructure, developing a sustainable workforce, and leading by example (Kentucky Office of Energy Policy, 2021). The development of the Project will contribute to the diversification of state’s energy portfolio and represent progress toward a more sustainable and resilient energy supply, which are stated goals of the “KYE³” program.

Additionally, there are several former coal surface-mine sites near the Facility. As historic coal mines remain inactive or even contaminated, these sites are typically constrained in their potential to be redeveloped or reused. Revitalizing sites through solar development has been an integral part maximizing site productivity to become an economic opportunity for local and regional economies (Kentucky Energy and Environment Cabinet, n.d.).

3.3 Transportation

The primary transportation routes to the Facility are Kentucky Route 80, which runs northeast-southwest, approximately 2.5 miles south of the Facility, and Kentucky Route 15, which runs northwest-southeast, approximately 1.9 miles east of the Facility. In addition, there are multiple local roads near the Facility. Delivery routes have not been finalized but are anticipated to come from Kentucky Route 15 to the east, by way of Couch Branch Road and Sam Campbell Road. 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 Traffic and Dust Study included with the Site Assessment Report.

There is one active rail line, owned by CSX Transportation, within the Study Area. The rail line runs from the northwest to southeast through the Study Area, in many areas alongside the North Fork Kentucky River. The rail system is not anticipated to be used for the transportation of any Facility components.

There is one private-use heliport and one private-use airport within the Study Area. The Hazard Appalachian Regional Healthcare Regional Medical Center heliport is located approximately 3.1 miles east of the project, and the Duff Airport is located approximately 4.5 miles northwest of the Project. Operation of the Facility is not expected to result in any adverse impacts to the regional air transportation network.

3.4 Local and Regional Plans

The Facility will be in Perry County, Kentucky. A total of three counties and one city are within the 5-mile Study Area. Available plans within these jurisdictions are summarized as follows.

3.4.1 Appalachian Regional Commission Development Plan 2021-2025

The state of Kentucky collaborated with the Appalachian Regional Commission (ARC) to produce a strategic fiscal plan for the Appalachian region (Development Plan). The ARC assists Area Development Districts (ADDs) to generate economic development and planning for the state. The Kentucky River Area Development District is the ADD that covers the Study Area, and is comprised of Breathitt, Knott, Lee, Leslie, Letcher, Owsley, Perry, and Wolfe Counties. The Facility aligns with ARC Investment Goal 1, which is described as Kentucky's "investment in economic opportunities through entrepreneurial, business development, and job creation strategies in manufacturing, tourism, and agritech in Eastern Kentucky's ARC region" (Commonwealth of Kentucky, 2021, p. 10). This Development Plan was derived from the multi-state ARC Strategic Plan, from which Kentucky applied a specific subset of guidance (Appalachian Regional Commission, 2021). The economic impacts associated with the Facility are compatible with the economic vision described in the Development Plan.

3.4.2 Perry County Economic Matrix Implementation Manual, 2017-2022

The *Perry County Economic Matrix Implementation Manual* (also referred to as the Manual) was developed in 2017, and it was created as a 5-year strategic plan for economic development. Perry County seeks to diversify the industries in the local economy using community-based development and critical strategic planning. As a result of job losses from the coal mining industry and single industry dependency in the Appalachian region, Perry County intends on transforming their economic position. To restructure the current economic environment, the objectives of the Manual include generating positive and sustainable, long-term, and strategic economic growth (McIntosh, 2017). The proposed Facility supports these objectives by providing new employment opportunities and introducing new industries in Perry County.

3.4.3 Local Zoning Regulations

The Project is located in an unincorporated area of Perry County, and there are no zoning regulations or local ordinances applicable to the Facility, as Perry County does not have zoning regulations. While the City of Hazard has an official zoning code; the Facility is not located within the boundaries of Hazard and therefore the zoning code is not applicable.

3.5 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.

4.0 MEASURING ECONOMIC IMPACTS

This section covers the methodology and inputs used in measuring the economic impacts of the project, including project cost data provided by the Applicant.

4.1 Defining Economic Impact Indicators

Quantifying the economic impacts of the proposed Bright Mountain Solar Project is essential to understanding the potential benefits that the Facility could have on the statewide economy, and within Perry County. Solar power development, like other commercial development projects, can expand the economy through both direct and indirect means. Income generated from direct employment during 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 the area of interest and engaged in 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 impact levels can be measured in terms of three indicators: jobs, earnings, and output. 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).
- **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.

