May 20, 2022

Solar Generation Siting Final Report – Bluebird Solar

KY State Board on Electric Generation and Transmission Siting
Case #2021-00141

Customer:
Kentucky PSC

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

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May 20, 2022

Prepared by:

Collin Abell
Power Systems Engineer

Vasu Chikkeruru
Senior Power Systems Engineer

Reviewed by:

Scott Campbell
Project Manager

Approved by:

Jim Cook
Chief Operating Officer

Solar Generation Siting Final Report – Bluebird Solar

Synopsis

This document is the Final Report prepared by Wells Engineering for Bluebird Solar in Harrison County, KY.

WEPSC Order: WE22022137

Public Service Commission PO: PON2 123 2100001913

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Contents

REVISIONS

Revision	Date Issued	Issue Type	By	Description
0	05-20-22	Final Report	CA	Issue for Review & Record

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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 Bluebird Solar LLC who is applying for a certificate of construction for an approximately 100MW Merchant Electric Solar Generation Facility in Harrison County, KY.

1.1 Scope

As part of the personal service contract for the 'Generation Siting Board Fall 2021', between The Commonwealth of Kentucky Energy Environment Cabinet/Public Service commission and Wells Engineering, in the matter of the order issued for case number 2021-00141, Wells Engineering was appointed to review the Application documents and the Site assessment report submitted by the applicant as per the Kentucky Revised Statutes KRS 278.706, KRS 278.708 and submit a Final report on the Solar Generation Siting for the application for a construction certificate by Bluebird Solar LLC in Harrison County.

Wells Engineering performed the review of the Application documents and the Site Assessment report submitted by the applicant by assigning it to the Senior Engineers and Designers at Wells Engineering and also by hiring experts as per different requirements of the siting project as seen by Wells Engineering.

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

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

1.2 Reference Document

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

i) 01_Bluebird_Pleading
ii) 02_Bluebird_Application
iii) 03_Bluiebird_Site_Assessment_Report
iv) 2021-00141 Bluebird Solar Procedural Schedule
v) Attachment_A_-_Context_Map
vi) Attachment_B_-_Lanscape_plan
vii) Attachment_C_-_Impact_Studies
viii) Attachment_D_-_Public_Notice_of_Application
ix) Attachment_E_-_Certificate_of_Compliance
x) Attachment_F_-_Public_Involvement_Activities
xi) Attachment_G_-_Public_Meeting_Documentation
xii) Attachment_H_-_AC1-074_Interconnection_Reports
xiii) Attachment_I_-_AC2-075_Interconnection_Study_Report
xiv) Attachment_J_-_Economic_Impact_Report
xv) SAR_Appendix_A_-_Kirkland_Property_Value_Impact_Analysis
xvi) SAR_Appendix_B_-_Preliminary_Site_Plan
xvii) SAR_Appendix_C_-_Bluebird_Property_Legal_Descriptions
xviii) SAR_Appendix_D_-_Noise_Analysis_Report
xix) SAR_Appendix_E_-_Reflectivity Analysis
xx) SAR_Appendix_F_-Traffic_Impact_Study
xxi) Responses provided by Bluebird Solar, LLC for First RFI
xxii) Responses provided by Bluebird Solar, LLC for Second RFI
xxiii) Kentucky Revised Statutes, KRS 278-706, 708 & 714

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.

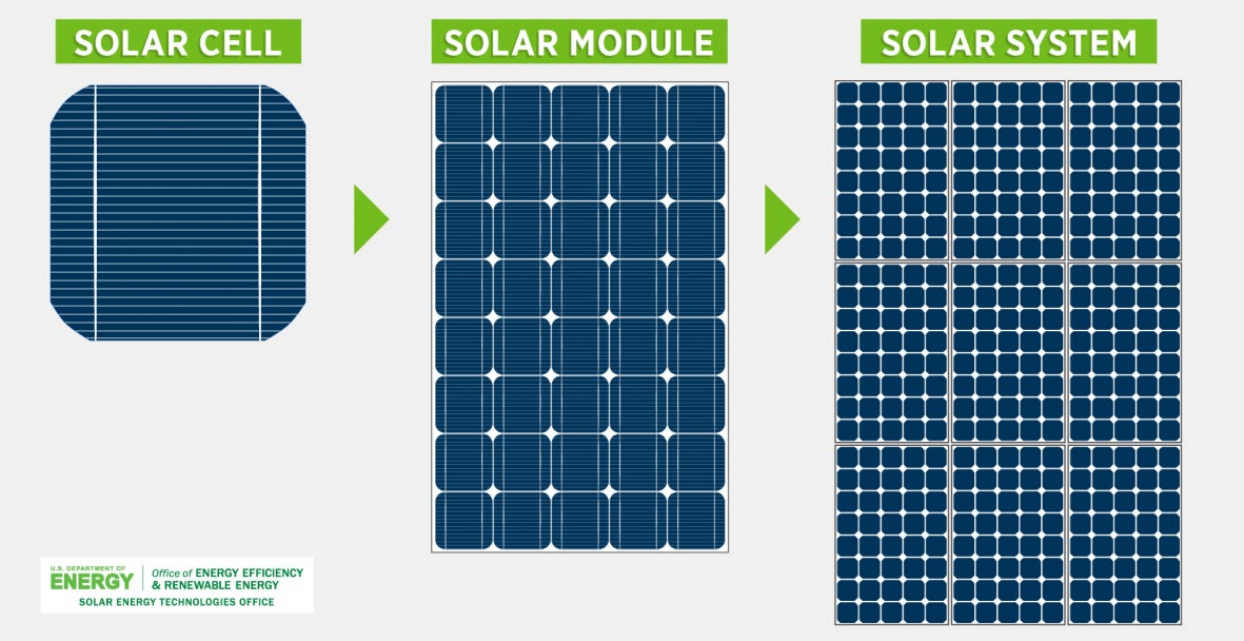

Figure (1)
Solar System[1]

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 system, in which the quantity and arrangement of solar modules is determined from the electrical system design of the plant and is then connected to the regional electric grid for distribution to the consumer.

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

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.

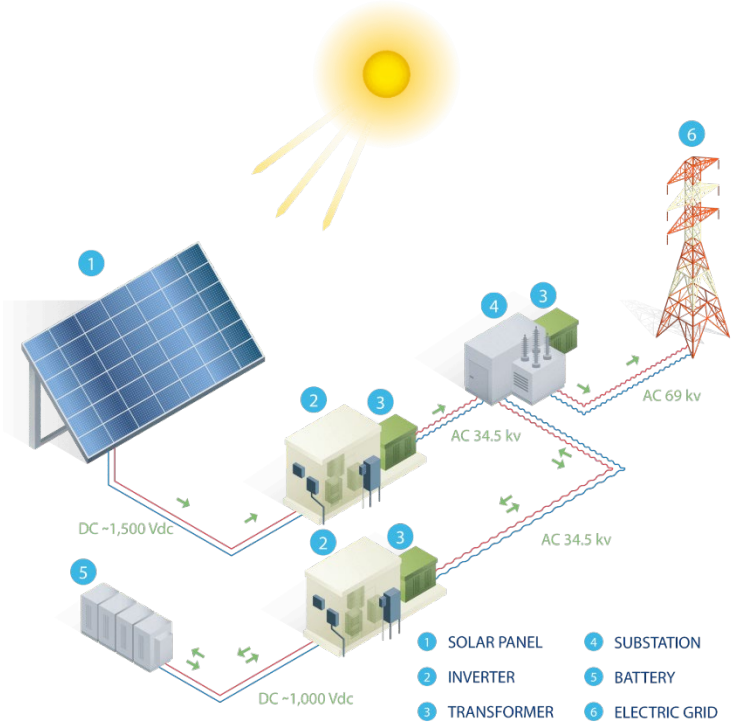

Figure (2)
A Solar Power Plant[2]

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

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

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

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.

