December 15, 2023

Solar Generation Siting Final Report – Banjo Creek Solar

KY State Board on Electric Generation and Transmission Siting
Case # 2023-00263

Customer:
Kentucky Public Service Commission

Prepared for:
KY State Board on Electric Generation and Transmission Siting

Wells Engineering, PSC
6900 Houston Road, STE 38 • Florence, Kentucky 41042 • Office 859.282.7538
http://www.WellsEngineering.com

Left Blank Intentionally

December 15, 2023

Prepared by:

Collin Abell
Power Systems Engineer

Reviewed by:

Scott Campbell
Project Manager

Approved by:

Jim Cook
Chief Operating Officer

Solar Generation Siting Final Report – Banjo Creek Solar

Synopsis

This document is the Final Report prepared by Wells Engineering for the Banjo Creek Solar Electric Solar Generating facility in Graves County, KY.

WEPSC Order: WE230912277

Public Service Commission PO:
PON2 123 2300003180

Left Blank Intentionally

Contents

Attachment – A

Final Assessment Report on Scenic, Environmental, Traffic, Noise & Fugitive dust impacts

Attachment – B

Impact on Property Values

Attachment – C

Economic Impact Analysis

Attachment – D

Information on Sound Dampening as requested by the Siting Board

REVISIONS

Revision	Date Issued	Issue Type	By	Description
0	12-15-23	Final Report	CA	Issue for Review & Record

Power Systems Engineering

Since 2004, Wells Engineering has served utility, industrial, and commercial facilities for all their power needs. Quality and innovation have established Wells as the go-to engineering firm specializing in the planning, design, control, and analysis of electrical power systems. With a great reputation of working closely with our clients and listening to their requests, our team diligently provides solutions that fit every need.

Wells Engineering delivers innovative solutions aligned with rigid standards and best engineering practices.

Our Mission

Our mission is to provide unsurpassed quality engineering service and customer support. We will conduct our business in the most professional manner possible and provide the highest quality product in a timely manner. Our value-added engineering will be recognized and provide the opportunity to earn our customers' confidence. We will use proven technology to create advanced power systems designs to support the development of the safest and most reliable systems for our clients.

Services

PLANNING AND STUDIES. Arc Flash Hazard Analysis • Short Circuit Analysis • Equipment Evaluation Analysis • Coordination Analysis • Load Flow Analysis • Power Factor Correction • Harmonic Analysis • Cable Ampacity Analysis • Motor Starting Analysis • Power Quality Analysis • Voltage Flicker Analysis • Insulation Coordination Analysis • Switching Transient Analysis • Generator Stability Analysis • Ground Mat Analysis • Grounding and Bonding Study • DC Power System Analysis • Project Feasibility Studies

DESIGN ENGINEERING AND EPC SERVICES. Generator Protection & Control • T&D Line • Power Substation • Transmission Switching Stations • Gas Insulated Substations • SCADA • Capacitor & Harmonic Filter Banks • Motor Protection & Control • Protection Relaying Schemes • Underground Duct banks • Unit Substations • LV/MV Motor Control Centers • AC/DC Traction Power Substations • LV/MV Power Cable Distribution • Emergency Generator Integration • ATS Specifications & Design

APPLICATION ENGINEERING. Relay Protection & Control • RTU & RTAC Programming • Induction Motor Control • Synchronous Motor Control • Capacitor & Filter Banks • SVC Systems • FACTS/STATCOM • Forensic Investigation • Sequence of Events Failure Analysis • Power Systems Planning • Grounding & Bonding • Maintenance Planning & Audits • Troubleshooting • Disaster Recovery Plans • Technical Witness.

PROJECT AND CONSTRUCTION MANAGEMENT. Equipment Specifications • Bid Document Facilitation • Subcontractor Qualification • Vendor Selection • Construction Estimates • Contract Administration & Implementation • OEM Factory Witness Testing • Resource Management • Master Project Schedule • Material Tracking • Spare Parts Management • Warranty Negotiation • Procurement Leveraging • Cash Flow Management

TESTING AND COMMISSIONING. MV/HV/EHV Circuit Breakers • Circuit Switchers • MV Switchgear • GSU & Power Transformers • Capacitor Banks • Harmonic Filter Banks • PTs & CCVTs • CTs • Substation Relay Protection & Control • Overcurrent, Fault Locators, & Distance Relays • Generator Protection Relaying Disconnect Switches • Surge Arrestors • Station Batteries • Grounding Resistors/Reactors/Transformers • Ground Grid • Reclosers • Reactors • Thermography • Relay protection & controls • Substation Commissioning • Predictive & Preventative Maintenance • Field Engineering & Troubleshooting • Arc Flash Hazard Analysis & Training • Refurbishment & Repair Electrical System Upgrades • NERC Compliance Testing

1 General Statement

The present document is the Final report prepared for the Solar Generation siting project of Banjo Creek Solar LLC who is applying for a certificate of construction for an approximately 120-megawatt Merchant Electric Solar Generation Facility and 30-megawatt AC battery energy storage system in Graves County, KY.

1.1 Scope

As part of the personal service contract for the 'Generation Siting Board 2023', between The Commonwealth of Kentucky Energy Environment Cabinet/Public Service commission and Wells Engineering, in the matter of the order issued for case number 2023-00263, Wells Engineering was appointed to review the Application documents and the Site assessment report submitted by the applicant as per the Kentucky Revised Statutes 278.706, 278.708 and submit a Final report on the Solar Generation Siting for the application for a construction certificate by Banjo Creek Solar LLC in Graves County, KY.

Wells Engineering contracted the following expertise based on the requirements of the project,

i) Clover lake Consulting Services for Noise & Environmental assessment
ii) Watters Unclaimed Property Consulting LLC for Economic impact.
iii) Clark Toleman, MAI,SRA for the review on impact on property values

1.2 Reference Document

The following documents are referenced for the creation of this document.

i. Read_1st_9-07-23 (Read 1st)
ii. 0_Banjo_Creek_Pleading
iii. 1_Banjo_Creek_Application
iv. 1a_Attachment_A_-_Context_Map
v. 1b_Attachment_B_-_Proof_of_Notice_of_Application
vi. 1c_Attachment_C_-_Certificate_of_Compliance
vii. 1d_Attachment_D_-_Public_Involvement_Documents
viii. 1f_Attachment_F_-_Economic_Analysis
ix. 1h_Attachment_H_-_Decommissioning_Plan
x. 2_Site_Assessment_Report
xi. 2a_Appendix_A_-_Land_Use_Map
xii. 2b_Appendix_B_-_Property_Deeds
xiii. 2c_Appendix_C_-_Preliminary_Site_Layout
xiv. 2d_Appendix_D_-_Noise_and_Traffic_Assessment_Study

xv. 2e_Appendix_E_-_Project_Renderings
xvi. 2f_Appendix_F_-_Property_Value_Analysis
xvii. 3_-_Banjo_Creek_Motion_for_Confidential_Treatment
xviii. 20230802_Banjo Creek Solar LLC Notice of Intent and Election
xix. 20230802_PSC Acknowledgment Letter
xx. 20230804_PSC No Deficiency Letter- Notice of Intent
xxi. 20230907_Acknowledgement Letter of Application Fees
xxii. 20230908_No Deficiency Letter
xxiii. Banjo_Creek_NOI_(01930668)

2 Solar Electric Power – 'Know-how'

Earth receives energy from the sun in the form of heat and light. It is possible for the light energy received to be converted into electricity using a device called a solar cell or photovoltaic cell (PV Cell for short). A solar cell receives 'Photons' from sunlight which then produces Electric 'Volts' thus giving these devices the name 'Photovoltaic'.

A simple solar cell is relatively small and can only produce a couple watts of electricity, which is not sufficient for large-scale utilization. To increase the power production, several cells are combined to form a 'Solar Module', which can produce a usable amount of electricity. A 'Solar System' is when several solar modules are arranged systematically for large-scale power production.

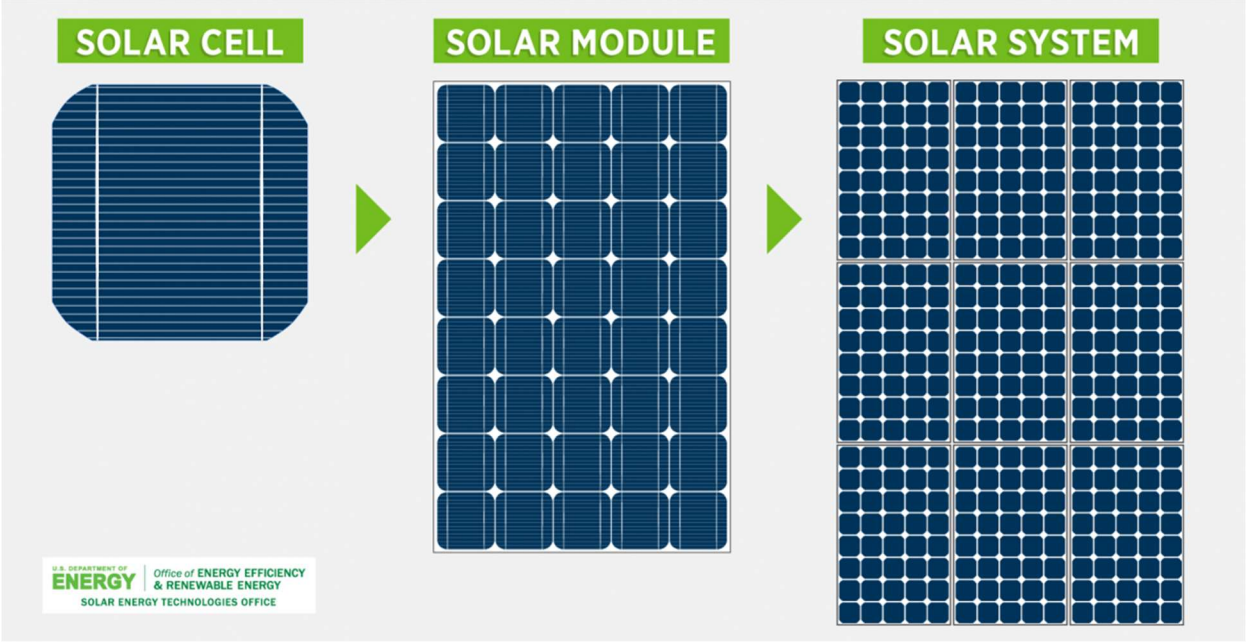


Figure (1)
Solar System[1]

For electricity generated by Solar systems to be utilized, it first must be connected to the regional electric grid. Once the solar system is connected to the electric grid it can then be distributed to consumers. This is achieved by constructing a solar power plant with the use of a solar panels, in which the quantity and arrangement of solar modules is determined from the electrical system

[1] Picture from the official website of 'Office of Energy Efficiency & Renewable Energy'

design of the plant and is then connected to the regional electric grid for distribution to the consumer.

2.1 Solar Power Plant

A Solar Power plant is an electric power plant constructed for generating electric power using solar modules. A Solar Power Plant consists of a solar system and the other associated electrical and plant equipment for transmitting the energy generated.

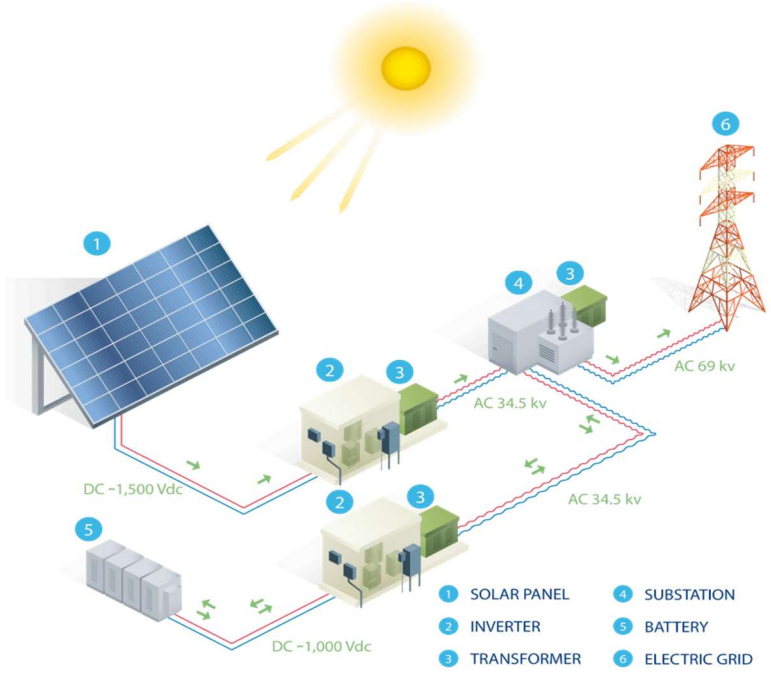


Figure (2)
A Solar Power Plant[2]

Some of the commonly seen equipment in a solar power plant are,

i) Solar Modules
ii) Inverters,
iii) Batteries
iv) Power transformer,
v) High voltage Circuit breakers, Fuses and Other protection equipment
vi) Utility Metering equipment
vii) Electrical Conductors &
viii) Steel & Concrete structures,

[2] Image found from industrial-on-grid-scheme.png (1600×1546) (avenston.com)

A Solar Power plant, constructed by a private entity, after making Power Purchase Agreements (PPA) with the local Electric Power grid to supply electric power, is known as a 'Merchant Electric Solar Power Plant'.

2.2 Role of Solar Modules

As stated earlier a Solar Module which is 'Photovoltaic', uses 'Photons' that are absorbed from sunlight to then produce electric power. This electric power is unidirectional in nature and requires additional equipment such as Inverters and Transformers for Electric Power Utilization.

Besides the additional equipment, the Solar modules are manufactured with the ability to track the sun to increase their efficiency.

Picture (3)
Solar Modules Installed on Farmland[3]

2.3 Role of Inverters

The power produced by a solar system, because of its basic principle of operation, is unidirectional and is in the form of Direct Current or in short, DC. This form of DC Power is not

[3] Refer to PV magazine Molong Solar Farm nolonger in development, successfully energised – pv magazine Australia (pv-magazine-australia.com)

suitable for utilization. The DC power should be converted to Alternating current, AC for utilization.

A 'Solar inverter' or a 'PV inverter' is a power electronic device which converts the DC Power generated by the Solar system, into AC Power. This AC Power is then transmitted to the electrical grid for power distribution.

Picture (4)
Industrial Solar Inverter[4]

2.4 Role of Batteries

As a Solar system can produce electric power only when the sunlight is available. It is because of this drawback a Solar power plant cannot produce electricity during night. In order to overcome this drawback Solar power plants are installed with batteries so that some portion of electricity produced by the solar modules during the day is stored in the batteries and retrieved during night.

The Solar Modules and the Batteries function on DC. A proper combination of Solar Modules and

[4] Refer to PV magazine SMA reaches 10 GW of installed Sunny Central inverters in North America – pv magazine USA (pv-magazine-usa.com)

Batteries can produce electricity all day long.

Picture (5)
GE Industrial Battery[5]

2.5 Role of Transformers and Other associated switchyard equipment

A Transformer is an electrical power equipment which is used either to step-up or to step-down the voltage of an electrical power source without changing the frequency of the voltage. A Transformer is an AC power equipment.

