Review and Evaluation of the Wood Duck Solar, LLC Site Assessment Report

Kentucky Public Service Commission and Kentucky State Board on Electrical Generation and Transmission Siting

September 15, 2025

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September 15, 2025

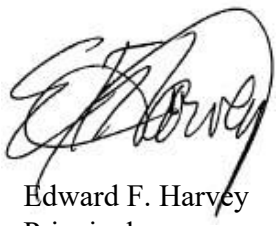
Mr. Wright Williams
Kentucky Public Service Commission
211 Sower Blvd.
Frankfort, KY 40601

Re: Harvey Economics' Review of Wood Duck Solar, LLC's Site Assessment Report for Facilities in Barren County, Kentucky

Dear Mr. Williams,

Harvey Economics is pleased to provide you with our final report, *Review and Evaluation of the Wood Duck Solar, LLC Site Assessment Report.*

Yours truly,



Edward F. Harvey
Principal

Report

September 15, 2025

Review and Evaluation of the Wood Duck Solar, LLC Site Assessment Report

Prepared for

Kentucky Public Service Commission and
Kentucky State Board on Electrical Generation and Transmission Siting
211 Sower Boulevard
Frankfort, Kentucky 40602

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SECTION 1
Introduction

This document provides a review of the Site Assessment Report (SAR) for the proposed Wood Duck Solar, LLC solar facility (Project or Solar Project) submitted to the Kentucky State Board on Electric Generation and Transmission Siting (Siting Board). Wood Duck Solar, LLC (Wood Duck Solar or Applicant) submitted the SAR as part of its application for a construction certificate to construct a merchant electric generating facility under KRS 278.706 and 807 KAR 5:110 on May 19, 2025. Siting Board staff retained Harvey Economics (HE) to perform a review of the SAR. Requirements specific to the SAR are defined under KRS 278.708, detailed below.

Statutes Applicable to the SAR Review

KRS 278.706 outlines the requirements for an application to receive a certificate to construct a merchant electric generating facility. Section (2)(l) of that statute requires the Applicant to prepare a SAR, as specified under KRS 278.708. The Wood Duck Solar SAR is the main focus of HE's review. However, the Siting Board also requested that HE review the economic impact report prepared by the Applicant. The economic impact report is a requirement of the application under KRS 278.706(2)(j), separate from the SAR.

KRS 278.708(3) states that a completed site assessment report shall include:

(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 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.

KRS 278.708(4) states that "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."

KRS 278.706(2)(j) states that a completed application shall include "an analysis of the proposed facility's economic impact on the affected region and the state."

KRS 278.706(2)(d) addresses specific setback requirements, as related to distances from adjacent property owners of various types (i.e., residential neighborhoods, schools, hospitals, nursing homes).

SAR Review Process and Methodology

HE completed the following tasks as part of the review of the Wood Duck Solar SAR and certain other components of the Wood Duck Solar application:

- Review of the contents and information provided in the site assessment report, application and other documents provided by the Applicant;
- Brief review of secondary data sources to obtain background information and geographic setting for the Wood Duck Solar Project;
- Limited review of relevant evaluation criteria to identify potential issues and assessment approaches to serve as benchmarks for the adequacy review;
- Identification of additional information we deemed useful for a thorough review, and submittal of questions to the Applicant via Kentucky Public Service Commission General Counsel;
- Review of additional information supplied by the Applicant in response to the first set of submitted HE questions, and discussion of responses with the Siting Board staff;
- Completion of interviews and data collection with outside sources as identified in this document;
- Participation in a site visit, including a tour of the Project site with the Applicant and in-person meetings with local officials;

- Review of additional information supplied by the Applicant in response to a second set of questions submitted by HE, and discussion of responses with the Siting Board staff;
- Completion of analyses and evaluation of the impacts upon each of the previous identified resources; and
- Preparation of this report, which provides HE's conclusions as to potential Project impacts and mitigation recommendations.

