

Bright Mountain Solar Project

Case No. 2022-00274



TAB 15

TAB 15 CUMULATIVE ENVIRONMENTAL ASSESSMENT

KRS 224.10-280(1) *Except for a person that commenced construction of a facility prior to April 15, 2002, or that has received a certificate of public convenience and necessity from the Public Service Commission prior to April 15, 2002, no person shall commence to construct a facility to be used for the generation of electricity unless the person:*

5. *Submits a cumulative environmental assessment to the cabinet with the permit application; and*
6. *Remits a fee set pursuant to KRS 224.10-100(20) by the cabinet to defray the cost of processing the cumulative environmental assessment.*

KRS 224.10-280(3) *The cumulative environmental assessment shall contain a description, with appropriate analytical support, of:*

(a) For air pollutants:

1. *Types and quantities of air pollutants that will be emitted from the facility; and*
2. *A description of the methods to be used to control those emissions;*

(b) For water pollutants:

1. *Types and quantities of water pollutants that will be discharged from the facility into the waters of the Commonwealth; and*
2. *A description of the methods to be used to control those discharges;*

(c) For wastes:

1. *Types and quantities of wastes that will be generated by the facility; and*
2. *A description of the methods to be used to manage and dispose of such wastes; and*

(d) For water withdrawal:

1. *Identification of the source and volume of anticipated water withdrawal needed to support facility construction and operations; and*
2. *A description of the methods to be used for managing water usage and withdrawal.*

A Cumulative Environmental Assessment (CEA) was developed by the Applicant, with assistance from EDR, in response to the requirements of KRS 224.10-280(1) and KRS 224.10-280(3), and is included in this Tab as Attachment L. The CEA will be submitted to the Kentucky Energy and Environment Cabinet.

Bright Mountain Solar Project
Application Tab 15
Case No. 2022-00274



**Attachment L – Cumulative
Environmental Assessment**

Cumulative Environmental Assessment

Bright Mountain Solar Project

Perry County, Kentucky

Case No. 2022-00274

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Exhibit A: Facility Location Map

1.0 INTRODUCTION

Bright Mountain Solar, LLC (Bright Mountain or Applicant) is proposing to develop an 80-megawatt (MW) alternating current, solar-powered electric generation facility (Facility) in Perry County, Kentucky. The Bright Mountain Solar Facility will be located on the site of a reclaimed coal surface mine, approximately 2.5 miles west of Hazard, Kentucky (Exhibit A). The area leased for the Facility includes approximately 805 acres of private land (Facility Area). The footprint of the Facility will be approximately 360 acres, within the Facility Area.

Pursuant to the requirements of Kentucky Revised Statute (KRS) 224.10-280, "no person shall commence to construct a facility to be used for the generation of electricity unless the person submits a cumulative environmental assessment to the cabinet with the permit application." On behalf of the Applicant, Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR) has prepared this Cumulative Environmental Assessment (CEA) for submission to the Kentucky Energy and Environment Cabinet.

The completed Facility will include arrays of photovoltaic solar panels and racking systems suspended on piles embedded in the ground. Public access to the Facility will be restricted by an agricultural style perimeter fence. Entry to the Facility for authorized personnel will be through locked gates, with internal roadways providing access to Facility components. An on-site operation and maintenance (O&M) building may be included in the final Facility design. Alternatively, an existing structure in the vicinity of the City of Hazard could be re-purposed as the O&M building. Electricity produced by the solar panels will be collected through a system of electrical collection lines. Inverters and associated transformers will convert the electricity from direct current to alternating current and increase the voltage to 34.5 kilovolts (kV), for transfer to a collection substation. A transformer in the collection substation will increase the voltage to 69 kV, for transmission of the electricity through an approximately 4-mile nonregulated transmission line to the existing Kentucky Power Company Bonnyman Substation, and then into the existing electric transmission system.

An application for a construction certificate for a merchant electric generating facility for the Bright Mountain Solar Facility is being submitted to the Kentucky State Board on Electric Generation and Transmission Siting (Board). The case number of the submission to the Board is 2022-00274.