In a Solar Power plant, the power produced by the solar modules is converted into the useful form of AC by Inverters. The AC Power produced by inverters are at a relatively lower voltage comparted to the voltage available at the electric power grid. A Transformer, which can step-up the voltage to match it with the grid, is used to overcome the difference in voltages and to establish an interconnection for the supply of power.

In a large Solar Power plant, every Inverter is installed with a Transformer locally to the inverter, to step-up the voltage to a medium level, other than the voltage available at the grid. This is done

[5] Refer to PV magazine GE to supply 100 MW/300 MWh battery for South Australia solar farm – pv magazine International (pv-magazine.com)

to form a network of Transformers to collect the power coming from each Inverter.

This Electric network of transformers will have one high-capacity Main Transformer, which does the final step-up for the connection with the grid.

Besides the Transformers, Solar Power plants are installed with some other electrical equipment like,

i) Electric Switchgear
ii) Electric Bus system
iii) Electric Protection system &
iv) Electric Energy measurement system

Picture (6) Substation Transformer[6]

[6] Image found from the following website Transformer substation THE TRENT - The Trent (thetrentonline.com)

2.6 Role of Steel & Concrete Structures, Roadways & Fencing

Steel & Concrete structures are necessary structures for the installation of solar modules and all other necessary electrical equipment. Roadways provide access to the modules for site personnel for work to be completed for maintenance and general site operation. Fencing is installed at solar facilities to determine the boundary of the facility, safety, as well as controlling who has access to the facility.

Picture (7)
Steel & Concrete Structures of a 2MW Solar farm[7]

[7] Image found from the following website
https://www.energy.gov/eere/solar/solar-integration-inverters-and-grid-services-basics

2.7 General Effects of Solar Power Plants

2.7.1 Noise from the Equipment

In a Solar power plant, the Solar Inverters and the Power Transformers are the main sources of noise. The cooling fans mounted on the Inverters and the Transformers are responsible for the majority of the noise. However, the noise produced by this equipment are effective only in the vicinity of the equipment and decay with the distance. When this equipment is located appropriately in the plant the effect of noise can be minimized.

2.7.2 Increased Road Traffic, Noise and Fugitive dust

The Solar Powerplant is a plant with stationary equipment producing energy based on the photovoltaic effect. There will not be any transportation of raw material or the plant wastage for the Solar power plant. Hence, Solar power plants do not increase the Traffic, Noise and Fugitive dust during the operation. However, during construction there will be considerable traffic of construction vehicles transporting the equipment of the plant. Necessary mitigation measures must be taken to avoid traffic congestion, Noise and Fugitive dust during the construction of the Solar Power plant

2.7.3 Environmental and Wildlife

Solar energy systems/power plants do not produce air pollution or greenhouse gases. In fact, solar energy consumption can have a positive indirect effect on the environment and reduces the use of other energy sources that have larger effects on the environment. However, some toxic materials and chemicals are used to make the photovoltaic (PV) cells of the Solar modules.

There has been a relatively low number of studies that have been done on how solar facilities affect wildlife. However, the following methods can be adopted to minimize the impact of Solar power plants on wildlife[8],

i) Avoid areas of high native biodiversity and high-quality natural communities
ii) Allow for wildlife connectivity, now and in the face of climate change
iii) Preferentially use disturbed or degraded lands
iv) Protect water quality and avoid erosion
v) Restore native vegetation and grasslands

[8] Making Solar Wildlife-Friendly
Creating solutions to maximize conservation benefit from solar production
https://www.nature.org/en-us/about-us/where-we-work/united-states/north-carolina/stories-in-north-carolina/making-solar-wildlife-friendly/

vi) Provide wildlife habitat

2.7.4 Farming land

One of the biggest concerns with solar farms built on farmland is the effects they will have on the land once all the panels and associated equipment are removed from the site, as well the effect on local wildlife species and the ability for the land to be used with domesticated animals.

The land occupying a solar farm can be reverted to agricultural uses once the project has reached the end of its operational life. The life of a solar installation is roughly 20-25 years and can provide a recovery period, increasing the value of that land for agriculture in the future. Giving soil rest can also maintain soil quality and contribute to the biodiversity of agricultural land. [9]

Silicon-based photovoltaic cells (PV) are the type of PV cells commonly used. Most solar panels are manufactured with a glass front that protects the PV cell as well as either a aluminum or steel frame. Research shows that traces metals leaching from solar modules is unlikely to present a significant risk due to the sealed nature of the PV cells. Some manufacturers use cadmium telluride (CdTe). Cadmium compounds are toxic, but studies show that these compounds cannot be emitted from CdTe modules during normal operation or even during fires. Industrial incineration temperatures, which are higher than grassfires, are required to release the compounds from the modules. [10]

During the Plant operation, Solar farms can be used to graze domestic animals such as sheep, which are commonly used to control vegetation at the facility as they do not climb on or damage the PV modules. It is not necessary to raise the PV modules in height to accommodate grazing as vegetation is accessible beneath the modules at the standard mounting heights. When sheep are used for grazing to control vegetation growth it can benefit local shepherds, the solar operators, and the land due to a reduction in mowing, herbicide, and other management needs. Cattle grazing is generally not compatible with PV facilities due to the risk of damage to the modules. Wild animals can graze under PV modules; however, security fences can be installed to increase the security of the facility as well as keeping out larger animals if they are deemed to be a damage risk to the modules. Fencing can be built to accommodate smaller animals such as foxes. The areas below the PV modules can be built to provide a habitat and forage to pollinators, birds, and other small species.[11]

[9] Farmer's Guide to Going Solar https://www.energy.gov/eere/solar/farmers-guide-going-solar
[10] Farmer's Guide to Going Solar https://www.energy.gov/eere/solar/farmers-guide-going-solar
[11] Farmer's Guide to Going Solar https://www.energy.gov/eere/solar/farmers-guide-going-solar

3 Banjo Creek Solar – Application Review & Findings

The present document, as mentioned in the previous sections, is the final report created after reviewing the application documents submitted by the applicant, Banjo Creek Solar, LLC.

In this section, a detailed discussion is made on the Initial review, Site visit and the Final review from Wells Engineering.

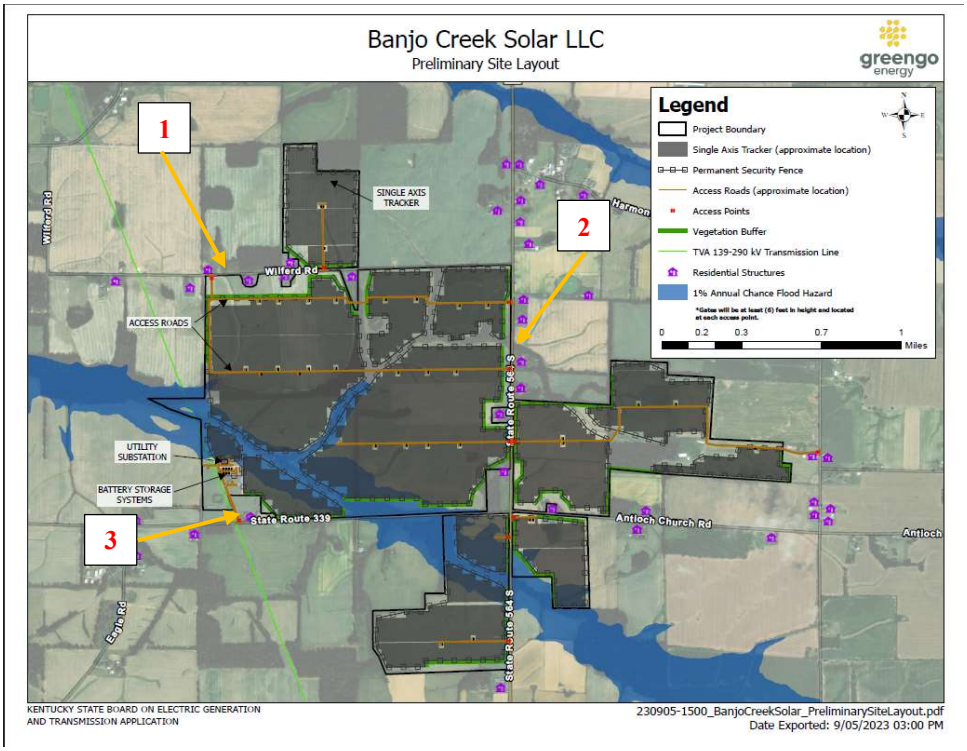
3.1 Initial Review

Wells Engineering and its Consultants working on the Siting Project review the applicant document for their adequacy, as part of the requirements of the state order for the applicant's Case No. 2023-00263. After the initial review of the application documents, a list of statements was submitted from First and Second Requests for Information.

3.2 Site Visit

As part of the requirements of the state order, for the applicant's Case No. 2023-00263, Wells Engineering, made a visit to site as organized by the Siting board, on November 3rd, 2023.

The locations visited are indicated on the picture below Reference Picture (8).



Picture (8) Banjo Creek Solar Site Visit Locations

Pictures from the site visit are shown in the following pages.

Picture (9) Stop #1 (Looking at proposed area for solar panels)

Picture (10) Stop #1 (Looking at Transmission Line)

Picture (11) Stop #1 (Looking at proposed area for solar panels)

Picture (12) Stop #1 (Looking at grain silos that are to be moved)

Picture (13) Stop #1 (Owner wants buffer around these barns)

Picture (14) Stop #2 (Looking at proposed area for solar panels)

Picture (15) Stop #2 (Looking at proposed area for solar panels)

Picture (16) Stop #2 (Existing Barn #1 to be removed)

Picture (17) Stop #2 (Existing barn #2 to be removed)

Picture (18) Stop #3 (Transmission line project will connect to, also location of project substation)

Picture (19) Stop #3 (Existing pig barn to be removed)

3.3 Final Review

In this section a detailed discussion is made on the major aspects of the application documents submitted for their compliance as per the statutes KRS 278.706, 708 & 710

3.3.1 Review of Application documents

Accordant with KRS 278.706 the applicant, Sebree II Solar LLC, submitted the application documents and a Site Assessment Report addressing the compliances on different requirements of KRS 278.708.

As per KRS 278.708(3) the Site Assessment Report shall include the following

(a) A description of the proposed facility that shall include a proposed site development plan that describes:
   1) Surrounding land uses for residential, commercial, agricultural, and recreational purposes.
   2) The legal boundaries of the proposed site.
   3) Proposed access control to the site.
   4) The location of facility buildings, transmission lines, and other structures.
   5) Location and use of accessways, internal roads, and railways.
   6) Existing or proposed utilities to service the facility.
   7) Compliance with applicable setback requirements as provided under KRS 278.704(2), (3), (4), or (5).
   8) Evaluation of the noise levels expected to be produced by the facility.

(b) An evaluation of the compatibility of the facility with scenic surroundings.

(c) The potential changes in property values and land use resulting from the siting, construction, and operation of the proposed facility for property owners adjacent to the facility.

(d) Evaluation of anticipated peak and average noise levels associated with the facility's construction and operation at the property boundary.

(e) The impact of the facility's operation on road and rail traffic to and within the facility, including anticipated levels of fugitive dust created by the traffic and any anticipated degradation of roads and lands in the vicinity of the facility.

As per KRS 278.710(1)(c) the 'Economic Impact of the facility' is studied for granting a Construction Certificate.

3.3.2 278.708(3)(a)(1) Surrounding Land Uses

Wells Engineering reviewed the Site Layout and maps submitted by the applicant and visited the site on November 3rd, 2023. The findings after the site visit are discussed below.

Findings on the Site Layouts & maps

1) Underground communication lines should be identified at the time of construction.

3.3.3 278.708(3)(a)(2) Legal Boundaries

The documentation on the legal description of the land was found to be adequate as part of the application. However, any discrepancy identified at any stage of the project shall be brought to the attention of the Public Service Commission and resolved for legal compliance.

3.3.4 278.708(3)(a)(3) Proposed Access Control

As per the KRS requirements KRS 278.708 (3)(a)(3), the applicant has proposed the access control methods that are adopted for the site.

Finding on Proposed Access Control:

1) At the time of construction and operation of the plant, besides providing fencing (as proposed by the applicant), all necessary signage, caution boards and safety requirements as per OSHA shall be installed.

3.3.5 278.708(3)(a)(4) Location of Facility Buildings & Transmission Lines

After reviewing the Site Layout and other plans submitted by the applicant and after visiting the site, the following findings were made.

Findings on Location of Facility Buildings and Transmission lines.

1) Existing Electric services:
   Any new power line should be clear of the existing electric service line, power pole and guy wire.
2) The Substation will need oil containment for the Transformer to prevent any leakage of oil into nearby bodies of water.

3.3.6 278.708(3)(a)(5) Location and Use of Accessways, Internal Road & Railways

As part of the site visit, major access points are visited, and the following findings were made.

Findings on Location and Use of Accessways, Internal Road & Road

1) The internal roads are proposed to be all-weather gravel.
2) Avoid using Oversize trailers for material transport and limit the overall weight as per the bridges and culverts of the Road. Install new culverts if necessary.
3) Weight limits of the roads should be considered when delivering heavy material loads for the project.

3.3.7 278.708(3)(a)(6) Existing or Proposed Utilities to Service the Facility

After reviewing the plot plans submitted by the applicant, it was found that the drawings do not indicate the utilities to the Operation & Maintenance building of the plant, as the drawings are prepared as preliminary. The applicant has not indicated if water, internet, or phone connection will be provided to the site. As applicable, there should be necessary drawings created indicating all underground, overhead utilities required to site at the time of construction.

3.3.8 278.708(3)(a)(7) Compliance with Applicable setback requirements

The KRS required setback is 2000 feet. This setback is practical for turbine-based plants but not practical for a solar power plant. After reviewing the application documents, Layouts & Maps, it was found that the following setback distances are followed,

100’ from state roads
30’ from county roads
300’ from Residences

3.3.9 278.708(3)(a)(8); (b); (d) & (e) Evaluation of Noise levels, Scenic surroundings, Environmental impact & Fugitive Dust

Wells Engineering has appointed Thomas Chaney for the Environmental Assessment of site for Noise, Scenic surroundings, historic and archeological, Environmental & Fugitive dust. The summary of review is as below,

“At its conclusion, this adequacy report shows that the application submitted by the applicant, Banjo Creek Solar LLCI is fully in compliance with the intent of the Kentucky Revised Statutes.”

Reference Attachment-A for complete report from Cloverlake Consulting.

3.3.10 278.708(3)(c) Property Values

Wells Engineering has appointed Clark Toleman for the assessment of the Application document for the impact on Property Values. The conclusion is described below.

Conclusion: ”Considering my analysis of the Kirkland Appraisals Impact Study I have concluded that the report is credible and representative of the market conditions that would exist should the Banjo Creek Solar Project be constructed based on the market evidence and interpretation of the data contained in the Impact Study. The report includes a review of published studies on property value impacts associated with solar projects, paired sales analysis in thirty-eight comparable solar

projects, and interviews with real estate professionals and real property assessors."

Reference the Attachment-B for complete report from, E. Clark Toleman MAI, SRA.

3.3.11 278.710(1)(c) Economic Impact Analysis

Economic Impact Analysis was performed by Mark Watters, as contracted by Wells Engineering, for the Site Assessment.

