Review and Evaluation of the Bright Mountain Solar, LLC Site Assessment Report

Kentucky Public Service Commission and Kentucky State Board on Electrical Generation and Transmission Siting

January 12, 2024

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January 12, 2024

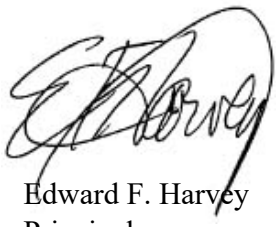
Ms. Heather Temple
Kentucky Public Service Commission
211 Sower Blvd.
Frankfort, KY 40601

Re: Harvey Economics' Review of Bright Mountain Solar, LLC's Site Assessment Report for Solar Facilities in Perry County, Kentucky

Dear Ms. Temple,

Harvey Economics is pleased to provide you with our final report, *Review and Evaluation of the Bright Mountain Solar, LLC Site Assessment Report.*

Yours truly,



Edward F. Harvey
Principal

Report

January 12, 2024

Review and Evaluation of the Bright Mountain Solar, LLC Site Assessment Report

Prepared for

Kentucky Public Service Commission and
Kentucky State Board on Electrical Generation and Transmission Siting
211 Sower Boulevard
Frankfort, Kentucky 40602

Prepared by

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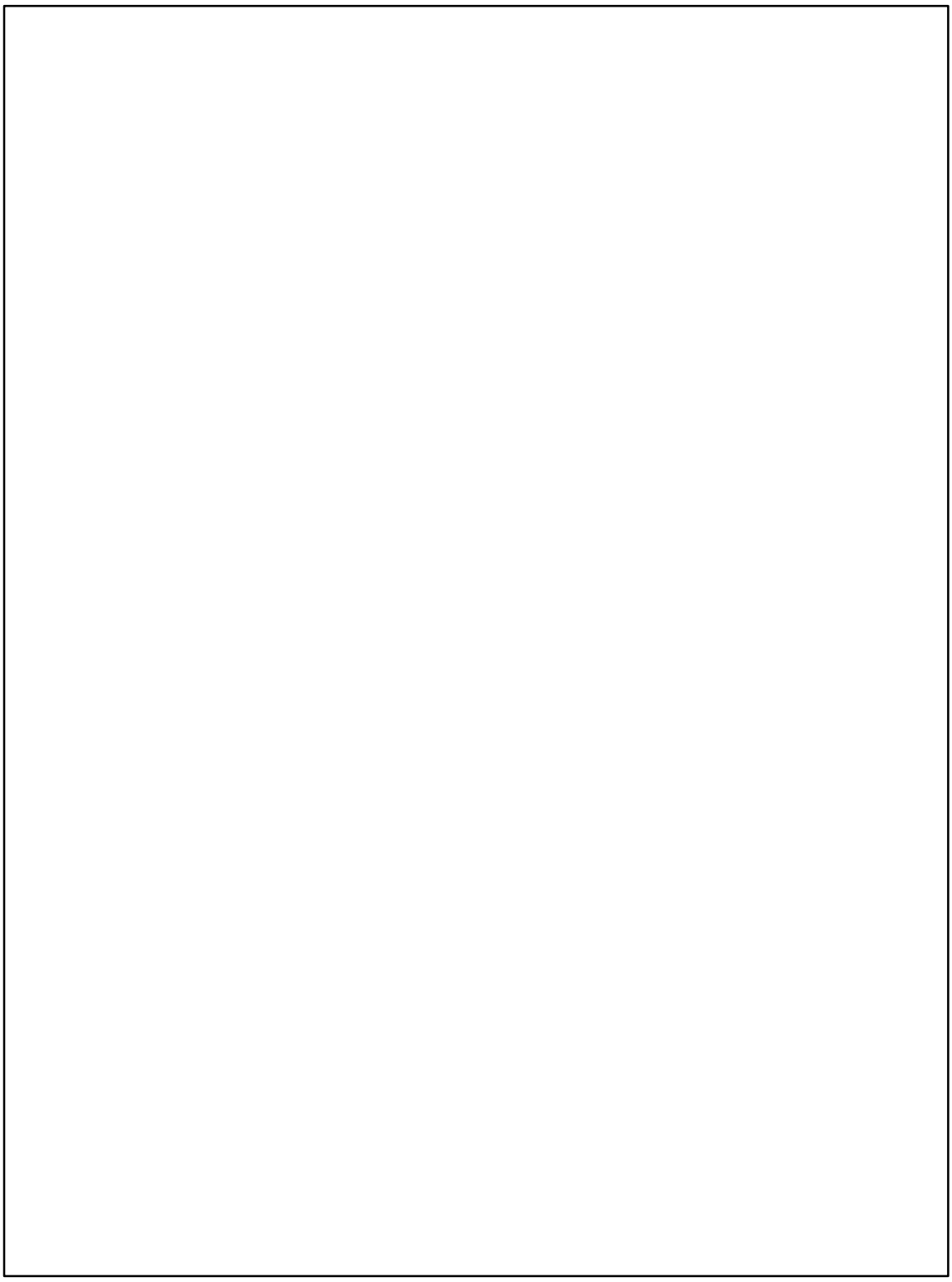
Exhibit 3-1.
Location, Overview and Project Facilities Map for the Proposed Bright Mountain Solar Project



Source: Bright Mountain Solar, LLC, September 2023.

The Project site is located approximately 115 miles southeast of the City of Lexington and about 60 miles north of the border with Tennessee. The Project site is approximately nine miles northwest of the City of Hazard.

Electric Transmission Line

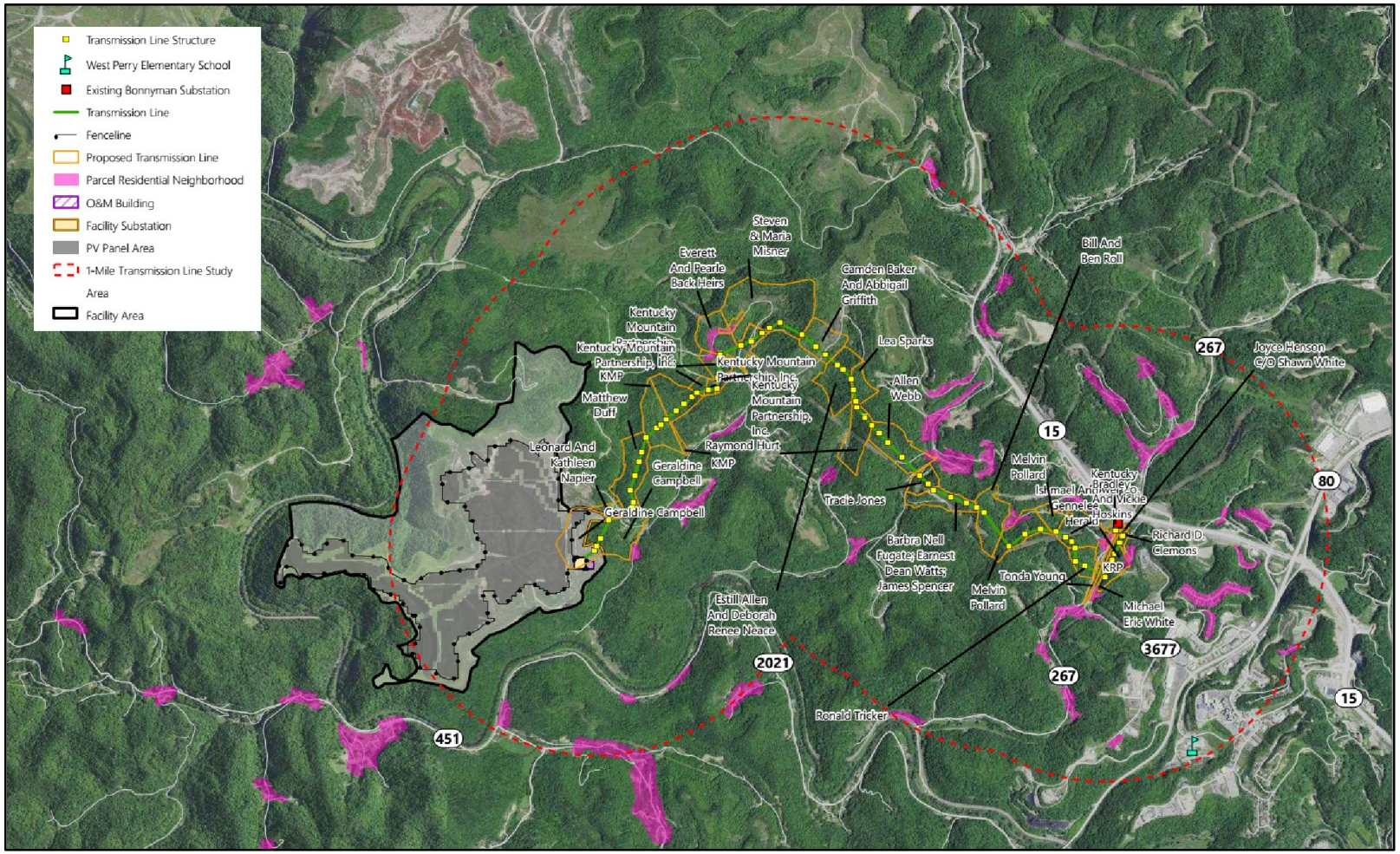
Application documents (Tab 13) provide the following description of the Project's transmission line:

The Project includes a 69 kV nonregulated transmission line, approximately four miles in length, to connect the Facility's collection substation to the regional electric grid at the POI (the existing Bonnyman Substation, owned by Kentucky Power). The proposed right-of-way for the transmission line is approximately a 100-foot-wide corridor centered on the transmission line, with the right-of-way width varying slightly in some locations due to landowner considerations. An estimated 64 above-ground structures (poles) will support the transmission line over its four-mile length.

Exhibit 3-2 illustrates the proposed transmission line route, running between the Project's substation and the existing Bonnyman Substation.[7]

[7] The Applicant has indicated that the final locations of transmission line structures are subject to further engineering design.

Exhibit 3-2.
Proposed Bright Mountain Solar Project's Electric Transmission Line Route



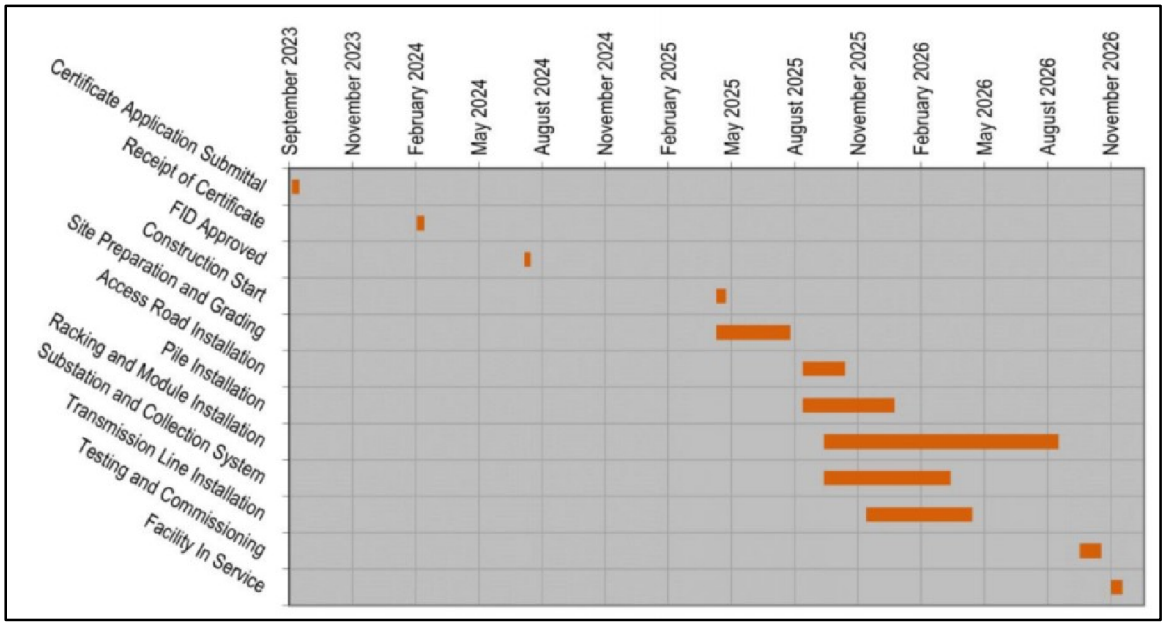
Note: Areas highlighted in pink indicate residential neighborhoods.

Source: Bright Mountain Solar, LLC, September 2023.

Construction Activities

Construction of the Bright Mountain Solar facility is expected to occur over a period of about 16 months, as shown in Exhibit 3-3. Peak construction activity is anticipated to occur during the period in which access road installation, pile installation, racking and module installation, and substation construction would overlap; that period is anticipated to last approximately two to three months.

Exhibit 3-3.
Preliminary Construction Schedule for the Proposed Bright Mountain Solar Project



Source: Bright Mountain Solar, LLC, November 2023.

According to the Applicant, construction activities will occur concurrently when and where possible across the Facility Area. However, the nature of construction is that some activities must occur sequentially on the site.

Between 150 and 190 workers will be on-site at any particular time, depending on the specific tasks and activities occurring at the time.

The Applicant has indicated that noise producing construction activities will be limited to 7:00 am through dusk, or until 7:00 pm when dusk is before 7:00 pm, Monday through Saturday.

Life of the Project

The Bright Mountain Solar facility is anticipated to operate for approximately 40 years. Project decommissioning (the process of closing the facility to retire it from service) is discussed in Section 5 of this report.

Proposed Site Development Plan

The following discussion addresses each of the SAR requirements for a proposed site development plan, as laid out in KRS 278.708(3)(a).

Surrounding land uses. Land surrounding the Project site and transmission line route predominantly consists of vacant timberland and farmland, as well as industrial mining and scattered residences. As noted previously, the Project will be situated on land that is a reclaimed coal mine site. Land uses in the area surrounding the Project can be categorized as predominantly timber logging and industrial mining, as well as residential homesteads. An existing mining operation is located to the north of the Project site. Section 4 of this report provides a general overview of the County's demographic and economic characteristics.

The Applicant also provided information describing the distances between nearby residential and non-residential structures and the Project boundary, solar panels, inverters and the substation. The area within 2,000 feet of the Project site includes 119 homes and two non-residential structures (a church and a post office).[8] Exhibit 3-4 summarizes information about the distances between structures and the Project boundary.

Exhibit 3-4.
Distances Between Residential and Non-Residential Structures and the Proposed Bright Mountain Solar Project

Distance from Project Boundary	Residential Structures	Non-Residential Structures
0 - 300 feet	3	
301 - 600 feet	9	
601 - 900 feet	22	
901 - 1,200 feet	25	2
1,201 - 1,500 feet	30	
1,501 - 1,800 feet	17	
1,801 - 2,000 feet	13	
Total Structures	**119**	**2**

Source: Bright Mountain Solar, LLC, November 2023.

The shortest distance between residences and Project generation facilities are as follows:

Solar panels: 696 feet

Inverter: 987 feet

Project substation: 1,078 feet

[8] As shown in Exhibit 3-3, the majority of those structures are located to the east and to the south of the Project site.

Twenty-seven homes would be located within 400 feet of one or more transmission line structures (poles). Of those 27 residences:

- The closest home to a transmission line pole would be 137 feet.
- Ten homes would be located within 400 feet of three separate poles.
- Five homes would be located within 400 feet of two separate poles.
- Seven homes would be located near additional poles at distances greater than 400 feet.

Many of these residential landowners have easement agreements with the Applicant.

Legal boundaries. Legal descriptions of the parcels which will comprise the Facility Area are provided in Tab 12, Exhibit B of the Application. According to the Applicant, there are 14 individual participating parcels within the Project boundary. One of these parcels is not leased for the purpose of hosting Project components, but instead has an easement agreement to allow for use of an existing access road located on that parcel.

Additional parcels are situated along the transmission line route, as shown in Exhibit 3-2, above. The Applicant has executed access easement agreements with applicable landowners along the transmission line route.

Access control. A single entrance to the Project site is proposed to be located at the northeast corner of the Facility Area, at the end of Jarets Branch Road. Public access to the site will be restricted by an agricultural-style perimeter fence (likely comprised of wire-mesh supported by evenly spaced posts), designed to meet the National Electric Safety Code (NESC) standards. Entry to the site for authorized personnel will be through locked gates. A designated site manager will control access to the site during construction and operation.

In addition to perimeter fencing, other access control measures include:

- Separate fencing enclosing the substation area, made up of chain-link and topped with barbed wire.
- Signage (including "No Trespassing" and "High Voltage Equipment") placed at locations along the perimeter fencing, warning the public of potential hazards.

Location of buildings, transmission lines and other structures. Approximately 200,000 solar panels, 21 inverters and small transformers, and a Project substation will be located across about 360 acres within the Project site. A series of below-ground collection cables will be used to deliver electricity to the Project substation, to be located on the eastern side of the Project site. An operations and maintenance (O&M) building may be located adjacent to the Project substation.[9] A proposed four-mile long transmission line will connect the Project to the existing Bonnyman Substation. The transmission line will generally run in an easterly direction away from the Project site and will include approximately 64 poles along

[9] Off-site locations (existing buildings, re-purposed into a Project O&M building), in the vicinity of the City of Hazard, may also be considered by the Applicant. The decision regarding location of the O&M building will be made during pre-construction.

the route. The preliminary locations of the panels, substation and O&M building can be seen in Exhibit 3-1 of this report. The Project transmission line route is illustrated in Exhibit 3-2 of this report.

Final decisions regarding the number and location(s) of laydown yards within the Project site will be finalized with the input of a chosen contractor. Preliminary ideas include one laydown area near the Project substation and the O&M building site.

The Project will also include several meteorological stations. Those stations would be attached to the racking system supporting the PV arrays in multiple locations across the Project site.

Location and use of access ways, internal roads and railways. As noted previously, a single entrance location will allow access to different sections of the Project site during construction. This entrance is located in the northeast corner of the Facility Area, at the end of Jarets Branch Road. This entrance will also be utilized during operations.

The preferred access route to the Project site would be via Kentucky Highway (KY) 15. From KY 15, local road access would include Sam Campbell Branch Road, to Jarets Branch Road, to the intersection with Couch Branch Road. The Project site includes one existing unpaved internal roadway. Approximately 26,100 feet of additional graveled access roads will be constructed across the Project site.

In addition to those roads listed above as the preferred access roads to the Project site, segments of Flat Gap Road, Lower Second Creek Road, Days Lane, and Kentucky Highway 267 may be utilized for the construction of the transmission line. Although not indicated in the application materials, it is presumed these roads could also be used as needed for maintenance or to repair downed lines during operation.

A CSX rail line runs along the North Fork Kentucky River, south and west of the Project site. The Applicant will not use this rail line for Project construction or operational activities and Project traffic is not expected to travel over any railroad crossings.

Existing or proposed utilities to service facility. Electric power necessary for operation of the solar facility when it is not generating electricity will be obtained through the Project's interconnection with the Bonnyman Substation, or through a local distribution service line. A back-up power supply generator and propane tank may be included in the final design for the Project substation. If an on-site O&M building is chosen in the final design, water will be obtained from a potable water well system or an off-site location, and an on-site septic system will be used for sewage disposal. The potable water well system and septic system will be designed and installed pursuant to all applicable regulations.

Compliance with applicable setback requirements. Applicable portions of the setback statute (KRS 278.706(2)(e)) state that "all proposed structures or facilities used for generation of electricity will be 2,000 feet from any residential neighborhood, school, hospital,

or nursing home facility."[10] Perry County has no planning and zoning ordinances governing relevant setback requirements; therefore, the State statutory setback requirements apply to the Bright Mountain Solar facility. Three areas identified as residential neighborhoods are located within 2,000 feet of Project facilities.[11] There are no schools, hospitals or nursing homes within 2,000 feet of the Applicant's proposed location of Project structures or facilities.

The Applicant has submitted a document titled Motion for Deviation from Setback Requirement (Motion for Deviation). According to the Applicant, the Project cannot be configured to meet the 2,000-foot setback requirements due to the fact that the mountaintop site has limited space suitable for hosting solar panels and other components.