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

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

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 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.

Figure (4)
Industrial Solar Inverter[4]

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

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 Batteries can produce electricity all day long.

Figure (5)
GE Industrial Battery[5]

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

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 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

Figure (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 the access to the facility.

Figure (7)
Example of Steel Structures within a Substation[7]

[7] Image found from the following website Gary-Chicago Airport Substation-Power Line Upgrades | Newkirk Electric (newkirk-electric.com)

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 noise comes from the equipment itself as well as the cooling fans for the equipment. However, the noise produced by this equipment are effective only in the vicinity of the equipment and decay with the distance. When these Inverters and the Transformers are installed with appropriate spacing between them the net effect of noise can be minimized.

2.7.2 Increased Road Traffic, Noise and Fugitive dust

The Solar Powerplant is a power plant where the electrical power is produced by non-moving stationary equipment. There will not be any crushers, conveyors or any disposal of neither fuel nor any waste, there is no raw material required for the plant. Hence, Solar power plants neither increase the Traffic, nor create Noise and Fugitive dust. 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. Using solar energy can have a positive, indirect effect on the environment when solar energy replaces or 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 a Solar Module.

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
vi) Provide wildlife habitat

[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/

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

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3 Bluebird 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, Bluebird 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

Initial review is the process of reviewing the documents submitted by the applicant. Wells Engineering and its Consultants working on the Siting Project, review the application documents for their adequacy. As part of the requirements of the state order, for the applicant's Case No. 2021-00141, Wells Engineering, and its Consultants, after the initial review of the application documents, provided list of statements for two requests of information from the applicant.

3.2 Site Visit

As part of the requirements of the state order, for the applicant's Case No. 2021-00141, Wells Engineering, made a visit to site as organized by the Siting board, on April 12th, 2022.

The locations visited are indicated on the site visit locations. Reference Figure (3).

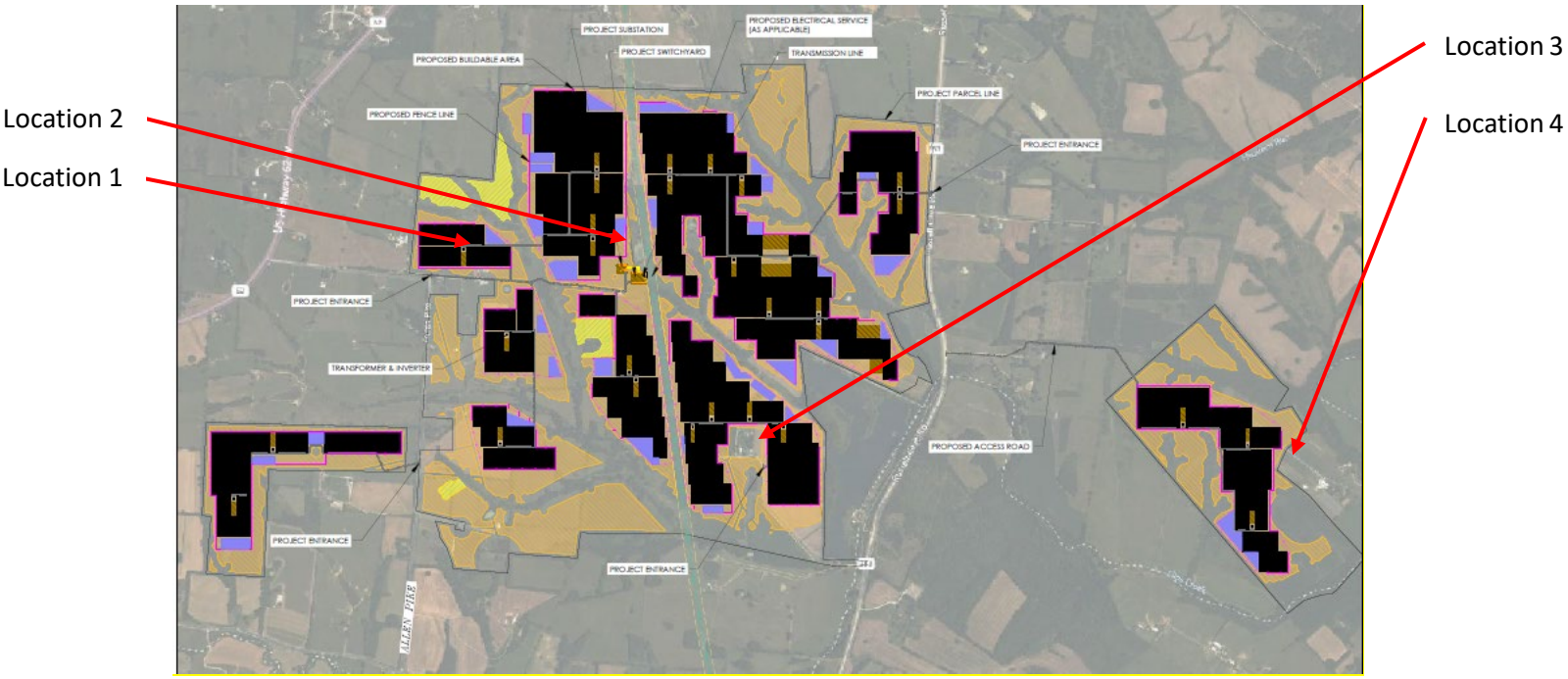

Figure (8)
Site Visit Locations

Location 1 - Project Entrance, also has the access road for the Project Substation
Location 2 – Location of the Project Substation
Location 3 – House located in the middle of the project area
Location 4 – Project entrance for East Island.

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

Picture (1)
Location #1 Barn #1 and Silo #1 along substation access road

Picture (2)
Location #1 Barn #2 along substation access road

Picture (3)
Location #1 Jacksonville – Renaker 138kV Transmission Line View #1

Picture (4)
Location #1 Jacksonville – Renaker 138kV Transmission Line View #2

Picture (5)
Location #2 Barn #3 and Silo #2 Located Along Substation Access Road

Picture (6)

Location #2 Abandoned House Near Substation Proposed Site

Picture (7)
Location #2 Existing Barn #4 Near Substation Proposed Site

Picture (8)
Location #2 Proposed Substation Area View #1

Picture (9)
Location #2 Proposed Substation Area View #2

Picture (10)
Location #2 Proposed Substation Area View #3

Picture (11)
Location #2 Proposed Substation Area View #4

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, and 278.708.

For the Solar site, as per KRS 278.706 the applicant, Bluebird 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, for the Solar site, 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 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;

(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; and

(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

3.3.1 278.708(3)(a)(1) Surrounding Land Uses

Wells Engineering reviewed the Site Layouts, 2-mile vicinity map and performed a Site Visit on April 12th, 2022. The findings after the site visit are discussed below.