*Summary: "*Based upon the representations of the Applicant through its *Economic Impact Report*, there is a positive, significant, short-term initial economic during the Construction Phase for the Commonwealth of Kentucky, Graves County, and its region. During the longer Operational (generation) phase, there are lesser-but-positive economic impacts.*"*

Reference the Attachment-C for complete report from Mark M. Watters.

4 Recommendations & Mitigations Measures

After reviewing the application documents and performing the site visit, Wells Engineering provides the following Recommendations & Mitigation measures.

1. Create an over-all plot plan indicating all water bodies, bridges, railroad crossings, culverts, access roads, power lines, residential and public structures, etc.
2. For locating the Solar Modules and Other associated equipment of the plant maintain sufficient clearance from the existing power lines.
3. Construct new bridges or culverts wherever necessary for equipment transportation.
4. Setbacks for solar equipment from roads and property lines, with increased setbacks for certain equipment. Security fencing, and vegetative buffer shall not be subject to setback restrictions.
5. Leaving existing vegetation between solar equipment and neighboring residences in place, to the extent practicable, to help screen the Project and reduce the visual impact.
6. Notices to neighbors regarding potential construction and operation noises, as well as limits on working hours during the construction period, as described in the Application.
7. Fugitive Dust and PM10(Coarse particles)
   Coarse (bigger) particles, called PM10, can irritate your eyes, nose, and throat. Dust from roads, farms, dry riverbeds, construction sites, and mines are types of PM10. The applicant will submit in writing the specific plan to control fugitive dust and PM 10 during the construction process ten days prior to commencing construction.

4.1 Cumulative effect of the Total Solar generation on the Grid

Solar developments are rapidly increasing and while the impact to the surrounding environment might be minimal, the combined or cumulative effects of multiple developments may have a greater impact. Environmental concerns due to cumulative impacts, such as Glint, Glare and emission are expected to grow.

The proposed project would create air emissions due to vehicle and dust emissions associated with development activities. Similar effects would be experienced during decommissioning, which would be carried out according to the project's restoration plan.

Generating electricity using solar rather than fossil fuels reduce greenhouse gas emissions and helps address climate change. While solar energy is preferable to fossil fuel generators from an emissions perspective, power output from solar energy sources depends on variable natural resources, which makes these plants more difficult to control and presents challenges for grid operators.

As the electricity from solar energy can be produced only during daytime, the Solar Power

projects have the inherent risk of unavailability during nighttime. The utilities and the transmission planning authorities shall identify the risks associated with this and plan the intake of the energy from Solar plants effectively.

To accurately balance electricity supply and demand on the power grid, grid operators must understand how much solar energy is being generated at any given time, how much solar energy generation is expected, and how to respond to changing generation. This can be challenging for grid operators due to the intermittent nature of solar energy and the wide variety in the size and locations of solar energy across the power grid. As the proportion of solar energy capacity on the grid increases, these issues are becoming increasingly important to understand renewables connect to the grid, how these connections impact grid operations, and implications of a high penetration of renewables for the grid in the future.

Wells Engineering delivers innovative solutions aligned with rigid standards and best engineering practices.

Visit us at

www.wellsengineering.com

ATTACHMENT A

Kentucky State Board on Electric Generation and Transmission Siting

Banjo Creek Solar – Case No. 2023-00263

Developed for Wells Engineering and the Kentucky Public Service Commission- State Board on Electric Generation and Transmission Siting

By Cloverlake Consulting Services, W. Thomas Chaney, President

December 15, 2023

Table of Contents

Report Section **Page**

Cloverlake Consulting Services December 15, 2023

On Behalf of Wells Engineering, Florence, Kentucky For Banjo Creek Solar LLC, Project-Kentucky State Siting Board on Electric Generation and Transmission Case No: 2023-00263.

Introduction

The Kentucky Public Service Commission, State Siting Board requires that applicants for a certificate for Solar Facilities file an application which details the current state of the affected properties to be used for the facilities. It also requires an assessment of the impact on the properties regarding the natural and human environment. This report assesses the adequacy of the assessment of the natural environment including noise, traffic, dust, historic, archeologic resources, and natural resources including endangered plant and animal species groundwater and surface water.

At its conclusion this adequacy report shows that the application submitted by the applicant, Banjo Creek Solar LLC is fully in compliance with the intent of the Kentucky Revised Statutes.

A. **Siting Project Description**-REQUIREMENT: per Kentucky Revised Statute (KRS) 278.708 (3)(a); A description of the proposed facility that shall include a proposed site development plan that describes:

1. Surrounding land uses for residential, commercial, agricultural, and recreational purposes;
2. The legal boundaries of the proposed site;
3. Proposed access control to the site;
4. The location of facility buildings, transmission lines, and other structures;
5. Location and use of access ways, internal roads, and railways;
6. Existing or proposed utilities to service the facility;
7. Compliance with applicable setback requirements as provided under KRS 278.704(2), (3), (4), or (5); and
8. Evaluation of the noise levels expected to be produced by the facility. COMPLIANCE: The Banjo Creek Solar Project (Project) is a proposed 120-megawatt alternating current solar photovoltaic (PV) facility and 30-megawatt alternating current battery energy storage system on approximately 1,106 acres located approximately eight miles southeast of the city of Mayfield

and 10 miles west of the city of Murray in Graves County, Kentucky. If built, the Project would sell power to the Tennessee Valley Authority (TVA) and connect to the existing adjacent TVA Paris–Mayfield 161-kilovolt (kV) transmission line. The solar facility would consist of a solar array with crystalline silicon or thin film PV panels attached to ground-mounted single-axis trackers, central inverters, several medium voltage transformers and a main power transformer, a substation, BESS, a switching station, an operations and maintenance (O&M) building, access roads, and all associated cabling and safety equipment. The placement of the facility components would minimize impacts to environmental resources to the maximum extent possible. The Project is within a rural agricultural area and is bisected by Kentucky Route 339 (KY 339)/Antioch Church Road, KY 564, and Wilferd Road, and is bounded to the east by Beech Grove Road. KY 339/Antioch Church Road extends east-west through the southern portion of the Project and KY 564 extends north-south through the eastern portion of the Project. The Project is predominantly flat to gently sloping agricultural land with strips of forested areas buffering property lines and some wetlands, streams, and ponds. Structures such as residences and agricultural buildings (barns, garages, silos) are also present, primarily along roads within or Banjo Creek Solar LLC controls a total of 1,270 acres of land in Graves County; however, due to development restrictions, the Project site as referenced in this CEA is 1,106 acres. See attachment G to the Site Assessment Report.

The Project would consist of PV modules attached to single-axis trackers that follow the path of the sun from the east to the west across the sky. Groups of panels would be connected electrically in series to form strings of panels, with the maximum string size chosen to ensure the maximum inverter input voltage is not exceeded by the string voltage at the Project's high design temperature. The panels, estimated to be approximately 6.6 feet by 4 feet, would be situated in individual blocks consisting of the PV arrays and an inverter station on a concrete pad or steel piles, to convert the direct current (DC) electricity generated by the solar panels into AC electricity. The PV panel and inverter blocks in close vicinity and not separated by public roads would be enclosed together by chain-link security fencing.

1.1 Project Land Use- According to the U.S. Geological Survey (USGS) National Land Cover Database (NLCD) (2021), surrounding Project land use consists of agricultural, forested, herbaceous, and low intensity development. Data indicate the Project site consists primarily of cultivated crops and hay/pasture (90.8 percent total), with scattered areas of deciduous and mixed forest (6.6 percent total), open space (1.6 percent), and developed areas, herbaceous, and open water (0.9 percent total). According to review of historical aerial imagery and topographic quadrangle maps, land use in the Project vicinity has remained relatively unchanged since at least 1950. There are no county, state, or federal public lands or recreational resources located within the Project site. Additionally, there are no state or county recreation facilities that have been identified within two miles of the Project. See the Assessment Report Appendix A for the NLCD (2021) Land Use Map for the Project site and

vicinity. A classification of the surrounding land use is included in the Property Value Analysis conducted by Kirkland Appraisals, LLC, and attached as Appendix F of the Site Assessment Report.

1.2 Legal Boundaries -Appendix B of the Site Assessment Report includes the property deeds for the Project.

1.3 Project Facility Layout and Access- The Project facility layout is presented in Appendix C to the Site Assessment Report. The layout identifies the access points for the Project. Access points would use locked, double-swing site access gates that would provide ingress to and egress from the site. The Project would be accessible only to TVA, Banjo Creek Solar LLC, and their agents and contractors.

1.4 Location of Facility Buildings, Transmission Line and Other Structures- TVA's adjacent existing Paris–Mayfield 161-kV transmission line extends north-northwest to south-southeast through the southwest corner of the Project (Appendix C of the Site Assessment Report). The proposed solar facility would interconnect to this transmission line, which would transmit the power generated by the facility. An on-site substation and switching station, built in the southwestern portion of the Project, would connect the solar facility to the existing TVA transmission line. A Battery (Attachment G Site Assessment Report KRS 278.706(2)(1)) Energy Storage System (BESS) would be built adjacent to the substation. An O&M building and storage and maintenance facility would also be constructed near the substation. There are plans for a new Transmission Line associated with the project. The adequacy of the application for this transmission line is dealt with later on in this report.

1.5 Location and Use of Access Ways, Internal Roads and Railways- The Project facility layout in Appendix C of the Site Assessment Report shows the proposed access points and internal roads at the Project site. Railways would not be used in support of this Project.

1.6 Existing and Proposed Utilities to Serve the Project- The Project components needing external power would be serviced by an existing adjacent TVA Paris–Mayfield 161-kV transmission line or local power from West Kentucky Rural Electric Cooperative. No utility water/sewage lines are expected to be built or used for the Project. Any water needs would be provided either via proposed on-site groundwater wells or by delivery via water trucks. Banjo Creek Solar LLC would coordinate with Kentucky 811 to verify the presence and location of utilities within or near the Project.

1.7 County Ordinances-Graves County does not have ordinances related to the construction and operation of solar facilities. However, to offset impacts to adjacent or nearby residences and in a practice of caution, Banjo Creek Solar LLC would implement the following setbacks for the Project:

• 300-foot solar panel setback from residences;

• 100-foot solar facility setback from non-participating parcels with residences and from state roads;

• 30-foot solar facility setback from non-participating parcels that do not have residences and from county roads; and

• 50-foot solar facility setback from the banks of intermittent and perennial streams and the edges of all wetlands. There would also be a six-foot-tall fence topped with barbed wire and a vegetative buffer composed of evergreen trees planted a maximum of 15 feet apart at the perimeter fence along the road frontage and residences where existing vegetation is not sufficient in shielding views of the facility. The evergreen trees will reach at least six feet in height at maturity. Due to the fence and vegetative buffer, it is anticipated that the visual impacts during the operations phase of the Project would be minor in the vicinity of the site. Because there are no residential neighborhood, schools, hospitals, or nursing home facilities.

1.8 Noise and Traffic Study-

Section 5 and 6 Following in this report discuss the results of the Noise and Traffic Study and the report is provided as Appendix D of the Site Assessment Report.

operations phase of the Project would be minor in the vicinity of the site. Attachment G Site Assessment Report KRS 278.706(2)(1).

2.0 Compatibility with Scenic Surroundings

REQUIREMENT: per KRS 278.708 (3)(b); An evaluation of the compatibility of the facility with scenic surroundings. COMPLIANCE: The Project site has predominantly flat to gently sloping terrain. Existing land use in the Project vicinity is largely agricultural and forested lands; if the proposed Project is constructed the land would be converted to industrial land use, consisting of low-profile PV arrays. Long-range views from visual resources near the Project, primarily along or off KY Route 339/Antioch Church Road and Beech Grove Road are generally partially obscured by mature trees as well as those framing fields and/or roads nearby. Long-range views from locations near the Project along KY Route 564 and Wilferd Road are generally unobstructed. To address the compatibility with the scenic surroundings of the Project, Banjo Creek Solar LLC's subconsultant, HDR performed an initial desktop.

review to identify multiple relevant key observation points (KOPs) near the Project that would be representative of typical views. A site visit was performed in August 2023 to assess different KOPs. Using photographs from the site visit, the topography on and surrounding the site was modeled and the key components of the Project for four different scenarios were determined. Appendix E provides the Project renderings. The Project would likely be more visually intrusive in the morning and late afternoon, when the panels would be facing east or west, respectively, at their maximum tilt, with the upper edge of the panels about eight feet from the ground. This effect would last until at least midday, which at this time the panel profile would be lying flat and about five feet tall. The anti-reflective PV panel surfaces would minimize glare and reflection, and visual impacts from these vantage points are expected to be minor due to the visibility of relatively small portions of the Project elements. There is no proposed permanent lighting at the Project site. As mentioned in Section 1.7, Graves County does not have any ordinances for solar facilities; however, Banjo Creek Solar LLC has proposed setbacks for the Project to adhere to. In addition, there would also be a six foot-tall fence topped with barbed wire and a vegetative buffer composed of evergreen trees planted a maximum of 15 feet apart at the perimeter fence along the road frontage and residences where existing vegetation is not sufficient in shielding views of the facility. The evergreen trees will reach at least six feet in height at maturity. Due to the fence and vegetative buffer, it is anticipated that the visual impacts during the operations phase of the Project would be minor in the vicinity of the site.

The data and conclusions contained in the Site Assessment Report for the Banjo Creek Solar project regarding Compatibility with Scenic Surroundings is in compliance with the intent of KRS 278.708.

3.0 Property Value Impacts

(REQUIREMENT: per KRS 278.708 (3)(c)) The potential changes in property values and land use resulting from the siting, construction, and operation of the proposed facility for property owners adjacent to the facility. COMPLIANCE: See Appendix F of the Site Assessment Report for a report describing potential property value impacts to owners adjacent to the proposed facility by a certified real estate appraiser. The conclusion of the report, Section XV on page 124, reads as follows: The matched pair analysis shows no negative impact in home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all support a finding of no impact on property value. Very similar solar farms in very similar areas have been found by hundreds of towns and counties not to have a substantial injury to abutting or adjoining properties, and many of those findings of no impact have been upheld by appellate courts. Similar solar farms have been approved adjoining agricultural uses, schools, churches, and residential

developments. The consultant has found no difference in the mix of adjoining uses or proximity to adjoining homes based on the size of a solar farm and have found no significant difference in the matched pair data adjoining larger solar farms versus smaller solar farms. The data in the Southeast is consistent with the larger set of data that the consultant has nationally. Based on the data and analysis in this report, it is the consultant's professional opinion that the solar farm proposed at the subject property will have no negative impact on the value of adjoining or abutting property. He notes that some of the positive implications of a solar farm that have been expressed by people living next to solar farms include protection from future development of residential developments or other more intrusive uses, reduced dust, odor and chemicals from former farming operations, protection from light pollution at night, it is quiet, and there is no traffic. The BESS component is significantly further away from nearby homes than necessary to protect adjoining property value and also supports a finding of no impact on property value. The closest non-participating home to the BESS is over 1,000 feet from the batteries.

The data and conclusions contained in the Site Assessment Report for the Banjo Creek Solar project regarding Property Value Impacts is in compliance with the intent of KRS 278.708.

