Summer Shade Solar, LLC Cumulative Environmental Assessment

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Abbreviations

BMPs	Best Management Practices
CEA	Cumulative Environmental Assessment
CFC	Chlorofluorocarbons
CO	Carbon monoxide
KAR	Kentucky Administrative Regulations
KDOW	Kentucky Division of Water
Pb	Lead
NAAQS	National Ambient Air Quality Standards
NO_x	Nitrous oxides
PM	Particulate Matter
PPE	Personal Protective Equipment
SO_2	Sulfur dioxide
SPCC	Spill Prevention and Countermeasure
SWPPP	Stormwater Pollution Prevention Plan
US EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

1.0 INTRODUCTION

The purpose of this report is to satisfy the requirements of KRS 224.10-280 which states no person shall commence to construct a facility to be used for the generation of electricity unless that person submits a cumulative environmental assessment (CEA) to the Kentucky Energy and Environment Cabinet with the permit application (KAR 2025). Summer Shade Solar, LLC is proposing to construct and operate the Summer Shade Solar Project (Project) within Metcalfe County, Kentucky. Kentucky State Highway 90 (Summer Shade Road) runs west to east through the northern portion of the Project and Kentucky State Highway 163 (Tompkinsville Road) runs north to south to the east of the Project area. The Project is located between the towns of Summer Shade, which lies to the west of the Project, and Beaumont, which lies to the east, and is approximately 13 miles southeast of the city of Glasgow, Kentucky. The Project footprint encompasses approximately 737 acres of undeveloped, agricultural land with surrounding rural low density residential development intermixed with forested land. The maximum generating capacity of the Project will be up to 106 megawatts (MW) alternating current (AC) with 424 megawatt-hour (MWH) battery energy storage system (BESS).

This CEA has been prepared on behalf of Summer Shade Solar, LLC for submittal to the Kentucky Energy and Environment Cabinet. In compliance with KRS 224.10-280, this report evaluates potential project impacts to air pollutants, water pollutants, wastes, and water withdrawal (KAR 2025).

2.0 AIR POLLUTANTS

The emission of air pollutants is regulated through the Clean Air Act, which through its regulations has established baseline National Ambient Air Quality Standards (NAAQS) for multiple pollutants in order to protect public health and welfare. The pollutants covered are ozone (O_3), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), carbon monoxide (CO), nitrous oxides (NO_x), sulfur dioxide (SO_2), and lead (Pb) (NAAQS 2025).

Geographic areas with ambient concentrations of these pollutants that exceed the NAAQS are designated as areas of nonattainment, and new emissions sources in or near these areas are often subjected to more stringent permitting requirements.

Metcalfe County and the six surrounding counties (Adair, Barren, Cumberland, Green, and Hart, and Monroe) are all in attainment for all pollutants (EPA 2025). Additionally, Metcalfe County is protected by the Air Quality Regulations found in the Kentucky Administrative Regulations (KAR), Title 401 Chapters 50-68 (KAR 2025).

Air pollutant emissions would result during construction from the operation of construction equipment, worker personnel vehicles, and equipment and supply deliveries. The amount of increase in air pollutant emissions would vary by the construction activity, work force size, and weather conditions occurring on the site.

Construction and operation equipment would include, but not be limited to, bulldozers, backhoes, flatbed semi-trucks, forklifts, bobcats and/or specialized tractors with extender or drill with auger or pile driver for installation of solar panel array posts, and concrete trucks, and emissions of PM, NO_x, CO, volatile organic compounds (VOCs), and SO_2 would be generated by both gasoline and diesel combustion engines. These emissions are anticipated to result in minor air quality impacts due to the limited durations, numbers of vehicles, and hours of operation. Site preparation and construction activities will produce temporary air pollutant emissions resulting from operation of construction equipment, ground-disturbing activities, and worker and delivery vehicles. To reduce impacts to air quality, the Project will require contractors to implement best management practices (BMPs) including properly maintaining construction equipment, covering loads to minimize dust emissions, and re-vegetating disturbed areas in compliance with the Kentucky Division of Water (KDOW) Construction Storm Water Discharge General Permit. Overall, impacts to air quality will be minor due to being localized and temporary in nature.

Vegetation clearing is expected to be limited due to the site being primarily undeveloped agricultural land. No burning of woody debris will occur on site, and vegetative debris will be chipped or mulched on site or managed at an off-site facility.

Once constructed, the Project will not produce any emissions during operation, including any of the criteria pollutants (PM, CO, SO_2 NO_x, VOCs, or Pb). In addition, no hazardous air pollutants are expected to be emitted from the facility during operation. During operation the only anticipated emissions associated with the facility are those from maintenance vehicles and personal transportation vehicles of workers used when performing routine operations.

3.0 WATER QUALITY

3.1 SURFACE WATER

The Project is located entirely in the Green watershed (Hydrologic Unit Code 051100) and drains from Nobob Creek and Glover Creek and eventually ends up in the Cumberland River. The hydrology of the area surrounding the Project is influenced by agriculture drainage and karst topography. None of the waterways in or immediately adjacent to the Project have any special designation (e.g., Outstanding State Resource Waters, Coldwater Aquatic Habitats, or other Special Use Waters) according to the KDOW Kentucky Special Waters Viewer (KDOW 2025).