Findings on the Site Layouts, 2-Mile vicinity maps

1. The total acreage of the fenced area is approximately 600 acres.
2. Cemeteries located within the project boundaries shall be provided with access.
3. Necessary clearances and vegetative screens shall be provided for non-participating properties, Public and Private residential structures, and buildings.

3.3.2 278.708(3)(a)(2) Legal Boundaries

After reviewing the legal descriptions of the land submitted as part of the application documents and RFI, the documentation 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.

3.3.3 278.708(3)(a)(3) Proposed Access Control

As per the KRS requirements KRS 278.708 (3)(a)(3), the applicant has proposed secured and restricted access control to the site.

Findings 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.
2. The Access control shall be as per the NERC CIP requirements.

3.3.4 278.708(3)(a)(4) Location of Facility Buildings, Transmission Lines, and other Structures

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

Findings on Location of Facility Buildings, Transmission Lines, and other structures.

1. There are currently two Electrical power distribution lines that run through the project area. One distribution line feeds a service for an existing barn shown in Picture (1) while the other feeds an electric service for an Abandoned House Picture (8).

3.3.5 278.708(3)(a)(5) Location and Use of Accessways, Internal Road & Railways

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

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

1. Internal access roads are proposed for the project.
2. Rail roads are not applicable to site.
3. Avoid using Oversize trailers for material transport and limit the overall weight as per the bridges and culverts of the Road. Reference Pictures (12, 13, 14, 15).

Picture (12)
Bridge on KY-353

Picture (13)
Culvert/Bridge for the site entrance off KY-353

Picture (14)
Bridge on Silas Road near the intersection of Silas Road and Allen Pike

Picture (15)
Bridge on Silas Road near Silas Baptist Church

3.3.6 278.708(3)(a)(6) Existing or Proposed Utilities to Service the Facility

The applicant noted in the first request for information "Bluebird does not anticipate the need for auxiliary power from a retail provider. If required, the project will receive auxiliary power from the local utility, Blue Grass Energy. Retail water is not planned for the site, but, if required, the project will contact the local utility to receive service." [12] As the project is in preliminary design if it is found as the project progresses that utilities are required for the project, Then there shall be necessary drawings created to indicate all underground and overhead utilities required to the site at the time of construction.

3.3.7 278.708(3)(a)(7) Compliance with Applicable Setback Requirements

The KRS required setback is 2000 feet. This setback is practical for turbine-based plants and the noise and view generated but not practical for a solar power plant. After reviewing the applications documents, statutes, and applicable zoning ordinances, it was found that the property line setback from the nonparticipating properties and roadways is 50 feet from the side and rear and 100 feet from the front. There should also be no more than 200 feet from any residential structure or dwelling unit.

3.3.8 278.708(3)(a)(8); (b); (d); & (e) Evaluation of Noise levels, Scenic surroundings, Traffic, Environmental impact & Fugitive Dust

Wells Engineering has appointed Cloverlake Consulting Services for the Environmental Assessment of site for Noise, Scenic surroundings, historic and archeological, Traffic, Environmental & Fugitive dust.

Summary: This report shows that all sections of the report are in compliance with the intent of KRS 278.708. As the project is still in its preliminary stages, as it progresses some other information may be needed, Such as:

- *Historic Resources-In particular a discussion of the impact of the project on historic buildings and cemeteries.*
- *Provide a copy of the Cumulative Environmental Impact assessment for the project.*
- *A plan to mitigate construction noise caused by pile driving including on-site barriers and construction schedules should be filied with the Siting Board 30 days prior to the beginning of construction.*

Reference the Attachment-A for the "Executive Summary of Final Assessment Report on Scenic, Environmental, Traffic, Noise & Fugitive dust impacts", Attachment-B "Final Assessment Report on Scenic, Environmental, Traffic, Noise & Fugitive dust impacts".

[12] Reference page 392 of "Final_Bluebird_First_Information_Response_Reduced.pdf" files as part of Applicant's response to First Data Request on 4/8/2022

3.3.9 278.708(3)(c) Property Values

Wells Engineering has appointed Clark Toleman, MAI for the assessment of the Application document for Property Values.

The summary of the expert's review on Property values is described below.

Summary: Considering my analysis of the Kirkland Impact Study my conclusion is that the report is credible and representative of the market conditions that would exist should the Bluebird Solar Project be constructed.

Reference Attachment-D "Impact on Property Values".

3.3.10 278.708(3)(c) Economic Impact Analysis

Economic Impact Analysis was performed Watters Unclaimed Property Consulting LLC, as contracted by Wells Engineering, for the Site Assessment.

Summary: Based upon the representations of the Applicant through its Economic Impact Analysis and Responses to the Siting Board's Request for Information, there is a significant, short-term initial economic to both the region and the Commonwealth of Kentucky. During the longer operational (generation) phase, there are lesser-but-positive economic regional impacts. Support, qualification and computation of the net economic impacts do not allow for a desired level of certainty for the asserted benefits or reasonably-certain quantification.

However, even though the Economic Impact Analysis lacked detail and thoroughness to be sufficient when compared to similar projects that came before the Siting Board. Based on similar projects Wells Engineering has reviewed it can be determined that the impact would still be positive but the true quantifiable impact on the local area is unknown at this time.

Reference Attachment-E "Economic Impact analysis".

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4 Recommendations & Mitigations Measures

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

1. Create a Site Survey Map indicating the property boundaries. This will be a good reference for current and future needs of the project.
2. Provide Site access control as per NERC guidelines.
3. For locating the Solar Modules and Other associated equipment of the plant maintain sufficient clearance from the existing power lines adhering to NEC, NESC & OSHA
4. Adhere to the setback distance at all locations as per guidelines from the local planning zone authority.
5. Setbacks for solar equipment from roads and property lines, with increased setbacks for certain equipment. Security fencing, vegetative buffer shall not be subject to setback restrictions.
6. Leaving existing vegetation between solar equipment and neighboring residences in place, to the extent practicable, to help screen the Project and reduce visual impact
7. Providing notice to neighbors regarding potential construction and operation noises, as well as limits on working hours during the construction period, as described in the Application.
8. Due to the proximity of a pond, the transformers installed for the substations should have a secondary containment system for the transformer oil to prevent water contamination.
9. Due to the three (3) separate areas of the project. It is recommended that the applicant verifies all existing utilities in the area before they proceed with the interconnection of the three areas.
10. Sound blanketing/ shrouding appears to be the most viable option for the application of pile driving for solar farm construction. Reference Attachment-C “Information on Sound Dampening as requested by the Siting Board” for the consultant’s report on sound dampening measures.

4.1 Combined Effects of Bluebird Solar and Bluemoon Solar in Harrison County

Harrison County currently has two (2) solar projects up for review by the siting board these are Bluebird Solar (Case #2021-141) and Bluemoon Solar (Case #2021-414). Below are our findings on the combined effects of these two projects.

4.1.1 Combined Impact on the Environment

If both projects are in their construction phase at the same time the number of citizens of Harrison County affected at one time will be greater. Since they are in different parts of the county, there will be more areas where construction-related noise and traffic could become a nuisance to citizens.

4.1.2 Combined Impact on Electric Power Reliability

The combined output of both the Bluebird and Bluemoon solar projects is 170MW. Each of these projects ties into a different transmission line, which helps to improve grid reliability. If both projects were connected to the same transmission line and there was a fault or nuisance trip on that line it may cause a huge dip in the power supplied to the grid. The power loss would be abrupt and cause a sudden imbalance in the energy produced and energy being consumed, which may cause power interruptions and in the worst case a black-out.