KRS 278.704(4) states that deviations from the setback requirements may be granted "on a finding that the proposed facility is designed to, and as located, would meet the goals of KRS 224.10-280, 278.010, 278.212, 278.214, 278.216, 278,218, and 278.700 to 278.716 at a distance closer than those outlined in the setback statute."

The Motion for Deviation addresses each of the statutes listed above, describing the Applicant's or Facility's compliance with each. That document also provides descriptions of the three residential neighborhoods within 2,000 feet of Project facilities.

Residential neighborhoods. The three residential neighborhoods identified in the Motion for Deviation are described as follows:

> is located to the east on the Project, along Lower Pigeonroost Road.
>
> is located to the south of the Project, near the intersection of Couchtown Road and KY 451 in the town of Busy.
>
> ! is located south of the Project along KY 451, in the town of Yerkes. Only a portion of this neighborhood is located less than 2,000 feet from the Project.

Exhibit 3-5 describes each of the identified residential neighborhoods within 2,000 feet of Project structures.

[10] According to KRS 278.700(6), a residential neighborhood is a populated area of five or more acres containing at last one residential structure per acre.
[11] Although residential neighborhood 1 does not encompass five or more acres, it was identified as a residential neighborhood as it is a cluster of five residences at a density greater than one residence per acre.

Exhibit 3-5.
Distances between Nearby Structures and the Proposed Bright Mountain Solar Project Solar Panels

Residential Neighborhood ID	Nearest Project Component	Area of Residential Neighborhood (Acres)	Number of Residences in Residential Neighborhood
1	Substation	2 [1]	5
2	PV Panel	5.2	7
3	PV Panel	30.9 [2]	52 [2]
		7.9 [3]	13 [3]

Notes: (1) Although Residential Neighborhood 1 does not encompass five or more acres, it was identified as a residential neighborhood as it is a cluster of five residences at a density greater than one residence per acre.

(2) For the entirety of Residential Neighborhood 3.

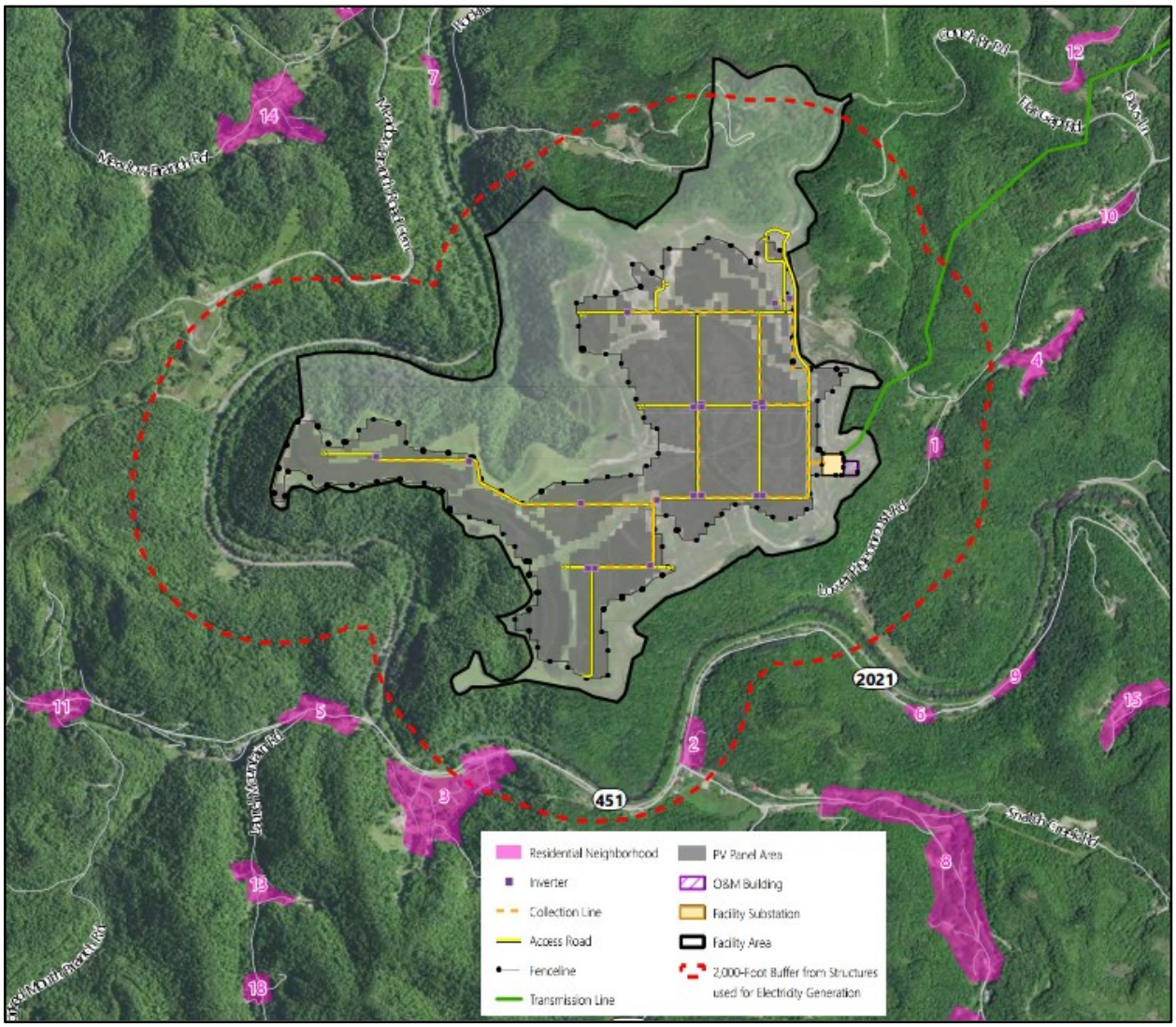
(3) For only the portion of Residential Neighborhood 3 within 2,000 feet of structures used for the generation of electricity.

Source: Bright Mountain Solar, LLC, November 2023.

Exhibit 3-6 identifies the residential neighborhoods within 2,000 feet of the Bright Mountain Project on a map of the region. The portion of Residential Neighborhood 3 that falls within the 2,000-foot boundary line can be seen in the Exhibit. Photos of select homes in those areas are provided in Appendix B of this report.[12]

[12] Photos were taken by HE staff as part of the Project site visit.

Exhibit 3-6.
Bright Mountain Solar Project Boundary, Project Infrastructure and Location of Nearby Residential Groups



Source: Bright Mountain Solar, LLC, November 2023.

Compliance with statutory requirements. The Motion for Deviation described the Applicant's or facility's compliance with applicable requirements as follows:

> " # $&%% ( ) * The Applicant has provided a CEA that addresses air pollutants, water pollutants, waste, and water withdrawal. That report (provided in Tab 15 of the SAR) provides a detailed discussion of each topic area and concludes the following:
>
> - . Construction of the Project will result in minimal quantities of emissions, and no air permit is required for operation of the Project. Construction activities may temporarily release fugitive air pollutant emissions (dust and other suspended particles), but these emissions will

diminish or be captured by the surrounding forested buffer before reaching residences outside of the Project boundary. Creation of fugitive dust will be mitigated using Best Management Practices (BMPs) such as reduced vehicle speed, application of gravel to heavily travelled internal roadways, application of water or a dust suppressant where needed, etc. Further, because the proposed site for the Project is a reclaimed surface coal mine that is largely devoid of trees, clearing of trees and shrubs will be minimal.

Any emissions from the operation of the Project would be generated by worker vehicles and maintenance equipment and would be negligible.

/ - . The Project will minimize impacts to surface waters during construction by adhering to the requirements of the general construction permit KYR10, issued by the Kentucky Division of Water (DOW). Prior to the commencement of construction activities, the Applicant will develop a storm water pollution prevention plan (SWPPP) to further minimize impacts to surface waters as a result of construction. Project operations may require the occasional use of fertilizers and herbicides. All such materials will be used in accordance with the manufacturer's instructions to avoid contaminating surface or ground water.

/ . Hazardous materials used during construction, such as petroleum-based lubricants and hydraulic fluids, will be properly stored and used following proper techniques. The potential for spills of such materials will be minimized through adherence to a spill prevention, control, and countermeasure (SPCC) plan developed prior to the commencement of construction activities and the wide availability of spill response kits.

Project construction is anticipated to generate approximately 4,900 cubic yards of construction waste, consisting primarily of wood pallets, cardboard, miscellaneous packing materials, construction scrap, and general refuse. Waste materials will be recycled if possible, and non-recyclable solid materials will be removed from the Project site and disposed of at a licensed solid waste disposal facility.

/ . Construction and operation of the Applicant's solar electricity generating facilities are not anticipated to be water intensive. The Project plans to use either existing on-site wells if they are functional, existing drainage basins, or an offsite location to obtain water for the site. If necessary, a new on-site water well may be established. For Project operations, water may be needed to wash the panels during extended dry periods in the region. However, it is anticipated that normal precipitation in the region will be sufficient to remove dust and debris from the solar panels, so panel washing generally will not be required. The Applicant estimates this could occur once a year and would require approximate 65,000 gallons of water across the facility. For office and management activities, water usage will be comparable to a single-family home.

" 0'$%(1% -- (The Motion for Deviation states that to the extent relevant, Bright Mountain Solar has satisfied any goals of KRS 278.010 by preparing and presenting its Project proposal and Application in terms consistent with the statutory definitions.

" 0'$ (2 - 3 - The Motion for Deviation states that Bright Mountain Solar anticipates having an executed interconnect agreement with Kentucky Power, a wholly-owned subsidiary of American Electric Power, Inc. (AEP), in approximately 2024 to connect the existing transmission grid via a 69-kilovolt (kV) circuit breaker and pay the related costs.

" 0'$ #( ) -
The Motion for Deviation states that, to the extent this section applies to the operation of Bright Mountain's proposed generation or the Project, the Applicant commits to following all appropriate and legally binding operating procedures.

" 0'$ 4(- 3 - 3 -- This statute is not specifically addressed in the Motion for Deviation; however, Bright Mountain's filing of a site assessment report as part of its Application in the present proceeding satisfies the goals of KRS 278.216.

" 0'$ '(-- - Bright Mountain Solar is not a utility as defined by the applicable statute; therefore, the Motion for Deviation states that this statute does not apply to the Applicant. However, the Motion for Deviation also states that "to the extent Board approval may at some time be required for change of ownership or control of assets owned by Applicant or its parent company, Applicant will comply with the applicable rules and regulations which govern its operation."

" 0'$0.%0%'$0 4(* 5 6 The Motion for Deviation states that Bright Mountain's Application and timely participation in the present proceeding demonstrates that the Project is designed to, and as located, would meet the goals of KRS 278.700 *et seq.*, including the allowance for deviation from setback requirements in KRS 278.704(4).

Evaluation of noise levels produced by facility. Noise levels related to facility construction and operations are discussed in detail in Section 5 of this report.

Results of SAR Review – Proposed Site Development Plan

Conclusions. Based on HE's review of the Bright Mountain Solar SAR, the subsequent information provided by the Applicant in response to two rounds of inquiries, direct discussions with the Applicant, and other secondary area research, HE offers the following conclusions regarding the proposed site development plan:

We believe that the Applicant has generally complied with the legislative requirements for describing the facility and a site development plan, as required by KRS 278.708.

Security and access control measures appear to be adequate, given the type of facility and its location in a rural area.

The Bright Mountain Solar Project does not meet the existing setback requirements, so the Applicant has submitted a motion for a deviation from those requirements. HE believes that the Project, as proposed, does meet the specific statutes noted for consideration in a setback deviation, assuming the mitigation HE proposes is adopted. The Siting Board will need to judge the quality of the Applicant responses in the setback deviation request.

Need for mitigation. Mitigation measures described in the SAR, or recommended by HE, which are related to the description of the facility and the proposed site development plan include:

1. A final site layout plan should be submitted to the Siting Board upon completion of the final site design. Deviations from the preliminary site layout plan, which formed the basis for HE's review, should be clearly indicated on the revised graphic. Those changes could include, but are not limited to, the location of solar panels, inverters, transformers, substation, operations and maintenance building or other Project facilities or infrastructure.

2. Any change in Project boundaries from the information which formed this evaluation should be submitted to the Siting Board for review.

3. Details of the final Project transmission line route, including final locations of transmission line structures and distances from nearby residences, should be submitted to the Siting Board upon completion. Deviations from the proposed route, which formed the basis for HE's review, should be clearly indicated.

4. The Siting Board will determine if any deviation in the site boundaries, site layout plan or final transmission line route are likely to create a materially different pattern or magnitude of impacts. If not, no further action is required, but if yes, the Applicant will support the Siting Board's effort to revise its assessment of impact and mitigation requirements.

5. A final, Project-specific, construction schedule, including revised estimates of on-site workers and commuter vehicle traffic, should be submitted to the Siting Board. Deviations from the preliminary construction schedule should be clearly indicated.

6. The Siting Board will determine whether any deviation to the construction schedule or workforce estimates is likely to create a materially different pattern or magnitude of impacts. If not, no further action is required. If so, the Applicant will support the Siting Board's effort to revise its assessment of impacts and mitigation requirements.

7. The Applicant or its contractor will control access to the site during construction and operation. The construction entrance will be gated and locked when not in use.

8. The Applicant's access control strategy will include appropriate signage to warn potential trespassers. The Applicant will ensure that the site entrance and boundaries have adequate signage, particularly in locations visible to the public, local residents and business owners.

9. According to National Electrical Safety Code regulations, the security fence must be installed prior to any electrical installation work. The substation will have its own separate security fence and locked access installed.

SECTION 4
Project Setting

Description of the Area

This section provides a description of the area surrounding the proposed Bright Mountain Solar Project site, located in Perry County, in the southeastern region of the Commonwealth of Kentucky. The Project site is located northwest of the city of Hazard, which is the Perry County seat, and is surrounded by numerous smaller communities such as Yerkes. The area's topography varies, mostly dissected with ridges and valleys throughout. The Middle and North Forks of the Kentucky River create valleys where communities reside and reliefs of 600-800 feet are common.[13] The county includes ten named Appalachian Mountains and Hazard has been referred to as the "Queen City of the Mountains." The area's history is rich in both coal mining and logging industries.[14] Buckhorn Lake State Park, a camping and recreational park, is located in Perry County, several miles west of the Project site, and portions of Daniel Boone National Forest are also located within the County.[15,16]

Population and housing density. As of mid-2022, approximately 27,400 people resided in Perry County.[17] The County's population has declined slightly over the past 20 years; in 2000 the population was 29,400 and in 2010 the population was 28,700.[18,19] About 96 percent of the population is white, and the median age of residents is 41 years.[20] Perry County is predicted to continue to decline in population in the future, with a projected population of about 24,700 residents by 2050; that is about a 10 percent decrease from 2022.[21,22] Currently, there are about 11,300 households in Perry County, with an average of about 2.4 persons per

[13] Kentucky Geological Survey. Groundwater Resources of Perry County, Kentucky. https://www.uky.edu/KGS/water/library/gwatlas/Perry/Topography.htm
[14] State of Kentucky. About Perry County. https://perrycounty.ky.gov/Pages/about.aspx
[15] Buckhorn Lake State Resort Park. https://www.buckhornlakestatepark.com/
[16] US Forest Service, Daniel Boone National Forest. https://www.fs.usda.gov/dbnf//
[17] U.S. Census Bureau. Perry County QuickFacts. https://www.census.gov/quickfacts/perrycountykentucky
[18] U.S. Census Bureau. Perry County, Kentucky, Profile of General Demographic Characteristics. https://data.census.gov/cedsci/table?q=perry%20county%20kentucky&y=2000&tid=DECENNIALDPSF42000.DP1&hidePreview=true
[19] U.S. Census Bureau. Perry County, Kentucky, Annual Estimates of the Resident Population: April 2010 – July 1, 2019. https://data.census.gov/cedsci/table?q=perry%20county%20kentucky&tid=PEPPOP2019.PEPANNRES&hidePreview=true
[20] U.S. Census Bureau. Perry County, Kentucky, Age and Sex. https://data.census.gov/cedsci/table?q=perry%20county%20kentucky&tid=ACSST5Y2019.S0101&hidePreview=false
[21] Kentucky State Data Center, Projections of Population and Households, State of Kentucky, Kentucky Counties, and Area Development Districts 2020 – 2050. https://louisville.app.box.com/s/rh39adf5ou0cd0aduxe5dnodanj3ftf0/file/993066674933
[22] Mr. Bill McIntosh, the Community Development Coordinator at the Perry County Fiscal Court, indicated that there is a lot of out-migration of residents from Perry County; many people move north for employment opportunities, including auto and battery plants in Ohio and Indiana.

household.[23] At a density of about 82 people per square mile, Perry County is more sparsely populated than most other counties in Kentucky.[24]

With a population of about 5,200 people, Hazard is the largest city in Perry County, and is located less than five miles southeast of the Project site. The remainder of the County is made up of smaller communities with fewer than about 400 people in each. With a population of about 320,300 in 2022, the closest metropolitan area to the Project site is Lexington-Fayette, Kentucky, which is located about 110 miles to the northwest.[25]

Income. In 2022, the per capita personal income in Perry County was $27,913. This was 26 percent less than the average per capita personal income of the Commonwealth of Kentucky, and 33 percent less than the average in the United States. As of mid-2022, about 27 percent of the Perry County population lived below the poverty line.[26]

Business and industry. In 2022, there were about 10,100 jobs in Perry County, with 86 percent classified as wage and salary jobs and 14 percent being proprietors' employment. [27,28]

Educational, health care, and social services is the largest employment sector in Perry County, with 3,642 jobs.[29] The area is home to a large regional medical facility, Hazard Appalachian Regional Healthcare where many are employed. That facility was established in the 1950s as one of the original nine Miners Memorial Hospital Association facilities.[30] Hazard is also home to the Kentucky Community and Technical College, with a student body of about 2,560 and where nearly 440 people were employed in 2022.[31] The college offers programs in areas such as nursing, surgical technology, and construction, at a variety of campus locations in the area, as well as housing the Kentucky School of Bluegrass and Traditional Music.[32,33]

[23] U.S. Census Bureau. Perry County QuickFacts. https://www.census.gov/quickfacts/perrycountykentucky
[24] Statistical Atlas. Perry County, Kentucky. https://statisticalatlas.com/county/Kentucky/Perry-County/Population
[25] U.S. Census Bureau. Lexington-Fayette QuickFacts. https://www.census.gov/quickfacts/fact/table/lexingtonfayetteurbancountykentucky
[26] U.S. Census Bureau. Perry County, State of Kentucky, and US QuickFacts. https://www.census.gov/quickfacts/fact/table/perrycountykentucky,KY,US/
[27] U.S. Census Bureau. Perry County, Industry by Occupation. https://data.census.gov/table/
[28] Bureau of Economic Analysis. Perry County, Regional Data, GDP and Personal Income. https://apps.bea.gov/iTable/
[29] U.S. Census Bureau. Perry County, Industry by Occupation. https://data.census.gov/table/ACSST5Y2022.S2405?q=perry%20county%20kentucky&t=Employment%20and%20Labor%20Force%20Status:Industry
[30] Appalachian Regional Healthcare, Location, About Hazard ARH. https://providers.arh.org/location/Hazard
[31] University Stats, Employee Information at US Universities and Colleges, HCTC. https://www.univstats.com/staffs/hazard-community-and-technical-college/
[32] Kentucky Community and Technical College. https://hazard.kctcs.edu/
[33] Kentucky Community and Technical College, Campuses. https://hazard.kctcs.edu/about/campuses/

The retail sector in Perry County includes about 1,442 jobs.[34] Most retail jobs are also located in the City of Hazard and support the larger facilities described above.

Construction is the next largest employment sector, with about 685 jobs.

Historically, coal mining was the dominant industry in Perry County, but the economics of coal have become unfavorable, compared with alternative fuel sources. This led to economic decline and out-migration. However, Hazard has seen some revitalization in the last decade after years of decline due to the closing of the area's coal mining companies. Devastating floods in the county in 2022 slowed that progress.[35] However, Kentucky is investing millions of dollars into the area and creating many new construction and other jobs via infrastructure development, including a new municipal water treatment plant.[36]

Major and minor roads and railways. The Project site is bounded on the south and west west by the North Fork Kentucky River, on the north by Rocklick Branch Road, and the east by Lower Pigeon Roost and Shingle Pin Roads. The nearest major roads to the site are Kentucky Highway 15 (KY 15) to the east, Kentucky Highway 28 (KY 28) to the north and Hal Rogers Parkway (HR 9006) to the south. The closest interstate, Interstate 75, is 60 miles west of Hazard via HR 9006. A CSX railway route follows along the Project site's southern and western borders.

