

# Cumulative Environmental Assessment

Pine Grove Solar Project  
Madison County, Kentucky

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**Prepared for**



The AES Corporation  
4200 Innslake Drive, Suite 302  
Glen Allen, VA 23060

**Prepared by**



4101 Cox Road, Suite 120  
Glen Allen, Virginia 23060

## Table of Contents

<b>1.0 INTRODUCTION .....</b>	<b>1</b>
<b>2.0 AIR POLLUTANTS .....</b>	<b>1</b>
<b>3.0 WATER POLLUTANTS .....</b>	<b>2</b>
3.1 Surface Water.....	2
3.2 Groundwater.....	2
<b>4.0 WASTE .....</b>	<b>3</b>
<b>5.0 WATER WITHDRAWAL .....</b>	<b>4</b>
<b>6.0 REFERENCES .....</b>	<b>5</b>

## Acronyms and Abbreviations

AES	AES Corporation
BMP	Best management practice(s)
CAA	Clean Air Act
CEA	Cumulative Environmental Assessment
CFC	chlorofluorocarbons
CO	Carbon monoxide
EPA	U.S. Environmental Protection Agency
KDOW	Kentucky Division of Water
MWac	Megawatts, alternating current
NAAQS	National Ambient Air Quality Standards
NO <sub>x</sub>	Nitrous oxides
O <sub>3</sub>	Ozone
Pb	Lead
Pine Grove	Pine Grove Solar, LLC
PJD	Preliminary Jurisdictional Determination
PM <sub>2.5</sub>	Particulate matter less than 2.5 microns in diameter
Project	Pine Grove Solar Project
PV	Photovoltaic
SO <sub>2</sub>	Sulfur dioxide
SPCC	Spill Prevention, Containment, and Countermeasures Plan
SWPPP	Stormwater Pollution and Prevention Plan
Tetra Tech	Tetra Tech, Inc.
USACE	U.S. Army Corps of Engineers

## 1.0 INTRODUCTION

Pine Grove Solar, LLC (Pine Grove), a subsidiary of AES Corporation (AES), is proposing to build an up to 50-megawatt AC (MWac) photovoltaic (PV) solar generation facility along Pine Grove Road, approximately 12 miles east of Richmond, Kentucky in Madison County (Project). The Project Area consists of approximately 486 acres of predominantly undeveloped and agricultural land.

This Cumulative Environmental Assessment (CEA) has been prepared on behalf of Pine Grove and AES by Tetra Tech, Inc. 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.

## 2.0 AIR POLLUTANTS

The Clean Air Act (CAA) regulates the emission of air pollutants and enabled the US Environmental Protection Agency (EPA) to establish the National Ambient Air Quality Standards (NAAQS). The criteria pollutants regulated by NAAQS include 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).

Geographic areas are designated as attainment, nonattainment, or unclassified based on NAAQS. Areas with ambient concentrations of the aforementioned pollutants that exceeds the NAAQS are designated as nonattainment areas, and emissions sources within these areas are typically subject to more stringent air permitting requirements.

Madison County, Kentucky and surrounding counties are designated as within attainment for all criteria pollutants (EPA, 2022).

Project site preparation and construction will produce temporary air pollutant emissions; these emissions would result from operation of construction equipment, ground-disturbing activities, and worker and delivery vehicles. The amount of increased air pollutant emissions will vary by weather conditions and construction activity occurring. However, Project emissions would remain well below the NAAQS. All contractors involved with Project construction will be required to implement best management practices (BMPs) to reduce dust or air quality impacts to the greatest extent practicable. These include cleaning and properly maintaining construction equipment, re-vegetating disturbed areas, covering soil piles and truck loads, and wet dust suppression.

Vegetation and tree clearing associated with Project construction is expected to be minimal as the majority of the site is open agricultural land. Any vegetative debris accumulated during construction and site preparation will be chipped, ground, and composted on site or will be managed at an offsite facility. No burning of any materials, including vegetation or vegetative debris, is proposed.

Once constructed, the Project will not produce any emissions during operation. The only emissions associated with the facility will be from maintenance vehicles and personal transportation vehicles of workers used when performing routine operations. Limited site visits are expected, and will be for the purposes of inspections, equipment maintenance, and vegetation management.

## 3.0 WATER POLLUTANTS

### 3.1 Surface Water

The Project is located within the Drowning Creek watershed (14-digit HUC: 05100204100090) and the Butler Branch watershed (14-digit HUC: 05100204100080) which drain to the Kentucky River. No waterways within or adjacent to the Project are designated as Outstanding State Resource Waters or other Special Use Waters as defined by the Kentucky Division of Water (KDOW).

Tetra Tech conducted a delineation of wetlands and waters of the United States at the Project site on the behalf of Pine Grove and AES. This investigation was performed with the goal of informing development of the Project and in support of a Preliminary Jurisdictional Determination (PJD). If any impacts to wetlands and waters are necessary and unavoidable, Pine Grove and AES will pursue the appropriate permits through the U.S. Army Corps of Engineers (USACE) and KDOW.