ATTACHMENT A

Bluebird Solar-Adequacy of the Applicants the Site Assessment Report Volumes 1 and 2-Executive Summary

Developed for Wells Engineering and the Kentucky Public Service Commission-State Board on Electric Generation and Transmission Siting-Case No. 2021-00141 By Cloverlake Consulting Services, May 5, 2022.

Executive Summary

The assessment of the adequacy of Bluebird Solar's Site Assessment Report contains the following sections. The assessment reviews each of these sections of the applicant's report and makes a determination of the adequacy of the applicant's report.

Summary of the Adequacy of the Applicant's Site Assessment Report

Based on a review of The Bluebird Solar Site Assessment Report Volumes I and II, by W. Thomas Chaney of Cloverlake Consulting, all of the sections of the report are in compliance with the intent of KRS 278.708.

Based on Cloverlake's analysis there are three areas where additional information/analysis may be needed.

These suggested measures are:

- Historic Resources-In particular a discussion of the impact of the project on historic buildings and cemeteries.
- Providing a Copy of the Cumulative Environmental Impact Assessment for the project.
- A plan to mitigate construction noise caused by pile driving including on-site barriers and construction schedules should be filed with the Siting Board 30 days prior to the beginning of construction.

Bluebird Solar-Adequacy of the Applicants the Site Assessment Report Volumes 1 and 2-Executive Summary

Developed for Wells Engineering and the Kentucky Public Service Commission-State Board on Electric Generation and Transmission Siting-Case No. 2021-00141 By Cloverlake Consulting Services, May 5, 2022.

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ATTACHMENT B

Bluebird Solar-Adequacy of the Applicants the Site Assessment Report Volumes 1 and 2

Developed for Wells Engineering and the Kentucky Public Service Commission-State Board on Electric Generation and Transmission Siting-Case No. 2021-00141

Bluebird Solar-Adequacy of the Applicants the Site Assessment Report Volumes 1 and 2

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

By Cloverlake Consulting, W. Thomas Chaney, President

May 5, 2022

Bluebird Solar-Adequacy of the Applicants the Site Assessment Report Volumes 1 and 2

Developed for Wells Engineering and the Kentucky Public Service Commission-State Board on Electric Generation and Transmission Siting-Case No. 2021-00141

Table of Contents

Cloverlake Consulting May 5, 2022

On Behalf of Wells Engineering, Florence, Kentucky For the Bluebird Solar Project Kentucky State Board on Electric Generation and Transmission Siting, Kentucky Public Service Commission

1. Description of the Proposed Site

REQUIREMENT: per KRS 278.706(2)(b); A full description of the proposed site, including a map showing the distance of the proposed site from residential neighborhoods, the nearest residential structures, schools, and public and private parks that are located within a two (2) mile radius of the proposed facility COMPLIANCE: This application (Application) is to construct and operate a solar photovoltaic facility producing up to 100 MWac (Project) on a fenced portion of an assemblage of Harrison County parcels from eleven landowners (Property) located south of Highway 62 (Leesburg Pike) near Broadwell. The Property straddles Russell Cave Road in southern Harrison County with most of the acreage on the west side of the Road. The power generated by the Project will be sold on the open market through an existing transmission line that crosses the property. A map showing the location of residential structures, schools, and

public and private parks in relation to the proposed project is in Appendix A. There are no schools, public or private parks, or healthcare facilities within 2 miles of the Project's radius. There are two residential neighborhoods (per KRS 278.700(6)) within 2,000 feet of the Project's radius. There are no hospitals and nursing home facilities within that radius. The project consists of a total of approximately 1345 acres with options to lease or purchase, 1 of which approximately 1000 acres is permitted. This land is primarily considered active farming and pastureland. While the site plan shows approximately 600 fenced acres, additional acres may be needed for internal roads between the fenced acres, for cables running between the blocks of solar panels, and for landscaping. The equipment onsite will consist of solar panels, racking, inverters, transformers, one substation transformer, and associated wiring and balance of system. The racking system used to fix the solar panels to the ground has a small footprint that does not use concrete, and the panels are not considered impervious as rainwater can travel over and around the panels, making this a low impact development. The panels are no more than 12 feet high at the highest point. The racks will be placed directly onto grass. Gravel will be placed on the access roads throughout the site and will not be placed under the solar panels. A fence meeting the National Electric Safety Code requirements, typically a six-foot fence with three strings of barbed wire at the top, will enclose the solar panels and associated infrastructure. The Project will comply with the NESC and American National Standards Institute (ANSI) Z535 Safety Sign Standards for Electric Utility Power Plants and Substations to guide the placement of safety signage around the facility. The Project will comply with the local Conditional Use Permit that requires a minimum of 100 feet from the Project's infrastructure to frontage boundary lines and 50 feet to side and 1 Of the project site, approximately 126 acres will be owned by the Project. Bluebird Solar Siting Board Application Page 5 rear boundary lines of any non-participating properties and roadways from the Applicant's solar energy system. A landscape buffer shall be retained where there is existing timber. Per a Harrison County ordinance, "Any existing tree or group of trees which stands within or near a require planting area and meets or exceeds the standards of this Ordinance may be used to satisfy the tree requirements of the planting area. The protection of tree stands, rather than individual trees, is strongly encouraged." Supplemental landscaping will be added where needed. The landscaping is intended to screen and substantially reduce the visibility of the solar arrays and their appurtenant facilities from the public rights-of-way and residences in the area. In addition, the County ordinance states a requirement for newly planted trees as "Double row of plant material 6 feet of height at planting. Evergreen trees will be placed no more than 20 feet apart, with the second row centered between the first rows, to be a layered look. A chain link fence coated in green or black coating no less than 6 feet in height and no more than 8 feet in height shall be placed along the perimeter of the property. The vegetation shall be placed on the outside of the

fence. The health of the landscaping shall be maintained, with trees replaced within 6 months upon death." Five different landscape buffers have been designed for the project.

1.01 Standard of Adequacy of the Site Assessment Report Submitted By Bluebird Solar

1 PROPOSED SITE DEVELOPMENT PLAN REQUIREMENT: per 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 278.7 04(2), (3), (4), or (5); and 8 Evaluation of the noise levels expected to be produced by the facility COMPLIANCE: Please see the Application, Section 2 for a detailed description of the proposed

1. Project and Project area. The following items provide information specifically in response to requirements 1 through 8 listed above. 1 A detailed description of surrounding land uses is provided in Appendix A of the Application: Property Value Impact Report (Kirkland Appraisals, LLC 2021). A summary of land use on parcels adjoining the Project is taken from this report and provided in Table 1 below.