Components of the Wood Duck Solar Facility Application

Wood Duck Solar, LLC's application package to the Siting Board (Application) consists of multiple documents, including the SAR and additional reports and studies provided as attachments to the SAR:

- The main Application document provides a summary overview of the Wood Duck Solar Project and the Applicant's responses to applicable KRS.
- Exhibits A through J include, but are not limited to, the following:
    - Description of the proposed site, including maps of the project area;
    - Public notice evidence and report;
    - Compliance with local ordinances, regulations and setback requirements;
    - Effect on Kentucky electricity transmission system;
    - Economic Impact Assessment;
    - Site Assessment Report (SAR), including Project Site Maps, Property Value Impact Analysis, Noise Study, Visual Resource Assessment, Glare Hazard Analysis, Landscape Plan and Traffic Study; and
    - Decommissioning Plan.

Additional Information Provided by the Applicant

Once HE reviewed the contents of the Application, including the SAR, HE and the Siting Board staff independently developed an initial list of detailed questions, either requesting additional information or asking for clarification about items in the SAR. The Siting Board staff submitted the first request for information, including questions from HE, on July 14, 2025; Wood Duck Solar provided written responses on July 28, 2025.

HE and certain representatives from the Siting Board also met with the Applicant for an in-person meeting on August 6, 2025, to conduct a site visit and discuss remaining issues.

After HE and the Siting Board staff reviewed Wood Duck Solar's responses to the first request for information and following the site visit, HE and the Siting Board staff independently

developed a second list of detailed questions. The Siting Board staff submitted the second request for information, including questions from HE, on August 13, 2025. Wood Duck Solar provided written responses to the second request for information on August 27, 2025, and with supplemental responses provided on September 4, 2025.

Report Format

This report is intended to support the Siting Board in its decision-making process pertaining to a construction certificate for Wood Duck Solar, LLC. The report is structured to respond to the requirements for a SAR as outlined in KRS 278.708, the economic analysis described in KRS 278.706(j) and to our contract:

- This section of the report, Section 1, introduces the purpose and process of the SAR review and HE's work;
- Section 2 offers a summary and conclusions of HE's SAR evaluation;
- Section 3 describes the Wood Duck Solar Project and proposed site development plan;
- Section 4 provides a brief profile of Barren County's economic and demographic characteristics as context for the Project setting;
- Section 5 offers detailed findings and conclusions for each resource area; and
- Section 6 presents recommendations concerning mitigation measures and future Siting Board actions.

Caveats and Limitations

Review limited to resource areas/issues enumerated in the statutes. HE's evaluation of the Wood Duck Solar Project is contractually limited to a review of the SAR and associated materials, as well as the economic impact analysis. Statutes dictate the issues to be covered in the SAR; HE focused on those specific topic areas, which are addressed in this report. The Siting Board might have additional interests or concerns related to the construction, sitting, or operation of the Project; those may be addressed in other documents or by other parties.

Public concerns. The public has raised a host of concerns regarding the siting of the Wood Duck Project, as evidenced in formally submitted comments to the Siting Board. HE conducted a high-level review of the submitted comments; public concerns that fall within the statutory issues to be addressed as part of the SAR review are addressed by HE in this report. Some public comments relate to topics outside of HE's responsibility and this report does not respond to those, for example, those related to wildlife or environmental concerns.

Level of review detail determined by expert judgement. KRS 278.708 identifies the required components of an SAR; however, the level of scrutiny and detail of the evaluation depends upon expert judgement as to what information is relevant and what level of detail is appropriate. This level of review generally relates to the assessment methodologies, geographic extent of impacts, and the degree of detailed information about the Project as requested by the

consultant in follow-up inquiries. Given our experience related to project impact assessments and evaluation of impacts on various resource components, HE believes that we have performed a thorough and comprehensive review of the Wood Duck Solar SAR, which we hope will meet the needs of the Siting Board.

Assumption of accurate Applicant data. HE reviewed all the data and information provided by the Applicant as part of the SAR and associated documents, including responses to two sets of inquiries. Although we evaluated Applicant data for consistency and clarity as part of our review, we did not perform any type of audit to confirm the accuracy of the information provided. We assume that the Applicant submissions are an honest representation of the Project, based on the best data available at the time.

Other solar projects / cumulative impacts. HE is unaware of any other solar energy generation facilities currently planned for location partially or fully within Barren County.