Paragraph (3) of KRS 224.10-280 provides that a CEA should contain a description, with analytical support, of the following topics:

- Air pollutants
 - Types and quantities of air pollutants that will be emitted from the facility
 - A description of the methods to be used to control those emissions

- Water Pollutants
 - Types and quantities of water pollutants that will be discharged from the facility into the waters of the Commonwealth
 - A description of the methods to be used to control those discharges
- Wastes
 - Types and quantities of wastes that will be generated by the facility
 - A description of the methods to be used to manage and dispose of such wastes
- Water Withdrawal
 - Identification of the source and volume of anticipated water withdrawal needed to support facility construction and operations
 - A description of the methods to be used for managing water usage and withdrawal

These requirements are discussed in the following sections of this report.

2.0 AIR POLLUTANTS

The Clean Air Act, as administered by the U.S. Environmental Protection Agency (USEPA), established National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulates. The USEPA tracks and publishes records of non-compliance with NAAQS standards. Construction of facilities that would constitute new emission sources affecting non-compliance areas could face more rigorous permitting requirements. Per the USEPA, Perry County, Kentucky, has historically complied, and currently remains in compliance, with NAAQS requirements (USEPA 2023).

Construction of the proposed Facility will result in the emission of minimal quantities of air pollutants. Construction equipment and transportation vehicles, powered primarily by internal combustion engines, will result in emission levels comparable to typical construction activities and will be minimized by maintaining construction vehicles in good operating condition.

Construction activities are anticipated to result in the release of some fugitive dust into the surrounding air. Fugitive dust consists of small lightweight particles that remain suspended in the air for a relatively brief period of time. Fugitive dust could arise from grading activities, equipment installation, traffic in unpaved areas, and dry, windy conditions during construction. It is anticipated that fugitive dust levels will be greatest within the Facility Area. The dust will quickly settle or be captured by the forested buffer that surrounds the Facility, and thus diminish before reaching residences outside of the Facility Area. Creation of fugitive dust will be minimized by the use of best management practices such as reduced vehicle speed, application of gravel to heavily-travelled internal roadways, application of water or a dust suppressant where needed, and seeding/stabilization in areas where construction activities have been completed or suspended. Overall impacts associated with fugitive dust are anticipated to be minimal.

Because the Facility is proposed to be located on the site of a reclaimed coal surface mine that is largely devoid of trees, clearing of trees and shrubs will be minimal. Any trees and shrubs that will need to be cleared will be chipped and mulched on site or transported off-site for disposal. Woody debris will not be burned on site; therefore, there will be no emissions of particulates from burning activities.

Because solar-powered electric generation facilities generate electricity by the direct conversion of sunlight to electricity, there will be no air emissions resulting from the operation of the Facility components. Operation of the Facility will not require any air emission permits. Facility operation personnel will require the use of pickup-truck-sized vehicles for transportation to, from, and within the Facility. This will typically require one or two vehicle trips per day. Additional vehicle emissions will be associated with occasional equipment deliveries and maintenance activities such as vegetation mowing. Fugitive dust emissions will be minimized during the operational phase by

maintaining low-growing vegetation throughout the Facility. Internal Facility access roadways, inverter pads, and the Facility substation area will be gravel-covered, helping to reduce emissions of fugitive dust during dry conditions.

3.0 WATER POLLUTANTS

3.1 Surface Water

The Facility Area is located along the eastern edge of the Colwell Fork-North Fork Kentucky River watershed, hydrologic unit code (HUC) 12 designation 051002010402. The easternmost portion of the Facility Area falls within the Big Willard Creek-North Fork Kentucky River watershed, HUC12 designation 051002010401 (Kentucky Energy and Environment Cabinet, Division of Water n.d.). The Kentucky Energy and Environment Cabinet provides information on Kentucky's designated special-use waters. These are waters that are listed in the KAR as being worthy of additional protection. A review of the Kentucky Special Waters online mapping showed that there are no special use waters within or in the vicinity of the Facility Area. The nearest special-use-designated water is a stream named "Hell for Certain Creek" approximately 5 miles southwest of the Facility Area. This stream, designated as an outstanding state resource water, with threatened and endangered listed species, discharges to the Middle Fork Kentucky River (Kentucky Energy and Environment Cabinet, Division of Water n.d.). The Hell for Certain Creek watershed extends further to the southwest, away from the Facility Area.