Table 1. Land Use Adjoining the Bluebird Solar Project

Land Use	Percent of Total Adjoining Acres	Percent of Total Adjoining Parcels
Residential	2.24	42.11
Agricultural	22.76	31.58
Agricultural/Residential	75.01	26.32
Total	100.00	100.00

Source: Kirkland Appraisals, LLC (2021)

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

1.The Project survey boundary is depicted in Appendix B of the Application, and the legal descriptions of the participating properties are listed in Appendix C.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

2.The Project survey boundary is depicted in Appendix B, and the legal descriptions of the participating properties are listed in Appendix C.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

3.As described in the Application, Section 2, "A fence meeting the National Electric Safety Code requirements, typically a six-foot fence with three strings of barbed wire at the top, will enclose the solar panels and associated infrastructure. The Project will comply with the NESC and American National Standards Institute (ANSI) Z535 Safety Sign Standards for Electric Utility Power Plants and Substations to guide the placement of safety signage around the facility." In addition, Bluebird Solar or its contractor will control access to the site during construction and operation. All construction entrances will be gated and locked when not in use.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

4. The locations of proposed Project transmission lines and other structures are depicted on the Preliminary Site Layout in Appendix B of the Application.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

5. The locations of preliminarily designed access control points and internal roads are depicted on the Preliminary Site Layout in Appendix B. No railways are present within the proposed Project site.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

6. The locations of existing and proposed utilities to service the Project are depicted on Preliminary Site Layout in Appendix B. If the project requires auxiliary electrical service it will be acquired from Blue Grass Energy and delivered to the project substation.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

7. The applicable setback requirements are identified in Section 4 of the Application. The Harrison County Conditional Use Permit established setbacks of a minimum of 100 feet to frontage boundary lines and 50 feet to side and rear boundary lines of any non-participating properties and roadways from the Applicant's solar energy system.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

8. The operational noise study report provided in Appendix D identifies the noise levels expectedto be produced by the facility. The findings are further explained in Section 3.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

2 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 is in an agricultural and rural residential area of southern Harrison County. As noted by Richard Kirkland in his report attached as Appendix A, "larger solar farms using fixed or tracking panels are a passive use of the land that is in keeping with a rural/residential area. . . . The solar panels are all less than 15 feet high, which means that the visual impact of the solar panels will be similar in height to a typical greenhouse and lower than a single-story residential dwelling. Were the subject property developed with single family housing, that development would have a much greater visual impact on the surrounding area given that a two-story home with attic could be three to four times as high as these proposed panels." The Project will adhere to the landscape plans presented in Attachment B to the Application. This will help ensure that the Project will be compatible with the scenic

surroundings. In addition, see Appendix E for a Reflectivity and Visibility Analysis report written by Aztec studying potential visual impacts to the community surrounding the proposed facility. Section 6 on page 48 shows the summary of results indicating some reflectivity events would take place without any mitigation. Section 7 on page 49 of the Application shows the proposed mitigation steps necessary to reduce the reflectivity impact of the project. The report concludes that reflectivity impacts can be mitigated by adding visual barriers (i.e., tree barriers) or altering the trackers' cut-off angle dependent on time of year or as needed. Bluebird Solar is obligated pursuant to the CUP to modify tracker rotation limits in the plant controller during times when glare is present.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

3 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: Please refer to the Property Value Impact Report provided as Appendix A (Kirkland Appraisals LLC 2021). In his transmittal letter, Mr. Kirkland provides the following conclusions on page 1. The matched pair analysis shows no impact on home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land where the solar farm is properly screened and buffered. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all indicate that a solar farm is a compatible use for rural/residential transition areas and that it would function in a harmonious manner with this area. Data from the university studies, broker commentary, and other appraisal studies support a finding of no impact on property value adjoining a solar farm with proper setbacks and landscaped buffers. Very similar solar farms in very similar areas have been found by hundreds of towns and counties not to have a substantial negative effect 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 with adjoining agricultural uses, schools, churches, and residential developments. Based on the data and analysis in this report, it is my professional opinion that the solar farm proposed at the subject property will have no impact on the value of adjoining or abutting properties and that the proposed use is in harmony with the area in which it is located. I note 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's quiet, and there is minimal traffic.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

4 ANTICIPATED NOISE LEVELS 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 project boundary COMPLIANCE: See Appendix D for a report studying the anticipated operational and construction noise levels as studied and measured at nearby Sensitive Receptors (SR). The excerpt below is a brief summary found on page 15 of Appendix D. Based on background noise monitoring and noise analysis for the project operation, it is expected that the ambient noise levels in the project vicinity could be low in the 40s dBA Ldn. The project generated noise from equipment within the site is less than 30 dBA Ldn and less than 20 dBA Ldn at the sensitive receptors, which are far below ambient noise levels. Noise from project generated vehicular traffic and maintenance activities are minimal and will not contribute noticeably to the nearby sensitive receptors. In conclusion, the project operation noise complies with EPA standard of 55 dBA Ldn threshold and no noise impact would occur. Additionally, the Harrison County Board of Adjustments has mandated that all construction activities shall be limited to daylight hours between 7:00 a.m. to 9:00 p.m. and will not be conducted on Sundays unless it is necessary to make up for delays or to meet deadlines. Construction workers may arrive on site prior to 7 a.m., but construction activities shall not take place until that time. During construction, it is anticipated that the loudest noise will be generated from the temporary and migrant pile driving of the panel-racking system, which has been evaluated by the U.S. Department of Transportation Federal Highway Administration to be 101 dBA at 50 feet. Bluebird Solar is familiar with prior noise studies submitted to the Siting Board by other projects and believes the anticipated noise generated during constriction by those projects is consistent with the noise anticipated to be generated by this project. Consistent with other projects, Bluebird Solar will commit to the following mitigation measure: If the pile driving activity occurs within 1,500 feet of a noise sensitive receptor, Bluebird Solar shall implement a construction method that will mitigate the noise generated during the pile driving process (i.e., semi-tractor and canvas method; sound blankets on fencing surrounding the solar site; or any other comparable method).

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

5 EFFECT ON ROAD AND RAILWAYS 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 any anticipated

degradation of roads and lands in the vicinity of the facility COMPLIANCE: The report provided in Appendix F discusses the Project's impact on road and rail traffic, and possible degradation of roads as a result of the Project. The following is the conclusion of the report on page 12. When comparing the no build analysis to the build analysis it was determined that the roadways in the study area will continue to operate at a LOS (level of service) similar to existing conditions. The analysis determined that existing and proposed conditions operated with a LOS "C" or better for all roadways in the study area and the average speed for all roadways are near or above the speed limit for all roadways. The turn lane analysis determined that no additional turn lanes are warranted for any roadways based on the traffic volumes on the road. The sight distance analysis determined that traffic entering US 62 at Allen Pike and the proposed entrances to KY 353 and Allen Pike meet all sight distance requirements. Some clearing along right of way may be required at these entrances to ensure proper sight distance is provided. Based on the analyses performed, no changes to the roadway network are recommended within the study area in order for traffic conditions to operate within acceptable conditions. Construction and associated land disturbance associated with the proposed project may temporarily contribute airborne materials. The Project will utilize Best Management Practices such as: appropriate revegetation measures, application of water, or covering of spoil piles, to minimize dust. Additionally, open-bodied trucks transporting dirt will be covered while moving. During construction activities water may be applied to internal road system to reduce dust generation. Water used for dust control is authorized under the Kentucky Pollutant Discharge Elimination System (KPDES) as a non-stormwater discharge activity, which will be required for the proposed project.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

6 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: Specific mitigation measures are listed below. These measures are the Harrison County Conditional Use Permit conditions for the project.

1. All construction activities shall be limited to daylight hours between 7:00 a.m. to 9:00 p.m. and will not be conducted on Sundays unless it is necessary to make up for delays or to meet deadlines.
2. Construction workers may arrive on site prior to 7 a.m., but construction activities shall not take place until that time.