4.0 Anticipated Noise Levels at Property Boundary

(REQUIREMENT: per KRS 278.708 (3)(d)) Evaluation of anticipated peak and average noise levels associated with the facility's construction and operation at the property boundary. COMPLIANCE: A Noise and Traffic Study is provided as Appendix D of the Site Assessment Report. The study is summarized as follows: Noise would be present on the Project site during construction; however, due to the size of the Project and the distance to the nearest noise receptors, construction would not contribute to a significant noise increase when compared to noise currently occurring on or near the Project (i.e., the operation of farming equipment for livestock, hay production, and crop harvesting), except during pile-driving activities. Pile-driving noise will be managed by reducing amount of time and number of pile-drivers within the 75 dBA Lmax/68dBA Leq buffers around each receiver. Noise during the construction phase is expected to temporarily increase during daylight hours due to heavy equipment, passenger cars and trucks, and tool use during assembly of the solar facilities. The Project will limit construction activity, process, and deliveries to the hours between 7 a.m. and 7 p.m. local time, Monday through Saturday. Construction activities that create a higher level of noise, such as pile-driving, will be limited to 8 a.m. to 6 p.m. local time, Monday through Friday. Non-noise causing and non-construction activities can take place on the site between 6 a.m. and 11 p.m. local time, Monday through Sunday, including field visits, arrival, departure, planning, meetings, surveying, etc. Periodic noise associated with the solar panel tracking system and the relatively constant noise of other site machinery would occur. Modeling results indicate that if site machinery noise emissions do not exceed the targets reported above in Table 6 (of Attachment D), noise levels at receivers in the vicinity can meet the 48 dBA hourly Leq design goal. Site visits and maintenance

activities would take place during daylight hours and will not significantly contribute to noise. The noise associated with these site activities is very similar to those currently generated onsite by farming activities and offsite by commercial and farm uses. See Attachment G of theSite Assessment Report. KRS 278.706(2)(1)

The data and conclusions contained in the Site Assessment Report for the Banjo Creek Solar project regarding Anticipated Noise Levels at Property Boundary is in compliance with the intent of KRS 278.708.

5.0 Effect on Road, Railways, and Fugitive Dust REQUIREMENT: per KRS 278.708 (3)(e); The impact of the facility's operation on road and rail traffic to and within the facility, including anticipated levels of fugitive dust created by the traffic and any anticipated degradation of roads and lands in the vicinity of the facility. COMPLIANCE: A Noise and Traffic Study is provided as Appendix D of the Site Assessment Report. The traffic, fugitive dust, and railroad portion of the study is summarized as follows: Traffic in the Project vicinity is predicted to increase temporarily during the construction phase of the Project. This includes daily morning, midday, and evening peaks for construction laborers entering and exiting the Project and periodic delivery of construction materials and equipment. Appropriate signage and traffic directing would occur as necessary to increase driver safety and reduce risk of collisions for approaching traffic. There are no anticipated impacts to the existing roadway infrastructure. During facility operation and maintenance, there would be no significant increase in traffic. Long-term impacts to the road infrastructure and vehicle traffic are not anticipated as daily traffic to the site would be minimal. Land disturbing activities associated with the Project site may temporarily contribute to airborne materials (i.e., dust). However, by implementing specific mitigation measures outlined in Appendix D of the Site Assessment Report, fugitive dust impacts associated with construction activities would be expected to be minor. A regional railroad, Paducah & Louisville Railway, extends north-south through the city of Mayfield, approximately 8.2 miles northwest of the Project. The proposed Project would have no effect on this railroad, nor would the Project utilize the rail for deliveries.

The data and conclusions contained in the Site Assessment Report for the Banjo Creek Solar project regarding the Effect on Road, Railways and Fugitive Dust is in compliance with the intent of KRS 278.708.

5.1 Hiring of a Consultant

The board shall have the authority to hire a consultant to review the site assessment report and provide recommendations concerning the adequacy of the report and proposed mitigation measures.

The board may direct the consultant to prepare a separate site assessment report. Any expenses or fees incurred by the board's hiring of a consultant shall be borne by the applicant.

The board has hired Wells Engineering and Cloverlake Consulting Services to review the adequacy of the Site Assessment Report.

6.0 Mitigation Measures

REQUIREMENT: (Per KRS 278.708(4)) The site assessment report shall also suggest any mitigating measures to be implemented by the applicant to minimize or avoid adverse effects identified in the site assessment report; and per KRS 278.708(6); The applicant shall be given the opportunity to present evidence to the board regarding any mitigation measures. As a condition of approval for an application to obtain a construction certificate, the board may require the implementation of any mitigation measures that the board deems appropriate. COMPLIANCE: Applicant is anticipating implementing the following mitigation measures to minimize or avoid adverse effects identified within the Site Assessment Report:

The site assessment report shall also suggest any mitigating measures to be implemented by the applicant to minimize or avoid adverse effects identified in the site assessment report; and per KRS 278.708(6); The applicant shall be given the opportunity to present evidence to the board regarding any mitigation measures. As a condition of approval for an application to obtain a construction certificate, the board may require the implementation of any mitigation measures that the board deems appropriate. COMPLIANCE: Banjo Creek Solar LLC would implement the following minimization and mitigation measures in relation to potential adverse effects identified in this application and per anticipated TVA standards:

• Install a vegetative buffer composed of evergreen trees planted a maximum of 15 feet apart between the perimeter fence and the road frontage and/or residences where existing vegetation is not sufficient in shielding views of the facility.

• Implement the following setbacks for the Project: o 300-foot solar panel setback from residences; o 100-foot solar facility setback from non-participating parcels with residences and from state roads; o 30-foot solar facility setback from county roads and non-participating parcels that do not have residences; and o 50-foot solar facility setback from the banks of intermittent and perennial streams and the edges of all wetlands

• Post a flag person during heavy commute periods, prioritize access for local residents, and implement staggered work shifts during daylight hours to manage construction traffic flow near the Project site; •

Ensure that heavy equipment, machinery, and vehicles utilized at the Project meet all federal, state, and local noise requirements; and

• Use best management practices (BMPs) such as periodic watering, wet suppression, covering open-body trucks, and establishing a speed limit to mitigate fugitive dust. Due to the interconnection of the solar facility to the existing TVA transmission line, the Project is subject to National Environmental Policy Act (NEPA) review. In the case of solar power purchase agreements, TVA requires development of an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) to document the review and the associated public involvement, such as comment period(s) and public meetings, if applicable. Under the power purchase agreement between TVA and Banjo Creek Solar LLC, TVA's obligation to purchase renewable power will be contingent upon the satisfactory completion of the appropriate environmental review (an EA or EIS) and TVA's determination that the Proposed Action would be "environmentally acceptable." To be deemed acceptable, TVA must assess the impact of the Project on the human environment to determine whether (1) any significant impacts would result from the location, operation, and/or maintenance of the proposed Project and/or associated facilities, and (2) the Project would be consistent with the purposes, provisions, and requirements of applicable federal, state, and local environmental laws and regulations. The EA or EIS will include a cumulative effects analysis, wherein the Project effects are considered alongside the effects of past, present, and reasonably foreseeable future actions. The EA or EIS will also list the unavoidable adverse environmental impacts and associated BMPs and mitigation measures that will be employed by the Project. These commitments will appear in the publicly available Finding of No Significant Impact or Record of Decision document anticipated to be issued by TVA with finalization of the EA or EIS. As required by KRS 224.10-280, Banjo Creek Solar has submitted a Cumulative EA which has been submitted separately to the Cabinet and filed with the Siting Board. A summary of the Cumulative EA is provided in Volume I of this application. In 2022, a Critical Issues Analysis (CIA) was also completed for the Project to identify potential environmental constraints at the Project site. The CIA outlined recommendations for critical resource areas that would require further study prior to proceeding with the Project development. In addition, the CIA summarizes federal, state, and local permitting requirements that may be applicable to the Project. Table 1 provides a summary of the findings and recommendations for the CIA.

Table 1. Summary of Findings and Recommendations

Resource Area Impacts Findings and Recommendations -Public Infrastructure Likely – permits would be required for Public infrastructure that could be impacted during construction activities and may warrant permits for oversized or overweight loads, or a traffic study as determined by the Kentucky Transportation Cabinet. No notifications to the Federal Aviation Administration would be necessary for the Project.

Consultation with Kentucky 811 is recommended to verify the presence and location of utilities within or near the Project Site.

Cultural Resources Unlikely – not anticipated to be present within the Project site Overall, no National Register of Historic Places-eligible cultural resources were identified in the study area, including within the Project Site. If these cultural resources were to be identified during a field survey within the Project Site or within a half-mile of the Project Site (the TVA-required study area for aboveground cultural resources), effects to these would be avoided, minimized, or mitigated in consultation with Mississippi Department of Archives and History and interested Native American tribes and in accordance with the National Historic Preservation Act.

Environmental Justice Unlikely – not anticipated to be present within the Project site Minority population rates are lower in the study area than in Graves County or the State of Kentucky, and poverty rates are slightly lower or comparable to the county and state.

Therefore, no disproportionately high or adverse direct or indirect impacts on environmental justice populations due to human health or environmental effects are expected to result from the Project. Public Lands, Recreational and Scenic Resources Unlikely– not anticipated to be present within the Project site

No county, state, or federal public lands or recreational resources are located within the Project Site.

No effects to public lands from the development of the Project are expected.

Land Use, Land Cover, and Zoning Likely – land use is anticipated to change from agriculture (current) to a solar farm (proposed) The Project Site consists of agricultural fields with strips of forested areas buffering property lines, water resources or drainages. There is no zoning in this area of Graves County. Solar projects in the state of Kentucky must apply for review by the Kentucky State Board on Electric Generation and Transmission Siting. Submission of a detailed application demonstrating that the Project is adhering to local ordinances and describing the anticipated Project effects to aspects of the human environment and how the Project would mitigate for those effects may be required. Community meetings are typically involved in this process, as well as a public hearing to answer questions from the Board and the concerned public.

Noise and Visual Resources Minor – temporary construction impacts to the area. There are approximately 35 structures located largely along roads within or bordering the Project Site, most of which will not be adversely impacted.

Resource Area Impacts Findings and Recommendations Surrounding Receptors- No impacts from operation appear to affect residential properties. Temporary noise impacts from construction activities

would occur, however no impacts from operations are expected. An assessment of visual effects related to the construction and operation of the Project would be required during NEPA review.

Hazardous Materials Unlikely – not anticipated to be present within the Project Site Records of drinking water spills and the presence of Coltharp Hog Farm have no indication from the report that the release of hazardous materials has occurred, however a Phase I Environmental Site Assessment should be conducted to determine potential risk of hazardous materials or spills within the Project Site.

Air Quality Unlikely – no air quality standards are anticipated to be imposed within the Project Site The Project Site is not located within a Nonattainment Area or Maintenance Area as defined by the U.S. Environmental Protect Agency (USEPA)'s GreenBook and observed with the USEPA's NEPAssist Tool. As such, no area-specific air quality standards are imposed within the Project Site.

Geology and Soils Minor to Moderate – farmland soils are anticipated to be within the Project Site and would be impacted. Hydric soils and farmlands of significance are present within the Project Site. Given the amount of farmland in Graves County, the Project effect to farmland soils is anticipated to be minor to moderate.

Hydrology and Water Resources Likely - permits would be required for impacts to streams, wetlands, or floodplains Streams, wetlands, and open water ponds are present within the Project Site. A delineation of streams and wetlands is recommended, with a submission for a jurisdictional determination to the U.S. Army Corps of Engineers Louisville District. As design and site boundaries are refined, request a pre-permit application meeting with the USACE and KDOW to discuss a permitting strategy for the Project. If streams and wetlands cannot be avoided, USACE Section 404 permit and KDOW 401 WQC processes should be initiated. If impacts do not exceed 0.5 acre of fill/disturbance, then the Project has the potential to be permitted by the USACE under a Nationwide Permit; if impacts exceed 0.5 acre of fill/disturbance an Individual Permit would be required. If impacts exceed 0.1 acre of wetland fill/disturbance or 0.03 acre of stream fill/disturbance, then compensatory mitigation may be required. Floodplains are also present within the Project Site, primarily in the vicinity of Mayfield Creek and an associated unnamed tributary. Consultation with the local floodplain coordinator within Graves County should be conducted regarding potential for floodplain effects, including unmapped floodplains.

Resource Area Impacts Findings and Recommendations Wildlife and Protected Species Unlikely – Project is anticipated to avoid impacted to protected species on site; permits would be required for impacts Protected species could be present on site based on required habitat conditions. A field survey for potential habitat should be conducted and consultation with the state and federal agencies is recommended. Conservation measures such as clearing during certain periods of the year and future vegetation management planning could support protected species.

It appears that the Critical Issues Analysis has addressed some of the concerns of the reviewing Consultant (Cloverlake Consulting Services)

6.1 Below are the Additional Mitigation Measures Recommended by the Consultant (Cloverlake Consultants)

Fugitive Dust and PM10

- Even though the application mentions the mitigation measures for Fugitive Dust in more than one section of the Site Assessment Report, the applicant should submit in writing the specific plan to control fugitive dust and PM 10 during the construction process ten days prior to commencing construction and ensure that plan is shared with contractors who will build the solar farm.

Protection of Archeologic and Historic Resources including Cemeteries

- The applicant mentions survey work that has been done by TVA within the Project Area and that seems sufficient for projects of this nature. The applicant, however, should develop a plan regarding the protection of historic and archeologic resources and cemeteries if they are uncovered or disturbed during the construction process, no less than 30 days prior to the beginning of construction activities. This is not required by this regulatory process but would be under other requirements including those administered by the Kentucky State Historic Preservation Office. It is suggested that a Historic and Archeologic Consultant be engaged to monitor the construction process. Although the applicant states in the response to the second set of Inquiries that there are no cemeteries in the project area, it is not clear what research was done to arrive at this conclusion. In rural Kentucky, there are many family cemeteries that may not be apparent until they are disturbed during a construction process.

7.0 New Electric Transmission Line Associated With the Banjo Creek Solar LLC Project

ROUTE DESCRIPTION REQUIREMENT: per KRS 278.714(2)(b): A full description of the proposed route of the electric transmission line or the carbon dioxide transmission pipeline and its appurtenances. The description shall include a map or maps showing:

1. The location of the proposed line or pipeline and all proposed structures that will support it;

2. The proposed right-of-way limits;

3. Existing property lines and the names of persons who own the property over which the line or pipeline will cross; and

4. a. The distance of the proposed electric transmission line from residential neighborhoods, schools, and public and private parks within one (1) mile of the proposed facilities; or b. The distance of the proposed carbon dioxide transmission pipeline from residential neighborhoods, schools, and parks, either private or public, within one thousand (1,000) feet of the proposed facilities. COMPLIANCE: To protect Kentucky's scenic assets, Banjo Creek Solar has selected the location of the proposed electric transmission line optimally in the interior of the project site. The proposed electric transmission line will be located on one parcel under lease by Banjo Creek Solar LLC and owned by Donald and Linda Coltharp in Graves County, Kentucky. Refer to Attachment A for a diagram of the location of the proposed transmission line area within the Project site on parcel 141.00.00.051.00. The proposed right-of-way will be no longer than 2,000 feet and will be limited to 65 feet on either side of the centerline, for a total width of 130 feet. The proposed transmission line will tie into the existing TVA 161kV transmission line on the Project site. Since Banjo Creek's interconnection application to TVA is in the facilities study phase and also subject to TVA's NEPA review, the final route of the proposed transmission line within the transmission line area may be adjusted to accommodate wetlands and other environmental resources as identified in the NEPA study process. The location of the proposed transmission line is in the interior of the project site and as far as possible from neighboring parcels. Special consideration was given to residential neighborhoods, schools, or public or private parks, none of which is within one (1) mile of the transmission line area indicated for the proposed facilities (Attachment A shows a one-mile radius and the location of residences, schools, and public or private parks.