A portion of the Facility Area is mapped by the Federal Emergency Management Agency (FEMA) as a Special Flood Hazard Area (SFHA) with a 1% annual chance of flooding (100-year floodplain). However, this portion is restricted to the extreme northwest section, where the Facility Area abuts the North Fork Kentucky River and Oliver Branch, a tributary to the North Fork Kentucky River. No development is proposed for this section of the Facility Area; therefore, there will be no flood zone impacts or Facility-related activities within a mapped flood zone.

A wetland and stream delineation, conducted during April 2022, found a total of 32 wetlands and 10 streams in the Facility Area. All wetlands were palustrine emergent, ranging in size from 0.01 acre to 0.30 acre. Based on the current Facility layout, there will be impacts to a total of approximately 1.1 acres of wetlands; however, none are anticipated to meet the August 29, 2023 revised definition of Waters of the United States (WOTUS). As such, none of these wetlands would be jurisdictional under Section 404 of the Clean Water Act or subject to review and permit authorization by the U.S. Army Corps of Engineers (USACE). None of the wetlands proposed to be impacted by the construction of the Project meet the directly abutting and direct surface connection standard. The Applicant intends to coordinate with the USACE to confirm that these wetlands do not meet the revised definition of WOTUS and therefore are not under federal jurisdiction prior to commencement of construction. One wetland on the western edge of the Facility Area is assumed to satisfy the revised WOTUS definition and be jurisdictional under Section 404 of the Clean Water Act; however, this wetland will not be impacted and permanent dredge and/or fill of this wetland by the Facility will not occur. All streams delineated within the Facility

Area are located near the periphery of the Facility Area. Direct impacts to streams will be avoided because no Facility components will be placed in or within 25 feet of any streams.

Facility construction will include the installation of perimeter fencing, arrays of photovoltaic solar panels and racking systems suspended on piles embedded in the ground, underground and/or overhead electrical collection lines, inverters and associated transformers, a collection substation, internal graveled roadways, and potentially an on-site O&M building and permanent staging area. During construction, temporary laydown yard(s) will be used for equipment staging, office trailers, and vehicle parking. The temporary laydown yard(s) will be reclaimed at the end of construction and potentially included in the solar panel array areas.

Impacts to surface waters during construction will be minimized through coverage under the Kentucky Pollutant Discharge Elimination System (KPDES) general construction permit KYR10, issued by the Kentucky Division of Water (DOW). General construction permit KYR10 authorizes the discharge of stormwater pollutants for construction activities with one or more acres of land disturbance. A Notice of Intent for coverage under KYR10 will be submitted to the DOW at least seven days prior to the commencement of construction activities. Construction-related impacts to surface waters will be minimized through adherence to a Stormwater Pollution Prevention Plan (SWPPP), developed pursuant to the requirements of KYR10. Upon completion of construction activities and achievement of final stabilization, the Applicant will submit a Notice of Termination to the DOW.

Facility maintenance activities could require the occasional use of fertilizers to enhance the growth of ground-cover vegetation and/or the use of herbicides to control noxious weeds or other unwanted vegetation. All such products will be applied in accordance with the manufacturer's instructions to assure avoidance of potential contamination to surface or ground waters.

3.2 Ground Water

Information obtained from the Kentucky Energy and Environment Cabinet shows that the aquifers of the eastern quadrant of Kentucky, including Perry County, generally consist of shallow fracture-flow and deep granular-consolidated aquifers (Kentucky Energy and Environment Cabinet n.d.). Although fracture-flow aquifers may be less reliable sources of water than some other aquifer types, some fracture-flow aquifers can be successfully used as drinking water sources.