4.2 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-powered electricity 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 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 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 (2020) for Kentucky and Perry County were used during the time of analysis (October 2022).

Preparing the JEDI model to generate estimates for 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: Commonwealth of Kentucky and Perry County, Kentucky
- Year of Construction: 2024
- System Application: Utility-Scale
- Capacity: 114 MW_{DC} or 80 MW_{AC}
- Module Material: Crystalline Silicon
- System Tracking: Single-Axis Tracking
- Money Value (Dollar Year): 2022

Using this Facility-specific data, the JEDI model then creates a list of default values, which include project costs, default tax payments, default lease payments, and default regional shares of costs. These default values are derived from over 10 years of research 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 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 specific estimates. The Applicant reviewed the default project cost values and regional shares subtotaled by each of the JEDI model categories shown in Table 5, then made specific adjustments to improve accuracy.

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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	\$86,996,250		
Construction Labor Total	\$18,453,750		
Construction - Other	\$21,090,000		
Operating/Maintenance (O&M) Labor	\$1,363,212		
O&M Materials and Services	\$908,808		
Construction Worker Hourly Wage	\$21.39		
O&M Technician Hourly Wage	\$21.39		
Construction Worker Employer Overhead	45.6%		
O&M Technician Employer Overhead	45.6%		

Source: JEDI model (USDOE NREL, 2021). Cost values verified by the Applicant in September 2022.

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4.3 Additional Cost Data

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

4.3.1 Estimated Capital and Intangible Costs

The total estimated capital and intangible costs of the Facility are <BEGIN CONFIDENTIAL INFORMATION> [REDACTED] <END CONFIDENTIAL INFORMATION>.

Installed solar project costs compiled by the U.S. Department of Energy’s Lawrence Berkeley National Laboratory (Berkeley Laboratory) in October 2021 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 2020 averaged roughly \$1,420/kW_{AC} (Bollinger, Seel, Warner, & Robertson, 2021).

By way of further comparison, a sample of 12 solar facilities installed in 2020 with capacities from 100 to 500 MW had a median cost of around \$1,290/kW_{AC} (Bollinger, Seel, Warner, & Robertson, 2021). These costs are slightly 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 differ from other Facilities completed the Applicant.

4.3.2 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> [REDACTED] <BEGIN CONFIDENTIAL INFORMATION> [REDACTED] <END CONFIDENTIAL INFORMATION> of staffing costs.

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 from 13 utilities that report utility-scale² solar O&M costs for plants that they own in the United States with commercial operation dates of 2011 through 2020. In general, facilities installed more recently have incurred lower O&M costs than those installed in 2011, though reductions in O&M costs have plateaued in the past few years. Specifically, the capacity-weighted average O&M cost for projects constructed in 2011 was approximately \$32/kW_{AC}-year, and then decreased to \$16/kW_{AC}-year for projects constructed in 2020 (Bollinger, Seel, Warner, & Robertson, 2021). According to the 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 are estimated to be slightly higher 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.

² The authors of this report considered "utility-scale" to be any project above 5 MW_{AC}. This Facility's nameplate capacity is substantially larger.

5.0 ECONOMIC IMPACT ANALYSIS RESULTS

The JEDI model was utilized to estimate the potential economic impact of the Facility statewide, and separately within Perry County. The results of the analysis show that the economic impact in Perry County will be significantly smaller than the impact to the entire State of Kentucky, which is expected. For the purposes of this analysis, estimated jobs numbers are intended to represent jobs which will be filled by people living within the area of interest, either the State of Kentucky or Perry County. Given the size of Perry County, it is anticipated that most construction jobs will not be filled by Perry County residents. However, the analysis assumes that most construction jobs will be filled by Kentucky residents.

5.1 Economic Impact in Kentucky

The estimated statewide impacts are provided in Table 6. Demand for new jobs associated with the Bright Mountain Solar Project will be created during both construction and operation. 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. The money injected into the statewide economy through the creation of these jobs will have long-term, positive benefits on individuals and businesses in Kentucky through its induced economic impacts. Overall economic impacts, including jobs created, are discussed in further detail for each phase (construction and O&M) below.