Construction activities may result in increased erosion and sedimentation impacting onsite streams and wetlands. In order to minimize impacts, the Project is designed with the existing topography being utilized to the greatest extent practicable and with minimal grading. The Project is expected to have stormwater discharge during construction; Pine Grove and AES will comply with KDOW's Construction Storm Water Discharge General Permit for any construction activities that disturb an acre or more. A Notice of Intent will be submitted before any work begins on the site, and the Project will submit a Notice of Termination once work is complete.

Stormwater discharge will be mitigated utilizing measures such as silt fences, temporary sediment basins and traps, buffer zones around streams and wetlands, and other BMPs in order to minimize the impacts of stormwater runoff. AES and Pine Grove will prepare a Stormwater Pollution Prevention Plan (SWPPP) to be implemented throughout all ground-disturbing activities to comply with KDOW requirements. These BMPs will be used from construction through final vegetative stabilization to prevent degradation and minimize sediment runoff into Waters of the U.S. and the Commonwealth.

All disturbed areas will be revegetated using a mixture of low growing, non-invasive grass and herbaceous plant seed mix that will be certified weed-free by a reputable dealer. All plantings and other erosion control measures will be inspected and maintained until they are deemed stable.

If necessary, only herbicides that are EPA-approved would be utilized for vegetation control on the site. Any herbicides used will be applied in accordance with label directions to limit any applications near waters of the U.S. or the Commonwealth.

After the completion of construction activities, the Project will have little to no impacts on surface waters during operations and maintenance. BMPs will be utilized during any activities that may cause runoff of sediments or pollutants. The reduction in chemical use and animal wastes related to the agricultural activities currently occurring on the site may have beneficial impacts to surface water resources in and adjacent to the Project.

### 3.2 Groundwater

Groundwater is any water found under the earth's surface. Groundwater is frequently used as a source of drinking water, and any pollution or contamination poses a potential risk to these waters and thus

poses a potential health risk to nearby populations. The main source of these contaminants in the vicinity of the Project is agricultural activities.

Hazardous materials that could potentially contaminate groundwater such as fuels, lubricants and other fluids will be stored on site during construction. However, contractors will utilize BMPs to minimize the risk of leaks and spills and implement plans and procedures to immediately address any spills and leaks that may occur. These practices will limit the risk of potential impacts to groundwater.

The development of the Project is not anticipated to have any negative impacts to groundwater. Precipitation can freely run off of the solar panels and infiltrate into the water table or be collected by surface waters as it would naturally.

## 4.0 WASTE

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

Waste generated during construction activities will include wooden crates, pallets, cardboard boxes and other packaging material, and general trash. Additionally, excess wiring and other random debris could be intermittently produced. No waste will be disposed of at the Project site. Where practicable, construction waste 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, used oil, diesel fuel, gasoline, hydraulic fluid, and other lubricants. Proper containers, specifically designed for management of such materials, will be located at onsite staging areas. The storage containers will have secondary containment in case of tank or vessel failure. 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 with petroleum-based fuels will take place on the Project site in specific designated areas. A Spill Prevention, Containment, and Countermeasures Plan (SPCC) will be developed and implemented to minimize the potential for spills of hazardous materials and any resulting impacts. Additionally, spill control kits will be carried on all 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). No significant environmental impacts caused by a potential spill are anticipated due to the small quantity of materials and the containment and clean up procedures that will be implemented.

Additionally, portable chemical toilets will be placed on site for construction workers. Licensed contractors will be utilized for pumping sewage from the portable toilets. The sewage waste will be disposed of at a permitted location selected by the chemical toilet contractor. Permanent bathroom facilities are not anticipated.

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

At the end of the Project's operational life, the Project will follow a decommissioning and site restoration plan to disconnect, remove and recycle the solar array equipment and restore the site. Non-recyclable components will be disposed of in a suitable licensed facility. Once all equipment has been removed, the Site will be restored via topsoiling and seeding following the methodology set forth in the Project decommissioning plan.

No adverse effects from waste generation or disposal in relation to construction or operation of the Project are anticipated.

## **5.0 WATER WITHDRAWAL**

At this time, it is not anticipated that the Project will require external utility services during typical plant operation. If water service is required during construction, the Project will use onsite well water.

Water use related to construction activities will include site preparation such as dust control and grading activities. Proper BMPs outlined in the SWPPP will be followed during any equipment washing and potential dust control discharges. The volume of water required during the construction process is minimal and water resources are not anticipated to be adversely affected.

The Project will minimally and infrequently use water during normal operations and maintenance. Typical rainfall in the region is sufficient to remove dust and other debris from the PV panels, and occasionally contractors may draw water for additional module cleaning. Water may be used for vegetation management needs, including screening vegetation installation and during periods of drought.

## 6.0 REFERENCES

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