2. The Applicant shall adhere to its Landscape Plan as submitted to the Planning Commission for the site plan review. However, along KY-353 the applicant shall at the minimum supplement existing landscape and plant either evergreens as listed in the Segment 5 planting plan or Segment 4 planting plan.

3. The Applicant shall maintain setbacks of a minimum of 100 feet to frontage boundary lines and 50 feet to side and rear boundary lines of any non-participating properties and roadways from the Applicant's solar energy system.

4. The Applicant's solar energy system, excluding utility poles, antennas, and substation equipment, shall not exceed 20 feet in height.

5. The Applicant shall prepare stormwater management plans that meet or exceed the Kentucky Stormwater Management Program regulations for all regulated activities at all stages of construction, operation, and decommissioning.

6. The Applicant shall obtain all required regulatory permits including a KPDES General Permit for Stormwater Discharges Associated with Construction Activity and a certificate of construction from the Kentucky State Board on Electric Generation and Transmission.

7. Following construction of the Project, the Project Site shall be fenced and locked at all times. The Project Site shall also be secured during construction. The Developer will install and maintain a permanent perimeter/boundary fence that meets the requirements of the National Electrical Safety Code.

8. Prior to the issuance of a Building Permit, a Decommissioning Plan and Cost Estimate shall be prepared by a licensed and Registered Professional Engineer from the Commonwealth of Kentucky who is not an employee of the Applicant or the landowner. The Decommissioning Plan shall comply with the minimum requirements of Article 23 of the Harrison County Fiscal Court's Zoning Ordinance. The Decommissioning Plan and Cost Estimate shall be approved by the Planning Commission prior to issuance of a Building Permit.

9. The Decommissioning Plan and Cost Estimate shall be updated every five years, submitted to the Planning Commission for approval, and the Security revised as appropriate based upon the revised cost estimate.

10. The Applicant shall post a combination performance and warranty surety in the amount indicated by the Cost Estimate in the form of either a Cash Deposit, Irrevocable Letter of Credit, or Surety Bond, which shall be both to ensure repair of defective materials and/or abandonment of the site. The Security shall be made in favor of the Cynthiana - Harrison County - Berry Joint Planning Commission in a form approved to the satisfaction of the Planning Commission.

11. The Applicant and the County shall enter into a recorded agreement in a form approved by the Planning Commission that ensures that the decommissioning is carried out in accordance with this Ordinance. The agreement at a minimum shall include a Decommissioning Plan, Cost Estimate, and language binding the applicant or landowner and the County to implement the decommissioning activities.

12. The project will be addressing any glare events through controls limiting the angle of rotation for the trackers on-site during periods of backtracking, typically early morning, and late afternoon. During the first year of operation should glare events occur, Bluebird Solar will respond accordingly by modifying the tracker rotation limits in the plant controller during times when glare is present. The project will put together an Operations and Maintenance Glare plan, to be submitted to the Building Inspector before project permits. The plan will detail when onsite Operations and Maintenance (O&M) personnel would on-site mobilize to critical viewpoints during certain times of the year during specific early morning and late afternoon hours. As detailed in the Reflectivity and Visibility Analysis, implementing limitations on backtracking cut off angles would achieve the desired effect of reducing or preventing a glare event. The backtracking limits will be implemented during the hours and seasons as determined by the combined Reflectivity and Visibility Analysis and verified by the Operations and Maintenance team.

13. Ground shall be remain free of debris and damaged solar materials at all times after construction has been completed.

14. Prior to construction the Applicant shall prepare an emergency management plan acceptable to the local fire district and County and should be responsible for training of local personnel as needed.

15. We recommend the Applicant contact the agricultural department and property owners and have a discussion on appropriate landscaping for the area.

Evaluation of the Adequacy of this section of the Site Assessment: This part of the application meets the requirements of the application process.

7. Other Environmental Factors Addressed By the Applicant

The applicant has adequately addressed Wetlands, endangered plant species including Running Buffalo Clover. White Clover, and Short's Goldenrod. They also adequately addressed endangered animal species that might be impacted y the project including endangered bats. Please see the application for details.

It is assumed that the Applicant has filed an assessment of the Cumulative Environmental Impact of the project with the Kentucky Energy and Environment Cabinet. A search of the Cabinets web regarding the Bluebird Solar Project s did not yield any results positive or negative.

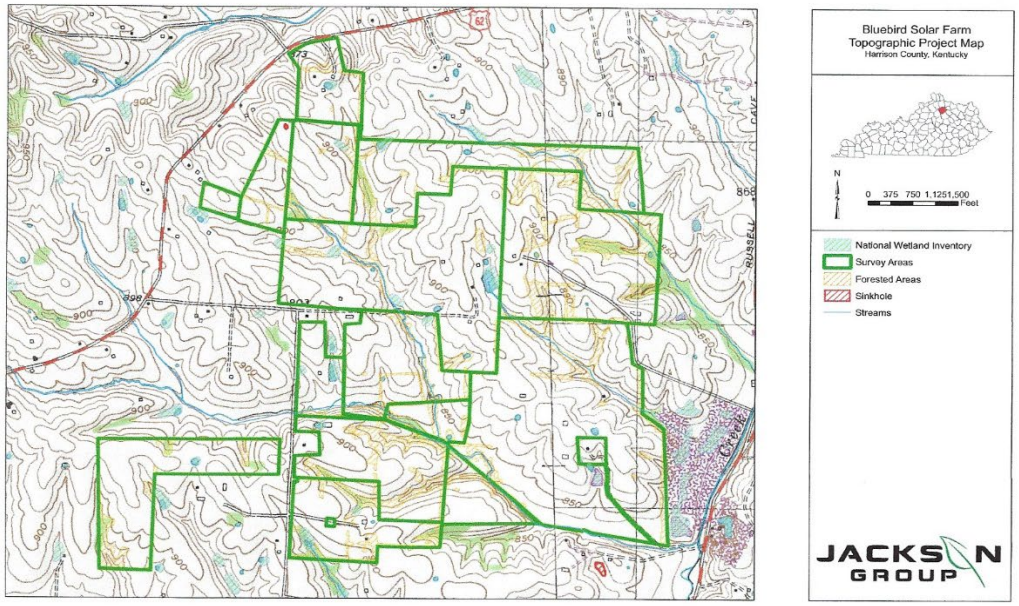
8.0 Summary of the Adequacy of the Applicant's Site Assessment Report

Based on a review of The Bluebird Solar Site Assessment Report Volumes I and II, by W. Thomas Chaney of Cloverlake Consulting, all of the sections of the report are in compliance with the intent of KRS 278.708.

Based on Cloverlake's analysis there are a three areas where additional information/analysis may be needed.

These suggested measures are:

- Historic Resources-In particular a discussion of the impact of the project on historic buildings and cemeteries.
- Providing a Copy of the Cumulative Environmental Impact Assessment for the project.
- A plan to mitigate construction noise caused by pile driving including on-site barriers and construction schedules should be filed with the Siting Board 30 days prior to the beginning of construction.



APPENDIX A-Site and Vicinity Map

REFERENCES

All the data for this adequacy report were take from documents filed by Bluebird Solar and responses by the Kentucky PSC and its consultants and a search of the Kentucky Energy and Environment Cabinet web site.