Overall area description. Based on HE's research, the area around the Project site can be generally described as rural, with a few residential communities nearby, and within close proximity to the small city of Hazard. Historically, the area was very remote due to the surrounding mountains. The remoteness and lack of substantial development allows for a picturesque landscape, with access to state parks as well as portions of Daniel Boone National Forest. Coal mining has played a major role in the growth and economy of the region; Hazard has proudly hosted the Black Gold Festival for nearly 40 years honoring the area's roots in the coal industry. The County's population is expected to decrease slowly over the next 30 years. Residents' income levels are low; they currently experience a slightly higher rate of poverty than the entire Commonwealth of Kentucky, which is higher than in the U.S.[37]

[34] U.S. Census Bureau. Perry County, Industry by Occupation. https://data.census.gov/table/ACSST5Y2022.S2405?q=perry%20county%20kentucky&t=Employment%20and%20Labor%20Force%20Status:Industry
[35] National Weather Service, Eastern Kentucky, July 2022 Flooding. https://www.weather.gov/jkl/July2022Flooding
[36] The Commonwealth of Kentucky, News. https://www.kentucky.gov/Pages/
[37] U.S. Census Bureau. Kentucky QuickFacts. https://www.census.gov/quickfacts/fact/table/KY/POP060210

SECTION 5
Description of Impacts

This section of the report addresses impacts to the following resource topics, as enumerated in KRS 278.708 and KRS 278.706(j):

Compatibility of the facility with scenic surroundings;

Potential changes in property values and land use for adjacent property owners;

Anticipated peak and average noise levels;

Road and rail traffic, fugitive dust and anticipated degradation of roads and lands; and

Economic impacts on the region and the state.

The statutes require that the SAR provides information about impacts to the above resources resulting from short-term construction activities and longer-term operational activities. The Siting Board also directed HE to address the potential effects of decommissioning activities, and that discussion is included in this section.

For each resource topic, HE describes generally accepted assessment criteria or methodology necessary to evaluate impacts of a project of this nature. We then summarize the relevant information included in the SAR, as well as supplemental information about the Bright Mountain Solar Project provided by the Applicant in response to data inquiries. HE also provides additional information gathered about the Project and its potential impacts on the region through secondary source research, including interviews. Finally, HE draws conclusions about Project impacts as well as recommended mitigation measures.

Facility Compatibility with Scenic Surroundings

This component of the statute relates to how well the proposed facility will "blend-in" or is compatible with its physical surroundings and associated land uses. For example, certain industrial facilities can be unsightly, visually unappealing, and generally incongruous with the surrounding area. Coal-fired electric generating plants often have large smokestacks that can be seen from far away. Wind turbines are tall, and their blades can be seen spinning from miles away, etc. Generally, solar farms are considered to be less visually intrusive, as they are relatively short in stature, and can be effectively visually blocked naturally with topographic variation or intervening vegetation, or through strategic means utilized by an applicant.

General methods of assessment. Visual impacts of solar facilities are highly dependent on the characteristics of the surrounding area, i.e., industrial, suburban residential, rural/agricultural. As a result, different methods may be used to assess the visual impacts of solar facilities, depending on location. The Argonne National Laboratory's Environmental Science Division and the National Park Service jointly developed the *Guide to Evaluating*

Visual Impact Assessments for Renewable Energy Projects; that document is a guide designed to help planners evaluate the quality and completeness of visual impact assessments for solar and wind facilities.[38] Additional reports have been published from public agencies and private firms on visual impact assessments for solar facilities.

Most visual impact assessments focus on visualization of the appearance of the project from key observation points (KOPs). Since it is impossible to visualize proposed projects from every observation point, it is common for planners to utilize a "worst-case" potential visual impact, i.e., locations where perceived change may be greatest. The overarching goal of visual impact assessments is to determine potential visual impacts that may result from construction, operations, and decommissioning of a project, in a manner that is logical, repeatable, and defensible.[39]

A standard visual analysis generally proceeds in this sequence:[40]

Description of the project's visual setting;

Identification of KOPs. KOPs are locations near the project site where there is potential for solar facility components to be seen from ground-level vantage points, i.e., a nearby residence or a passing vehicle;

Analysis of the visual characteristics of the project, i.e., height of solar panels, descriptions of other facility components; and

Evaluation of impacts from KOPs.

Glare from sun shining off of solar panels can also be a potential issue in certain locations (i.e., along roadways, near airports, or close to residential properties) or at specific times of the day (generally in the early morning or later in the afternoon as the panels rotate to capture the light). Glare analyses evaluate the potential for different types of glare (red, which is the most severe; yellow, which is less severe; and green, which has the lowest severity rating) at different locations around a project site and the duration of potential glare, if applicable, at different times of the day. Measures can be implemented to reduce the potential for glare impacts, including the use of anti-glare panels, appropriate panel location and growth of vegetative buffers.

Project components with potential for visual impacts. Once constructed, the following Project components may result in visual impacts to local residents and drivers:

- The Project would include approximately 200,000 solar panels. With the tracking arrays, the height of the panels will vary as the structures tilt to follow the sun

[38] National Park Service, U.S. Department of the Interior. *Guide to Evaluating Visual Impact Assessments for Renewable Energy Projects*. August 2014. http://visualimpact.anl.gov/npsguidance/.
[39] Dean Apostol, James Palmer, Martin Pasqualetti, Richard Smardon, Robert Sullivan. (2016). *The Renewable Energy Landscape: Preserving Scenic Values in our Sustainable Future*. September 2016.
[40] Environmental Design & Research. *Visual Impact Analysis*. May 2019.

throughout the day, with a maximum height of approximately 15 feet, while the fixed-tilt arrays will have a set height of 10 feet.[41]

7 (21 inverters and small transformers will connect to the panel arrays, converting the direct current power generated by the solar panels to alternating current power delivered to the Project substation.

This area would be located in the eastern portion of the Project site west of Shingle Pin Lane.

8 9 : If developed on-site, this building would be located adjacent to the Project Substation.

/ Multiple weather stations will be located throughout the interior of the Project site. Weather stations will be attached to the racking which supports the solar panels.

2 Security fencing surrounding the perimeter of the Project is described as "agricultural style" (likely comprised of wire-mesh supported by evenly spaced posts). Separate fencing will enclose the substation area and will be made up of chain-link, topped with barbed wire.

6 Over the course of four miles, the transmission line will include 64 poles, between 80 and 120 feet in height and spaced at varying distanced from another along the transmission line route. The transmission line route is shown in Exhibit 3-2 of this report; that corridor generally runs in an easterly direction away from the Project site.

Summary of information provided by the Applicant. The Visibility Assessment Technical Memorandum, prepared by the firm EDR, is provided in Exhibit H of the Application.[42] That document describes the scenic setting of the area and the potential visual impacts associated with the Project.

Scenic surroundings. According to the Visual Assessment, the Facility Area occupies an area formerly used for surface coal mining which is situated atop a large topographic feature rising from a distinct meander in the North Fork Kentucky River. The site is bordered by the North Fork Kentucky River on the south and west sides. As a reclaimed surface coal mine, the Project site contains some terraced areas and some areas with sparse vegetative cover. The topography of the Facility Area ranges from 1,435 feet on the east side to 970 feet on the west side. The entire former mine is surrounded on all sides by dense forest vegetation. Because the former coal extraction at the site involved a practice known as mountaintop removal, the

[41] As noted in Section 3 of this report, both a single-axis tracking system and a fixed-tilt system are under consideration for the solar array racking. Under either racking system alternative, the footprint of the PV arrays would be similar.

[42] The Visibility Assessment focuses on the Project site and Project components located within the Project boundary (i.e., solar panels); it does not address any potential visibility concerns related to the four-mile long transmission line.

Facility Area can be thought of as a shelf, beyond which the topography descends sharply to the North Fork Kentucky River.

Within a two-mile Visual Study Area surrounding the Project site, land cover consists primarily of forested land (approximately 76% or 19 square miles). Low intensity development (typically including house lots and roads) and pasture/grasslands cumulatively makes up about 16% or 4 square miles. Approximately one square mile (2%) consists of active or former mining land. The remainder of the area consists of open water (0.3%), developed land (1%), and scrub shrub vegetation (4.4%).

Potential visual impacts from Project construction. The SAR does not address the potential for visual impacts to adjacent landowners or local drivers during the construction phase.

Potential visual impacts from Project components (operational phase). To identify areas where views of the proposed Project would potentially be available, EDR conducted a digital surface model (DSM) viewshed analysis. A DSM viewshed analysis evaluates potential Project visibility considering the screening effects of topography, structures, and vegetation. The analysis concluded that visibility of the Project appears to mainly occur on elevated mountain sides that have been cleared of vegetation as a result of mining operations or along roads traversing nearby hillsides. The model identified several areas within the Project viewshed indicated to be associated with coal extraction mines or railroad loading facilities. Additionally, several small, discrete areas of potential visibility were identified along Couchtown Road, which hosts a number of small communities, including residences and businesses.

Following the desk-top analysis, EDR staff conducted a site visit for the purposes of documenting potential views toward the proposed Project and to verify the viewshed analysis results. The Visibility Assessment states that "field review suggests that areas with Project visibility will be substantially fewer and smaller than suggested by the viewshed analysis." At several locations, substantial existing vegetation offers significant screening of the proposed Project. The report provides the following conclusions:

> Field review determined that, while the viewshed results are likely overstated, opportunities for discrete views may be available toward the proposed Project. However, these views will likely only be of a very small portion of the Project and are not likely to affect the scenic quality of the view or the observer's experience.
>
> Because the vegetation bordering the site will largely remain intact, there will be significant screening of the relatively low-profile Project components.
>
> Due to the lack of visibility throughout the Visual Study Area, the Project will not result in adverse visual effects from any visual resources.

Visually sensitive resources. Visually sensitive resources are described as including locations such as (1) properties of historic significance; (2) designated scenic resources (3) public lands and recreational resources; and (4) high use public areas. EDR identified eight scenic resources within the two-mile Visual Study Area surrounding the Project but indicated

that only four would be located within the Project viewshed. EDR's evaluation of those four resources concludes that views of the Project would be limited at those locations:

1. *Daniel Boone National Forest (1.7 miles from the Project Area):* The viewshed indicated a very small, non-descript area of potential visibility at the boundary of the forest. Because the area of potential visibility is so small and occurs in a remote forested area, it is not likely for viewers to see the Project from this location.

2. *North Fork Kentucky River (0.0 miles from the Project Area):* Portions of the banks of the North Fork Kentucky River occur within the Project viewshed. Field review confirmed that, while discrete views toward the Project may be available, the Project would not be noticed by casual observers due to the presence of extensive, tall vegetation surrounding the Project Area.

3. *Kentucky State Route 2021 (0.2 miles from the Project Area):* A portion of this highway follows the aforementioned North Fork Kentucky River, and the visibility results are very similar. Field review confirmed that, while tightly framed views may include very small portions of the Project, it would likely go unnoticed by casual observers.

4. *Kentucky State Route 451 (0.2 miles from the Project Area*): This road also runs along the North Fork Kentucky River in the vicinity of the Project, and the visibility results are similar to those of Kentucky State Route 2021. State Route 451 and State Route 2021 are concurrent for approximately one quarter mile where both routes turn away from the North Fork Kentucky River. It is anticipated that any views will be discrete and will only include very small portions of the Project. This type of visibility is likely to go completely unnoticed by observers.

Applicant's approach to Project screening. The Applicant has not proposed any mitigation measures aimed at reducing potential visual impacts of the Project on adjacent residents, business or local drivers, citing the presence of existing vegetation and the elevation of the Project site relative to the surrounding area.

Potential for glare from Project panels. The Applicant provided a Solar Glare Analysis Report prepared by the firm EDR (Tab 12, Exhibit I), focusing on the potential for glare from the fixed-tilt racking alternative.[43]. EDR use the ForgeSolar software to evaluate potential glare from the 40 nearest "habitable structures" (residences or commercial buildings) from the Facility.[44] The Applicant noted that there is significant topographic variation and dense existing vegetation in the vicinity of the Facility, which screens nearby residences from view. The Applicant also noted that there are no residences in close proximity to the western edge of the Facility and given the lack of visibility, no features warranted modeling [in that area].

[43] The Report states that because of how tracking PV arrays operate, they rarely reflect enough sunlight to produce retinal irradiance values sufficient to result in glare with potential to cause a temporary after-image. Therefore, that design was not addressed in the Glare Analysis.

[44] 40 is the maximum number of receptors that can be input into the model. The Glare Analysis includes a map identifying each receptor evaluated in the glare analysis.

Additionally, PV panels are designed to absorb as much of the solar spectrum as possible to maximize efficiency and the Project's solar panels will include anti-reflective coatings.

Results from EDR's Glare Analysis determined that no glare of any type (green, yellow or red) would be received at any of the identified residences.

Visual impacts of the transmission line. As described previously in this report, the transmission line will follow a four-mile long route between the Project substation and the existing Bonnyman Substation. The proposed right-of-way for the transmission line is approximately a 100-foot-wide corridor centered on the transmission line. According to the Applicant, approximately 43 acres of vegetative clearing is anticipated to be required to accommodate the transmission line, although the exact amount of clearing is subject to further engineering design.

HE's evaluation of impacts. HE reviewed maps and Google Earth satellite imagery of the site and used Google Maps to "drive" around the area to assess viewpoints of the Project from a vehicle commuter's point of view. In addition, HE staff made a visit to the Project site on November 9, 2023. During this site visit, we visited sensitive receptors near the Project boundary, viewed the proposed access point, drove around the Project property to gain line-of-sight to various viewpoints, and compiled a photo log of the different areas. The photo log index map and site photos can be found in Appendices A and B of this report, respectively.

Visual setting. HE's site visit confirmed information provided by the Applicant and gathered as part of the Project evaluation, with regards to the rural nature and "look" of the area. The area surrounding the Project is largely forested, but there are several homes in relatively close proximity to the Project boundary, including three areas identified as residential neighborhoods.[45] Additionally, an existing mining operation is located to the north of the Project site across Sam Campbell Branch Road. Traffic in the Project area is generally light, especially on smaller, local roads; KY 15 is more heavily traveled. The CSX rail line runs along the south and west sides of the Project site.

Most local roads surrounding the Project site are paved, while a small number are aggregate or gravel; all local roads are relatively narrow. Existing vegetation includes trees, bushes and grasses, and vegetation is relatively dense in most areas surrounding the Project site.

The Applicant provided information about the distances between nearby residential and non-residential structures and the Project boundary, solar panels, inverters and the substation.[46] Exhibit 3-4 of this report described proximity of residential and non-residential structures to the Project boundary. Exhibit 5-1, below, presents data on the distances between residences and the Project's solar panels, inverters and Substation.[47] A total of 119 residential structures are located within 2,000 feet of the Project boundary.[48]

[45] Section 3 of this report described the residential neighborhoods.
[46] The Applicant provided data for structures within 2,000 feet of the Project boundary.
[47] Two non-residential structures (a church and a post office) are located more than 1,500 feet from a solar panel and further from other Project components.
[48] The majority of those homes are located to the east and south of the Project site.

Exhibit 5-1.
Distances between Nearby Residential Structures and the Proposed Bright Mountain Solar Project Solar Panels, Inverters and Substation

Distance from Residence (ft)	Solar Panel	Inverter	Substation
0 - 300 feet	0	0	0
301 - 600 feet	0	0	0
601 - 900 feet	5	0	0
901 - 1,200 feet	6	1	1
1,201 - 1,500 feet	23	1	6
1,501 - 1,800 feet	25	10	11
1,801 - 2,000 feet	14	7	0
Total Homes:	**73**	**19**	**18**

Note: Structures include those within 2,000 feet of the Project boundary line.

Source: Bright Mountain Solar, LLC, November 2023.

As noted in Section 3 of this report, the shortest distance between residences and generation infrastructure within the Project site are as follows:

Solar panels: 696 feet

Inverter: 987 feet

Project substation: 1,078 feet

Along the transmission line route, 88 homes are located within about 1,600 feet of one or more transmission line structures (poles). The majority of those homes are located within 1,000 feet of at least two separate poles. The closest home to a transmission line pole would be 137 feet. That residence would be within 400 feet of three poles and within 1,000 feet of six poles. A total of 27 homes would be located within 400 feet of one or more transmission line poles, including:

Ten homes located within 400 feet of three separate poles.

Five homes located within 400 feet of two separate poles.

Seven homes located near additional poles at distances greater than 400 feet.

Construction activities. Adjacent landowners and commuters driving along surrounding local roads may be able to see construction equipment and activity as it occurs, primarily deliveries and construction of the transmission line.

There are relatively few homes immediately surrounding the Project site, but some local residents would be able to see trucks and other equipment during construction, especially in the vicinity of the transmission line. These include homes along Flat Gap Road, Lower Second Creek Road, and Days Lane Cemetery, where the access roads for the Project transmission line will connect to local roads.

Drivers on surrounding roadways, including local roads near the Project site, may be able to see construction activities occurring on the Project site from certain locations. Construction activity along the transmission line route may be more visible to local drivers.

The Project's relatively remote location, steep topography and existing vegetation in much of the area will substantially reduce visibility of Project construction activities.

According to the construction schedule provided by the Applicant, transmission line installation would occur over approximately a six-month period (see Exhibit 3-3 of this report). Therefore, the most visible construction activity would be limited in duration.

Because of the rural nature of the area, the small number of homes in close proximity to the Project site and the fact that construction will be temporary, occurring over about a 16-month period, HE expects the visual impacts from construction activities to be minimal.

Project facilities. HE's focus of the scenic compatibility evaluation is upon the above-ground Project components, including the solar panels, inverters, Project substation, transmission lines and other structures as those components may be visible from local residences and roads.

The Project site has been largely cleared during its former use as a mine but is surrounded by dense natural vegetation. The Project site will not be visible from most viewpoints due to its isolated location at the top of a high ridge, even without the development of additional visual barriers.

The smallest distance between a residence and a Project solar panel is almost 700 feet; other components are located at further distances. Given the area's topography and natural vegetation, few homes or commercial buildings would likely have a view of Project facilities.

The overhead transmission line and support poles may be visible from nearby homes due to its 80-120 foot above-ground height. In general, existing vegetation would not likely shield the transmission line and support poles from full view. However, depending on the distance, angle of view and growth of vegetation, trees and shrubs may block some of the view of some poles. The fact that many landowners granted an easement to the Applicant suggests that the proximity of the transmission line is not a significant issue to those parties.

Development of the transmission line will require approximately 43 acres of vegetative clearing along its four-mile route. Clearing will occur within the 100-foot wide transmission line corridor, on property with which the Applicant has easement agreements with property owners.

The Applicant's yet to be developed complaint resolution plan may offer a pathway to further reducing Project views during operations, should that be desired by local residents.

Interviews with Perry County representatives suggest a general lack of familiarity with the Bright Mountain Project.[49] None of those officials have heard much opposition to the Project, or heard any specific concerns raised by local residents, including any issues surrounding scenic impacts or compatibility. However, those interviews also suggested that many local residents may not be aware of the Project.

Due to the dense existing vegetation and steep topography in this area, HE would expect the visual impacts associated with the presence of Project facilities to be minimal.