7.1 Summary of the adequacy of the Banjo Creek Solar LLC Transmission line application-Based on the above information, it is difficult to fully visualize the proposed transmission line route. To the extent possible, please provide a specific line route map with any alternative routes.

8.0 Summary of the Adequacy of the Applicants Site Assessment Report

The applicant has done an adequate job, in most cases, of addressing the concerns brought up by the analysis of the adequacy of this Site Assessment Report. Among these are Environmental Permitting, Wetland Delineations, Stormwater, Groundwater, and Endangered Species. Although the set of mitigation strategies in this report does not include a specific dust control plan for the site, nor does it address the treatment and protection of archeologic and historic resources including Cemeteries. It is stated that no Historic and Archeologic Sites are present, but there is still a concern about the level of detail of the analysis done by the applicant and the research done to support that conclusion. One of the biggest concerns in this regard, is the possibility of the existence of family Cemeteries in the project area that could be uncovered and disturbed during construction.

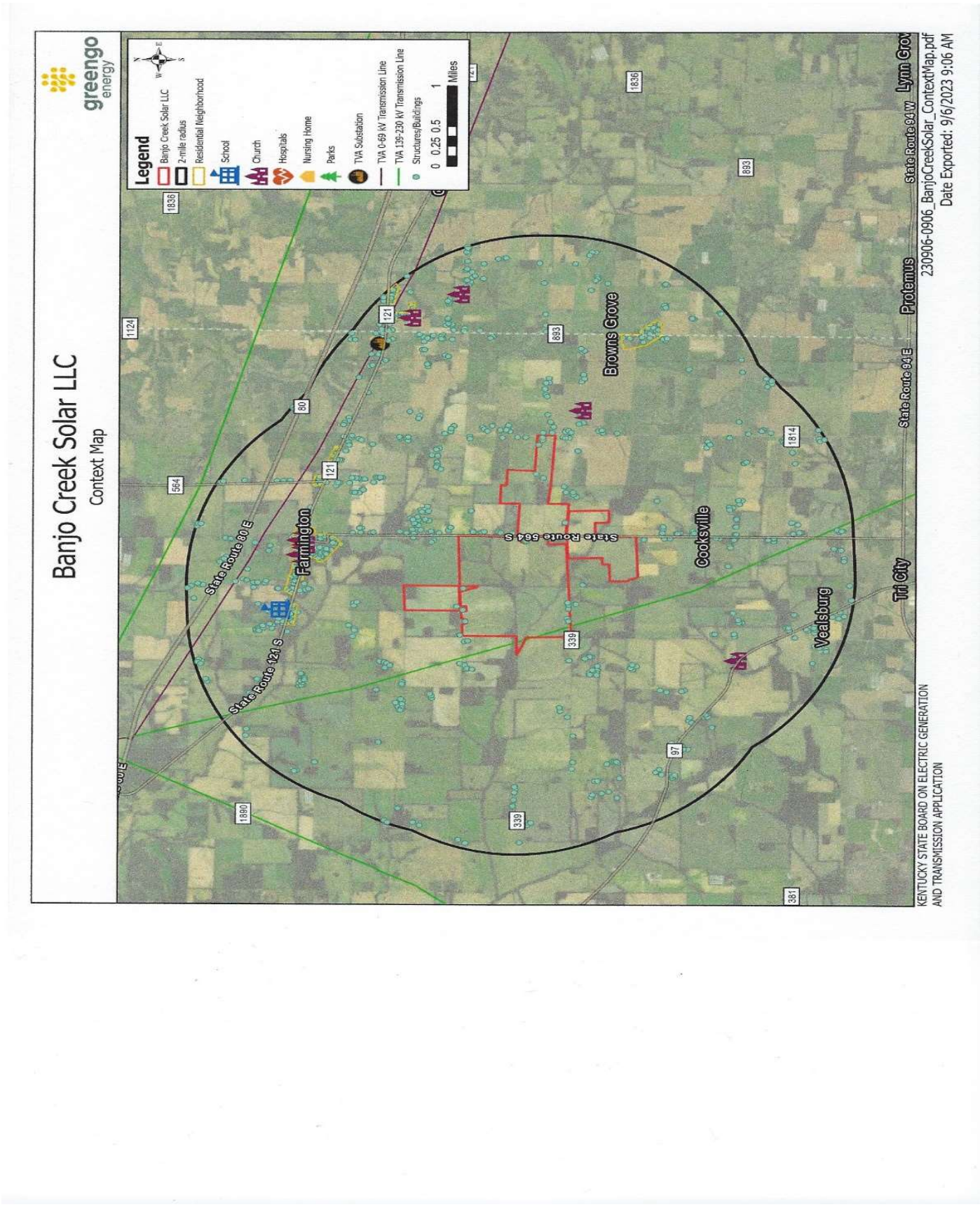
Based on a review of The Banjo Creek Solar LLC Project Site Assessment Report, as well as the Applicant's responses to the first and second sets of Inquiries from the Staff, by W. Thomas Chaney of Cloverlake Consulting Services, all the sections of the report are essentially in compliance with the intent of KRS 278.708. The consultant, however, urges the applicant to consider the recommendations in section 6.1 and 8.0 above.

REFERENCES

All the information for this Adequacy Assessment was extracted from the Applicant's Site Assessment Report ,the Applicant's Electric Transmission Line Application, Banjo Creek Solar Project, supplemental reports, appendices, legal filings and a field analysis performed on October 12 and 13, 2023 by W. T. Chaney of Cloverlake Consulting Services.

Page 17

Context Map


Banjo Creek Solar LLC
Context Map
greengo energy
Legend
Banjo Creek Solar LLC
2-mile radius
Residential Neighborhood
School
Church
Hospitals
Nursing Home
Parks
TVA Substation
TVA 0-69 kV Transmission Line
TVA 138-230 kV Transmission Line
Structures/Buildings
0 0.25 0.5 1
Miles
State Route 80 E
State Route 121 S
State Route 564 S
State Route 94 E
State Route 94 W
Farmington
Browns Grove
Cooksville
Tri City
Vealsburg
Protemus
Lynn Grov
1836
1124
564
121
80
893
1814
339
97
1880
381
KENTUCKY STATE BOARD ON ELECTRIC GENERATION AND TRANSMISSION APPLICATION
230906-0906_BanjoCreekSolar_ContextMap.pdf
Date Exported: 9/6/2023 9:06 AM

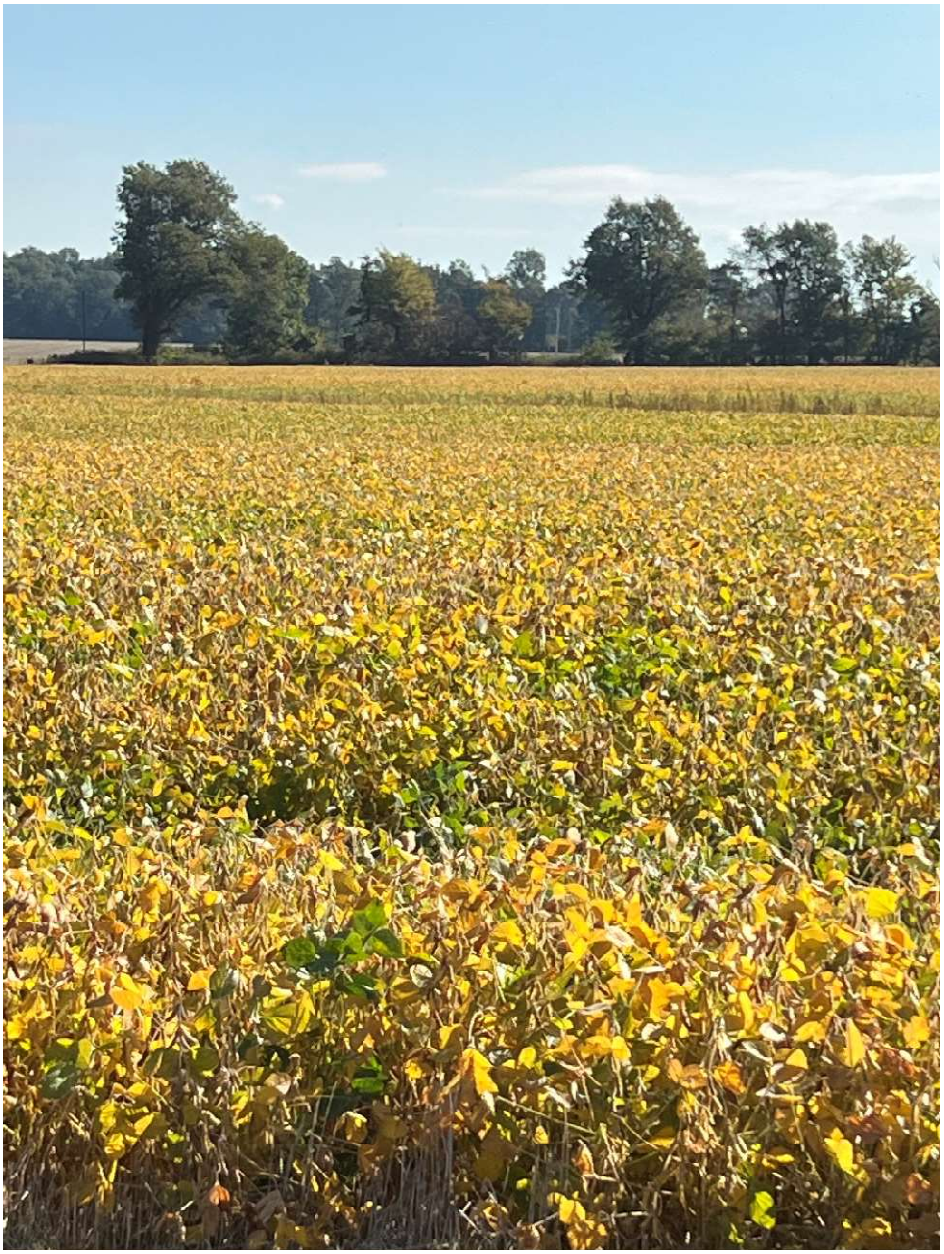
Gallery of Photographs Taken During The Site Visit by W. T. Chaney on October 13 and 14, 2023


Antioch Ch. Rd.
STOP


FARMINGTON

Resume W. Thomas Chaney


Christians
at
Antioch
Welcome You!
SUNDAY BIBLE STUDY 9AM
WORSHIP 10 AM
EVENING 6PM
WEDNESDAY BIBLE STUDY 630




80
564
STOP
DIVIDED
HIGHWAY
INTERNET
844-612-1447
A & S
LOGGING


339


Antioch Ch Rd


Adams Rd

RESUME

W. THOMAS (TOM) CHANEY

PRESIDENT CLOVERLAKE CONSULTING

YEARS OF EXPERIENCE

50

EDUCATION

- MBA, Finance and Management Point Park University, 2011
- M.A., Environmental Planning, Eastern Kentucky University, 1973
- B.A., Physical Geography and Geology, Eastern Kentucky University, 1972

AREAS OF EXPERTISE

- Strategic training and mentoring of employees
- Management and direction of multidiscipline natural resource management consulting teams
- Environmental Assessment of Energy Facilities including Wind and Solar Projects
- Harvard Leadership Development Training
- Advanced Project Management Training

CERTIFICATIONS

- Certified Mediator, 2004
- Certified Kepner-Tregoe Rational Process Program Leader, 2003
- Harvard Leadership Development
- Advanced Project Management

HONORS

- Cinergy "Above and Beyond Award" for Diversity, CG&E/Cinergy, Duke Energy
- Diversity Champion and "Wolf" Award recipient for top individual performance, CG&E/Cinergy, Duke Energy

EXPERIENCE SUMMARY

Mr. Chaney is the President of Cloverlake Consulting Services and directs the work of expert natural resource management teams of engineers and scientists. He has a distinguished background in utility management, organizational development and consultant service to utility companies for environmental and planning work. He has done career management service for large utilities including Cinergy, Cincinnati Gas & Electric and Duke, and has consulting experience with Power Engineers, BHE Environmental, GAI Consultants, Booz-Allen Hamilton, Woolpert Consultants, and Dames and Moore.

Mr. Chaney's current practice involves Siting and Environmental Planning for major utility facilities in several states in the Midwest. He has developed testimony and testified in front of state siting agencies.

He also specializes in strategically training and mentoring employees and has grown a prominent Cincinnati multi-discipline environmental engineering and consulting practice. He also provided strategic training and mentoring services for CG&E, Cinergy, and Duke Energy for 25 years and currently provides these services to Master Provisions, a Northern Kentucky food charity... Mr. Chaney developed and presented the Business Case for Diversity to Cinergy executives in 1995, and was responsible for environmental training and education, and high-performance team training and coaching.

He is a certified mediator and holds a license as a Program Leader for Kepner-Tregoe rational process.

Kentucky Public Service Commission-Siting Board Ohio Power Siting Board SITING AND CERTIFICATION

Another specialty is the management of the Ohio Power Siting Board siting/certification process. He is also proficient at managing the Kentucky PSC Siting Board Process. He was involved in the original development of the rules for these processes with the PUCO and the OPSB and served as the implementing Principal contact for CG&E, Cinergy, and Duke from 1984 to 2006. He has been involved in consulting practices since then that specialize in these siting processes including GAI Consultants, BHE consultants, Power Engineers and ERM.

The following projects are a few examples of this work:

- Kentucky Public Service Commission Siting Board

In his position as President of Cloverlake Consulting Services, he has completed the analysis of the adequacy of several solar projects in Kentucky.

- AEP Siting and Permitting Projects, Ohio, Kentucky, Indiana, Virginia and West Virginia

In his position with Power Engineers, he supervised over twenty siting and permitting projects in the above states.

- NIPSCO Permitting In Indiana

Mr. Chaney, likewise, was involved in several Transmission Line permitting projects in Indiana for NIPSCO.

- GAI Consultants, Constance-Zimmer Natural Gas Transmission Line, Ohio

Project Manager responsible for the siting, routing and certification of this transmission line. The project required numerous environmental permits and a Certificate of Environmental Compatibility and Public need from the Ohio Power Siting Board (OPSB).

- Dominion East Ohio Gas, Akron-Canton Gas Transmission Line, Ohio

Project manager responsible for siting, certification (OPSB) and permitting.

- Management Consulting, Large Aviation and Environmental Projects

As a management consultant for a private management consulting firm, Mr. Chaney was responsible for numerous large aviation and environmental projects, including the Chicago, O'Hare International Airport Delta Concourse project, the Miami International Airport Runway Environmental Impact Statement (EIS) Concourse project, the Miami International Airport Runway Environmental Impact Statement (EIS)project, and the Greater Pittsburgh International Airport Midfield Terminal Studies project that required noise and land use compatibility studies.

- Regional Planning manager

As a planning manager for the Northern Kentucky Area Development District, Mr. Chaney covered all aspects of regional planning for eight counties in northern Kentucky. He supervised professional and clerical staff dealing with issues on the environment, housing, land use and recreation in compliance with the Older Americans Act (Title III) and the Social Security Act (Titles XIX and XX).