Table 6: Estimated Jobs and Economic Impact Analysis for Kentucky

	Jobs (FTE)	Earnings (Millions)	Output (Millions)
Construction			
Project Development and Onsite Labor Total	190.5	\$13.8	\$14.7
<i>Construction Labor</i>	162.1	\$11.8	-
<i>Construction Related Services</i>	28.4	\$2.0	-
Module & Supply Chain Impacts	52.4	\$3.2	\$8.5
Induced Impacts	36.9	\$2.0	\$6.0
Total Construction Impacts	279.8	\$19.0	\$29.2
Annual Operation			
Onsite Labor Impacts	7.1	\$0.3	\$0.3
Revenue & Supply Chain Impacts	3.1	\$0.2	\$0.8
Induced Impacts	1.2	\$0.1	\$0.2
Total Operation Impacts	11.5	\$0.6	\$1.3

Source: JEDI model (version PV05.20.21) (USDOE NREL, 2021). Cost values verified by the Applicant in September 2022.

Notes: Earnings and Output values are millions of dollars in 2022 dollars. 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 exactly to the totals shown in this table.

5.1.1 Statewide Economic Impact: Construction Phase

Based on JEDI model computations, construction of the proposed Facility is estimated to generate 190.5 onsite construction and project development personnel FTE positions, with a projected wage rate of **<BEGIN CONFIDENTIAL INFORMATION>** [REDACTED] **<END**

CONFIDENTIAL INFORMATION>. Module and supply chain industries could in turn generate an additional 52.4 FTE jobs over the course of Facility construction. In addition, Facility construction is estimated to induce demand for 36.9 FTE jobs through the spending of additional household income. The total impact of 279.8 new jobs is estimated to result in up to approximately \$19.0 million of earnings, assuming a 2024 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.

Construction of the Facility is expected to have a positive impact on economic output, which is 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 \$29.2 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.

5.1.2 *Statewide Economic Impact: Operation and Maintenance Phase*

Based on JEDI model computations, the O&M of the proposed Facility is estimated to generate 7.1 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>**, consistent with Kentucky averages, estimated to be approximately \$24.28 per hour for installation, maintenance, and repair occupations (U.S. Department of Labor Bureau of Labor Statistics, 2021).

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 3.1 FTE jobs with annual earnings of approximately \$0.2 million. In addition, it is estimated that 1.2 FTE jobs with associated annual earnings of \$0.1 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 \$1.3 million as a result of Facility O&M.

5.2 **Economic Impact in Perry County**

The estimated impacts for Perry County are provided in Table 7. Demand for new jobs associated with the Bright Mountain Solar Project will be created during both construction and operation. 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. The money injected into the Perry County economy through the creation of these jobs will have positive benefits on individuals and businesses in the area through its induced economic impacts. As stated previously, the economic impact estimated for Perry County is significantly smaller than the estimated statewide impact, as the analysis assumed that most of the construction and operation employees would not be residents of Perry County.

Overall economic impacts for Perry County, including jobs created, are discussed in further detail for each phase (construction and O&M) below.

Table 7: Estimated Jobs and Economic Impact Analysis for Perry County

	Jobs (FTE)	Earnings (Millions)	Output (Millions)
Construction			
Project Development and Onsite Labor Total	25.4	\$1.8	\$2.0
<i>Construction Labor</i>	20.3	\$1.5	-
<i>Construction Related Services</i>	5.2	\$0.3	-
Module & Supply Chain Impacts	7.7	\$0.4	\$1.1
Induced Impacts	2.6	\$0.1	\$0.4
Total Construction Impacts	35.7	\$2.4	\$3.5
Annual Operation			
Onsite Labor Impacts	3.6	\$0.1	\$0.1
Revenue & Supply Chain Impacts	0.3	\$0.0	\$0.1
Induced Impacts	0.1	\$0.0	\$0.0
Total Operation Impacts	4.0	\$0.2	\$0.2

Source: JEDI model (version PV05.20.21) (USDOE NREL, 2021). Cost values verified by the Applicant in September 2022.

Notes: Earnings and Output values are millions of dollars in 2022 dollars. 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 exactly to the totals shown in this table.