Conclusions and recommendations. Based on our review of the SAR, supplemental information provided by the Applicant, and additional research conducted by HE, we offer the following conclusions and recommendations regarding scenic compatibility:

> Construction vehicles and activity may be visible from local roadways and at different vantage points around the Project site, but these effects will be temporary and mostly limited to the area of the transmission line, due to the remote location of the Project site. Existing vegetation along the Project boundary line is dense and will reduce visibility of construction activities occurring on-site in most areas. The area is relatively remote, with few residents or drivers along local roads, reducing the extent of visual impacts.
>
> Operational infrastructure, including the solar panels and inverters, will be largely invisible to drivers along local roads, including KY 15, Sam Campbell Branch Road, Rocklick Branch Road, Lower Pigeonroost Road, and others, as well as to local residents surrounding the Project site. The existence of relatively few homes in close proximity to the Project will reduce the extent of visual effects.
>
> The Project substation and O&M building will be located in the eastern portion of the Project site, west of Lower Pigeonroost Road and Shingle Pin Lane. That area is generally remote and located more than 1,000 feet from any residence. Visibility of those components will be quite low.
>
> HE believes that existing vegetation and terrain would largely shield Project components from view of local residents. However, the overhead transmission line and support structures will remain visible from certain locations, due to their height and the 100-foot wide clearing along the corridor.
>
> Homes within close proximity to the Project site were also present in the area when the Project site was an operating surface mine. During that time, local residents likely experienced views of mining activity to the extent that existing vegetation did not obstruct those views. Therefore, nearby homeowners may be used to having partial

[49] Interviews with Mr. Scott Alexander, the Perry County Judge Executive; Mr. Bill McIntosh, the Community Development Coordinator at the Perry County Fiscal Court; and Mr. Lonnie Douglas Adams, the Perry County Property Valuation Administrator, were conducted during the site visit trip on November 9, 2023.

views of commercial or industrial structures and may not see the proposed solar facility as having an adverse effect on the viewshed.

The use of anti-glare panels will reduce, or eliminate, the potential for glare from solar panels for local residents and drivers. A glare study was performed by the Applicant's consultants; glare is not expected to be an issue.

The Applicant has stated that they will develop a complaint resolution plan "outlining the process by which individuals may submit complaints during construction and operation and how Bright Mountain Solar will address any complaints received." However, no specific details were provided regarding the resolution of potential complaints related to scenic impacts during construction or operations.

Based on our understanding of the Project area in Perry County, HE believes that the Bright Mountain Solar facility would not be incompatible with existing scenic conditions.

Need for mitigation. The visual impacts are likely to be such that the Applicant should consider certain mitigation:

1. Existing vegetation between the solar arrays and nearby roadways and homes shall be left in place, to the extent feasible, to help minimize visual impacts and screen the Project from nearby homeowners and travelers.

2. The Applicant will not remove any existing vegetation except to the extent it must remove such vegetation for the construction and operation of Project components.

3. Any changes to the site infrastructure layout (i.e., panels, inverters, etc.) included in the Application materials will be submitted to the Siting Board for review. If the Siting Board deems those changes to be significant, the Siting Board may require the Applicant to develop a vegetative screening plan.

4. The Applicant shall cultivate at least two acres of native pollinator-friendly species on-site.

5. The Applicant will use anti-glare panels and operate the panels in such a way that glare from the panels is minimized or eliminated. The Applicant will immediately adjust solar panel operations upon any complaint about glare from those living, working, or traveling in proximity to the Project.

6. Given the lack of proposed screening, the Applicant will inform homeowners that will be visually impacted by the transmission line and work with them to address any concerns.

7. Given the lack of proposed screening, the Applicant will work with homeowners and business owners visually impacted by the Project to address any concerns.

Potential Changes in Property Values and Land Use

The construction and operation of industrial facilities has the potential to negatively affect property values and/or land uses of those properties adjacent to, or even in the general vicinity of, the facility in question. The magnitude, timing, and duration of increased traffic volume, noise, odor, visual impairments, or other emissions associated with the facility can influence the marketability and value of nearby properties. Each of those factors are addressed in this report and are considered here in examining property value impacts.

General methods of assessment. The value of a residential property is based on several factors, including characteristics of the home and the land on which it is situated, the uses and values of the surrounding property, among other attributes. The value of a residential property will take into account things such as lot size, age of home, size of home, number of bedrooms and bathrooms, etc. A residential property located near public lands or open spaces may be more highly valued, whereas the same property located near a heavy industry facility might have a lower value. Residential properties will be assessed differently than agricultural or industrial properties.

Several methods are available to assess the impacts of a new development on nearby property values. A technique known as hedonic pricing analysis can be used to determine the impacts of a specific characteristic on the price or value of a property. However, this method of valuation requires large amounts of data, statistical experience, and careful evaluation. Formal appraisal is a technique which uses the concept of specific property characteristics in comparing different properties. Matched pair analysis is another technique. A matched pair analysis makes a comparison between similarly situated properties that sold before and after a new industrial facility is constructed. This approach is described in more detail below.

Summary of information provided by the Applicant. The Applicant's consultant, CohnReznick LLP, completed the Adjacent Property Value Impact Report (Tab 12, Exhibit A of the SAR).[50] Referred to here as the CohnReznick report, that document, along with additional follow-up information from the consultant, provides the following relevant information:

- ; - - . The - CohnReznick report provides summaries of three academic reports addressing property value impacts of solar facilities. Many property value impact studies and real estate assessor reports prepared by other experts were also reviewed. The CohnReznick report states that "these published studies and other valuation expert opinions conclude that there is no impact to property adjacent to established solar farms."

7 " < - = + = ,
. The CohnReznick report describes interviews with the Grant County PVA

[50] The CohnReznick Property Value Impact Report consists of two documents: (1) Academic and Peer Authored Property Value Impact Studies, Research and analysis of Existing Solar Facilities, and Market Participant and Assessor Interviews; and (2) Site Specific Analysis Addendum Report: For the Proposed 80 MW Bright Mountain Solar Project To Be Located in Perry County, Kentucky.

and the Clark County PVA, regarding the impacts of solar facilities in those areas. Those PVAs both stated that no reduction in assessed property values has been seen in properties located adjacent to or in close proximity to a solar facility.[51]

1 - - – The CohnReznick report employs an analytical approach described as a paired sale analysis, which "can be utilized to extract the effect of a single characteristic on value." The report provides the following description of this approach:

"One of the most useful applications of the sales comparison approach is paired sale analysis. This type of analysis may compare the subject property or similarity impacted properties called 6 *with unimpaired properties called*) *A* $ *comparison may also be made between the unimpaired value of the subject property before and after the discovery of a detrimental condition. If a legitimate detrimental condition exists, there will likely be a measurable and consistent difference between the two sets of market data; if not, there will likely be no significant difference between the two sets of data. This process involves the study of a group of sales with a detrimental condition, which are then compared to a group of otherwise similar sales without the detrimental condition."*[52]

Essentially, assuming that the presence of a solar facility might constitute a "detrimental condition," the CohnReznick analysts compare sales prices of properties adjacent to (Test Areas) and further from (Control Areas) solar facility properties. The report provides detailed information for ten different solar facilities, including project data (acreage, generation, date of operation) and property sales data.

- - – CohnReznick provided the following information regarding residential home values: "Based on our research, homes in the area that have recently sold were constructed as early as the 1960's and as recently as 2017. There have not been any residential home sales directly adjacent to the Project Area, however, there has been steady sales activity in the broader study area surrounding the Project Area, in a ten-mile radius, throughout the last year. We searched for sales that closed between July 2022 through July 2023, and identified 25 market transactions of single-family homes. We studied homes that are more similar to the rural residential homesteads that surround the proposed Project Area. The sale price per square foot ranges from $60 per square foot to $161 per square foot of gross living area."

Exhibit 5-2 presents a summary of recent local sales in Perry County.

[51] At 8.5 MWs and 2.7 MWs, respectively, the solar facilities in those areas are much smaller than the Bright Mountain Solar Project.
[52] The CohnReznick report cites Randall Bell, PhD, MAI. Real Estate Damages. Third ed. Chicago, IL: Appraisal Institute, 2016.

Exhibit 5-2.
Summary of Home Sales Surrounding the Proposed Bright Mountain Solar Project Site, July 2022 – July 2023

Median Lot Size (Acres)	Median Living Area (SF)	Min. Sale Price	Max. Sale Price	Median Sale Price	Median Sale Price PSF
1.00	1,800	$110,000	$370,000	$185,000	$108.90

Source: Bright Mountain Solar, LLC, September 2023.

It is noted that Perry County, Kentucky endured historic flooding at the end of July 2022 and as a result of this natural disaster event, there has been only one residential home sale in the surrounding Project Area since the flooding occurred. The flooding destroyed many homes, including washing away some homes entirely. The one home that has since sold consists of 1,800 square feet and sits on one acre, sold for $103 per square foot after being on the market for 66 days.

The home values surrounding the Project site are roughly similar to the average home value of the Control Area properties analyzed in CohnReznick's paired sale analysis, as seen in Exhibit 5-4, below.[53]

- – The CohnReznick report states that "land values can be driven by a site's proximity to the path of development." However, the path of development in the local area is surrounding the City of Hazard, to the southeast. The Project Area has been used for forestry and mining land for over 16 years. Generally, any undeveloped forestry land is considered to be an interim use as the intensity of uses grows in step with macroeconomic factors; however, the Project and the land surrounding are not in the path of development in the foreseeable future and a change in use is not expected."

) -- - . The CohnReznick report does not address the potential for construction activity to affect property values. However, in response to HE inquiries on this topic as part of previous SAR evaluations for the PSC, CohnReznick has stated that construction activities are temporary in nature and not consistent with the long-term proposed passive use of solar Project sites.[54] Therefore, the focus of the CohnReznick impact analysis is on the operational period. However, their report also stated that the review of transactions occurring during construction did not identify any measurable impact to property prices at that time.

CohnReznick conclusions. The CohnReznick analysis focuses on data associated with eleven separate solar farms. The report states that "overall, the vast majority of the surrounding acreage for each comparable solar farm is made up of agricultural land, some of which have homesteads. There are also smaller single-family home sites that adjoin the solar farms

[53] When comparing median sales price per square foot of recently sold homes in Perry County to those of homes sales in the Control Areas of other solar facilities.
[54] Case No. 2020-00244, Harvey Economics, Review and Evaluation of the Caldwell Solar, LLC Site Assessment Report, January 21,2022.

analyzed in this report. Generally, these solar farms are sound comparables to LightsourceBP's proposed solar project [Bright Mountain Solar] in terms of adjoining uses, location and size."

The CohnReznick report provides the following conclusions:

> The solar farms analyzed reflected sales of property adjoining an existing solar farm (Test Area Sales) in which the unit sale prices were effectively the same or higher, except for one, than the comparable Control Area Sales that were not near a solar farm. The report's conclusion is that there is no negative impact on improved residential homes adjacent to solar, nor agricultural acreage. This was confirmed with market participants interviews, which provided additional insight as to how the market evaluates farmland and single-family homes with views of the solar farm.
>
> CohnReznick concluded that since the Adjoining Property Sales (Test Area Sales) were not adversely affected by their proximity to the solar farm, that properties surrounding other proposed solar farms operating in compliance with all regulatory standards will similarly not be adversely affected, in either the short- or long-term periods.
>
> Based upon the examination, research, and analyses of the existing solar farm uses, the surrounding areas, and an extensive market database, CohnReznick concluded that [redacted], with regard to unit sale prices or other influential market indicators.

Together, Exhibits 5-3 and 5-4 provide a summary of the CohnReznick analysis and conclusions. Exhibit 5-3 focuses on residential sales, while Exhibit 5-4 focuses on land sales.

Exhibit 5-3.
CohnReznick Paired Sale Analysis Conclusions – Single Family Residential Properties

Solar Farm	Number of Test Area Sales	Number of Control Area Sales	Median Price per Sq Ft (Test Area)	Median Price per Sq Ft (Control Area)	% Diff	Impact Found
Single-Family Residential						
Sunshine Farms Group 1	2	6	$192.48	$190.99	**0.78%**	No Impact
North Star Solar Group 1	3	11	$151.93	$139.50	**8.91%**	No Impact
North Star Solar Group 2	1	10	$119.82	$116.33	**3.00%**	No Impact
North Star Solar Group 4	1	10	$172.41	$170.86	**0.91%**	No Impact
North Star Solar Group 5	1	7	$205.09	$170.88	**20.02%**	No Impact
North Star Solar Group 6	1	8	$114.48	$120.49	**-4.99%**	No Impact
North Star Solar Group 7	1	4	$156.84	$135.63	**15.64%**	No Impact
North Star Solar Group 8	1	11	$139.70	$132.68	**5.29%**	No Impact
North Star Solar Group 9	1	8	$101.63	$103.95	**-2.22%**	No Impact
Indy Solar III Group 2	4	8	$59.10	$57.84	**2.18%**	No Impact
Indy Solar III Group 3	7	11	$72.15	$71.69	**0.65%**	No Impact
Dougherty Solar	1	5	$74.55	$76.23	**-2.21%**	No Impact
Barefoot Bay Solar Group 2	5	126	$95.90	$93.95	**2.07%**	No Impact
Innovative Solar 42 Group 1	1	7	$107.09	$100.18	**6.91%**	No Impact
Innovative Solar 42 Group 2	1	7	$111.71	$105.34	**6.10%**	No Impact
Rutherford Farm	1	6	$53.46	$52.49	**1.85%**	No Impact
Elm City Solar	1	8	$56.60	$55.57	**1.85%**	No Impact
Woodland Solar	1	5	$144.63	$137.76	**4.99%**	No Impact
DTE Lapeer Solar Group 1	3	7	$105.26	$99.64	**5.65%**	No Impact
DTE Lapeer Solar Group 2	1	5	$114.12	$113.01	**0.98%**	No Impact
DTE Lapeer Solar Group 3	1	4	$98.84	$96.32	**-1.53%**	No Impact
Average Variance in Sale Price for Test to Control Areas - Residential					***2.07%***	

Notes: (1) Each solar facility included in the CohnReznick analysis is described in detail in the CohnReznick report included in the SAR.

(2) The average distance between a solar panel and a house ranged from about 180 feet for North Star Solar Group 8 and Rutherford Farm to 800 feet for North Star Solar Group 8.

Source: Bright Mountain Solar, LLC, September 2023.

Exhibit 5-4
CohnReznick Paired Sale Analysis Conclusions – Land Sales

Solar Farm	Number of Test Area Sales	Number of Control Area Sales	Median Price per Acre (Test Area)	Median Price per Acre (Control Area)	% Diff	Impact Found
Land (Agricultural / Single Family Lots)						
Sunshine Farms Group 2	1	9	$67,500	$49,900	**26.07%**	No Impact
Indy Solar III Group 1	1	4	$8,210	$8,091	**1.47%**	No Impact
Miami-Dade Solar	3	6	$82,491	$81,686	**0.76%**	No Impact
Barefoot Bay Solar Group	2	7	$54,500	$51,000	**6.86%**	No Impact
Average Variance in Sale Price for Test to Control Areas - Land					**4.17%**	

Notes: (1) Each solar facility included in the CohnReznick analysis is described in detail in the CohnReznick report included in the SAR.

(2) The average distance a solar panel and each lot ranged from about 290 feet for the Indy Solar Group to 766 feet for the Miami-Dade Center.

Source: Bright Mountain Solar, LLC, September 2023.

HE's evaluation of impacts. To assess the topic of impacts to property values, HE: (1) reviewed relevant existing literature related to solar facility impacts; (2) conducted interviews with the Perry County Property Valuation Administrator and the Community Development Coordinator at the Perry County Fiscal Court; (3) conducted additional evaluation of the data provided in the CohnReznick report; and (4) examined the potential for impacts to residential and other properties closest to the Project.

Literature review. HE reviewed the existing literature related to the relationship between property values and utility – scale solar facilities. Recent studies that address the issue of changes in property values specifically related to solar facilities include the following:[55]

> A 2022 study examining the impact of large-scale photovoltaic projects on residential home prices in six U.S. states found that homes within 0.5 mi of the solar facility experienced an average home price reduction of 1.5%, as compared to homes 2 to 4 miles away.[56] Measurable effects were seen for facilities constructed on agricultural land, for larger solar facilities and for rural homes. However, adverse effects on property values were only seen in three of the six states analyzed.[57]
>
> A 2022 study using property value models found that utility-scale solar facilities do not have direct positive or negative spillover effects on nearby agricultural land

[55] Several of these studies are also addressed in the CohnReznick report and considered in their evaluation and conclusions.
[56] Elmallah, S. et al. *Shedding light on large-scale solar impacts: An analysis of property values and proximity to photovoltaics across six U.S. states*, Energy Policy, Vol. 175, April 2023.
[57] The CohnReznick report notes that the dataset for this study "is centered on relatively small projects in relatively rural areas" and notes that a webinar presented by the study authors indicated that the results should not be applied to larger projects (i.e., those above 18 MWs) and that the study did not consider site design, setbacks or landscaping features.

values.[58] However, the authors did "find evidence that suggests construction of a solar farm may create a positive option-value for landowners that is capitalized into land prices." Specifically, after construction of a nearby solar farm, study findings indicated that agricultural land that is also located near transmission infrastructure could increase in value.

A 2020 study completed by economists at the University of Rhode Island found that in areas of high population density, houses within a one-mile radius depreciate by about 1.7 percent following construction of a solar array. The study found "substantially larger negative effects for properties within 0.1 miles and properties surrounding solar sites built on farm and forest lands in non-rural areas." However, additional analysis focused on impacts in more rural areas found that the "effect in rural areas is effectively zero (a statistically insignificant 0.1%) and that the negative externalities of solar arrays are only occurring in non-rural areas." The researchers note that this may be due to solar facilities being less visible in rural areas (due to land abundance for vegetative buffers).[59]

A 2020 study focusing on the property value effects of wind turbines and solar facilities in the Netherlands states evidence suggesting that the negative effects of solar facilities (including noise (buzzing sounds), glare and visibility) results in decreased residential housing prices (2-3%). They found these effects to be localized (within 1km of the facility, or a little more than half a mile). However, the researchers also note that the relatively small number of solar facilities in the Netherlands makes the results less precise (as compared to the wind farm analysis).[60]

A 2019 article produced by the American Planning Association (APA) indicates that the "impact of utility-scale solar facilities is typically negligible on neighboring property values." The issue of property value impacts "can be a significant concern of adjacent residents, but negative impacts to property values are rarely demonstrated." [61]

A 2018 University of Texas study included a geospatial analysis and a survey of residential property assessors to determine the potential for property value impacts. The results show "that while a majority of survey respondents estimated a value impact of zero, some estimated a negative impact associated with close distance

[58] Abashidze, N. and Taylor, R. *Utility-Scale Solar Farms and Agricultural Land Values*, Land Economics, Vol. 99, Issue 4, November 2023. https://le.uwpress.org/content/early/2022/12/20/le.99.3.102920-0165R
[59] Gaur, V., and C. Lang. *Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island*. University of Rhode Island, Department of Environmental and Natural Resource Economics, September 2020. https://web.uri.edu/coopext/files/PropertyValueImpactsOfSolar.pdf
[60] Koster, H. and M. Droes. *Wind turbines and solar farms drive down house prices.* VoxEU, September 2020. https://voxeu.org/article/wind-turbines-and-solar-farms-drive-down-house-prices. Mr. Koster is Professor of Urban Economics and Real Estate at Vrije University in Amsterdam; Mr. Droes is Assistant Professor of real Estate Finance at the University of Amsterdam.
[61] Coffey, Darren. *Planning for Utility-Scale Soar Energy Facilities.* American Planning Association, PAS Memo, September – October 2019. https://www.planning.org/pas/memo/2019/sep/.

between the home and the facility, and large facility size. Regardless of these perceptions, geospatial analysis shows that relatively few homes would be impacted."[62]

Independent appraisers are often hired to conduct analyses related to property value impacts for solar companies, as is the case here for the Bright Mountain solar facility. Those analyses focus on property value trends of lands adjacent to existing solar farms across the country, using a paired sales or matching pair approach. HE reviewed several appraisal reports; those appraisals indicate differences in property values ranging from about -3.2% to as much as +27%, although generally in cases with positive impacts, property values increased by about 5% or less. Overall, the conclusions were that solar facilities do not negatively impact property values.[63]

It is interesting to note that although the existing studies related to this issue generally indicate no impacts to property values, local residents often bring up concerns about property values during public hearings or open houses related to specific solar facilities. In many cases, as evidenced by newspaper articles or other media, residents believe that property values will be reduced by nearby solar farms. So, there may at least be a perception of negative effects on property values that permeates communities.

Interviews with Perry County Officials. HE spoke with the Perry County Property Value Administrator (PVA), Mr. Lonnie Adams, on November 9, 2023, as part of the on-site visit. Mr. Adams was unaware of the specifics of the Bright Mountain Project but has spoken with PVAs across the state about solar projects in general. He believes that local residents don't really know much about solar facilities or may not be all that interested in them. There have been rumors circulating about solar projects coming to Perry County, but there has not been much publicity surrounding actual projects; solar projects have not been big news in the area.