- Senior Environmental Planning Consultant

Mr. Chaney's experience as a Senior Environmental Planner with a private consulting firm required management of numerous land use planning and environmental assessment projects. His duties included accountability to the client.

- Duke Energy, Edwardsport IGCC Start-Up natural Gas Line, Indiana

Project Manager for the routing and permitting of a gas transmission line used to start-up the Edwardsport Indiana IGCC. This project is a clean coal endeavor that utilizes Illinois Basin high sulfur coal.

- Dominion East Ohio Gas Company, Solid Waste natural Gas Siting Study and Application, Ohio

Project Manager for the OPSB application for this complex project, which was rerouted due to the construction of a large municipal landfill.

- GAI Consultants, Rockies Express Line, Ohio

Project Manager for cultural resources projects associated with this gas transmission line.

- CG&E, Gas Storage Site, Kentucky

Project Manager responsible for the environmental permitting of this large gas storage site, formerly a depleted gas and oil production field.

- CG&E/Cinergy/Duke Energy Natural Gas Licensing Projects, Multiple States

Reviewed and led the licensing and environmental permitting for all natural gas transmission line projects.

- CG&E Cinergy, Numerous Power Plant, Transmission Line and Gas Line Siting and permitting Projects

In his capacity as Licensing Division Director, Mr. Chaney was involved in more than 100 Transmission Line, Gas Line and Power Plant projects during his tenure with CG&E/Cinergy/Duke.

ATTACHMENT B

Review Appraisal

Of:

Kirkland Appraisals LLC

Adjacent Property Value Impact Report

Banjo Creek Proposed Project, Case No. 2023-00263

Graves County, Kentucky

Dated September 1, 2023

Date of Review

December 5, 2023

Prepared for:

Mr. Scott H. Campbell, Senior Project Manager

Wells Engineering, PSC

6900 Houston Road, Suite 38

Florence, Kentucky

Prepared by:

E. Clark Toleman, MAI, SRA

333 West Vine Street, Suite 300

Lexington, Kentucky 40507

E. Clark Toleman, MAI, SRPA

Real Estate Appraisal Services

VINE CENTER 333 W. VINE ST., SUITE 300 · LEXINGTON, KENTUCKY 40507
TEL. (859) 253-0314 · FAX (859) 253-0653

December 12, 2023

Mr. Scott H. Campbell
Senior Project Manager
Wells Engineering, PSC
6900 Houston Road, Suite 38
Florence, Kentucky 41042

Re: ***Review Appraisal Report***
Kirkland Appraisals, LLC-Impact Study dated September 1, 2023
Proposed Banjo Creek Solar Project, Graves County Kentucky

Dear Mr. Campbell

Following your request, I have carried out an investigation and review of the Kirkland Appraisals Adjacent Property Value Impact Study that estimates the impact in terms of property value to the surrounding properties adjacent to the proposed Banjo Creek Solar Project. The Kirkland Appraisals report is part of the application PSC Case No. 2023-00263 for the 1,270 acres, reduced to 1,106 acres, 120-megawatt solar project with 30-magawatt AC battery energy storage system with to The Kentucky State Board on Electric Generation and Transmission Siting. I have reviewed the Kirkland Appraisals report as well as the data within in application, and made a physical inspection of the subject parcels that make up the project and surrounding area. There are 47 parcels properties that have been identified as adjoining the project tracts.

Considering my analysis of the Kirkland Appraisals Impact Study I have concluded that the report is credible and representative of the market conditions that would exist should the Banjo Creek Solar Project be constructed based on the market evidence and interpretation of the data contained in the Impact Study. The report includes a review of published studies on property value impacts associated with solar projects, paired sales analysis in thirty-eight comparable solar projects, and interviews with real estate professionals and real property assessors.

The following is a summary of my technical review of the Kirkland Appraisals Impact Study and comments on the specific data and analysis contained in the report prepared in compliance with Standard 3 of the Uniform Standards of Professional Practice.

Respectfully submitted,

E. Clark Toleman, MAI, SRA

Project Name:	**Banjo Creek Solar Project-PSC No. 2023-00263**
Property Location:	Graves County, Kentucky
Date of Impact Study:	March 14, 2023
Property Type:	Agricultural and Rural Homesites
Land Area:	1,106 Combined acres,120MW, and 30MW battery storage
Report Option:	Narrative Impact Study
Intended Use of Review: Siting Board	Kentucky State Electric Generation and Transmission

Purpose of this Review

The purpose of this review is to determine if the appraisal report is essentially in compliance with: KRS 278.708 and The Uniform Standards of Professional Appraisal Practice (USPAP) as promulgated by the Appraisal Standards Board of The Appraisal Foundation.

Scope of the Review

This review was limited to an analysis of the appraisal report in order to form an opinion as to:

- The completeness of the report;
- The adequacy and relevance of the data presented;
- The reasonableness of any adjustments made by the appraiser to the data;
- The appropriateness of appraisal methods and techniques used; and
- The adequacy and reasonableness of the analysis, opinions and conclusions contained in the appraisal report.

Reviewer: E. Clark Toleman MAI, SRA Date of Review: December 5, 2023

3. Purpose of the Impact Study

The Impact Study is in three parts, a review of academic and peer authored property value impact studies, research and analysis of existing solar facilities, and interviews with real estate experts market participants and Assessors. The study also includes a review of paired sales before and after solar projects were constructed through-out the United States and considered comparable to the properties adjacent to the proposed 120 MW Banjo Creek Solar Project and 30 MW battery energy storage system. The purpose of this impact study under review is to estimate any related change in terms of market value to the adjoining properties due to the proposed solar project in Graves County Kentucky as of September 1, 2023.

Market Value is defined as:

> The most probable price which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller, each acting prudently, knowledgeably and assuming the price is not affected by undue stimulus, Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby: (1) buyer and seller are typically motivated; (2) both parties are well informed or well advised, and each acting in what he considers his own best interest; (3) a reasonable time is allowed for exposure to open markets; (4) payment is made in terms of cash in U,S, dollars or in terms of financial arrangements comparable thereto; and (5) the price represents the normal consideration for the property sold unaffected by special or creative financing or sales concessions granted by anyone associated with the sale.

Market Value is therefore the actual real dollar value of the subject property would bring at an appraisal date under "normal" conditions with the seller and buyer acting reasonably. The contemporary concept emphasizes cash value. This is necessary in the investigation of "market" sales to equate any non-typical financing terms to conditions that are typical at an appraisal date.

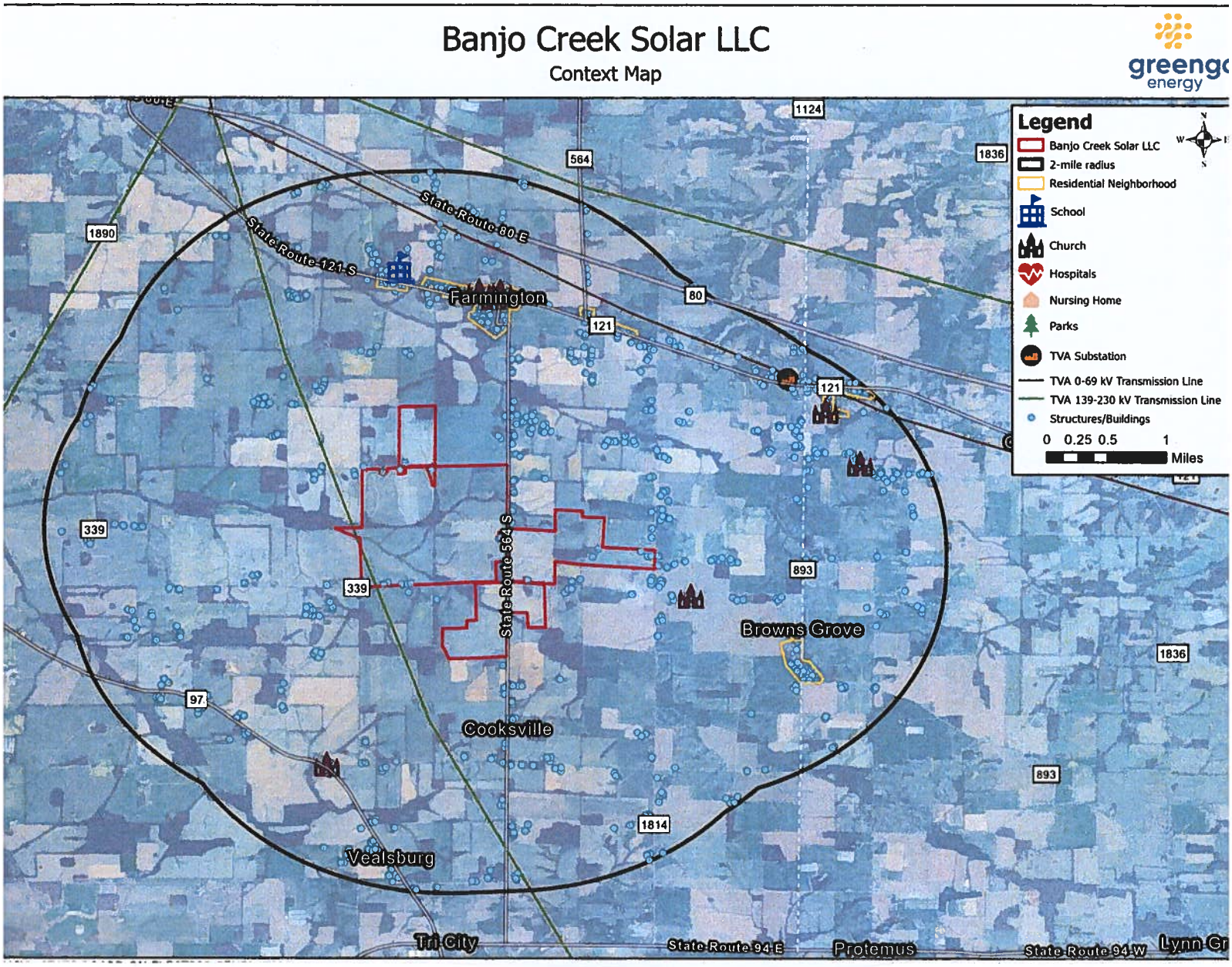
Intend Use of Review Appraisal

This review appraisal is prepared for Wells Engineering on behalf of the Kentucky State Board on Electric Generation and Transmission Siting Board Case No. 2023-00263.

Date of Impact Study Review

This review Appraisal is made as of December 5, 2023 with all economic, statistical and market data correlated to this date. The last inspection of the subject property area was made on this date and all physical characteristics are described relative to this date unless otherwise stated within this report

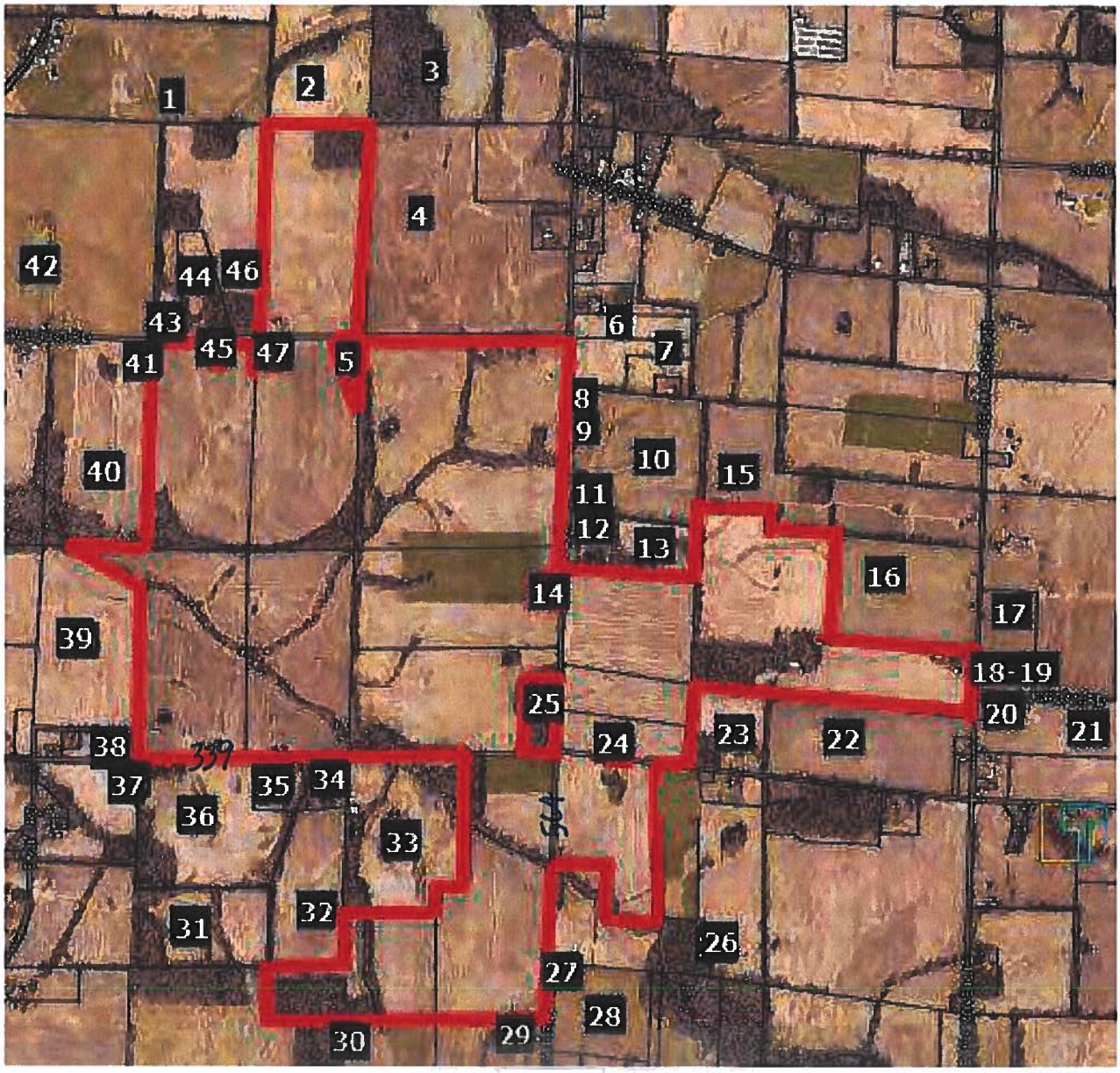
Location Map



Proposed Project Area

The subject properties are situated in Graves County approximately eight miles southeast of Mayfield Kentucky, and ten miles west of Murry with a total area of 1.980 acres in 47 parcels adjacent to the project area of 1,106 acres reduced from 1,270 acres with an actual project foot print of 850 acres. The project parent parcels are bisected by Route 339, Kentucky Route 564, and Wilford Road. The general area is rural in nature being developed as general farms and homesites with level to sloping topography. The 2023 Graves County population is estimated to be 36,615 a slight decline since 2020. The project proposes that all setback distances will be in compliance with the Harrison County zoning ordinance.