5.2.1 Perry County Economic Impact: Construction Phase

Based on JEDI model computations, construction of the proposed Facility is estimated to generate 25.4 onsite construction and project development personnel FTE positions. Module and supply chain industries could in turn generate an additional 7.7 FTE jobs over the course of Facility construction. In addition, Facility construction is estimated to induce demand for 2.6 FTE jobs through the spending of additional household income. The total impact of 35.7 new jobs for Perry County could result in up to approximately \$2.4 million of earnings.

The value of economic output in Perry County associated with construction of the Facility is estimated to be \$3.5 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 local economy.

5.2.2 Perry County Economic Impact: Operation and Maintenance Phase

Based on JEDI model computations, within Perry County the O&M of the proposed Facility is estimated to generate 3.6 direct FTE jobs with estimated annual earnings of approximately \$0.1 million. Wage rates for the direct operational employees are projected to be <BEGIN CONFIDENTIAL INFORMATION> [REDACTED] <END CONFIDENTIAL INFORMATION>, consistent with Kentucky averages, estimated to be approximately \$24.28 per hour for installation, maintenance, and repair occupations (U.S. Department of Labor Bureau of Labor Statistics, 2021).

As shown in Table 7, supply chain and induced impacts of Facility O&M within Perry County are anticipated to be relatively small. In total, while in operation, the Facility is estimated to generate demand for 4.0 FTE jobs within Perry County with annual earnings of approximately \$0.2 million. Total annual economic output is estimated to increase by \$0.2 million as a result of Facility O&M.

5.3 Land Lease Payments

In addition to the economic impacts listed above, land lease payments will be made to participating landowners through Facility lease agreements. These annual payments will offer direct benefits to participating landowners, in addition to any income generated from the surrounding land use (e.g., agricultural production). The Applicant estimates that these payments will total approximately **<BEGIN CONFIDENTIAL INFORMATION>** [REDACTED] **<END CONFIDENTIAL INFORMATION>** over 40 years. These lease payments will have a positive impact on the region, to the extent that landowners will spend their revenue locally.

6.0 LOCAL TAX REVENUES

6.1 Legislative Context

Solar energy projects in Kentucky can be exempt from tangible personal property and real property tax payments if they are financed through an Industrial Revenue Bond (IRB), as solar energy projects are included in the definition of “industrial building” found in KRS 103.200. Communities may negotiate for annual payments in lieu of taxes (PILOT) from these exempted projects.

6.2 Estimated Payments In Lieu Of Taxes

The Applicant anticipates executing a PILOT agreement, which would require annual PILOT payments to Perry County. Discussions on the terms of a potential PILOT agreement are in preliminary stages, and these discussions between the Applicant and Perry County will continue. The Applicant-provided inputs to the JEDI model did not include an estimation of annual PILOT funds, and as such the benefits of a PILOT agreement are not included in Section 5. PILOT funds would be paid annually and could be disbursed by Perry County. The Facility is expected to achieve commercial operation as early as 2026 and have a lifespan of approximately 40 years.

CONCLUSION

The Facility will have a positive impact statewide and on the jurisdictions within the Study Area. Lease 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 Statewide Economic Benefit: Construction of the Facility is expected to produce an estimated \$19.0 million in employment earnings and \$29.2 million in total economic output. Subsequently, each year the Facility is operational, it is expected to generate approximately \$0.6 million in earnings and \$1.3 million in total economic output.
2. Statewide Employment Benefits: During construction, the Facility is expected to support demand for a total estimate of approximately 280 onsite, supply chain, and induced employment positions. It is expected to support an estimated total of approximately 12 positions during each year of its operation.
3. Perry County Economic Benefit: Construction of the Facility is expected to produce an estimated \$2.4 million in employment earnings and \$3.5 million in total economic output. Subsequently, each year the Facility is operational, it is expected to generate approximately \$0.2 million in earnings and \$0.2 million in total economic output.
4. Perry County Employment Benefits: During construction, the Facility is expected to support demand for a total estimate of approximately 36 onsite, supply chain, and induced employment positions. It is expected to support an estimated total of approximately 4 positions during each year of its operation.
5. Land Lease Revenues: The Facility will result in approximately **<BEGIN CONFIDENTIAL INFORMATION>** [REDACTED] **<END CONFIDENTIAL INFORMATION>** in total lease payments made to participating landowners over 40 years.
6. Property Tax Revenues: The Facility will increase local government revenues as the Applicant is anticipated to execute a PILOT agreement with Perry County.