Mr. Adams does not expect the Bright Mountain Solar facility to have any impact on local property values. However, he commented that the existence of transmission lines could have an impact, since development could not occur under or around those components.[64] He described the historical real estate market in Perry County as largely tied to the coal economy; however, in recent years (since COVID), both the number of home sales and home prices have

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[62] Al-Hamoodah, Leila, et al. *An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations.* Policy Research Project, LBJ School of Public Affairs, The University of Texas at Austin, May 2018. https://emp.lbl.gov/sites/default/files/property-value_impacts_near_utility-scale_solar_installations.pdf.

[63] McGarr, P. and A. Lines, CohnReznick, Property Value Impact Study, Proposed Soar Farm, McLean County, IL, 2018; McGarr, P. and A. Lines, CohnReznick, Property Value Impact Study, Proposed Soar Farm, Kane County, IL, 2018; McGarr, P., CohnReznick, Property Value Impact Study, Adjacent Property Values Solar Impact Study: A Study of Nine Existing Solar Farms Located in Champaign, LaSalle, and Winnebago Counties, Illinois; and Lake, Porter, Madison, Marion, And Elkhart Counties, Indiana, 2018; McGarr, P., CohnReznick, Property Value Impact Study, Adjacent Property Values Solar Impact Study: A Study of Eight Existing Solar Farms Located in Lapeer County, Michigan; Chisago County, Minnesota; Marion County, Indiana; LaSalle County, Illinois; Bladen, Cumberland, Rutherford and Wilson Counties, North Carolina; and Isle of Wight County, Virginia, 2020.

[64] The Bright Mountain transmission lines will be located on properties for which lease agreements have been executed between the Applicant and the landowner.

increased considerably. A number of out-of-state buyers from denser regions of the U.S. are now moving to Perry County for a variety of personal reasons. However, the steep topography of the area is a challenge for homebuilding, potentially limiting the development potential in the Project area.

HE also spoke with the Community Development Coordinator at the Perry County Fiscal Couty, Mr. Bill McIntosh. Mr. McIntosh was also largely unfamiliar with the Bright Mountain Project, but reiterated Mr. Adams' comments regarding the development challenges presented by the topography of the area.

Evaluation of the CohnReznick report and conclusions. The CohnReznick report concludes that there are no impacts on property values associated with proximity to a solar facility (Exhibits 5-3 and 5-4). HE closely examined the solar projects, data and conclusions provided in the CohnReznick report and we offer the following observations and comments:

> For the solar facilities analyzed, the average distance between a residence and a solar panel ranged from 180 feet to 750 feet. For the Bright Mountain Solar Project, homes are located at least 696 feet from a solar panel. Therefore, the CohnReznick analysis and conclusions may also reflect outcomes related to the Bright Mountain Solar Project in Perry County.
>
> For the solar facilities analyzed, the size of the solar facilities evaluated ranged from about 8.6 MW up to 120 MW and from an overall property size of 129 acres (8.6 MW facility) up to 1,037 acres (120 MW facility). Of those facilities, about half were larger than 70 MWs, which is similar in scale to the proposed Bright Mountain facility.
>
> A small number of data points included in the analysis (four of the 21 different solar farms groups) indicated negative differences in sales price for homes in the Test Areas. However, three of the four groups experienced sales price differences of approximately two percent; data for the fourth group indicates a difference of about five percent. Those small differences may be the result of many site-specific or structural factors and may not be specifically due to the presence of a solar facility.
>
> The presence of vegetative buffers could be a factor in the sales prices of homes near solar facilities. Vegetative buffering surrounding the solar farms included in the CohnReznick analyses varied from existing vegetative buffering to vegetation planted by the developer to no buffering at all. CohnReznick stated that there appears to be no consistent difference in the paired sale analyses associated with the existence or extent of vegetative buffering around a solar facility.

Residential properties in close proximity to the Project site. Information obtained in HE's literature search indicates that impacts to the values of adjacent or surrounding properties may be related to the ability to see or hear the Project and that vegetation or other visual barriers may reduce the potential for adverse impacts to property values. Therefore, HE more closely examined the locations and situations of nearby residential properties in terms of distance to the Project and potential viewshed impacts when considering potential impacts to property values.

Some homes along Shingle Pin Lane and Darren Lane would be located relatively close to the Project site. Five homes would be within 900 feet of a solar panel and a total of eleven homes would be within 1,200 feet of a panel (Exhibit 5-1). The closest home would be 696 feet from a panel. The closest home to an inverter would be 987 feet and the closest home to the Project substation would be 1,078 feet.

The Applicant for the Bright Mountain Solar Project is not proposing any vegetative buffers around Project facilities or the property boundary. However, in this particular location, the steep topography and the presence of existing trees, shrubs and other vegetation will limit the view of the Project from nearby residences.

Twenty-seven homes would be located within 400 feet of one or more transmission line poles. The smallest distance between a residence and a pole would be 137 feet; that residence would be within 400 feet of three separate poles. Given the 80-to-120-foot height of each pole, existing trees and other vegetation may not fully shield those structures from view.

As described in the next section of this report (noise evaluation), operational noise levels are expected to be low, and Project generated noise level may not be noticeable to nearby residents.

As noted previously under the scenic compatibility section, homes within close proximity to the Project site were also present in the area when the Project site was an operating surface mine. Mining activity continues to occur in other locations in the area. Current property values reflect that location, even as mining activity in the region declines. HE believes that traffic volume, noise and views of solar facility structures will be less than what occurred during mining operations, and therefore, we do not believe that the Bright Mountain Project would adversely affect property values in the area.

Conclusions and recommendations. Based upon review of the CohnReznick report and our additional research efforts and interviews, HE offers the following conclusions related to potential impacts to property values or land uses for adjacent property owners:

Construction activities will be temporary, occurring over a period of about 16 months. Those activities will result in increased traffic and noise in the vicinity of the Project; however, homebuyers and those interested in buying other types of properties often have a longer-term mindset when deliberating a purchase.

Certain literature suggests that concerns surrounding impacts to property values from solar facilities stems from visibility of panels and other infrastructure. If that is the case, the existing dense vegetation and topography in the Project area should go a long way to mitigating any potential reductions in property values.

The Applicant is not proposing any vegetative buffers around Project facilities or the property boundary. However, the proposed complaint resolution plan may be able to address any landowner concerns about property values, as related to the viewshed. HE

believes such a plan needs to be implemented in a manner that fully resolves landowner concerns.

Current research suggests that the existence of solar facilities does not, in general, measurably result in negative influences on property values for adjacent landowners in rural areas. HE's data analyses also generally point to a conclusion of no discernible impacts to property values, although there is a small risk of negative impacts.

Additionally, this area of Perry County has experienced extensive coal mining activity, historically, and is currently home to limited continued mining activity. The traffic, noise and other effects of that type of activity likely play a larger role in property values than the proposed solar facility.

Operational noise levels are estimated to be below the World Health Organization's estimates of moderate or annoying noise levels for all nearby residences.

The Perry County Property Valuation Administrator believes that property values will be unaffected by the presence of the solar facility.

HE concludes that property values in the Project area and in Perry County are unlikely to be affected by the siting of the Bright Mountain Solar facility. This conclusion assumes that the mitigation strategies discussed in Section 6 are adopted by Bright Mountain Solar.

Need for mitigation. No unique mitigation measures are recommended related to potential impacts to property values or adjacent land uses because other mitigation can accomplish this. However, close coordination by the Applicant with impacted and concerned homeowners regarding potential visual impacts and impacts from noise, traffic or other Project activities should be initiated.

Anticipated Peak and Average Noise Levels

Noise issues stem from construction activities and operational components of the solar facility. During construction, noise will include graders, bulldozers, excavators, dozers, dump trucks, pile drivers, and other equipment. During operations, noise will be emitted from inverters, small transformers, and the larger substation transformer. Distance from noise emitters to noise receptors is important since noise levels decrease the further a noise receptor is from a noise emitter. Perry County does not have a noise ordinance.

General methods of assessment. Sound levels are measured in decibel units (dB). Decibels are measured on a logarithmic scale that quantifies sound intensity. Sound levels are typically described as dBA, which is the measure of the overall noise level of sound across the audible spectrum to compensate for the varying sensitivity of the human ear to sound at different frequencies. The impacts of noise are not strictly related to loudness – the time of day when noise occurs, the duration of the noise, and baseline or background noise levels are also important factors in determining the "loudness" of a noise.

Generally speaking, an increase in 10 dBA is perceived as a doubling of loudness, which is to say, 70 dBA is perceived as twice as loud as is a level of 60 dBA.[65] A change of three decibels is barely noticeable, but a change of five decibels is typically noticeable. Once sounds reach 90 dBA humans can experience pain from the noise and sounds above 150 dBA can cause permanent hearing damage.[66] For additional context, 30 dBA is the sound emitted by a whisper, 55 dBA are emitted from a percolating coffeemaker, and 90 dBA would be the sound emitted by an individual's yell.

A standard noise impact assessment focuses on several key factors:[67]

Measurement of existing ambient noise levels;

Identification of noise-sensitive receptor sites;

Calculation of distances between noise sources and sensitive receptors;

Estimation of project-related (construction or operational) noise production and exposure, including cumulative noise effects.

Summary of information provided by the Applicant. A Sound Assessment report (Tab 12, Exhibit G of the SAR) was prepared by Jacobs Engineering Group Inc. (Jacobs), focusing on sound emissions during construction and the operational phase of the Project. Additional data on baseline ambient conditions and expected noise conditions during construction were provided in response to the two Siting Board data requests.

Baseline (ambient) noise levels. Existing land uses in the Project area are mainly rural residential; significant undeveloped forest land is also present in the area. The Applicant indicated that baseline noise levels for a very quiet rural residential area, similar to the area surrounding the Project, would result in daytime sound levels of approximately 40 dBA. The area surrounding the Project site includes a railway, secondary roads, and residential structures. The CSX rail line is generally located to the south and west of the Project site and likely contributes to the existing ambient noise profile of the area.

Noise sensitive receptors. Noise sensitive receptors are generally defined as locations where people reside or where the presence of unwanted sound may adversely affect the existing land use. Typically, sound sensitive locations include residences, places of worship, hotels, auditoriums, athletic fields, day care centers, hospitals, offices, schools, parks and recreational areas. Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community

[65] RECON Environmental, Inc. *Noise Analysis for the Drew Solar Project, Imperial County, California*. July 24, 2018. http://www.icpds.com/CMS/Media/Drew-Solar---Appendix-G.pdf
[66] Alpine Hearing Protection website, https://www.alpinehearingprotection.co.uk/5-sound-levels-in-decibels/#:~:text=0%20decibel%20is%20the%20so,permanent%20damage%20to%20your%20hearing.
[67] Department of Energy. Noise and Vibration Impact Assessment Methodology. https://www.energy.gov/sites/prod/files/edg/media/EIS0250F-S2_0369_Volume_V_Part_3.pdf;

annoyance). Local conditions such as traffic, topography, and wind characteristics of the region can alter background sound conditions.

As noted previously and described in Exhibit 3-4, there are 119 residences and two non-residential structures (one church and one post office) located within 2,000 feet of the Project boundary; all those structures are considered sensitive noise receptors.

Construction noise emitters. During the construction phase, a variety of heavy equipment will be utilized. Peak construction noise will be created by pile drivers, dozers, graders, pneumatic tools, and additional equipment. At a distance of 50 feet, nominal sound levels for these pieces of equipment are predicted to be about 85 dBA.[68]

The Applicant utilized Federal Transit Administration's (FTA) Transit Noise and Vibration Impact Assessment Manual (2018) to develop estimated sound pressure levels at various distances. Exhibit 5-5, below, provides the average cumulative sound levels for multiple pieces of equipment operating simultaneously in close proximity to each other.

Exhibit 5-5.
Average Cumulative Construction Equipment Sound Pressure Levels at Various Distances

Distance from Construction Activity	Average Sound Pressure (Leq), dBA
50 feet	87
100 feet	83
200 feet	78
400 feet	73
800 feet	67
1,600 feet	62
3,200 feet	56

Note: Assumes cumulative noise levels created by one piece of equipment generating 85 dBA at a distance of 50 feet, two pieces of equipment generating 85 dBA at a distance of 50 feet further away, and two pieces of equipment generating 85 dBA at a distance of 100 feet further away.

Source: Bright Mountain Solar, LLC, September 2023.

There are four non-participating residences and three participating residences located within 1,000 feet from any solar panel, which is also the location of pile driving during construction. Pile installation activities are expected to occur over a period of about five months; however, this activity will move across the Project area such that noise impacts to individual residences will occur for much shorter periods. The Applicant stated they plan to use a small hydraulic

[68] SAR Tab 12, Exhibit G - Bright Mountain Solar Project Sound Assessment, Table 2-1.

driver designed for solar panel installation, which generates a sound level of 85 dBA at 50 feet and is quieter than pile drivers used in general construction. Exhibit 5-6 provides estimated sound levels for residences within 1,000 feet of any panel array.

Exhibit 5-6.
Estimated Construction Sound Levels for Residences within 1,000 Feet of Solar Panels

Receptor ID	Participating Residence	Distance from Solar Array (ft)	Estimated Sound Level (dBA)
259	No	696	68
334	No	735	68
228	No	776	67
80	No	814	67
115	Yes	845	67
232	Yes	908	66
290	Yes	961	66

Source: Bright Mountain Solar, LLC, November 2023.

As the distance from the source of noise increases, the sound level attenuates, or decreases. A doubling of distance results in a decreased noise level of approximately six dBA.[69] Therefore, residences more than 2,000 feet from the panels would experience lower levels of noise from the construction of the panels. The thick natural vegetation and steep topography of the area surrounding the Project site will likely contribute to further reduction of sound pressure levels for residences.

Construction of the Project transmission line will produce noise outside of the Facility Area. These construction activities include clearing approximately 43 acres of trees and existing vegetation along the four-mile route for the overhead line, creation of access roads, and installation of 64 support poles along the route, which will likely include pile driving.[70]

The transmission line route is projected to travel through predominantly wooded areas and private parcels to the east of the Project facility to connect with the Bonnyman Substation. There are 71 non-participating residences and two participating residences located within 1,000 feet from one or more support poles, which is also the location of pile driving during construction.[71] The closest residence is 137 feet from a Project transmission line pole, with two other poles within 300 feet of that residence. Twenty-seven residences, including two participating landowners, are located within 400 feet of at least one support pole. These residences within 400 feet are likely to experience sound levels greater than 73 dBA during

[69] http://hyperphysics.phy-astr.gsu.edu/hbase/Acoustic/isprob2.html#c1
[70] According to the Applicant's response to the first data request, the proposed transmission line route and extent of required vegetative clearing are subject to further engineering design.
[71] Participating residences refers to participating landowners with leases for the Facility Area and is not inclusive of landowners with signed easement agreements for the Project transmission line.

construction of the Project transmission line.[72] Installation of the Project transmission line will move across the area such that noise impacts to individual residences will not occur for the full six month period of construction. The Applicant has acquired separate easement agreements with the landowners closest to the proposed transmission line path as well as with Perry County.[73]

Operational noise emitters. According to the Jacobs report, during the Project's operational phase, the primary sources for noise will be (1) the primary substation transformer; (2) twenty-one inverters, which will be distributed throughout the Project; and (3) twenty-one small transformers co-located with the inverters.

Most of the operational noise will occur during daylight hours, however, the substation transformer remains energized at night, which may produce some sound. No residence will be closer than 1,000 feet to the substation; the nearest residence is located about 1,078 feet from the substation location.

Jacobs modeled operational noise from the Project using software designed for power generation applications to calculate the sum of individual sources of sound. Using the EPA standard of a day/night sound level (L_{dn}) of 55 dBA for daytime and 45 dBA for night as a starting point, Jacobs adopted a design goal of 45 dBA for daytime operations to be conservative.

Modeling results are illustrated in Exhibit 5-7, which shows the distance from each inverter skid and from the substation at which sound levels are 55 dBA (yellow circles), 45 dBA (green contour lines) and 35 dBA (light blue contour lines) during daytime operations.[74]

Focusing on daytime operations and noise levels, Exhibit 5-7 shows that all residences are outside of the 45 dBA sound contour. Among non-participating residences, the highest predicted sound level is 42 dBA at the closest residence and 40 dBA at all others.[75]

In addition to the inverters and the substation transformers, routine maintenance and repair activities will occur during operations but will not materially impact noise levels in the area.

The 69-kV overhead transmission line is unlikely to produce noise greater than the ambient sound levels in the area during operation.[76]

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[72] The Applicant's Sound Assessment did not include an evaluation of the sound level impacts for residences near construction of the transmission line; HE referred to the cumulative FTA levels by distance provided by the Applicant and shown in Exhibit 5-5 of this report.

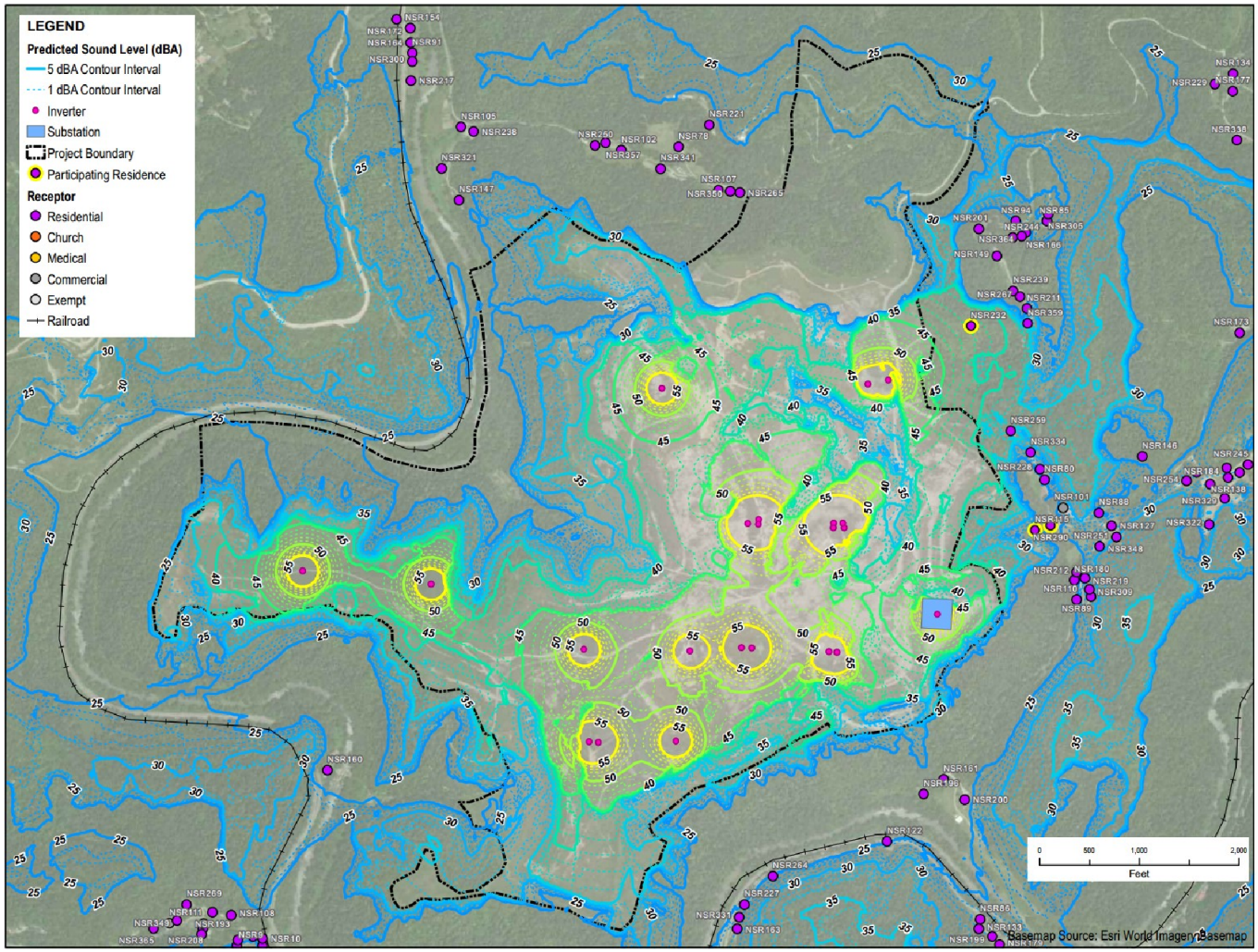
[73] Copies of easement agreements for the transmission line are included as Attachment B of the Applicant's response to the first data request.