SECTION 2
Summary and Conclusions

On May 19, 2025, Wood Duck Solar, LLC (Wood Duck Solar or Applicant) applied to the Kentucky State Board on Electric Generation and Transmission Siting (Siting Board) for a construction certificate to construct a merchant electric generation facility and associated nonregulated transmission line. Wood Duck Solar's application (Application) responded to the statutory requirements set forth by the State of Kentucky in KRS 278.706 and 278.708.

The Siting Board retained Harvey Economics (HE) to review and evaluate the Site Assessment Report (SAR) included in the Application, as well as other supporting information provided by the Applicant. In addition to the topic areas included in the SAR, HE also addressed the Applicant's economic impact analysis and the topic of decommissioning. The results and conclusions from HE's review and evaluation are provided below. Recommended mitigation measures are offered in Section 6 of this report.

Facility Description and Site Development Plan

Wood Duck Solar proposes to construct an approximately 100-megawatt merchant electric solar facility and nonregulated transmission line situated on approximately 2,259 acres near the City of Glasgow in Barren County, Kentucky.

Solar infrastructure will include approximately 204,550 tracking solar panels, associated ground-mounted racking structures, 25 inverters and underground and overhead electrical collection systems. A Project substation and constructed nonregulated transmission line (approximately 500 feet long) will connect the Project to the existing Eastern Kentucky Power Cooperative 69 kV Bon Ayr substation. One meteorological station and an operations and maintenance building will be located near the substation. Almost 100,000 linear feet of internal gravel access roads will also be constructed.

- ***Surrounding land uses*** – The area around the Project site predominantly consists of forested and agricultural land, as well as some residential properties. Existing vegetation surrounds the Project site, including trees, shrubs and hedgerows used to identify property boundaries. Commercial and utility use makes up less than half of one percent of acreage adjoining the Project site.

- ***Proximity to homes and other structures*** – A total of 266 residential structures and 88 non-residential structures will be located within 2,000 feet of the Project boundary line. The closest home will be about 83 feet from a solar panel and further from any inverter or the Project substation.

- ***Locations of structures*** – Solar panels, inverters and collection system cabling will be located across the property. The Project substation will be located to the south and east of the Project site, on the north side of New Bowling Green Road and west of Bent Creek Drive. An operation and maintenance (O&M) building will be located on-site

adjacent to the Project substation. One meteorological station will be located near the O&M building. A 500-foot transmission line is proposed to connect the Project substation to the existing 69 kV Bon Ayr substation owned and operated by Eastern Kentucky Power Cooperative.

- ***Locations of access ways*** – Twenty-one separate entrances will allow access to the Project site during construction and operations. These entrances are located across the Project site, providing access to different areas of the Project. Approximately 100,000 linear feet of internal gravel access roads will be constructed across the Project site. The Project will not use railways for any construction or operational activities.

- ***Access control*** – Each entrance will have its own security gate during construction and operations. The Project solar arrays and inverters will be secured with approximately 159,740 linear feet of perimeter fence, consisting of eight-foot game style fence. A security fence meeting National Electric Safety Code (NESC) requirements will secure the substation, consisting of six-foot game style fence with three strand barbed wire at the top. Project representatives will engage in Project-specific training for local emergency services and first responders. The construction contractor will coordinate with emergency service providers to ensure implementation of safety protocols.

- ***Utility service*** – Electricity utility service is anticipated to be obtained from Farmers RECC and water utility service from Glasgow Water Company. At this time, sanitary sewer and gas utility services are not anticipated for the Project. Water for construction-related dust control and operations will be obtained from several potential sources, including an on- or off-site groundwater well, or trucked from an off-site water purveyor. Portable toilets will be placed on-site for construction workers; sewage waste will be disposed of at a permitted location selected by a licensed contractor.

- ***Project life*** – The Applicant anticipates a 40-year Project life for the Wood Duck Solar facility.

Project construction is expected to occur over a period of approximately 18 months. An average of between 160 and 200 workers will be on-site throughout the construction period, depending on the types of activities occurring at any particular time. Peak construction activity is expected to occur over a period of approximately nine months.

Barren County setback requirements and requested variance. Barren County setbacks applicable to the Wood Duck Project are outlined in Article 503.1.5 of the Subdivision Regulations of Barren County, Kentucky.[1] Under those Subdivision Regulations, the following setbacks apply to the Project: 50-foot front yard; 10-foot side yard; and 20-foot rear yard. Accordingly, the setback requirements identified in KRS 278.704(2) and KRS 278.706(2)(e) do not apply to this Project.