Gallery of Photographs Taken the Site visit on April 1, 2022

Bluebird Solar-Adequacy of the Applicants the Site Assessment Report Volumes 1 and 2

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Resume W. Thomas Chaney

W. THOMAS (TOM) CHANEY

PRESIDENT CLOVERLAKE CONSULTING

YEARS OF EXPERIENCE

49

EDUCATION

- MBA, Finance and Management Rowland School of Business 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
- 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 two solar projects in Kentucky; Madison Solar and Horseshoe Bend Solar. He is currently actively involved in two additional solar projects; McCracken County Solar and Meade County Solar.

- 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

Bluebird Solar-Adequacy of the Applicants the Site Assessment Report Volumes 1 and 2

Developed for Wells Engineering and the Kentucky Public Service Commission-State Board on Electric Generation and Transmission Siting-Case No. 2021-00141

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 C

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

ATTACHMENT D

Review Appraisal

Of:

Kirkland Appraisals, LLC

Impact Study

Bluebird Solar Project

Harrison County, Kentucky

1345 Acres

Date of Review

April 28, 2022

Prepared for:

Mr. Scott Campbell, Senior Project Manager

Wells Engineering

6900 Houston Road, Suite 38

Florence, Kentucky 41042

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

May 10,2022

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

Re: ***Review Appraisal Report***
Kirkland Appraisal, LLC-Impact Study
Bluebird Solar Project, Harrison County Kentucky

Dear Mr. Campbell

Following your request, I have carried out an investigation and review of the Kirkland Appraisal LLC Impact Study that estimates the impact in terms of property value to the surrounding properties to the proposed Bluebird Solar Project. The Kirkland report is part of the application for the 1,345 acre solar project to The Kentucky State Board on Electric Generation and Transmission Siting. I have reviewed the Kirkland 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 38 properties that have been identified as adjoining the project tracts.

Considering my analysis of the Kirkland Impact Study my conclusion is that the report is credible and representative of the market conditions that would exist should the Bluebird Solar Project be constructed.

The following is a summary of my technical review of the Kirkland report 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:	*Bluebird Solar Project*
Property Address:	Agracultural/Rural
Metropolitan Area:	Cynthiana, KY Harrison County Seat
Property Type:	Agracultural with homesites
Report Option:	Narrative Impact Study
Review Client:	Mr .Scott Campbell Wells Engineering 6900 Houston Rd., Suite 38 Florence, Ky.41042
Intended Use of Review:	Internal Use

Purpose of this Review

The purpose of this review is to determine if the appraisal report is essentially in compliance with:

(1) 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: April 28, 2022

3. Purpose of the Impact Study

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 known as Bluebird in Harrison County as of April 28, 2021.

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 will 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.

Intended Use of the Appraisal

This review appraisal is prepared for Wells Engineering on behalf of the Kentucky State Board on Electric Generation and Transmission Siting Board.

Date of Appraisal Review

This Appraisal is made as of April 28, 2021 with all economic, statistical and market data correlated to this date. The inspection of the property was made on this date and all physical characteristics are described relative to this date unless otherwise sated within this report.

Proposed Project Area

The subject properties make up a 1,345 acre area on the west side of Russell Cave Rood HW 353 south of Cynthiana with smaller areas on the west and east side of the main tract. The Kirkland appraisal identifies the property as an assemblage at 2252 KY Highway 32 Cynthiana which appears incorrect . All the thirty- eight adjoining areas are listed including fourteen residential tracts under ten acres with the balance being general farms. The closest adjoining house will be 350 feet from a solar panel with an average distance to the adjoining residence being 1,975 feet.

List of Adjoining Properties

Surrounding Uses

#	MAP ID	Owner	GIS Data Acres	Present Use	Adjoin Acres	Adjoin Parcels	Distance (ft) Home/Panel	Adjoining Linear Feet
1	065-0000-030-00-000	Sharp	77.26	Agricultural	1.96%	2.63%	N/A	3,819
2	065-0000-029-00-000	Wright	5.00	Residential	0.13%	2.63%	N/A	20
3	065-0000-029-01-000	Rowe	5.00	Residential	0.13%	2.63%	1,600	367
4	065-0000-026-02-000	McDaniel	7.92	Residential	0.20%	2.63%	1,385	1,261
5	065-0000-028-00-000	Darnell	98.68	Agri/Res	2.51%	2.63%	2,115	867
6	065-0000-027-00-000	Hehr	24.00	Agri/Res	0.61%	2.63%	3,330	321
7	065-0000-004-00-000	Brown	1.82	Residential	0.05%	2.63%	2,560	246
8	065-0000-026-03-000	Partin	1.15	Residential	0.03%	2.63%	2,365	224
9	065-0000-026-04-000	McDaniel	10.64	Residential	0.27%	2.63%	N/A	1,605
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11	065-0000-025-00-000	Gray	8.71	Residential	0.22%	2.63%	2,755	40
12	065-0000-023-00-000	Mattox	7.41	Residential	0.19%	2.63%	2,785	543
13	065-0000-022-00-000	Mattox	0.25	Residential	0.01%	2.63%	2,900	101
14	065-0000-021-00-000	Patterson	201.75	Agri/Res	5.13%	2.63%	2,595	7,964
15	066-0000-007-00-000	McDowell	511.53	Agri/Res	13.00%	2.63%	875	3,850
16	079-0000-001-00-000	Crestview	1517.00	Agri/Res	38.56%	2.63%	3,865	2,097
17	007-00-00-006.00	Roe	106.00	Agricultural	2.69%	2.63%	N/A	1,616
18	080-0000-002-04-000	Roe	3.82	Residential	0.10%	2.63%	935	356
19	080-0000-002-06-000	Koch	2.00	Residential	0.05%	2.63%	610	714
20	080-0000-002-00-000	Roe	21.64	Agricultural	0.55%	2.63%	N/A	1,127
21	008-00-00-019.00	Hines	33.00	Agricultural	0.84%	2.63%	N/A	656
22	008-00-00-016.00	Hines	25.00	Agricultural	0.64%	2.63%	N/A	873
23	008-00-00-014.00	Ricker	125.00	Agri/Res	3.18%	2.63%	1,195	48
24	080-0000-001-00-000	Ricker	85.00	Agricultural	2.16%	2.63%	N/A	4,280
25	007-00-00-003.00	McDowell	40.00	Agricultural	1.02%	2.63%	N/A	1,006
26	007-00-00-001.00	Hinkle	16.62	Residential	0.42%	2.63%	N/A	212
27	066-0000-006-01-000	Hinkle	76.63	Agricultural	1.95%	2.63%	N/A	3,718
28	066-0000-004-00-000	McDowell	307.00	Agri/Res	7.80%	2.63%	350	9,132
29	053-0000-005-00-000	Roland	5.67	Residential	0.14%	2.63%	1,905	592
30	003-00-044.00	Root	9.00	Residential	0.23%	2.63%	2,395	80
31	052-0000-040-00-000	Wise	46.15	Agri/Res	1.17%	2.63%	1,260	5,365
32	003-00-00-046.00	Hines	67.00	Agri/Res	1.70%	2.63%	1,720	816
33	052-0000-041-00-000	Wilson	21.00	Agricultural	0.53%	2.63%	N/A	1,838
34	052-0000-028-00-000	Shropshire	328.00	Agricultural	8.34%	2.63%	N/A	3,947
35	052-0000-030-03-000	Sharp	24.90	Agricultural	0.63%	2.63%	N/A	331
36	052-0000-030-02-000	Sharp	2.46	Residential	0.06%	2.63%	2,355	237
37	052-0000-036-00-000	Mallory	53.12	Agri/Res	1.35%	2.63%	1,190	4,818
38	052-0000-037-00-000	Sharp	57.00	Agricultural	1.45%	2.63%	N/A	4,507
		Total	**3934.623**		**100.00%**	**100.00%**	1,975	

Methodology to Indicate Effect on Adjoining Properties

The Kirkland 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 several states. This is a quantitative analysis 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 Impact Study applied the paired sales analysis to adjoining properties around solar farms in 10 states including Kentucky. The result is has been broken down into sub-groups with the Kentucky analysis indicating a range of change in value from -1% to +3%.It should be mentioned that three of these solar farms are on the utility companies land and one is in an industrial park.