[74] Noise modeling does not include cumulative sound pressure levels from existing ambient noise. Cumulative sound pressure levels during operation were provided in response to the second data request.

[75] This is also true for all participating residences, except one, which is predicted to experience operational sound levels of 44 dBA.

[76] https://www.sandiegocounty.gov/pds/PC/140124-Supporting-Documents/PDS2012-3300-12-004/Technical-Studies1/25_Noise_Report.pdf

Exhibit 5-7.
Predicted Sound Contours of the Bright Mountain Solar Facility during Daytime Operation, dBA



Source: Bright Mountain Solar, LLC, September 2023.

HE's evaluation of impacts. Neither the Commonwealth of Kentucky nor Perry County have a noise ordinance that is applicable to the Project. As such, HE utilized the noise limit recommendations generated by the Environmental Protection Agency (EPA) and the World Health Organization (WHO) to gauge acceptable levels of sound.

> The EPA determined that a constant sound of 70 dBA over a 24-hour period is enough to start causing permanent hearing loss for individuals, and a sound of 55 dBA outdoors is enough to cause activity interference and annoyance.[77]
>
> The WHO determined that daytime noise emissions greater than 55 dBA over a 16-hour period can cause serious annoyance, and noise emissions greater than 50 dBA over a 16-hour period can cause moderate annoyance. The WHO recommends limits of 45 dBA over an 8-hour period during the night.[78]

Construction noise. Construction activities will produce sporadic noise that will exceed 55 dBA during daytime hours. Residential noise sensitive receptors less than 1,000 feet from pile driving locations will experience estimated sound levels of greater than 65 dBA during pile driving. Residential receptors near installation of the support poles for the Project transmission line will experience the highest sound levels during that phase of construction. Access road construction and other construction activities will also generate noise greater than 55 dBA at 1,000 feet. However, the nature of the Project, which requires that construction activities move around the site as each task is completed, will reduce the timeframe for the annoyance created by loud, though sporadic, noise. The topography and thick vegetation surrounding the Project area will likely diminish the noise impacts as well.

The Project has the potential for a number of loud activities to occur simultaneously, but the timing of activities is such that it is not realistic to predict which sources of noise will contribute to these periods of cumulative sounds. The anticipated construction timeframe provided by the Applicant indicates approximately a four-month site preparation and grading period and many subsequent construction activities will overlap. The Applicant provided some data on cumulative noise for different construction activities; however, it is unlikely that construction noise would be limited to that shown in Exhibit 5-5. Therefore, HE examined methods for calculating cumulative sound levels.

As a reference, one decibel is the "just noticeable difference" in sound intensity for the human ear.[79] However, the frequencies of different sounds will affect the perceived loudness of cumulative noise. "Compared with dB, A-weighted measurements underestimate the perceived loudness, annoyance factor, and stress-inducing capability of noises with low frequency components, especially at moderate and high volumes of noise."[80] This means that very

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[77] United States Environmental Protection Agency. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. March 1974. https://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.PDF

[78] World Health Organization. *Guidelines for Community Noise*. April 1999. https://www.who.int/docstore/peh/noise/Comnoise-1.pdf

[79] http://hyperphysics.phy-astr.gsu.edu/hbase/Sound/db.html#c3

[80] https://www.softdb.com/difference-between-db-dba/

different types of noises could have a greater cumulative impact than expected. Cumulative impacts from two noise sources can be calculated based on the difference in the sound levels as shown in Exhibit 5-8.

Exhibit 5-8.
Calculation of Additional Sound Power, in Decibels

Signal Level Difference between Two Sources (dB)	Decibels to Add to the Highest Signal Level (dB)
0	3
1	2.5
2	2
3	2
4	1.5
5	1
6	1
7	1
8	0.5
9	0.5
10	0.5
>10	0

Source: https://www.engineeringtoolbox.com/adding-decibel-d_63.html.

This suggests that even multiple sources of loud noise will produce only modest increases to overall sound levels, providing the sources of noise are not of very different frequencies.

Although all residences within 2,000 feet of the Project site will likely experience noise at levels expected to cause annoyance (55 dBA or greater) during construction, the sporadic nature of the noise will not be sufficient to cause damage to residents' hearing.

Operational noise. The nature of solar projects dictates that noise from operations will occur mainly during daylight hours. The closest residential receptor, a participating landowner, will experience predicted noise levels of about 44 dBA during operations. This is within the WHO's recommended maximum noise level of 50 dBA. HE concludes that, overall, noise impacts from Project operations will be minimal.

Conclusions and recommendations. Based on our review of the SAR, supplemental information provided by the Applicant, and additional research conducted by HE, we offer the following conclusions and recommendations regarding noise emissions:

> Construction phase noise may be annoying for residents surrounding the Project area for short periods of time. The intermittent nature of the noise might ameliorate the impacts, but residents close to the Project site and transmission line path might find construction noise to be troublesome even if it does not present actual damage to hearing.

Bright Mountain Solar has stated that during the construction phase, noise-producing work will be done between the hours of 7:00 am to 7:00 pm; however, it is likely that some noise, for example from deliveries or worker vehicles, would occur outside those hours. Noise occurring in the early hours of the morning and later hours of the evening should be minimized.

The current trend of employees working from home could make daytime noise more of an issue than it would have been previously.

Noise from Project components during operations (inverters, transformers) is anticipated to result in small, if any, increases to the local sound environment, depending on location. In most locations, those increases would be unnoticeable to residents or drivers in the area.

The topography and heavy existing vegetation might help mitigate noise emissions that may be caused by construction or operational components of the Project.

Need for mitigation. The Applicant should consider certain mitigation to reduce noise impacts:

1. The Applicant shall notify residents and businesses within 2,000 feet of the Project boundary and transmission line route about the construction plan, noise potential, complaint resolution process, and mitigation plan at least one month prior to the start of construction.

2. The Applicant shall respond to any complaints related to noise levels or noise causing activities occurring during construction or operations via a timely, formal and clearly developed complaint resolution program.

3. If pile driving activity occurs within 1,000 feet of a noise sensitive receptor, the Applicant shall implement a construction method that will suppress the noise generated during the pile driving process (i.e., semi-tractor and canvas method; sound blankets on fencing surrounding the Project site; or any other comparably effective method).

4. The Applicant should limit the construction activity, process and deliveries to the hours of 8:00 am to 6:00 pm, Monday through Saturday. No construction work should be conducted on Sundays.

5. The Applicant shall place panels, inverters and substation equipment consistent with the distances to noise receptors indicated in the Applicant's noise study and with the Applicant's proposed setbacks. Nevertheless, the Applicant shall not place solar panels or string inverters, if used, closer than 150 feet from a residence, church or school, 25 feet from non-participating adjoining parcels, and 50 feet from adjacent roadways. The Applicant shall not place a central inverter, and, if used, energy storage systems closer than 450 feet from a residence, church, or school. These setbacks shall not be required for residences owned by landowners involved in the Project that explicitly agree to lesser setbacks and have done so in writing. All agreements by participating

landowners to lesser setbacks must be filed with the Siting Board prior to commencement of construction of the Project.

Road and Rail Traffic, Fugitive Dust and Road Degradation

Traffic concerns related to the development of the Bright Mountain Solar facility during the construction or operational phases are addressed in this section. The 16-month long construction phase would include commuting construction workers, vehicles, and equipment on-site, plus the delivery of heavy loads of solar components, infrastructure, and other equipment. Increased traffic during operations will occur as employees travel to and from the property to monitor and maintain the site.

General methods of assessment. A typical evaluation of traffic-related impacts includes:

Establishing existing traffic conditions in the area;

Identifying primary access points that will be used by the project;

Estimating changes in traffic due to construction and operations; and

Assessing the impacts of project-related traffic on local areas. This includes determining whether additional traffic will lead to congestion, changes in service levels of existing road networks and identifying any potential degradation to existing roadways.

Summary of information provided by the Applicant. Tab 12, Exhibit F of the SAR is a Traffic and Dust Study (Traffic Study) prepared by BL Companies on behalf of Black & Veatch Corporation. The study provides a narrative on existing road and traffic conditions; average daily traffic statistics for select roads; estimates of the Project's construction and operational traffic; and an opinion on potential impacts to road infrastructure. More detailed and updated information was provided during the in-person site visit and in the Applicant's responses to the Siting Board's data requests. HE assumes that responses to the second data request are the best available information; that information was used if it conflicted with previous information.

Site access, vehicle parking and internal roadways. Vehicles traveling to the Project site will use KY 15 to reach local roads accessing the site. Local roads used to reach the single access point proposed for the Project include Sam Campbell Branch Rd, and Jarets Branch. Jarets Branch is the former mining access road leading directly to the site. Separately, local roads to the east and southeast of the Project site will be traveled by worker vehicles and delivery trucks for construction of the Project transmission line. These local roads include Flat Gap Road, Lower Second Creek Road, Days Lane, and Kentucky Highway 267 (KY 267).[81]

[81] Final designation of roadways to be used for constructing the transmission line are subject to change after further engineering design.

One laydown yard is anticipated to be developed within the Project site. The location of this area has not been finalized but is anticipated to be located near the substation to the southeast.

Approximately 26,100 feet of graveled roadways will be constructed across the Project site. Internal roads will be 14 feet wide. Access road construction will take approximately two to three months to complete.

Additional gravel access roads will be constructed abutting to Lower Pigeonroost Road, Flat Gap Road, and Days Lane Cemetery Road for construction of the Project transmission line. Details regarding the length and width of these roads were not provided by the Applicant.

Baseline traffic volumes and road conditions. The Applicant provided traffic data and other descriptors for major and local roads used to access the Project site and transmission line during construction. Annual average daily traffic and other road descriptors are provided in Exhibit 5-9.

Exhibit 5-9.
Baseline Traffic Data for Local Roads in the Project Area

	Roadway	Surface	Lane Width	Shoulder	Annual Average Daily Traffic
Project Site	KY 15	Asphalt	12 feet	Yes	15,543
	Sam Campbell Branch	Asphalt	18 - 22 feet	No	230
	Jarets Branch	Aggregate	12 - 18 feet	No	N/A
Transmission Line	KY 267	Asphalt	Narrow	No	N/A
	Flat Gap Rd	Asphalt/Aggregate	Narrow	No	N/A
	Lower Second Creek	Asphalt	Narrow	No	N/A
	Days Lane	Aggregate	N/A	No	N/A

Notes: (1) Average Annual Daily Traffic counts are from 2021.
(2) Specific roads used for construction of the Project transmission line have not been finalized and are subject to further engineering design.
(3) N/A indicates data not available.

Source: Bright Mountain Solar, LLC, September 2023 & December 2023.

Construction related traffic volumes and routes utilized. Construction related traffic for the Project site will include (1) passenger vehicles; (2) heavy-duty trucks; and (3) water trucks:

An average of 300 worker vehicle trips to and from the Project site are predicted on any individual day. Workers are anticipated to drive personal vehicles, likely pickup trucks, with two workers per vehicle. The weight of these vehicles is approximately 7,500 lbs.

The average number of heavy-duty delivery truck trips per day is anticipated to be 5, with the potential for more during peak periods.

> Delivery trucks will include gravel semi-trailer sump trucks at about 40,000 pounds gross vehicle weight (gvw); concrete trucks at 69,000 pounds gvw with 40,000 pounds load weight; semi-trailer flatbed trucks at about 80,000 pounds gvw and 45,000 pounds load weight; and 40-foot shipping containers for PV module delivery with an expected gvw of about 65,000 pounds. and 27,000 pounds load weight.
>
> The main power transformer will be delivered by low-boy multi-axle trailer with an approximate gross vehicle weight of 313,000 pounds and load weight of 238,000 pounds.
>
> Four water truck trips are expected each day. These vehicles have an expected gross vehicle weight of 52,000 lbs. and a load weight of 33,000 lbs.

The Applicant has stated that large deliveries will occur via KY 15; however, travel on local roads will also be necessary for direct site access and for constructing the transmission line. Bright Mountain Solar will obtain all necessary permits for oversized or overweight deliveries.

The Traffic Report and Applicant's response to the second data request acknowledged that some areas along the Project access routes are damaged, including buckling and sinking of the asphalt in some areas. Improvements to some roads may be necessary prior to construction to allow for large deliveries. Such improvements may include road widening or surface repairs and will be determined by the contractor.

Bright Mountain has not yet engaged a contractor for construction of the Project transmission line. Construction details, including the specific roads used to access the transmission line route, have not been finalized. As such, the Applicant was unable to provide information regarding traffic volumes, or number and types of vehicle trips on local roadways for this phase of construction. Bright Mountain Solar indicated that they would coordinate with Perry County to minimize impacts to traffic or roadways.

Construction traffic management. The Applicant addresses traffic management during construction as follows:

> Appropriate signage and traffic guidance will be used during construction, in accordance with the Manual on Uniform Traffic Control Devices and Kentucky Transportation Cabinet.
>
> Bright Mountain Solar will coordinate with State road officials to identify the necessary transportation requirements for heavy trucks during construction on KY 15.
>
> Bright Mountain Solar will coordinate with Perry County road officials to identify the necessary transportation requirements for heavy trucks during construction on Sam Campbell Branch Road.
>
> Temporary lane or shoulder closures may be used for the safety of the traveling public and construction workers; these closures may include the use of flaggers.
>
> A Traffic Management Plan will be developed by the contractor prior to construction.

The Traffic Study recommended additional safety measures specifically for Jarets Branch Road, including radio communication, pilot vehicles, traffic flaggers and signage.

Operations related traffic volumes. The Traffic Study indicated that traffic in the operational phase will be negligible and limited to two to three pickup trucks traveling to the site three to five days each week. The study concluded that traffic volume and function would not be significantly impacted.

Road degradation. Bright Mountain Solar does not anticipate any damage to existing roadway infrastructure. These roads were used by heavy trucks when the site was an operating coal mine.

Railways. There is one railway line in the Project area, the CSX Transportation Railroad (CSX). Bright Mountain Solar has indicated that large equipment, such as the main power transformers, may be delivered by railroad, but this method of transportation is not currently proposed, and they have not had any discussions with CSX. Construction vehicles will not need to cross the railroad along the proposed route for delivery; the Applicant will work with the railroad directly if a crossing agreement is needed.

Fugitive dust. The Applicant expects some dust generation from Project construction and has indicated that best management practices (BMPs) will be employed. These BMPs include covering loads and applying water to suppress dust. Compacted gravel access roads may also contribute to airborne dust particles and water will be applied as needed. Bright Mountain Solar will apply water to local gravel roads, enforce speed limits, and wash equipment before site removal.

HE's evaluation of impacts. HE conducted additional research and analyses related to traffic, road degradation and fugitive dust, as described below.

Local road conditions. KY 15 will be the major roadway traveled by delivery vehicles. According to the Kentucky Transportation Cabinet's (KYTC) Truck Weight Classification Map, KY 15 near the Project site is rated for 80,000 pounds (40-ton) gross vehicle weight.[82] Gross vehicle weight is the total weight of the vehicle, including passengers and cargo. HE identified Hal Rogers Parkway (HR-9006) as the likely truck route connecting the nearest major highway (US 75, to the west) with KY 15 in Hazard for Project deliveries to travel. The KYTC Truck Weight Classification Map rates HR-9006 for 80,000 pounds (40-ton) gross vehicle weight.[83] No weight limit information is available for local roads surrounding the Project site and transmission line route.

HE made the following observations about local roads during the Project site visit:

> *KY 15* – two-lane, striped, blacktop road with adequate width for two cars to pass.
>
> *Sam Campbell Branch Rd* – narrow two-lane, blacktop road.

[82] https://transportation.ky.gov/Planning/Documents/Weight%20Class.pdf
[83] https://transportation.ky.gov/Planning/Documents/Weight%20Class.pdf

Jarets Branch – narrow single-lane, aggregate road, difficult for two cars going opposite directions to pass.

During the site visit (a weekday), there was little traffic on local roads surrounding the Project site. Appendix B provides photos from the site visit, including several of local road conditions.

Baseline traffic volumes. The Applicant provided traffic counts for roads in the Project area, as shown previously in Exhibit 5-9. HE confirmed that no additional data for other roads is available, which is likely due to the low volumes of traffic expected on those roads.

Construction related traffic impacts. Bright Mountain Solar provided estimates of the number of construction vehicle trips accessing the Project site on an average day, provided in Exhibit 5-10. Peak day construction traffic estimates were not provided by the Applicant but are predicted to be higher while multiple construction activities overlap. The peak construction period is expected to occur over a period of about three months.

Exhibit 5-10.
Estimated Daily Vehicle Trips to the Bright Mountain Solar Project Site, Average Day

	Vehicle Trips Average Day
Worker Vehicles	300
Water Trucks	4
Delivery Trucks	5
Total	**309**

Notes: (1) Vehicle trips account for trips going to the Project site and trips going away from the Project site each day.
(2) Each worker vehicle is predicted to transport two workers.
(3) This exhibit excludes vehicle trips for construction of the Project transmission line.

Sources: Bright Mountain Solar, LLC, November 2023.

Vehicle and traffic data for construction of the Project transmission line was not available as of the second data request. The Applicant stated that the final route, structure placement, and roadways to be used for the transmission line is subject to further engineering design.

The estimated traffic increases may create noticeable, but perhaps acceptable, increases on KY 15. However, it is difficult to determine the effects on local roads in the Project area. Those roads are lightly to moderately traveled, so increases in traffic volume are likely to be noticeable. Although the magnitude of change to any single road cannot be determined, HE offers the following observations:

> On peak days, the increased traffic on local roads could be dramatic. While it will likely be predominantly local residents who are impacted, this change may create negative attitudes about the Project.

Average day traffic will also create noticeable changes in traffic volumes in the Project area.

The narrow roads and lack of shoulders on many roads in the Project area will require drivers to pull over to pass and will increase the inconvenience to local residents during the construction period.

Large trucks and a lack of shoulders may create untenable situations where there is nowhere for either the truck or oncoming vehicles to pull over.

This information suggests that carpooling will be important for minimizing traffic impacts to local residents during the construction period.

Operations-related traffic impacts. With limited staff members working regular business hours and the occasional off-hours maintenance and repair, traffic impacts during operations should be minimal. HE does not expect significant traffic effects related to the operation of the facility.

Impacts to railways. As proposed, the Project will not impact the local CSX railway. The Applicant should work with CSX to determine if railway crossings by Project delivery trucks will be an issue once construction details have been finalized.

Road degradation. The Applicant's lack of information about the weight limits, types of existing traffic (especially large trucks) and baseline traffic levels on some roads make it difficult to predict if road degradation will occur. Despite this, the existing condition and nature of the local roads to be used to access the Project suggests that either extensive work will need to be done in advance of Project onset or that degradation will occur, and Bright Mountain Solar will need to work with Perry County road authorities to correct the damage.

The Kentucky Transportation Cabinet (KYTC) Pavement Conditions interactive map provides data regarding road conditions for individual segments of state and county roads; pavement conditions data are not available for local or city roads.[84] Pavement conditions are rated on a scale of green/good, yellow/fair and red/poor. The portion of KY 15 near the Project site is color coded green, and treatments are recommended to occur by 2027. The portion of KY 267 near the Bonnyman Substation is color coded red, and treatments were recommended to occur in 2022. No pavement conditions data is available for other local roads.

Given the estimates of Project-generated traffic during construction and the available information about road conditions, the Applicant should be prepared to repair any damage due to commuting workers or heavy trucks traveling on the local roadways.