Map of Project Properties



Surrounding Uses

#	MAP ID	Owner	GIS Data Acres	Present Use	Adjoin Acres	Adjoin Parcels	Distance (ft) Home/Panel	L.F Adjacent
1	140.00.00.030.00	Smith	119.00	Agricultural	6.01%	2.13%	N/A	1
2	140.00.00.043.01	Forrester	80.00	Agricultural	4.04%	2.13%	N/A	1355
3	140.00.00.044.00	Fazi	135.00	Agri/Res	6.82%	2.13%	4,510	1
4	140.00.00.018.00	Coltharp	127.30	Agricultural	6.43%	2.13%	N/A	5290
5	140.00.00.021.01	Hartsfield	3.03	Residential	0.15%	2.13%	305	2065
6	156.00.00.070.08	Weaks	13.00	Residential	0.66%	2.13%	N/A	1
7	156.00.00.070.09	Weaks	13.00	Residential	0.66%	2.13%	N/A	570
8	156.00.00.069.00	Cash	2.11	Residential	0.11%	2.13%	370	330
9	156.00.00.068.01	Hunter	2.13	Residential	0.11%	2.13%	340	330
10	156.00.00.068.00	Hunter	51.84	Agri/Res	2.62%	2.13%	N/A	675
11	156.00.00.067.00	McEndree	4.10	Residential	0.21%	2.13%	325	400
12	156.00.00.066.00	McEndree	3.00	Residential	0.15%	2.13%	N/A	310
13	156.00.00.066.01	Jeffress	22.00	Agri/Res	1.11%	2.13%	325	2620
14	141.00.00.048.00	Ivy	2.00	Residential	0.10%	2.13%	305	1260
15	156.00.00.062.00	Johnson	72.00	Agri/Res	3.64%	2.13%	1,785	2025
16	156.00.00.063.0	Faughn	58.00	Agri/Res	2.93%	2.13%	870	3190
17	156.00.00.035.00	Faughn	22.00	Agricultural	1.11%	2.13%	N/A	370
18	156.00.00.034.00	Clinton	0.17	Residential	0.01%	2.13%	N/A	40
19	156.00.00.033.00	Clinton	0.38	Residential	0.02%	2.13%	690	120
20	156.00.00.031.00	Downs	5.00	Residential	0.25%	2.13%	645	295
21	156.00.00.032.01	Rogers	35.40	Agricultural	1.79%	2.13%	N/A	1
22	156.00.00008.00	Fuqua	57.94	Agricultural	2.93%	2.13%	N/A	2650
23	156.00.00.003.00	Galloway	47.00	Agri/Res	2.37%	2.13%	635	4390
24	156.00.00.002.00	Adams	0.65	Residential	0.03%	2.13%	305	680
25	141.00.00.047.00	Jackson	9.00	Residential	0.45%	2.13%	305	2555
26	156.00.00.006.00	Jones	83.00	Agricultural	4.19%	2.13%	N/A	3280
27	157.00.00.074.00	Bunch	1.15	Residential	0.06%	2.13%	N/A	250
28	157.00.00.073.00	Bunch	41.45	Agricultural	2.09%	2.13%	N/A	455
29	141.00.00.033.00	Bunch	66.00	Agri/Res	3.33%	2.13%	545	1396
30	141.00.00.034.00	Miller	205.00	Residential	10.35%	2.13%	N/A	2865
31	141.00.00.040.00	Coltharp	120.00	Agricultural	6.06%	2.13%	N/A	1
32	141.00.00.044.00	Douglas	18.74	Residential	0.95%	2.13%	N/A	1615
33	141.00.00.043.00	Sims	64.88	Agricultural	3.28%	2.13%	N/A	5045
34	141.00.00.045.00	Douglas	20.00	Residential	1.01%	2.13%	N/A	550
35	141.00.00.045.01	Douglas	10.05	Residential	0.51%	2.13%	N/A	630
36	141.00.00.044.01	Douglas	63.32	Agricultural	3.20%	2.13%	N/A	1430
37	141.00.00.056.01	Cochran	1.00	Residential	0.05%	2.13%	2,300	1
38	141.00.00.056.03	Galloway	6.18	Residential	0.31%	2.13%	N/A	310
39	141.00.00.052.00	Jetton	65.42	Residential	3.30%	2.13%	N/A	2865
40	140.00.00.009.00	Wilferd	79.41	Agricultural	4.01%	2.13%	N/A	3345
41	140.00.00.010.00	Wilferd	2.00	Residential	0.10%	2.13%	480	285
42	140.00.00.023.00	Wilferd	166.30	Agricultural	8.40%	2.13%	N/A	1
43	140.00.00.014.00	Wilferd	2.33	Residential	0.12%	2.13%	775	390
44	140.00.00.022.01	Hartsfield	18.15	Residential	0.92%	2.13%	N/A	330
45	140.00.00.022.01	Wilferd	1.47	Residential	0.07%	2.13%	415	670

Methodology to Indicate Effect on Adjoining Properties

The Kirkland Appraisals Impact Study utilizes the Paired Sales Analysis as the basis for an indication of change in value experienced to adjoining properties from solar farm projects in fourteen states plus two in Kentucky. This is a quantitative analysis of paired-sales to identify the effect of any one characteristic in a given market on market price. This analysis is used to estimate what adjustment is indicated for an individual characteristic such as a garage, swimming pool or any number of characteristics that need adjustment for the subject property. This is a standard analysis technique in appraisal practice and is most indicative when there is a large sample size.

The Kirkland Appraisals Impact Study applied the paired sales analysis to adjoining properties around existing solar farms in fourteen states including Illinois, Indiana, Georgia, Florida, North Carolina, South Carolina, Virginia, Michigan, Ohio, Tennessee, Maryland, Minnesota, Arizona, and Texas plus two solar farms in Kentucky. The survey employes test area sales that are adjoining a solar farm and Control sales not adjoining solar farm. The survey is done in the surrounding states including solar farms with the analysis of sales analyzed and broken into subset of Kentucky with boarder states, southeastern states, national data base and larger solar farms 20 to 80 MW. The result indicates no change to positive impact effect on adjoining property value. The general conclusion would indicate a neutral overall effect on the market value of adjoining properties to solar farms generally and would therefore have a neutral impact on adjoining properties in the proposed Banjo Creek project. There is a separate paired sales analysis for the Battery Storage area which included 16 battery storage sites analyzed in six states. The closest residence in the subject project has great distance then paired sales in this study.

Conclusion of Solar Farm Impact

The evidence presented in the Kirkland Appraisal Impact study including the paired sales analysis is a strong indicator that proximity to the proposed Banjo Creek Project will have a neutral impact on the adjoining property value when the set back and buffer screening is in place. The proposed solar farm is a passive entity without the recognized nuisance characteristics of noise, traffic, odor, or other typical stigma considered to create a detrimental effect. A review of published research material on this subject is included in this Impact Study which also indicates the neutral effect on the adjoining property to solar farms projects of similar size and neighborhood characteristics as found in the proposed Banjo Creek Solar project.

Review Appraiser's Limiting Conditions and Certification

- This review memorandum is based on data and information contained in the appraisal report under review as well as additional information from other sources that may be applicable and have been identified.
- It is assumed that the data and information contained in the appraisal under review are factual and accurate.
- The reviewer reserves the right to consider any additional information that may subsequently become available and may revise any opinions and conclusions if such data and information dictate the need for change.
- Unless otherwise stated, all of the assumptions and limiting conditions contained in the appraisal report under review are also conditions of this report.
- This appraisal review is specifically not an appraisal. Any opinions expressed by the reviewer are limited by the scope of the analysis identified in this review report.
- If the yield capitalization methodology (discounted cash flow analysis) was completed by the appraiser using a market-accepted, preformatted lease-by-lease software program: To the extent possible, the inputs have been scanned for reasonableness, however, neither the reliability or accuracy of the inputs nor the expertise or competency of the person working with the software can be verified by the reviewer. Further, no property specific, corroborating diskette has been submitted with this assignment.
- The review appraiser is not required to give testimony or appear in court, or at public hearings or at any special meeting or hearing with reference to the property appraised or the appraisal report, unless arrangements have been made prior to preparation of this report.

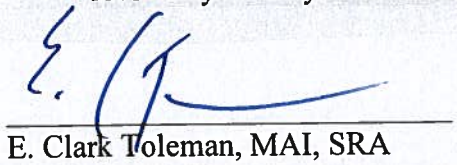
- All data provided in the appraisal reviewed is assumed to be accurate and complete and that there has been no omission of data that would affect the reviewer's conclusions.

I certify that, to the best of my knowledge and belief:

- the facts and data reported by the reviewer and used in the review process are true and correct.
- the analyses, opinion and conclusions in this review report are limited only by the assumptions and limiting conditions stated in this review report and are my personal, impartial and unbiased professional analysis, opinions and conclusions.
- I have no present or prospective interest in the property that is the subject of this report and no personal interest with respect to the parties involved.
- I have no bias with respect to the property that is the subject of this report or to the parties involved with this assignment.
- my engagement in this assignment was not contingent upon developing or reporting predetermined results.
- my compensation is not contingent on an action or event resulting from the analyses, opinions or conclusions in this review or from its use.
- my analyses, opinions and conclusions were developed and this review report was prepared in conformity with the Uniform standards of Professional Appraisal Practice

(USPAP) and all federal, state and banking regulations in force and applicable as of the date of this report.

- I have made a personal inspection of the work and subject property under review.
- no one provided significant appraisal, appraisal review or appraisal consulting assistance to the person signing this certification, and I have not provided any prior appraisal service on this property.
- As of the date of this report, E. Clark Toleman, MAI, SRA has completed the continuing education requirements of the Appraisal Institute.
- The use of this report is subject to the requirements of the Appraisal Institute relating to review by its duly authorized representatives.



E. Clark Toleman, MAI, SRA
Kentucky Certified General Appraiser

QUALIFICATIONS OF THE APPRAISER

E. Clark Toleman MAI, SRA

PROFESSIONAL MEMBERHIPS:

MAI Member of the Appraisal Institute
SRPA MAI No. 7572
SRA General Certification – Kentucky Real Estate Appraisers Board No. 109

Real Estate Broker – State of Kentucky
Member of Lexington Board of Realtors
Member of Kentucky Association of Realtors
Member of National Association of Realtors

EDUCATION: West Australia Institute of Technology, Perth, Australia – Business Studies Major in Real Estate Valuation

Completed all course requirements for the Australian Institute of Valuers, the American Institute of Real Estate Appraisers and Society of Real Estate Appraisers. Appraisal seminars related to Conservation Easements, partial interests and Federal guidelines for Federal Land Acquisition.

Participate in continuing education through seminars and courses by the Appraisal Institute.

EXPERIENCE:
Full time career in all phases of Real Estate. Employed in Property Management, Office of Development, Leasing and Valuation. Real Estate Appraiser in Lexington, Kentucky since 1974. Owner and Manager of Investment Property. Self- employed and owner of E. Clark Toleman Real Estate Appraisal Services.

APPRAISAL CLIENTS:

Financial Institutions:

Bank of Lexington, First Security National Bank, Bank One, Citizens Fidelity Bank in Lexington, First National Bank of Louisville, Fifth Third Bank of Campbell County, PNC Bank, Franklin Bank, MCNB Bank, First Capital Bank, Community Trust Bank, First Southern National Bank. Recent non-bank lender clients include: Realty Investment

Company, Memphis, Tennessee; New York Life, Atlanta, Georgia, Cincinnati Insurance Co.

GOVERNMENT INSTITUTIONS:

Lexington Fayette Urban County Government, Corps of Engineers, Department of Justice, General Services Administration, U.S. Postal Service, Census Bureau, Resolution Trust Corporation, FDIC, FSLIC, Commonwealth of Kentucky, Transportation Cabinet, Bluegrass Airport Board, LexTran Board, State of Kentucky Kentucky Office of the Courts, LFUCG Division of Water Quality, University of Kentucky, Kentucky State University, Kentucky Community and Technical College System, Eastern Kentucky University, Division of Real Property State of Kentucky, Louisville Regional Airport Board, Lexington KY Airport Board.

APPRAISED FOR:

Major horse farms, full range of commercial properties, multi-family residential, condemnation cases for both Plaintiff and Defendant, IRS, utility companies, four flood control lane projects, Urban Renewal, major industrial properties and highway right of way. Appraisals conducted on conservation easements for individuals the State of Kentucky for the PACE program and the Lexington Fayette Urban County Government for the Purchase of Development Rights, on Farm Properties, Marathon Oil Co. for R/W easements, CSX Railroad, Norfolk Southern Railway, Cincinnati Insurance, Safe Co Insurance, LexTran, and Southern States.

QUALIFIED AS EXPERT IN REAL ESTATE VALUES:

Federal Court of Kentucky- Eastern and Western Division. Testified in Local Tax Appeal Cases, Circuit Court of Clark, Pike, Montgomery, Bourbon, Woodford, Jessamine, Bell, Johnson, Jefferson, Anderson, Franklin, Boone, Campbell, Scott, Lawrence, Clay, Whitley, Pulaski, Kenton, and Martin County, Kentucky, and the United States Bankruptcy Court.

ATTACHMENT C

Watters
UNCLAIMED PROPERTY CONSULTING LLC

CELL 513.225.6158
OFFICE 513.232.1769
2519 Ashton Court
Cincinnati, Ohio 45244-2810

Review and Evaluation of the Electronic Application of Banjo Creek Solar LLC for a Certificate of Construction for an Approximately 120 Megawatt Electric Generating Facility in Graves County, Kentucky Pursuant to KRS 278.700 and 807 KAR 5:110 Siting Board Case No. 2020-00263

Review of *Economic Impact Report*
Application Attachment F

Prepared for

David H. Elliot Company (Elliot Engineering)
Wells Engineering PSC
6900 Houston Road, Suite 38
Florence, Kentucky 41042

By

Mark M. Watters
Watters Unclaimed Property Consulting LLC
2519 Ashton Court
Cincinnati, Ohio 45244

Executive Summary

Based upon the representations of the Applicant through its *Economic Impact Report*, there is a positive, significant, short-term initial economic during the Construction Phase for the Commonwealth of Kentucky, Graves County, and its region. During the longer Operational (generation) phase, there are lesser-but-positive economic impacts.

Project Factual Summary

Banjo Creek Solar LLC is requesting authorization to construct and operate a 120-megawatt alternating current (MWac) photovoltaic electricity generation facility and a 30-megawatt AC battery storage system in the vicinity of the intersection of Kentucky Route 339 (Antioch Church Road) and KY Route 564 (Wilferd Road); and on the east by Beech Grove Road south of Farmington, KY, (and approximately 10 miles south of Mayfield, KY) in Graves County. The project facility will include approximately 1,106 acres. The Project will include 500 feet of transmission line to connect the Project's substation to a utility switch yard and to the Tennessee Valley Authority's existing Paris-Mayfield 161-kilovolt transmission line.

The generating facility will consist of solar arrays proposed to contain either silicon or thin film PV panels on ground-mounted single-axis trackers, central inverters, a main power transformer, medium voltage transformers, a substation, switching station, an operations and maintenance building, means of access, and associated cable and safety equipment.

Banjo Creek Solar LLC is a limited liability company organized under Kentucky laws with its principal address at 1900 South Blvd., Suite 306, Charlotte, NC 28203. The Applicant's *Economic Impact Report* ("Economic Report") was prepared by Paul A. Coomes, Ph.D., 3604 Rail Ridge Road, Louisville, KY 40241. See *Banjo Creek Solar LLC Kentucky State Board on Electric Generation and Transmission Siting Application, Application Documents, Case No. 2023-00263* Attachment F.