The next survey is done in the surrounding states including 19 solar farms with a paired sale analysis indicating a range of effect on value from -5% to +7% with an average overall change of +1%. This result would indicate a neutral effect overall. Solar farms over 5 MW where than analyzed including 23 projects and 56 paired sales studied with gross range in change from -10% to +10, with only one sale showing -10%, 41 sales indicating 0% to +7% and the average being +1%, which overall is an indication of a neutral effect.

Conclusion of Solar Farm Impact

These paired sales are a strong indicator that proximity to a solar farm has a neutral impact on the adjoining property value when a buffer screening is in place, and this is because a 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. There is a review of published research material on this subject included in this Impact Study which also indicates the neutral effect on the adjoining property to solar and wind farms.

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.

Signed: _____

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ATTACHMENT E

Review Appraisal

Of:

Kirkland Appraisals, LLC

Impact Study

Bluebird Solar Project

Harrison County, Kentucky

1345 Acres

Date of Review

April 28, 2022

Prepared for:

Mr. Scott Campbell, Senior Project Manager

Wells Engineering

6900 Houston Road, Suite 38

Florence, Kentucky 41042

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

May 10,2022

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

Re: ***Review Appraisal Report***
Kirkland Appraisal, LLC-Impact Study
Bluebird Solar Project, Harrison County Kentucky

Dear Mr. Campbell

Following your request, I have carried out an investigation and review of the Kirkland Appraisal LLC Impact Study that estimates the impact in terms of property value to the surrounding properties to the proposed Bluebird Solar Project. The Kirkland report is part of the application for the 1,345 acre solar project to The Kentucky State Board on Electric Generation and Transmission Siting. I have reviewed the Kirkland 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 38 properties that have been identified as adjoining the project tracts.

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The following is a summary of my technical review of the Kirkland report 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:	*Bluebird Solar Project*
Property Address:	Agracultural/Rural
Metropolitan Area:	Cynthiana, KY Harrison County Seat
Property Type:	Agracultural with homesites
Report Option:	Narrative Impact Study
Review Client:	Mr .Scott Campbell Wells Engineering 6900 Houston Rd., Suite 38 Florence, Ky.41042
Intended Use of Review:	Internal Use

Purpose of this Review

The purpose of this review is to determine if the appraisal report is essentially in compliance with:

(1) The uniform Standards of Professional Appraisal Practice (USPAP) as promulgated by the Appraisal Standards Board of The Appraisal Foundation;

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- The completeness of the report;
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Reviewer: E. Clark Toleman MAI, SRA Date of Review: April 28, 2022

3. Purpose of the Impact Study

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 known as Bluebird in Harrison County as of April 28, 2021.

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 will 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.

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Intended Use of the Appraisal

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Date of Appraisal Review

This Review Appraisal is made as of April 28, 2022 with all economic, statistical and market data correlated to this date. The inspection of the property was made on this date and all physical characteristics are described relative to this date unless otherwise sated within this report.

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List of Adjoining Properties

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18	080-0000-002-04-000	Roe	3.82	Residential	0.10%	2.63%	935	356
19	080-0000-002-06-000	Koch	2.00	Residential	0.05%	2.63%	610	714
20	080-0000-002-00-000	Roe	21.64	Agricultural	0.55%	2.63%	N/A	1,127
21	008-00-00-019.00	Hines	33.00	Agricultural	0.84%	2.63%	N/A	656
22	008-00-00-016.00	Hines	25.00	Agricultural	0.64%	2.63%	N/A	873
23	008-00-00-014.00	Ricker	125.00	Agri/Res	3.18%	2.63%	1,195	48
24	080-0000-001-00-000	Ricker	85.00	Agricultural	2.16%	2.63%	N/A	4,280
25	007-00-00-003.00	McDowell	40.00	Agricultural	1.02%	2.63%	N/A	1,006
26	007-00-00-001.00	Hinkle	16.62	Residential	0.42%	2.63%	N/A	212
27	066-0000-006-01-000	Hinkle	76.63	Agricultural	1.95%	2.63%	N/A	3,718
28	066-0000-004-00-000	McDowell	307.00	Agri/Res	7.80%	2.63%	350	9,132
29	053-0000-005-00-000	Roland	5.67	Residential	0.14%	2.63%	1,905	592
30	003-00-044.00	Root	9.00	Residential	0.23%	2.63%	2,395	80
31	052-0000-040-00-000	Wise	46.15	Agri/Res	1.17%	2.63%	1,260	5,365
32	003-00-00-046.00	Hines	67.00	Agri/Res	1.70%	2.63%	1,720	816
33	052-0000-041-00-000	Wilson	21.00	Agricultural	0.53%	2.63%	N/A	1,838
34	052-0000-028-00-000	Shropshire	328.00	Agricultural	8.34%	2.63%	N/A	3,947
35	052-0000-030-03-000	Sharp	24.90	Agricultural	0.63%	2.63%	N/A	331
36	052-0000-030-02-000	Sharp	2.46	Residential	0.06%	2.63%	2,355	237
37	052-0000-036-00-000	Mallory	53.12	Agri/Res	1.35%	2.63%	1,190	4,818
38	052-0000-037-00-000	Sharp	57.00	Agricultural	1.45%	2.63%	N/A	4,507
		Total	**3934.623**		**100.00%**	**100.00%**	1,975	

Methodology to Indicate Effect on Adjoining Properties

The Kirkland 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 several states. This is a quantitative analysis 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 Impact Study applied the paired sales analysis to adjoining properties around solar farms in 10 states including Kentucky. The result is has been broken down into sub-groups with the Kentucky analysis indicating a range of change in value from -1% to +3%.It should be mentioned that three of these solar farms are on the utility companies land and one is in an industrial park.

The next survey is done in the surrounding states including 19 solar farms with a paired sale analysis indicating a range of effect on value from -5% to +7% with an average overall change of +1%. This result would indicate a neutral effect overall. Solar farms over 5 MW where than analyzed including 23 projects and 56 paired sales studied with gross range in change from -10% to +10, with only one sale showing -10%, 41 sales indicating 0% to +7% and the average being +1%, which overall is an indication of a neutral effect.

Conclusion of Solar Farm Impact

These paired sales are a strong indicator that proximity to a solar farm has a neutral impact on the adjoining property value when a buffer screening is in place, and this is because a 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. There is a review of published research material on this subject included in this Impact Study which also indicates the neutral effect on the adjoining property to solar and wind farms.

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.

Signed: _____

Watters
UNCLAIMED PROPERTY CONSULTING LLC

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

Selected Project Experience

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

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 2020)

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)

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.

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

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