Bridges. The Applicant reported there are no bridges or water crossings along the access route to the Project site; one bridge was identified on roads along the transmission line path. However, heavy deliveries will need to travel KY 15 beyond the immediate Project area to

[84] https://maps.kytc.ky.gov/pavementconditions/

reach the Project site and for construction access to the transmission line corridor. HE consulted the KYTC's bridge weight limit map to identify potential bridges delivery trucks may cross.[85]

Bridges along KY 15 to the north and south of the Project area are black, which indicates "no restrictions". HE identified Hal Rogers Parkway (HR-9006) as the likely truck route connecting the nearest major highway (US 75 to the west) with KY 15 in Hazard for Project deliveries. The majority of the bridges along Hal Rogers Parkway are black. One bridge along HR-9006 within Hazard County, south of the Project site, is blue, indicating a "gross posted" restriction, with a limit of 29 tons. Further west, between US 75 and Hazard County, HR-9006 passes through the cities of London and Manchester. Two bridges near London and four bridges near Manchester are noted as green, which indicates "some restrictions" and have weight limits ranging between 40 and 60 gross tons. These restrictions should be taken into account when developing routes for semi-trailers and any heavy vehicles.

A small concrete bridge is present at the intersection of Flat Gap Road and Lower Second Creek Road along the route for Project transmission line construction travel. A weight limit was not available for this bridge. This bridge should be further evaluated during the engineering design process.

Fugitive dust. Fugitive dust should not be an issue given the Applicant's proposed efforts to reduce dust with the use of best practices, including the application of water, and the forested boundary surrounding the Project site.

Conclusions and recommendations. Based on our review of the SAR and subsequent information provided by the Applicant, as well as other secondary research conducted regarding roads and dust, HE offers the following conclusions regarding traffic, fugitive dust, and road degradation:

1. The lack of information about local roads near the Project site and transmission line easements is a concern. Special care should be taken in developing a plan to consider road conditions, bridges and culverts, the presence or lack of road shoulders, and vehicle weights.

2. Access to the Project site and transmission line easements from KY 15 will require cars and semi-trucks to travel on small local roads. The single site entrance planned for the Project site will consolidate construction vehicle traffic to one route, potentially minimizing the distribution of traffic impacts, or might result in a feeling of overwhelming traffic on that one route for local residents.

3. Construction traffic will likely be noticeable on local roads surrounding the Project site, including Sam Campbell Branch Road and those that connect with Sam Campbell Branch Road to reach KY 15. This includes Meadow Branch Road, Rocklick Branch Road and others, as several larger neighborhoods are located in that area and those

[85] https://maps.kytc.ky.gov/bridgeweightlimits/

residents travel Sam Campbell Branch Road to reach KY 15. Construction traffic could be irritating to these local residents.

4. Construction traffic will likely be noticeable on local roads surrounding the Project transmission line path, including Lower Second Creek Road and Lower Pigeonroost Road. Several neighborhoods are located along those and connecting roads. Construction traffic could be disruptive to these local residents.

5. The nature of the local roads will require that drivers pull over for large vehicles. While residents may be accustomed to this, it might be a point of dissatisfaction. Additionally, some local roads may not be wide enough to allow for safe passage of multiple vehicles, in their current condition.

6. Road degradation may be an issue in some areas on local roads, depending on the amount of traffic using certain smaller or less maintained roads. Some local roads may need improvements prior to the start of Project construction.

7. Bright Mountain Solar should consider incentives or other means of encouraging carpooling to reduce the number of worker vehicles and to minimize traffic-related effects, including the potential for congestion, accidents, noise or dust issues.

8. While KY 15 and Hal Rogers Parkway (HR-9006) are rated to support the weight of most of the Project deliveries, the substation transformer delivery will far exceed the weight limit for these roads and for some bridges along HR-9006, which connects the closest major interstate (US 75) with KY 15.

9. Given the small number of employees on-site during operations, HE does not anticipate any noticeable traffic impacts during the operational period.

10. Fugitive dust should not be an issue given the Applicant's proposed efforts to reduce dust with the application of water and other best management practices.

Need for mitigation. The Applicant should consider certain mitigation to reduce impacts associated with traffic and dust:

1. The Applicant shall comply with all laws, permits and regulations regarding the use of roadways and bridges.

2. The Applicant shall consult with the Kentucky Transportation Cabinet (KYTC) regarding truck and other construction traffic and obtain necessary permits from the KYTC.

3. The Applicant shall consult with the Perry County Road Department (PCRD) regarding truck and other construction traffic and obtain necessary permits from the PCRD.

4. The Applicant will fix or pay for damage resulting from any vehicle transport to the Project site or transmission line easements. The Applicant shall implement ridesharing

between construction workers when feasible, use appropriate traffic controls or allow flexible working hours outside of peak hours to minimize any potential delays during AM and PM peak hours.

5. The Applicant shall develop a transportation plan for the heavy deliveries route(s) within Kentucky, taking into consideration any weight restricted bridges.

6. The Applicant shall work with the Commonwealth road authorities and the PCRD to perform road surveys, before and after construction activities, on all roads in the Project area to be used by construction vehicles.

7. The Applicant shall comply with any road use agreement executed with the County or PCRD. Such an agreement might include special considerations for overweight loads, routes utilized by heavy trucks, road weight limits and bridge weight limits.

8. The Applicant shall develop and implement a traffic management plan for the Project to minimize the impacts on traffic flow and keep traffic and people safe. Any such traffic management plan shall also identify any noise concerns during the construction phase and develop measures that would address those noise concerns.

9. The Applicant shall consult with CSX and the KYTC to evaluate potential impacts to railroad crossings from Project traffic, if railroad crossings are necessary. If necessary, the Applicant shall develop additional, specific mitigation measures applicable to impacts on affected railroad crossings.

10. The Applicant shall properly maintain construction equipment and follow best practices related to fugitive dust throughout the construction process. Dust impacts shall be kept at a minimum level.

Economic Impacts

Evaluation of the potential economic effects of the Bright Mountain Solar Project is based on knowledge of the Project's construction timeline and activities and the solar facility's long-term operational activities. Project employment needs, local expenditures (labor, materials/supplies, equipment) and payment of applicable taxes and other fees are considered over the short- and long-term and placed within the context of existing demographic and economic conditions.

General methods of assessment. Both the construction and operational phases should be evaluated to include:

Detailed understanding of the project: Specific activities to occur, the timeline of those activities, geographic extent of project effects;

Quantification of direct effects: Number of employees and range of wage levels, materials purchases, supplies and equipment and associated sales tax payments, other

tax payments including property taxes. Determining the portion of purchases to occur in the local area or within the Commonwealth is key;

Estimation of total effects: Use of region and industry specific multipliers to estimate indirect and induced effects to calculate total effects such as employment, income and overall economic activity;

Other social or economic benefits, including potential non-monetary benefits, to the local community or surrounding area; and

Potential curtailments or impacts to other industries.

Summary of information provided by the Applicant. The Bright Mountain Solar Application included a Socioeconomic Report (Tab 10) prepared by the firm EDR. That report includes a discussion and explanation of the Project's economic benefits, including estimates of employment, labor income and total economic output generated by Project construction and operations for Perry County and for the Commonwealth of Kentucky. According to the Socioeconomic Report, the employment and economic impacts of the facility were assessed using the Jobs and Economic Development Impact (JEDI) photovoltaics model, created by the National Renewable Energy Laboratory (NREL). The JEDI model creates default expenditure values based on certain facility-specific information; the Applicant then adjusted the default values to improve the accuracy of the estimates for the Bright Mountain Project.[86]

HE requested additional information regarding estimates of tax payments anticipated to be paid to Perry County and other taxing entities within the County. In response to that request, the Applicant stated that they expect to execute a payment in lieu of taxes (PILOT) agreement with Perry County and that, since discussions with the County are on-going, no estimates of annual PILOT payments are currently available.

Excerpts from the Applicant's Socioeconomic Report are presented below:

Capital investment: The JEDI model default values indicate that total capital investment for the Bright Mountain Solar Project is approximately $126.5 million, including materials, labor and other construction-related expenses. The majority of the total expenditures for this Project are expected to be spent outside of Perry County or Kentucky, including items such as solar panels, trackers and other major equipment. Because those components are typically manufactured outside of Kentucky, spending on those items is not expected to directly affect the economies of Perry County or Kentucky. Overall, Project construction will generate a total of about $14.7 M of economic output within Kentucky, including a much smaller portion for Perry County ($2.0 M). Total economic benefits to Kentucky ($29.2 M) and Perry County ($2.4 M) also include indirect and induced effects.[87]

[86] The Socioeconomic Report presents the JEDI default expenditure values but has redacted the adjusted values for confidentiality purposes.

[87] Indirect impacts stem from expenditures made in industry sectors that support firms directly engaged in construction activities. Induced impacts are associated with increased household spending from income generated by construction activities.

Construction employment and earnings: Construction of the facility is anticipated to generate approximately 190.5 full-time equivalent (FTE) jobs over the approximately 16-month construction period.[88] Approximately 13 percent, or about an estimated 25.4 FTEs, would be hired from within Perry County. Given the estimates of labor income provided, the average earnings per construction worker amount to about $72,400 over the full construction period. The circulation of construction-related monies throughout the local area (induced and indirect effects) would also generate some additional new jobs, or FTEs, and income in other economic sectors.

Exhibit 5-11 presents the employment, income and economic output generated by Project construction, both in Perry County and in Kentucky.

Exhibit 5-11.
Estimated Economic Benefits of the Proposed Bright Mountain Solar Project, Construction Phase

	Perry County			Commonwealth of Kentucky		
	Jobs (FTEs)	Earnings	Economic Output	Jobs (FTEs)	Earnings	Economic Output
Direct	25.4	$1.8 M	$2.0 M	190.5	$13.8 M	$14.7 M
Total	35.7	$2.4 M	$3.5 M	279.8	$19.0 M	$29.2 M

Notes: (1) Employment is measured as Full-Time Equivalents (FTEs); the number of individual workers may be greater than the number of FTEs.

(2) Estimates for the Commonwealth of Kentucky include Perry County.

(3) Direct economic benefits include construction labor and construction related services.

Source: Bright Mountain Solar, LLC, September 2023.

Operational employment and earnings: Approximately seven FTEs would be required to perform the Project's regular operation and maintenance work. About half of those employees are expected to be hired from within Perry County, with the remaining hired from surrounding counties. Salaries for operational employees are estimated to be approximately $40,000 per FTE per year.

Exhibit 5-12 presents the employment, income and economic output generated by Project operations, both in Perry County and in Kentucky.

[88] 1 job = 1 FTE = 2,080 hours worked in one year. A part-time or temporary position would constitute a fraction of one job or FTE. Therefore, the number of individual people hired for construction will likely be greater than the estimated number of FTEs.

Exhibit 5-12.
Estimated Economic Benefits of the Proposed Bright Mountain Solar Project, Operations Phase

	Perry County			Commonwealth of Kentucky		
	Jobs (FTEs)	Earnings	Economic Output	Jobs (FTEs)	Earnings	Economic Output
Direct	3.6	$0.1 M	$0.1 M	7.1	$0.3 M	$0.3 M
Total	4.0	$0.2 M	$0.2 M	11.5	$0.6 M	$1.3 M

Notes: (1) Employment is measured as Full-Time Equivalents (FTEs); the number of individual workers may be greater than the number of FTEs.

(2) Estimates for the Commonwealth of Kentucky include Perry County.

Source: Bright Mountain Solar, LLC, September 2023.

Property tax revenues: As noted in the Socioeconomic Report and in the Applicant's responses to HE inquiries, the Applicant anticipates executing a payment in lieu of taxes (PILOT) agreement with Perry County, which would require annual PILOT payments made to the County throughout the life of the Project (approximately 40 years). Perry County would then disburse those funds to jurisdictions within the County. Discussions with Perry County officials about that agreement are on-going. The Applicant has not estimated the amount of those annual payments.

HE's evaluation of impacts. An economic impact analysis can be an opportunity to identify the monetary and other benefits provided by Project construction and operational activities. A meaningful discussion of the monetary and other benefits must provide some quantification of said benefits, along with additional context to determine the magnitude of those benefits:

> For most solar facilities, the purchase of materials, supplies and equipment makes up a large portion of total project construction costs. The Applicant's analysis indicates that the majority of the Project's capital expenditures are anticipated to occur out-of-state, limiting the economic benefits to Perry County or the Commonwealth. Therefore, the economic benefits of construction will come mainly from labor activities.
>
> It is also important to note that direct construction jobs, as well as indirect and induced, will be temporary, resulting from the approximately 16-month construction period. Additionally, the portion of construction period jobs realized for Perry County residents will depend on the number of available and qualified workers in the area.
>
> Annual operations and maintenance expenditures for the Project would be small. The majority of economic benefits generated during operations would result from employee earnings and PILOT payments.
>
> We assume that PILOT payments will be distributed to local entities within Perry County, including the Perry County School District. Those payments will provide

additional revenue to those entities; however, PILOT payments will generally amount to a small percentage of total tax revenues for any individual entity.

Landowner leases are not mentioned in the economic analysis. Those landowners will realize direct benefits from the Project via lease payments.

Because of the Project's location on a reclaimed mountaintop-removal coal mine site, no active agricultural or commercial production activities will be curtailed.

Conclusions and recommendations. Construction and operation of the Bright Mountain Solar facility will provide some limited economic benefits to the region and to the Commonwealth. Overall, the Project will result in measurable, but temporary, positive economic effects to the region during the construction phase. Construction activity will generate regional employment and income opportunities; those effects will be temporary, but local hires will increase employment and incomes to an area that needs it. Most construction purchases will be made outside of Kentucky.

Operational economic benefits will be confined mostly to PILOT revenues, although these are assumed to be relatively minor in terms of total County tax revenues. Those payments will generally amount to a small percentage of total tax revenues for any individual public entity. Operational employment will be minimal, but will generate local income, and local purchases of materials or supplies will generate additional economic activity.

Need for mitigation. Socioeconomic impacts of the Bright Mountain Solar facility represent a positive, albeit small, contribution to the region. The following mitigation measures could be implemented to increase economic benefits within Perry County and provide more detailed information about the Project's local economic benefits:

1. The Applicant should attempt to hire local workers and contractors to the extent they are qualified to perform the construction and operations work.

2. The Applicant should consider opportunities to optimize local benefits; for example, by purchasing materials, if possible, in the local area during construction and operation.

Decommissioning Activities

Decommissioning is the process of safely closing the solar facility to retire it from service at the end of its useful life, and subsequently returning the land to its original condition. This might include removal of solar panels and all associated facilities, and restoration of the property to pre-Project conditions. Although not specifically addressed in the statutes, the Siting Board requested that HE discuss the potential impacts associated with decommissioning activities.

General methods of assessment. The types of impacts likely to result from decommissioning might be similar in nature to those experienced during construction. For example, workers would need to commute to the site daily, trucks would be required to haul equipment away using local roads and noise may be generated by all of the activity. Therefore,

the methods of assessing decommissioning impacts would be similar to those employed to evaluate the construction phase effects. Removal and disposal of the project components should also be addressed in this assessment.

Summary of information provided by the Applicant. Tab 12, Exhibit J of the SAR provides the Applicant's Decommissioning Plan, which lays out the procedures for restoring the site to its original condition, or to other economic land uses as desired by the relevant landowner, at the end of the Project's operational life. This plan was prepared for the Applicant by Black & Veatch in December 2022. According to the Applicant, the Bright Mountain solar facility would have an expected useful life of approximately 40 years.

Decommissioning plan and activities. According to the Decommissioning Plan, the following general decommissioning activities will occur within the Project area:

Removal of panels;

Removal of weather station, data monitoring system, inverters, electrical equipment, racking and scrap;

Removal of piles to a depth of at least three feet;

Removal of concrete inverter foundations to a depth of at least three feet;

Removal of electrical collection lines to a depth of at least three feet;

Removal of access roads;

Removal of fencing; and

Removal of the collection substation.

Some components may be left in place under certain circumstances, as noted in the Decommissioning Plan. Private access roads and/or security fencing may remain in place at landowner's request and through mutual agreement. Site grading and related stormwater facilities will remain. Sections of electrical conduits or casings that cross public roads, buried utilities, or sensitive areas such as wetlands will not be removed to "minimize disruption to the land and other facilities."

Following the completion of decommissioning activities, it is anticipated that the site will primarily be converted back to its pre-construction condition. The land will be graded as necessary with topsoil and will be planted with a seed mix to stabilize the soil.

Additional decommissioning activities will be required for the removal of the overhead transmission line, support structures, and access roads constructed outside the Project area. These plans were not included in the Decommissioning Plan, but the Applicant's overhead electrical line easement agreement with Perry County includes commitments to remove all improvements located "above the roads" upon termination. This would include removal of the overhead electrical transmission line between Project substation and Bonnyman substation and support structures. It is unclear if removal of the additional access roads built along the transmission line route will be included.

The Applicant's easement agreements with other landowners along the Project transmission line path include removal of above-ground and below-grade improvements.

Anticipated decommissioning costs. Bright Mountain Solar contracted with an engineering consultant, Black & Veatch, to prepare a cost estimate for the decommissioning activities for the Project, based on the conceptual Project site plan with fixed tilt panels and 2022 dollars. The consultant's estimate for total gross decommissioning costs within the Project area is $7,785,723. After returns for salvaged materials, the net decommissioning costs are projected to be $6,639,000.

Decommissioning costs for the Project's transmission line and associated components were not included in these calculations.

Financial assurance. Bright Mountain will post a financial surety with Perry County as the obligee that is equal to the net cost of decommissioning the Project (decommissioning costs minus salvage value). According to the Applicant, lease agreements with participating landowners also contain language to provide financial security related to the removal of the Project.

HE's evaluation of impacts. The impacts of decommissioning activities are likely to be somewhat smaller than those of construction. Fewer workers may be able to complete facility removal activities in a shorter time period, as compared to construction activities. Additionally, decommissioning work may not require the same level of experience or skill sets as project construction, resulting in the employment of more general laborers at lower wages. Therefore, the benefits to local employment and income during decommissioning would be somewhat less than those described for the construction phase.

Conclusions and recommendations. HE believes that decommissioning the facility and returning the site to its original condition can be accomplished once all the components have been removed. Completion of reclamation activities would eliminate long term Project-related negative impacts, as compared with simply shutting the solar facility. This process will also have a modest and temporary positive economic stimulus to the region.

The Applicant has suggested that economic incentives exist for decommissioning, but HE believes that is highly uncertain due to variable costs for decommissioning and metal prices 40 years in the future.

Need for mitigation. The Applicant's approach to decommissioning and restoration includes removal of above ground and underground structures associated with the Project, as well as site restoration activities. Commitments regarding land restoration are not included in individual lease agreements with participating landowners. To ensure that all decommissioning commitments are met, we recommend the following:

1. The Applicant shall file a full and explicit decommissioning plan with the Siting Board or its successors as well as Perry County. This plan shall commit the Applicant to removing all facility components, above-ground and below-ground, regardless of depth, from the Facility Area and transmission line route. Access roadways and other

structures, such as the O&M building, shall also be removed unless the landowner states in writing that they prefer those to remain in place. The decommissioning plan shall be completed at least one month prior to construction of the Project.

2. Decommissioning shall also include removal of all Project transmission line structures and any associated transmission line components. Access roads developed to maintain transmission line components shall also be removed unless the landowner states in writing that they prefer those to remain in place.

3. The Applicant, its successors, or assigns shall decommission the entire site of the Project once it ceases producing electricity for a continuous period of 12 months. Decommissioning shall include the removal of all solar panels, racking, and equipment including concrete pads and trenched electrical wiring.

4. The Applicant, its successors, or assigns shall notify Perry County officials of upcoming decommissioning activities at least 30 days prior to the commencement of decommissioning.

5. As applicable to individual lease and easement agreements, the Applicant, its successors, or assigns will abide by the specific land restoration commitments agreed to by individual property owners, as described in each executed lease and easement agreement.

6. The Applicant shall file a bond with Perry County Fiscal Court, equal to the amount necessary to effectuate the explicit or formal decommissioning plan, naming Perry County as an obligee or a third-party (or secondary, in addition to individual landowners) beneficiary of that bond, so that Perry County will have the authority to draw upon the bond to effectuate the decommissioning plan as needed. For land in which there is no bonding requirement otherwise, Perry County shall be the primary beneficiary of the decommissioning bond for that portion of the Project. The bond(s) shall be in place at the time of commencement of operation of the Project.

7. The bond amount should be reviewed and updated every five years at the expense of the Applicant to determine and update the cost of facility removal. This review shall be conducted by an individual or firm with experience or expertise in the costs of removal or decommissioning of electric generating facilities. Certification of this review shall be provided to the Siting Board or its successors and the Perry County Fiscal Court. Such certification shall be by letter and shall include the current amount of the anticipated bond and any change in the costs of removal or decommissioning.