Construction activities may increase erosion and sedimentation impacting onsite streams and wetlands. To minimize impacts, the Project will utilize the existing landscape where possible to eliminate grading. Where grading is unavoidable, it will be completed with earthmoving machinery and will make every effort to match existing slopes. The Project anticipates stormwater discharge to occur during construction and intends to comply with KDOW's Construction Storm Water Discharge General Permit for any construction activities that disturb 1-acre or more.

Contractors will be required to use silt fences, erosion and sediment controls, and other BMPs to minimize the impacts of stormwater runoff. Summer Shade or its contractor will prepare and implement a stormwater pollution prevention plan (SWPPP) to comply with KDOW requirements. These BMPs will be used during the construction phase through final vegetative stabilization to minimize sediment runoff into Waters of the U.S. and Commonwealth. After construction, all disturbed areas will be seeded, and erosion control measures will be inspected and maintained until the Project site is stable.

Once construction is complete, the Project will have little to no impacts on surface water during operations and maintenance. BMPs will be utilized during any activities that may cause runoff of any sediments or pollutants. It is expected that the surface water resources in and adjacent to the Project site will benefit from the indirect impacts related to the reduction in chemical use related to the agricultural activities currently occurring on the site.

3.2 GROUNDWATER

Materials in the form of fuels, lubricants and other fluids will be stored on site during construction and leaks and spills have the potential for release into groundwater. However, contractors will utilize BMPs to minimize the risk of leaks and spills and implement plans and procedures to immediately address spills and leaks that do occur. Due to the use of BMPs, there are no anticipated direct adverse impacts due to construction of the Project on groundwater.

During construction and operation, it is possible that limited use of fertilizer and herbicides will be used at the Project site. Any chemical use will be conducted in accordance with manufacturer's recommendations, EPA regulations, and KY State Licensing to reduce the risk of groundwater contamination. It is anticipated that impacts to groundwater will be beneficial by removing the site from agricultural use which will reduce overall chemical use on the site.

4.0 WASTE

All waste generated during the construction and operation of the Project will be disposed of following all local, state, and federal regulations.

Waste generated during construction activities will include wooden crates, pallets, cardboard boxes, and other packaging material. Additionally, excess wiring and other debris could be intermittently produced. Where practical, construction waste material will be recycled, and any material that cannot be recycled will be disposed of offsite at a permitted facility. Construction contractors and subcontractors will be responsible for proper cleanup, disposal, and storage activities.

Primary construction materials stored on site will be liquids such as oil, diesel fuel, gasoline, hydraulic fluid, and other lubricants. Proper disposal containers, obtained by a waste disposal contractor, will be located at onsite staging areas. Waste materials generated during the construction process will be stored

in appropriate containers specific to the waste material. Safety data sheets will be available to on-site personnel for all applicable materials.

Fueling of construction related machinery, such as tractors, trucks, and semi-trucks will take place on the Project site in designated areas. Proper storage and handling procedures for preventing spills related to machinery re-fueling will be implemented by the construction contractor. Additionally, spill control kits will be carried on refueling vehicles.

Paint, degreasers, pesticides, herbicides, air conditioning fluids (chlorofluorocarbons [CFC]), gasoline, propane, hydraulic fluid, welding rods, and janitorial supplies may be stored on site in small quantities (less than 55 gallons, 500 pounds, or 200 cubic feet). Significant environmental impacts caused by a potential spill are not anticipated due to the small quantity of materials and the implementation of proper clean up procedures.

The Project will ensure the safe handling, storage, and disposal of hazardous materials. Proper personal protective equipment (PPE) will be provided to facility staff, and they will be trained in proper use of PPE and the handling, use, and cleanup procedures of hazardous materials used on site. Adequate supplies of applicable clean up materials will be stored on-site.

Licensed waste management companies will manage any waste generated on site. Waste produced on site is expected to be minimal and will be mainly related to maintenance or repair of construction equipment.

Additionally, portable chemical toilets will be placed on site for construction workers. Licensed contractors will be responsible for pumping sewage from the portable toilets. The sewage waste will be disposed of at a licensed location selected by the chemical toilet contractor.

Once construction is complete and the Project is in the operation phase, no waste is expected to be generated from the site. Any waste generated during maintenance activities will be removed from the site and disposed of in accordance with state and federal regulations.

Based on review of the potential waste generation activities, adverse effects are not anticipated from general waste or wastewater treatment and disposal.

5.0 WATER WITHDRAWAL

If water service is required during construction, the Project will use onsite wells, install new wells, or transport water to the Project site via water trucks.

Water use related to construction activities will include site preparation such as dust control and grading activities. The primary use of water would be for the grading of access roads, foundations, and equipment pads. Proper BMPs outlined in the SWPPP will be followed during any equipment washing and potential

dust control discharges. Groundwater resources are not anticipated to be adversely affected by the volume of water required during the construction process.

Solar electricity generation is not a water-intensive process. Manual washing of solar panels is not anticipated but may be elected to be a part of the facility operations in the event rainfall in the region does not adequately remove dust and other debris from the panels. However, water will be used for vegetation management needs, including screening vegetation installation and during prolonged periods of drought.

6.0 REFERENCES

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