Data obtained from the U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS) shows much of the Facility Area to be mapped with groundwater levels at a depth of 6 to 7 feet (Soil Survey Staff, USDA NRCS n.d.). As part of a preliminary geotechnical evaluation, subsurface investigations were conducted using widely spaced borings taken across the Facility Area. The borings, which ranged from approximately 22 to 52 feet below existing grade, showed

a subsurface profile consisting generally of reclaimed surface mine spoils containing gravel, clay, sand, and boulders. This result is consistent with the historical use of the area for surface mining of coal resources. Groundwater was encountered only in one boring, at a depth of approximately 41 feet, which rose to a depth of approximately 36 feet after completion of drilling. This finding is deeper than the groundwater depth indicated by the USDA NRCS mapping, however, these results may not be representative of the actual groundwater table. Groundwater level fluctuations may occur due to seasonal variations in the amount of rainfall, runoff, and other factors.

Based on information derived from the Kentucky Geoportal (Kentucky Geography Network n.d.), there are four mapped water wells located within the Facility Area. All wells are listed as active, for domestic, single household use. However, given the surface mining history of the Facility Area, and the fact that there are no residences within the Facility Area, it is likely that these wells previously have been sealed or are otherwise no longer functional. Communications with the participating landowners indicate that there are no functional wells in the Facility Area. Three of the mapped water wells, numbers 00037579, 00030663, and 00001898, are mapped outside of the proposed Facility fenceline and would not be impacted by Facility components. One well, number 00006142, is mapped just within the Facility fenceline but not within the panel area of the Facility. The Kentucky Geoportal showed no mapped springs or karst areas within the Facility Area or its vicinity.

Construction activities will involve equipment that is powered by petroleum-based fuels and that uses petroleum-based lubricants and/or hydraulic fluids. Petroleum products stored on site will be stored in double-wall containment vessels or within a secondary containment system. Refueling will occur at a specified refueling location in the laydown yard area, or within the construction areas for some less portable equipment. Spill response kits will be kept on all refueling vehicles, to be used in the event that refueling or maintenance activities were to result in a spill. The potential for spills of such materials will be minimized through the adherence to procedures outlined in a spill prevention, control, and countermeasure (SPCC) plan that will be developed for construction activities. The SPCC plan will address the prevention of, preparedness for, and appropriate responses to any discharges of petroleum products. A copy of the SPCC plan will be maintained on site during construction, and construction personnel will be instructed in its use.

Because the Facility is not anticipated to generate, store, treat, or dispose of bulk quantities of potential groundwater contaminants, the requirement to develop a groundwater protection plan pursuant to 401 KAR 5:037 is not applicable to the proposed Facility. However, many practices for groundwater protection from potential contaminants will be included in the above-mentioned SPCC plan. As mentioned previously, the use of fertilizers and herbicides is anticipated to be only occasional, and in conformance with label directions. The use of steel piles to support the solar

panels and the use of spread-footing foundations are not anticipated to negatively affect groundwater. Although the solar panels themselves have impermeable surfaces, there will be sufficient vegetated area between panel rows to allow for groundwater infiltration.

4.0 WASTES

According to the Applicant, Facility construction is anticipated to generate approximately 4,900 cubic yards of construction waste, consisting primarily of wood pallets, cardboard, miscellaneous other packing materials, construction scrap, and general refuse. Construction waste will be collected from panel installation sites and other Facility work areas and disposed of in dumpsters located at the laydown yards. A private contractor will empty the dumpsters as needed and dispose of the refuse at a licensed solid waste disposal facility. Waste materials will be recycled when possible. If any universal waste is generated during construction activities, it will be handled, managed, and disposed of in accordance with federal, state, and local regulations. Except for a minimal amount of volunteer and peripheral woody vegetation, which may be chipped and mulched on site, all waste materials will be disposed of offsite.