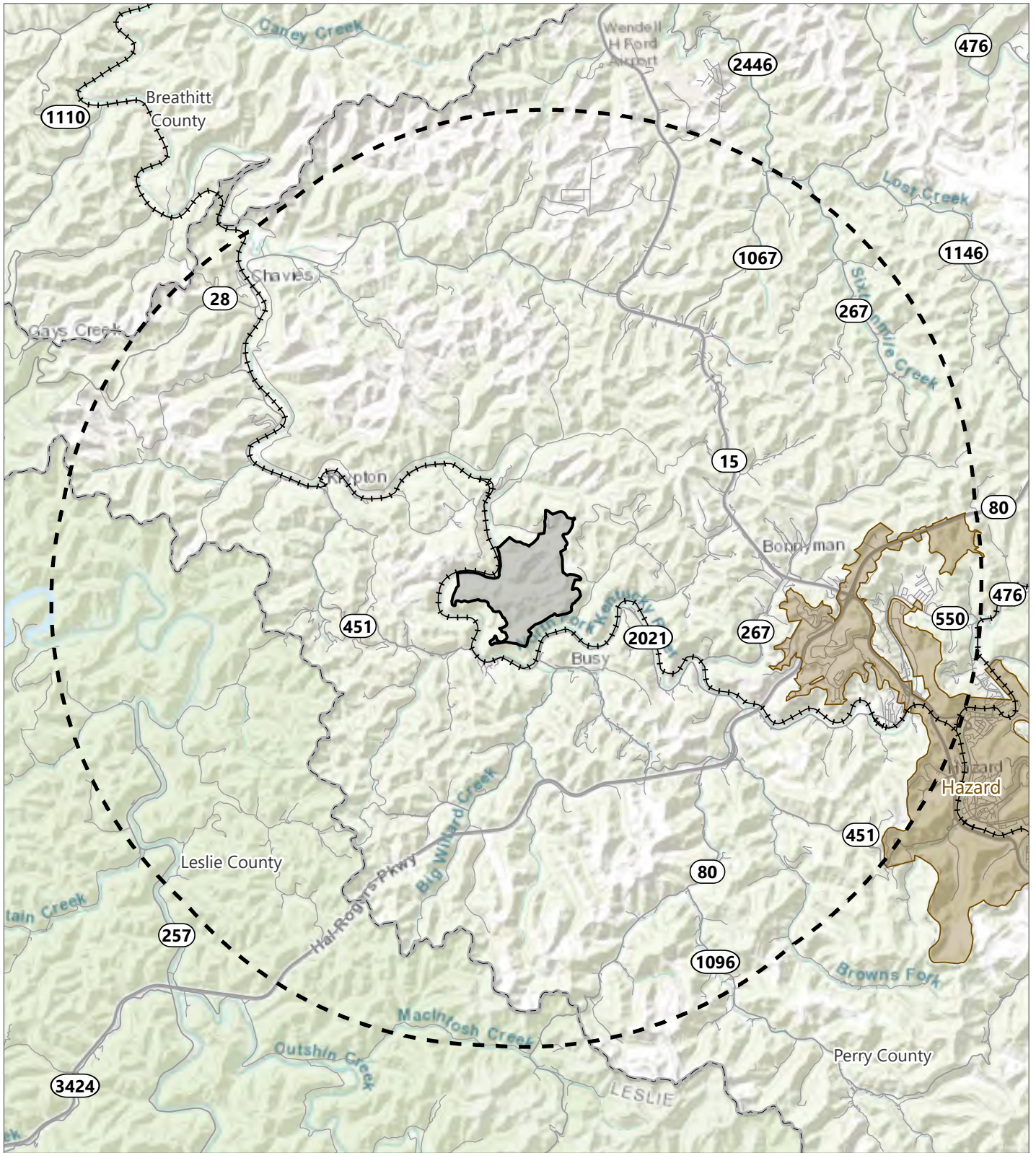
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Figures