8. If the Applicant proposes to retrofit the current proposed facility, it shall demonstrate to the Siting Board that the retrofit facility will not result in a material change in the pattern or magnitude of impacts compared to the original project. Otherwise, a new Site Assessment Report will be submitted for Siting Board review. The term retrofit is defined as the facility being re-designed such that the facility has a different type of operations or function, i.e., no longer operates as a solar electric generation facility.

9. The Applicant shall also prepare a new Site Assessment Report for Siting Board review if the Applicant intends to retire the currently proposed facility and employ a different technology.

10. The Applicant, its successors, or assigns must provide notice to the Siting Board if during any two-year period it replaces more than twenty percent of its facilities. The Applicant shall commit to removing the debris and replaced facility components from the Project site and Perry County upon replacement. If the replaced facility components are properly disposed of at a permitted facility, they do not have to be physically removed from Perry County. However, if the replaced facility components remain in Perry County, the Applicant must inform the Siting Board of where the replaced facility components are being disposed of.

11. Any disposal or recycling of Project equipment, during operations or decommissioning of the Project, shall be done in accordance with applicable laws and requirements.

Public Outreach and Communication

The Application details the public involvement activities undertaken by Bright Mountain Solar, LLC staff in Tabs 3 and 6 of the SAR. Those activities included the following events and actions taken to notify and inform Perry County officials and residents about the Project:

Public meetings and events:

On September 7, 2022, Bright Mountain Solar representatives hosted an in-person public meeting at the West Perry Elementary School in Hazard. Notice of that meeting was published in The Hazard Herald, a Perry County newspaper, prior to the meeting.[89] Additionally, a letter was sent to participating and adjacent landowners, dated August 15th, 2022, which included meeting information. The meeting was conducted as an "open house" format, where Project representatives provided information on the development, construction, and operation of the proposed Bright Mountain Solar Project. Attendees were able to view Project maps and ask questions. According to the Application, the public information meeting was attended by 8 participants, including local landowners, and the Perry County Judge Executive, Scott Alexander.

On Thursday, September 8, 2022, Bright Mountain representatives made a donation of $20,000 to the Foundation for Appalachian Kentucky flood relief efforts at the Hazard City Hall with Perry County leaders in attendance.

A second public information meeting for the Project was held on August 27, 2023, at the West Perry Elementary School in Hazard. Notice of that meeting was published in The Hazard Herald prior to the meeting.[90] According to the

[89] Publication date unknown.
[90] Publication date unknown.

Applicant, a letter was sent to participating landowners and landowners adjacent to both the Project facility and transmission line path with notification about this meeting. The meeting was conducted as an "open house" format, where Project representatives provided information on the development, construction, and operation of the proposed Bright Mountain Solar Project. Attendees were able to view Project maps and ask questions. According to the Application, the public information meeting was attended by fewer than 20 participants, including local landowners, community members, and the Perry County Judge Executive, Mr. Scott Alexander.

Outreach to surrounding landowners and others:

On December 15, 2022, a notice of application was published in The Hazard Herald. Adjacent landowners to the Project were sent letter notice of the application on December 7, 2022, and a follow-up letter was sent December 12, 2022, via mail.

On September 7, 2023, a notice of application was published in The Hazard Herald. Adjacent landowners to the Project area and transmission line path were sent notice of application letters on August 31, 2023, via mail.

Between April 2020 and August 2023, Bright Mountain representatives met with local and state officials and other stakeholders multiple times, as detailed in Exhibit 5-13, below.

Exhibit 5-13.
Bright Mountain Meetings with Local Officials and Stakeholders

Date	Participants
April 2020	Perry County Judge/Executive Scott Alexander Perry County Schools Superintendent Jonathan Jett Hazard Mayor Donald "Happy" Mobelini
May 2020	Perry County Judge/Executive Scott Alexander
June 2020	State Senator Brandon Smith Perry County Schools Superintendent Jonathan Jett
September 2020	Perry County Judge/Executive Scott Alexander
January 2021	Perry County Judge/Executive Scott Alexander Perry County Schools Superintendent Jonathan Jett
October 2021	Perry County Judge/Executive Scott Alexander Perry County Schools Superintendent Jonathan Jett Hazard Mayor Happy Mobelini
April 2022	Perry County Judge/Executive Scott Alexander
May 2022	State Senator Brandon Smith
September 2022	Foundation for Appalachian Kentucky
December 2022	Perry County Judge/Executive Scott Alexander
January 2023	Perry County Judge/Executive Scott Alexander Perry County School Superintendent Kent Campbell Hazard Mayor Happy Mobelini
June 2023	Perry County Judge/executive Scott Alexander
August 2023	Perry County Judge/executive Scott Alexander Perry County Grant Writer

Source: Bright Mountain Solar, LLC, October 2023.

A Project website was developed in July 2022 to provide the public with details on how to attend the public information meeting, a map showing the Project Area, a general summary of the Project, and a contact form to submit questions and comments regarding the Project. The website address is https://www.brightmountainsolar.com/.

As part of HE's site visit to the Project area, HE met with the Perry County Judge Executive, Mr. Scott Alexander, and the Perry County Economic Development Lead, Mr. Bill McIntosh. Mr. Alexander indicated that public awareness of the Project was low, but he has heard equally from constituents in favor of and opposed to the Project. Mr. McIntosh was not familiar with the Project but provided HE with general background and insight into the potential impacts of solar projects on the County.

HE also met with the Perry County Property Valuation Administrator, Mr. Lonnie Douglas Adams, who commented that this meeting was the first time he had heard about this Project. He believes local residents are largely unaware of the Project specifically but generally know that solar projects are coming to the area.

Following the site visit, HE spoke with the Perry County Road and Bridge Supervisor, Benny Combs. Mr. Combs was familiar with the Project but had not spoken with any Bright Mountain Representatives.

Need for mitigation. Because of the limited attendance at the local public meetings and the general sense of local unawareness of the Project, it is suggested that the Applicant pursue additional public outreach and engagement activities within Perry County.

Complaint Resolution

Bright Mountain Solar has stated that they will develop a complaint resolution plan prior to commencing construction. This plan will outline the process for individuals to submit complaints during construction and operation of the Project, and how Bright Mountain Solar will address these complaints.

Need for mitigation. The Applicant's described approach to resolving complaints is vague and generally undefined. A formal process for addressing complaints should be developed and followed during the construction and operational periods to address any issues associated with visual, noise or other Project-related impacts. The following measures should be undertaken to implement a complaint resolution process:

1. The Applicant should develop and implement a complaint resolution plan that describes the process for filing complaints during construction and during operations, and this plan should be provided to Perry County and the Siting Board. The complaint resolution plan should explain how the complaint will be addressed; the timeframe in which a complainant can expect a response; and an explanation of how resolution will be determined if the complainant is not satisfied with the response from the Applicant.

2. The Applicant should submit to the Siting Board, annually, a status report associated with the complaint resolution plan, recounting the individual complaints, how the Applicant addressed those complaints and the ultimate resolution of those complaints, and whether or not the resolution was to the complainant's satisfaction.

SECTION 6
Recommended Mitigation

This section identifies actions the Applicant can take to mitigate potential negative impacts on certain regional resources. Other regulatory processes will determine the need for particular actions on other resource topics. These are only noted here, and HE makes no recommendation as to their merit. Beyond those actions, HE recommends a list of mitigation actions for Siting Board and Applicant consideration.

Regulatory Actions and Mitigation Outside Siting Board Jurisdiction

The Siting Board should be aware of the following permitting and regulatory actions that will require Applicant compliance and possible mitigation efforts (in addition to this effort to obtain a Certificate of Construction from the Siting Board).[91] No action on these actions is required by the Siting Board since these are outside the Siting Board's jurisdiction. The Applicant states that Bright Mountain Solar intends to comply with all applicable permitting requirements, and provided the following list of permits known to be required prior to either construction or operation of the facility:

> An approved Jurisdictional Determination from the U.S. Army Corps of Engineers (USACE) for isolated wetlands within the Facility Area will be obtained. Depending on the results of the Jurisdictional Determination, the appropriate permit for impacts to jurisdictional features would be obtained, if applicable.
>
> Kentucky Pollutant Discharge Elimination System (KPDES) permit for stormwater discharges associated with construction activities (KYR10) and associated notice of intent-stormwater construction activities (NOI-SWCA), stormwater pollution protection plan (SWPPP), and notice of termination (NOT).
>
> Class 21 vehicle permits, as needed, for transportation on state roads to site.
>
> Kentucky Transportation Cabinet, Department of Highways permits for the use of any vehicles that surpass the normally allowable dimensions and weight limits for highway vehicles, if applicable.
>
> Perry County electrical service permit, required for any facility being constructed that requires electric service.

In addition to the above, the Applicant has prepared and submitted a Cumulative Environmental Assessment (CEA), as required by Section 224.10-280 of the KRS.

[91] Information provided in response to the Siting Board's First Data Request.

Mitigation for Siting Board and Applicant Consideration

The following mitigation measures are based upon: (1) Applicant commitments set forth in the SAR; (2) measures discussed with the Applicant in subsequent information exchanges or discussions; and (3) additional mitigation steps HE believes will reduce or eliminate negative Project impacts and are reasonable for the Applicant to undertake.

In performing this comprehensive review of the Bright Mountain Solar Application and supplemental materials, HE has gained an understanding of the Project, the location, the construction and operational activities, the Applicant's intentions, and the Project's impacts. Our recommended mitigation actions are intended to reduce or eliminate potential adverse impacts.

A. Site development plan:

1. A final site layout plan should be submitted to the Siting Board upon completion of the final site design. Deviations from the preliminary site layout plan, which formed the basis for HE's review, should be clearly indicated on the revised graphic. Those changes could include, but are not limited to, the location of solar panels, inverters, transformers, substation, operations and maintenance building or other Project facilities or infrastructure.

2. Any change in Project boundaries from the information which formed this evaluation should be submitted to the Siting Board for review.

3. Details of the final Project transmission line route, including final locations of transmission line structures and distances from nearby residences, should be submitted to the Siting Board upon completion. Deviations from the proposed route, which formed the basis for HE's review, should be clearly indicated.

4. The Siting Board will determine if any deviation in the site boundaries, site layout plan or final transmission line route are likely to create a materially different pattern or magnitude of impacts. If not, no further action is required, but if yes, the Applicant will support the Siting Board's effort to revise its assessment of impact and mitigation requirements.

5. A final, Project-specific, construction schedule, including revised estimates of on-site workers and commuter vehicle traffic, should be submitted to the Siting Board. Deviations from the preliminary construction schedule should be clearly indicated.

6. The Siting Board will determine whether any deviation to the construction schedule or workforce estimates is likely to create a materially different pattern or magnitude of impacts. If not, no further action is required. If so, the Applicant will support the Siting Board's effort to revise its assessment of impacts and mitigation requirements.

7. The Applicant or its contractor will control access to the site during construction and operation. The construction entrance will be gated and locked when not in use.

8. The Applicant's access control strategy will include appropriate signage to warn potential trespassers. The Applicant will ensure that the site entrance and boundaries have adequate signage, particularly in locations visible to the public, local residents and business owners.

9. According to National Electrical Safety Code regulations, the security fence must be installed prior to any electrical installation work. The substation will have its own separate security fence and locked access installed.

B. Compatibility with scenic surroundings:

1. Existing vegetation between the solar arrays and nearby roadways and homes shall be left in place, to the extent feasible, to help minimize visual impacts and screen the Project from nearby homeowners and travelers.

2. The Applicant will not remove any existing vegetation except to the extent it must remove such vegetation for the construction and operation of Project components.

3. Any changes to the site infrastructure layout (i.e., panels, inverters, etc.) included in the Application materials will be submitted to the Siting Board for review. If the Siting Board deems those changes to be significant, the Siting Board may require the Applicant to develop a vegetative screening plan.

4. The Applicant shall cultivate at least two acres of native pollinator-friendly species on-site.

5. The Applicant will use anti-glare panels and operate the panels in such a way that glare from the panels is minimized or eliminated. The Applicant will immediately adjust solar panel operations upon any complaint about glare from those living, working, or traveling in proximity to the Project.

6. Given the lack of proposed screening, the Applicant will inform homeowners that will be visually impacted by the transmission line and work with them to address any concerns.

7. Given the lack of proposed screening, the Applicant will work with homeowners and business owners visually impacted by the Project to address any concerns.

C. Potential changes in property values and land use:

1. No unique mitigation measures are recommended related to potential impacts to property values or adjacent land uses because other mitigation can accomplish this. However, close coordination by the Applicant with impacted and concerned homeowners regarding potential visual impacts and impacts from noise, traffic or other Project activities should be initiated.

D. Anticipated peak and average noise levels:

1. The Applicant shall notify residents and businesses within 2,000 feet of the Project boundary and transmission line route about the construction plan, noise potential, complaint resolution process, and mitigation plan at least one month prior to the start of construction.

2. The Applicant shall respond to any complaints related to noise levels or noise causing activities occurring during construction or operations via a timely, formal and clearly developed complaint resolution program.

3. If pile driving activity occurs within 1,000 feet of a noise sensitive receptor, the Applicant shall implement a construction method that will suppress the noise generated during the pile driving process (i.e., semi-tractor and canvas method; sound blankets on fencing surrounding the Project site; or any other comparably effective method).

4. The Applicant should limit the construction activity, process and deliveries to the hours of 8:00 am to 6:00 pm, Monday through Saturday. No construction work should be conducted on Sundays.

5. The Applicant shall place panels, inverters and substation equipment consistent with the distances to noise receptors indicated in the Applicant's noise study and with the Applicant's proposed setbacks. Nevertheless, the Applicant shall not place solar panels or string inverters, if used, closer than 150 feet from a residence, church or school, 25 feet from non-participating adjoining parcels, and 50 feet from adjacent roadways. The Applicant shall not place a central inverter, and, if used, energy storage systems closer than 450 feet from a residence, church, or school. These setbacks shall not be required for residences owned by landowners involved in the Project that explicitly agree to lesser setbacks and have done so in writing. All agreements by participating landowners to lesser setbacks must be filed with the Siting Board prior to commencement of construction of the Project.

E. Road and rail traffic, fugitive dust, and road degradation:

1. The Applicant shall comply with all laws, permits and regulations regarding the use of roadways and bridges.

2. The Applicant shall consult with the Kentucky Transportation Cabinet (KYTC) regarding truck and other construction traffic and obtain necessary permits from the KYTC.

3. The Applicant shall consult with the Perry County Road Department (PCRD) regarding truck and other construction traffic and obtain necessary permits from the PCRD.

4. The Applicant will fix or pay for damage resulting from any vehicle transport to the Project site or transmission line easements. The Applicant shall implement ridesharing between construction workers when feasible, use appropriate traffic controls or allow flexible working hours outside of peak hours to minimize any potential delays during AM and PM peak hours.

5. The Applicant shall develop a transportation plan for the heavy deliveries route(s) within Kentucky, taking into consideration any weight restricted bridges.

6. The Applicant shall work with the Commonwealth road authorities and the PCRD to perform road surveys, before and after construction activities, on all roads in the Project area to be used by construction vehicles.

7. The Applicant shall comply with any road use agreement executed with the County or PCRD. Such an agreement might include special considerations for overweight loads, routes utilized by heavy trucks, road weight limits and bridge weight limits.

8. The Applicant shall develop and implement a traffic management plan for the Project to minimize the impacts on traffic flow and keep traffic and people safe. Any such traffic management plan shall also identify any noise concerns during the construction phase and develop measures that would address those noise concerns.

9. The Applicant shall consult with CSX and the KYTC to evaluate potential impacts to railroad crossings from Project traffic, if railroad crossings are necessary. If necessary, the Applicant shall develop additional, specific mitigation measures applicable to impacts on affected railroad crossings.

10. The Applicant shall properly maintain construction equipment and follow best practices related to fugitive dust throughout the construction process. Dust impacts shall be kept at a minimum level.

F. Economic impacts:

1. The Applicant should attempt to hire local workers and contractors to the extent they are qualified to perform the construction and operations work.

2. The Applicant should consider opportunities to optimize local benefits; for example, by purchasing materials, if possible, in the local area during construction and operation.

G. Decommissioning:

1. The Applicant shall file a full and explicit decommissioning plan with the Siting Board or its successors as well as Perry County. This plan shall commit the Applicant to removing all facility components, above-ground and below-ground, regardless of depth, from the Facility Area and transmission line route. Access roadways and other structures, such as the O&M building, shall also be removed unless the landowner states in writing that they prefer those to remain in place. The decommissioning plan shall be completed at least one month prior to construction of the Project.

2. Decommissioning shall also include removal of all Project transmission line structures and any associated transmission line components. Access roads developed to maintain transmission line components shall also be removed unless the landowner states in writing that they prefer those to remain in place.

3. The Applicant, its successors, or assigns shall decommission the entire site of the Project once it ceases producing electricity for a continuous period of 12 months. Decommissioning shall include the removal of all solar panels, racking, and equipment including concrete pads and trenched electrical wiring.

4. The Applicant, its successors, or assigns shall notify Perry County officials of upcoming decommissioning activities at least 30 days prior to the commencement of decommissioning.

5. As applicable to individual lease and easement agreements, the Applicant, its successors, or assigns will abide by the specific land restoration commitments agreed to by individual property owners, as described in each executed lease and easement agreement.

6. The Applicant shall file a bond with Perry County Fiscal Court, equal to the amount necessary to effectuate the explicit or formal decommissioning plan, naming Perry County as an obligee or a third-party (or secondary, in addition to individual landowners) beneficiary of that bond, so that Perry County will have the authority to draw upon the bond to effectuate the decommissioning plan as needed. For land in which there is no bonding requirement otherwise, Perry County shall be the primary beneficiary of the decommissioning bond for that portion of the Project. The bond(s) shall be in place at the time of commencement of operation of the Project.

7. The bond amount should be reviewed and updated every five years at the expense of the Applicant to determine and update the cost of facility removal. This review shall be conducted by an individual or firm with experience or expertise in the costs of removal or decommissioning of electric generating facilities. Certification of this review shall be provided to the Siting Board or its successors and the Perry County Fiscal Court. Such certification shall be by letter and shall include the current amount of the anticipated bond and any change in the costs of removal or decommissioning.

8. If the Applicant proposes to retrofit the current proposed facility, it shall demonstrate to the Siting Board that the retrofit facility will not result in a material change in the pattern or magnitude of impacts compared to the original project. Otherwise, a new Site Assessment Report will be submitted for Siting Board review. The term retrofit is defined as the facility being re-designed such that the facility has a different type of operations or function, i.e., no longer operates as a solar electric generation facility.

9. The Applicant shall also prepare a new Site Assessment Report for Siting Board review if the Applicant intends to retire the currently proposed facility and employ a different technology.

10. The Applicant, its successors, or assigns must provide notice to the Siting Board if during any two-year period it replaces more than twenty percent of its facilities. The Applicant shall commit to removing the debris and replaced facility components from the Project site and Perry County upon replacement. If the replaced facility components are properly disposed of at a permitted facility, they do not have to be physically

removed from Perry County. However, if the replaced facility components remain in Perry County, the Applicant must inform the Siting Board of where the replaced facility components are being disposed of.

11. Any disposal or recycling of Project equipment, during operations or decommissioning of the Project, shall be done in accordance with applicable laws and requirements.

H. Public outreach and communication:

1. The Applicant should pursue additional public outreach and engagement activities within Perry County because of the limited attendance at the local public meeting and the general sense of local unawareness of the Project.

I. Complaint resolution program:

1. The Applicant should develop and implement a complaint resolution plan that describes the process for filing complaints during construction and during operations, and this plan should be provided to Perry County and the Siting Board. The complaint resolution plan should explain how the complaint will be addressed; the timeframe in which a complainant can expect a response; and an explanation of how resolution will be determined if the complainant is not satisfied with the response from the Applicant.

2. The Applicant should submit to the Siting Board, annually, a status report associated with the complaint resolution plan, recounting the individual complaints, how the Applicant addressed those complaints and the ultimate resolution of those complaints, and whether or not the resolution was to the complainant's satisfaction.