Waste fluids from construction equipment maintenance activities and other sources will be stored in appropriate containers, with secondary containment where needed, for disposal by a licensed contractor. Portable toilets used for construction workers will be staked for stability and maintained by the contractor supplying the toilet facilities.

Facility O&M activities will typically generate small amounts of waste materials, which could include wood, cardboard, metal packing/packaging materials, replaced Facility components, and general refuse. O&M personnel will process waste materials following industry best management practices. Waste materials generated during Facility operation will be stored temporarily in on-site dumpsters, which will be emptied on a regular basis for recycling or disposal at a licensed solid waste disposal facility. Small volumes of maintenance supplies, such as cleaning fluids, degreasers, herbicides/pesticides, oils, and fuels will be stored for occasional use at the Facility. Waste materials generated from these supplies during Facility operation will be stored temporarily in appropriate containers and will be recycled or disposed of on a regular basis by a licensed solid waste disposal facility. It is anticipated that the O&M activities will generate waste materials in quantities comparable to a typical small business.

5.0 WATER WITHDRAWAL

Construction of the Facility will likely require the use of limited amounts of water, primarily for fugitive dust control, equipment washing, and compaction in areas such as access roads, foundations, and equipment pads. Water will be obtained from existing on-site wells (if functional), from existing drainage basins, or brought in from an off-site location. If necessary, a new on-site water well may be established, following all applicable regulations. Water will be used and applied in conformance with the requirements of the SWPPP.

Solar panels generate electricity without the use of water. Therefore, no industrial-scale water treatment facilities are necessary, and no water will be discharged by the Facility. 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. However, during extended dry periods, it may be necessary to wash the panels to maintain panel performance. The Applicant estimates that this could occur approximately once per year and would require approximately 65,000 gallons of water across the Facility. Normal precipitation in the region is expected to be sufficient to maintain vegetation coverage within the Facility Area.

O&M activities may be conducted from an off-site facility, or an O&M building constructed within the Facility Area. If an off-site location is chosen, an existing structure in the vicinity of the City of Hazard will be used, and a portable restroom facility will be located on-site for use by O&M personnel. The portable restroom facility will be maintained by a third-party vendor. If an on-site O&M building is used, potable water would be supplied from an existing well, a well that would be established for this purpose, or through a connection with the municipal water system. An on-site septic system would be developed for waste disposal. Water usage and wastewater production at the O&M building would be comparable to a single-family home. The water well and septic system would be established in accordance with all applicable regulations.

REFERENCES

- Kentucky Energy and Environment Cabinet. n.d. *Groundwater Basics*. Accessed November 18, 2022. <https://eec.ky.gov/Environmental-Protection/Water/GW/Pages/GWBasics.aspx>.
- Kentucky Energy and Environment Cabinet, Division of Water. n.d. *Kentucky Special Waters*. Accessed November 18, 2022. <https://watermaps.ky.gov/>.
- . n.d. *Kentucky Watershed Explorer*. Accessed November 18, 2022. <https://experience.arcgis.com/experience/a8a017332225466b9f25a2ed11c21a7c/page/Home/>.
- Kentucky Geography Network. n.d. *Kentucky Groundwater Data Repository - Water Well and Spring Location Map*. Accessed November 2022. <https://kgs.uky.edu/kgsmmap/KGSwater/viewer.asp>.
- Soil Survey Staff, USDA NRCS. n.d. *Web Soil Survey*. Accessed July 2023. <https://websoilsurvey.nrcs.usda.gov/>.
- USEPA. 2023. *Kentucky Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants*. July. Accessed August 21, 2023. https://www3.epa.gov/airquality/greenbook/anayo_ky.html.

Bright Mountain Solar Project
Cumulative Environmental Assessment



Exhibit A

Exhibit A. Facility Location Map



-  Project Area
-  PV Panel Area
-  County Boundary



Basemap: ESRI "World Topographic Map (WGS84)"