Figure 1. 5-Mile Study Area



Bright Mountain Solar Project

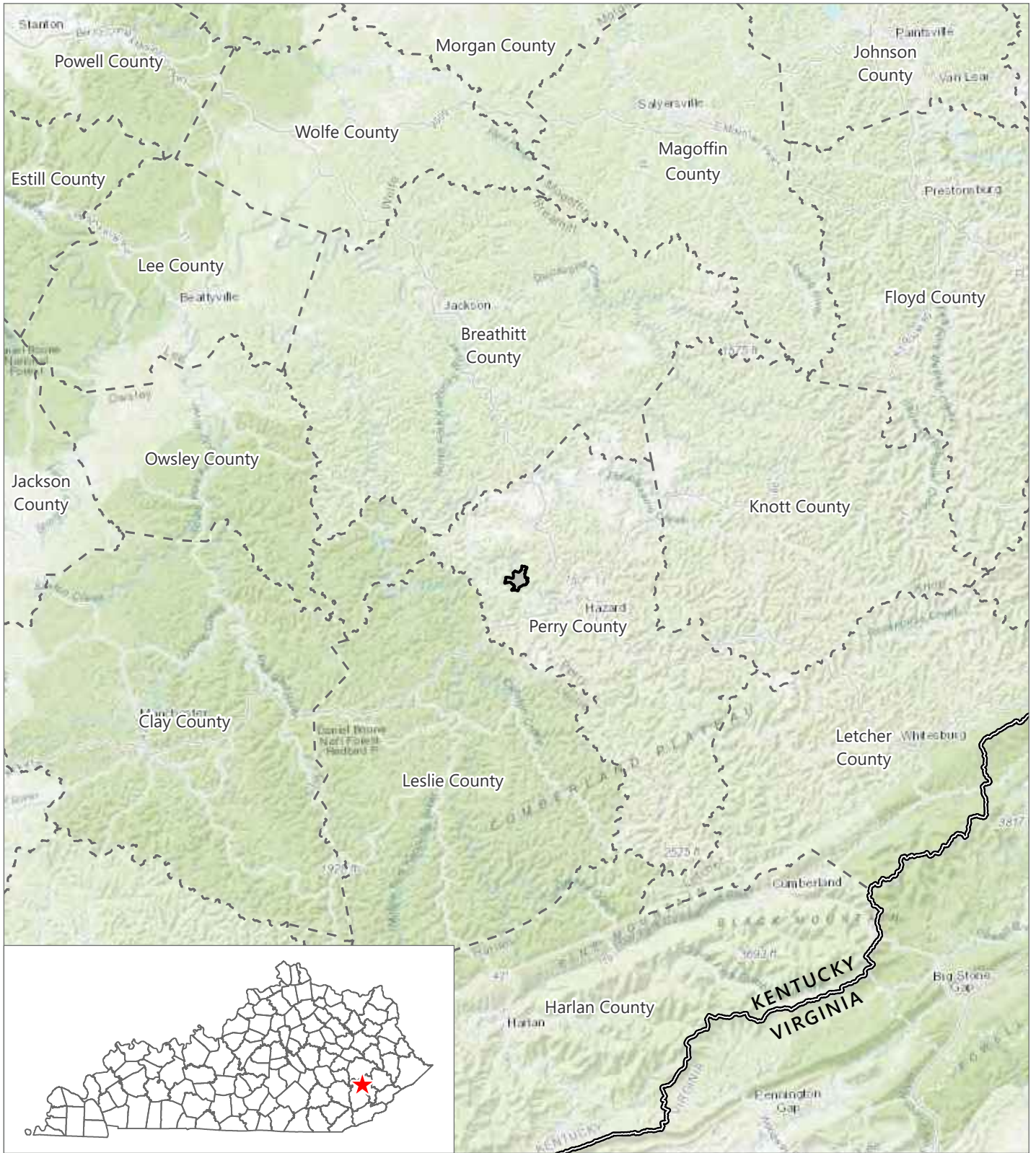
Perry County, Kentucky

Socioeconomic Report

- +++ Railroad
- 5 Mile Study Area
- Project Area
- City Boundary
- County Boundary



Figure 2. Regional Facility Location



Bright Mountain Solar Project

Perry County, Kentucky

Socioeconomic Report

 Project Area