The Construction Phase estimated total spending is projected to be $248 million; the total economic impact from labor is estimated to be $23.1 million from 381 jobs of all types; and one-time tax revenues of all types are estimated at $231,000. The Operational (generation) Phase expects 3.8 jobs creating modest labor income; and taxes during this phase, absent admission into either or both the Industrial Revenue Bond (IRB) and Payments in Lieu of Taxes (PILOT) programs, are estimated to be $4.7 million state and $3.2 million (of which $2.1 million are for Graves County School System) over the 40-year life of the Program. The report is silent as to any economic impact resulting from post-Project remediation of the involved properties.

Review Criteria and Methodology

This review encompasses the entirety of Banjo Creek Solar LLC's Application, including its "Attachment F", *Economic Impact Report* ("Economic Report"), that used IMPLAN modeling.

Methodology. The *Economic Impact Report* and its analyses of both Construction and Operational Phases of the Project were reviewed to consider:

- Specific aspects of the Project - specific tasks and activities; their chronology and timelines; and the geographic aspects of the Project and their effects;
- The quantification and/or estimation of the above-listed criteria for impact upon state, regional and local areas within the Commonwealth;
- Other civil, social and subjective (non-monetary) economic effects within the community, region, and state; and
- Potential impacts, either positive or negative, to current use or other industries and businesses
- Electrical output compared to current agrarian production.

Basis for Analysis. KRS 278.706 states that any person seeking to obtain a construction certificate to construct a merchant generating facility must file:

> **KRS 278.706**
>
> * * * *
>
> (2) A completed application [including] the following:
>
> (j) An analysis of the propose facility's economic impact on the affected region and the state.

Criteria for analysis. This review and evaluation of Applicant Banjo Creek Solar LLC's proposed Solar Energy Project ("Project") is based upon projected short-term Construction- and long-term Operational Phases, as described by the Applicant and detailed by responses to questions posed to that Applicant. The Applicant's Economic Impact Report and their Responses are analyzed for each Phase, using the following criteria:

Direct impacts. Wages paid to employed workers for Construction and Operational Phases.

Indirect Impacts. Purchases of goods, materials and services necessary for the construction and maintenance of the Project facilities.

Induced Impacts. These are socioeconomic changes arising as a result of increases in local spending as a result of the Project.

Taxes.

Kentucky Income and Franchise Taxes.

Local Occupational Taxes.

Kentucky Commonwealth and Local Property Taxes.

- Real estate taxes
- Tangible Personal Property Taxes
- Fees in lieu of property taxes (IRB and PILOT)

Kentucky Commonwealth Sales Taxes.

Other Benefits. Includes other contributions to the Commonwealth, county and the region.

Electrical and other Outputs. This criterion is a measure of the value of goods and services produced. Stated differently, "output" is the value of projection by the industry or producer in a calendar year or, in the present case, for the period of production.[1]

By definition, each criterion is reviewed in the context of ***net*** economic impact: the vary terminology demands that in each instance there is an existing "baseline" from which positive or negative economic results may arise.

The analyses were conducted on a statewide-, regional- and county basis.

Applied Review and Analysis

Review Summary

Overall it appears that the proposed Project will likely have positive economic impacts on the county, regional and commonwealth economy, particularly during the Construction Phase. Discussion of each criterion follows. All sums are in current dollars:

[1] See, e.g., *Output Data,* https://support.implan.com/hc/en-us/articles/115009505807-Output-Data#:~:text=In%20IMPLAN%2C%20Output%20is%20the%20value%20of%20production,margin%20only%3B%20it%20does%20not%20represent%20revenues%20%28sales%29.

Direct, Indirect and Induces Impacts

Direct, Indirect and Induced impacts. The applicant has outlined the basis for concluding the Project is projected to produce direct county impact during the Construction Phase of $23.1 million, from either 323 or 381 new jobs in Graves County.[2] These numbers presumably include labor temporarily re-locating to Kentucky for construction. The Applicant's solar project is likely to have a significant short-term impact on the regional and Commonwealth economy during the Construction Phase and a modest impact during Operational Phase.

For the Operations Phase, employment of 3.8 full-time equivalent persons is projected. The economic impact of this employment is expected to have a relatively small positive impact on the local economy

These numbers appear to be in line with similar projects.

Output

The generation of electricity by the Project (Output), is measured by positive cash flow, for the generation and sales of produced electricity. For this Project, the annual value of said output is projected to be 120 MWac. The monetary value of said output is not stated, but sensibly could be expected to greatly exceed the value from current (agrarian) property use.

Tax Impacts

Kentucky taxes for the *Economic Impact Report* review were grouped as business taxes, employment taxes, sales and use taxes, and property taxes for the purposes of this review.

Business taxes include Commonwealth income, franchise and like taxes.

The Applicant taxpayer is a limited liability company (LLC). LLC's are not directly taxed for income purposes by the Commonwealth, but their ownership may be. LLC members may be taxed as single-member LLC (sole proprietorship which files federal and/or state income taxes); as a partnership whose partners file taxes (liable for self-employment taxes and income taxes); as C corporations, taxed as such; or S Corporations who pay corporate income taxes. In addition, LLC's file an Annual Report with the Secretary of State with a $15 fee.

The Applicant has made no projection of Commonwealth business taxes with supporting information, data or calculations.

[2] *Economic Impact Report*, pages 1 and 11. Number of jobs varies, but total wages are the same. This variance is unexplained.

Employment taxes would include primarily local occupational taxes. These are sometimes grouped with business taxes as they are local income-based taxes but paid by the employer from withholding of the employees' wages. These taxes have been projected as $231,000 during the Construction Phase and are not projected, but should be modest, over the Operational Phase. The projected current income derived from these properties has not been projected, so the Applicant's projection is gross, not net. These numbers are local (occupational) taxes; state-level income-based taxes did not seem to be considered.

Sales and use taxes are taxes paid for purchasing goods and services within the Commonwealth, or with the complementary use tax, for property and services not taxable or undertaxed at the point of origin for which the commonwealth imposes their own tax. The Applicant projects that indirect impact of purchases from local suppliers will be minimal, as local businesses generally do not stock or supply solar farms materials.[3] There is no projection of any use taxes upon the use, storage or consumption of supplies and materials purchased outside Kentucky.

Property taxes include both real estate and personal property taxes:

Real estate taxes, currently based upon farm usage, will not change during the short Construction Phase (annually this is approximately $7,000). During the Operational Phase, the Applicant is projecting annual county real estate taxes of $80,000 per year, or a 40-year projection of $3.2 million, gross.[4] State property taxes over the same period are projected to be $4.7 million.[5]

Personal property taxes. The Applicant may pursue an Industrial Revenue Bond (IRB) agreement and Payments in Lieu of Taxes (PILOT) agreement that will reduce projected taxes. As both have yet-to-be negotiated, they have not been projected.

Conclusions and Recommendations

The construction and operation of the Golder Solar, LLC solar project facility in Graves County, Kentucky will provide significant positive economic benefits to the region and Commonwealth.

The Project will provide significant positive economic effects to the region and Commonwealth during the short Construction Phase. Measurable employment, payroll and associated occupational taxes, together with indirect and induced impacts will realize both payroll and occupational tax increases.

[3] *Economic Impact Report*, pp.11-12.
[4] *Economic Impact Report*, pp.1-2.
[5] *Economic Activity Report*, page 1.

During the Operational Phase, the economic impact is expected to be smaller for the region and Commonwealth. A modest payroll will provide employment for a few individuals with modest state income and local occupancy taxes in the Commonwealth and Graves County. With IRD and PILOT agreements in place, over the 25-year life of the Operational Phase, the Applicant has not projected personal property taxes or their IRB/PILOT payments. However, real estate taxes are estimated to be $3.3 M, gross.

There was no analysis of economic impact during the remediation following the Project, but such should be deemed to have minimal impact as decommissioning intends to return the real estate to its original condition. Labor and material costs, plus any incidental taxes, would usually be minimal.

Watters
UNCLAIMED PROPERTY CONSULTING LLC

CELL 513.225.6158
OFFICE 513.232.1769
2519 Ashton Court
Cincinnati, Ohio 45244-2810

Electric Generation and Transmission Siting Studies and Analyses – Economic Impact - Solar – Before the Kentucky Board on Electric Generation and Transmission Siting

In Re: Bluebird Solar LLC, Case No. 2021-00141, Application for Certificate to Construct an Approximately 90 Megawatt Merchant Electric Solar Generating Facility in Harrison County, Kentucky (September 2022)

In Re: Blue Moon Energy LLC, Case No. 2021-00414, Application for Certificate to Construct an Approximately 70 Megawatt Merchant Electric Solar Generating Facility and Nonregulated Electric Transmission Line in Harrison County, Kentucky (May 2022)

In Re: Sebree Solar, LLC, Case No 2021-00072, Application for Certificate to Construct an Approximately 60 Megawatt Merchant Solar Electric Generating Facility in Meade County, Kentucky (circa November 2021)

In Re: McCracken County Solar LLC, Case No 2020-00392, Application for Certificate to Construct an Approximately 60 Megawatt Merchant Solar Electric Generating Facility in Meade County, Kentucky (circa September 2020)

In Re: Meade County Solar LLC, Case No 2020-00390, Application for Certificate to Construct an Approximately 40 Megawatt Merchant Solar Electric Generating Facility in Meade County, Kentucky (circa September 2020)

In Re: Sebree Solar II, LLC, Case No. 2022-00131, Application for a Certificate to Construct an Approximately 150 Megawatt Merchant Solar Electric Generating Facility in Henderson County, Kentucky (circa July 2022)

In Re: Golden Solar, LLC, Case No. 2020-00243, [Application] for Certificate of Construction for an approximately 100 Megawatt Merchant Electric Solar Generating Facility in Caldwell County, Kentucky (circa November 2022)

As a subcontractor to the primary contractor for such study, reviewed the Applicant project reports of direct, indirect and induced economic impacts on the state and community; state corporate income, personal income, and occupational taxes; real and person property taxes; sales and use taxes; and net output value of goods and services produced.

Tax Studies – Real & Personal Property, Sales and Use, and Local Taxation Including Available Incentives, Deductions and Exemptions

Planning, Design and Analysis of Electrical Power System Upgrades – Tennessee

Performed construction contract review for the purposes of making a proposal for electronic system upgrades, to determine application of major taxes – Income, property sales and use taxes, rates, exemptions, exceptions, and available incentives applicable to Michigan.

Tax Studies – Kentucky Occupational Taxes

Research to identify local occupational taxes for proposed job sites

Prior to initiation and execution of contractor work projects, researched local occupation taxes for applicability, rates, registration and returns.

Tax Studies – Sales and Use Taxation

Planning, Design and Analysis of Electrical Power System Upgrades – Michigan

Performed construction contract review for the purposes of making a proposal for electronic system upgrades, to determine application of sales and use – and state tax exemptions deductions and incentives available.

Taxes - Corporate Registration to Do Business and Pay Taxes and Fees

Registration of a Business and For Taxation - Pennsylvania

Made applications with the Pennsylvania Secretary of State for state registration and with the state Department of Revenue for all state and local applicable taxes.

Registration and Management of State Personal and Gross Receipts Taxes

Registration for Taxation – New Mexico

Determine applicable taxes and means of registration for payment of New Mexico personal and gross receipts taxes.

ATTACHMENT D

Response to Noise Abatement Systems for Solar Farm Pile Driving

These are responses to pile driving noise abatement questions asked by Wells Engineering on behalf of the Kentucky Public Service Commission:

There are many ways to shroud and reduce the noise around pile driving at Solar Farm installations. Barriers and noise reducing curtains are on the market that can provide the ultimate, and potentially expensive methods to reduce the noise from pile driving at a construction site.(See the images at the end of this document) Additionally, earthen and concrete block barriers can be constructed and utilized that are less convenient but could possibly be more cost effective.

Specifically, the questions being asked are as follows:

- Is sound blanketing the right or most effective method of noise reduction?
- Is sound blanketing the standard for noise reduction?
- What are the other methods of noise reduction and how effective are they when compared to sound dampening as well as to each other?
- Provide a recommendation on the best(or the most appropriate) method of reducing the noise.

Is sound blanketing the right or most effective method of noise reduction?

There are many products and methods for construction noise mitigation on the market. It depends on the severity of the situation and the level of the sensitivity of the land use being affected by the pile driving noise. Ideally, if the sensitive land use is adjacent to or within 500 feet of the installation, the constructor could use noise shrouds, temporary noise walls or barriers or curtains to reduce noise levels by 15 to 30 dB (A) making the noise less noxious to local residents.

Trans Mountain Energy is an example of a company taking an innovative approach to help reduce noise from pile driving activities for construction at their Westridge Marine Terminal as part of the Trans Mountain Expansion Project.

Contractors for this project will be using ‘noise shrouds’ to cover the hammers that drive piles into the ocean floor for the new marine terminal in the Burrard

Inlet. The shrouds, which are about two stories tall and wide enough to hold a medium-sized SUV, dampen the sound of hammer impact.

The noise shrouds are being sourced from a company based in Germany specifically for the Trans Mountain Energy project and are designed to fit the hammers that drive the piles. This technique has been used in other projects around the world.

These shrouds could also be used on the ground at a Solar Farm installation. These are a very expensive and extreme option to remedy the issue of reducing pile driving noise by 15-30dB(A). (See the photo at the end of this document, photo 1)

Is sound blanketing the standard for noise abatement?

Sound blanketing/shrouding appears to be the most viable option for the application of pile driving for solar farm construction. It should be coupled with understanding the schedules of the affected residents and working with them to do the pile driving at times during the construction day when they may be away from their properties.

What are the other methods of noise reduction and how effective are they when compared to sound dampening as well as to each other?

- Trying to reduce the time required for pile driving by being more time effective with the pile driving.

  This tactic may not be cost or schedule effective.

- Develop a relationship with those living in the residential structures near the area to be impacted that will help them understand the process and utilize a schedule that will less adversely impact them. For example, doing the pile driving when residents are not at home.

  This may not work if the residents don't cooperate.

- Noise mitigation to reduce off-site noise levels due to sheet pile driving may include using alternative tools or equipment. A high-frequency vibratory hammer can be utilized during the sheet pile driving to minimize noise and vibration.

  This could be much more expensive than sound blanketing or shrouding.

- Construction of Earthen or Masonry Temporary Barriers. These barriers would utilize soil and masonry materials that may be readily available at the Pile Driving site.

  This method/tactic would require design and implementation by a qualified noise consultant. It could be less cost effective than renting or purchasing ready-made noise shrouds and barriers.

Provide a recommendation on the best(or the most appropriate) method of reducing the noise.

It is the recommendation of this consultant that ready-made sound reducing barriers or blankets are the most viable option for this application. This should be coupled with interaction with the residents living in noise sensitive land uses.

Photo 1

Examples of Sound Shrouding and Blanketing

The temporary sound barriers shown below are engineered, designed, and manufactured specifically for noise control applications. These sound blankets, or sound curtains, have several different assembly options depending on specific sound control needs. Temporary sound barrier blankets are made for ease of installation and to specified height requirements. The exterior facings of the temporary curtains can withstand very harsh environments and are designed to last through five years of continuous outdoor use.

Other examples of noise walls or shrouds are shown on the next page.


JENSEN