[1] In May 2025, Barren County passed an ordinance specifically related to setbacks for solar energy systems (Ordinance 25-695). The ordinance applies to future solar projects and is not applicable to the Wood Duck Solar facility.

Application materials state that the Project will comply with all local ordinances. However, the Applicant requested a variance from the Barren County setback requirements noted above specifically related to properties owned by participating landowners. According to the Applicant, the variance removes setback requirements for interior property lines (property lines between parcels that are within the Project boundary). This will only impact participating property owners whose parcel boundaries adjoin another participating parcel. The Applicant's variance application was approved by the Joint City-County Planning Commission in 2023.[2]

Conclusions and recommendations. HE believes that the Applicant has generally complied with the legislative requirements for describing the Wood Duck Solar facility and the site development plan, as required by KRS 278.708.

Project Setting

The area immediately surrounding the Project site can be generally described as rural, including forestland, agricultural operations and residential communities. The topography of Barren County is generally flat, with small hills and ridges in some areas. Meadowlands cover the northern third of the County and the Barren River flows through the western part of the County; fertile soils contribute to the area's agricultural productivity.

Barren County has a current population of about 44,700 people. Steady population growth over the last several decades and anticipated future population growth is due, in part, to in-migration associated with economic development, including expansion of the manufacturing sector. The City of Glasgow, about five miles southeast of the Project site, has an estimated 15,000 residents. Barren County is home to multiple large employers, including the several large manufacturing companies and the T.J. Regional Health Center. Mammoth Cave National Park, a State Park, and many cultural and historical areas draw tourists and support employment in the retail and hospitality sectors. Agriculture remains an important part of the local character and identity in Barren County, with high production of cattle, hay, soybeans and tobacco.

The economy of the region appears to be relatively healthy; however, residents' income levels are low, and they experience higher than average rates of poverty as compared to other counties in Kentucky or the U.S.

Compatibility with Scenic Surroundings

The Project site and surrounding areas can be described as rural, where the majority of the landscape is agricultural or forested. More than 90 percent of the acreage adjacent to the Project site is categorized as agricultural or mixed agricultural/ residential. A small portion of the area is developed, including individual single-family homes, churches or small business establishments. An existing EKPC substation is located along New Bowling Green Road on the southeastern side of the Project site and several existing transmission lines run through the area.

[2] Included in the Applicant's response to the Siting Board's second data request.

Scenic compatibility focuses largely on Project infrastructure, including solar panels, inverters, fencing, Project substation and a short overhead transmission line. The shortest distance between a residence and a solar panel is about 83 feet; inverters and the Project substation are further from any residence or other structure. Exhibit 2-1 indicates the distance from residences to Project infrastructure.

Exhibit 2-1.
Distances between Nearby Residential Structures and the Proposed Wood Duck Solar Project Solar Panels, Inverters and Substation

Distance from Residence (ft)	Inverter	Solar Panel	Substation
0 - 300 feet	0	9	0
301 - 600 feet	4	26	1
601 - 900 feet	6	39	17
901 - 1,200 feet	6	29	15
1,201 - 1,500 feet	17	22	11
1,501 - 1,800 feet	23	30	11
1,801 - 2,000 feet	8	15	5
Total Homes:	**64**	**170**	**60**

In some areas panels will be located within view of local roadways. The overhead transmission line and support poles may be visible from several local residences.

The area includes existing natural vegetation in the form of trees, shrubs and hedgerows, and the Applicant has proposed vegetative screening to further reduce visibility of Project infrastructure along roadways and from nearby residences.

Vegetative screening and use of anti-glare panels will reduce the potential for glare from solar panels for most local residents and drivers. The Applicant's glare study predicted that glare would occur along one roadway and at three residences surrounding the Project site. At each location, glare could occur for several minutes to less than one hour each day, generally in winter months.

Given its rural location, existing vegetation and proposed screening of roadways and nearby residences, HE believes the Wood Duck Solar facility can be considered compatible with the existing scenic surroundings for most residents and businesses.

Potential Changes in Property Values and Land Use

The Applicant's consultant, Kirkland Appraisals, LLC, provided an extensive database and analysis of property values, transactions, and estimated impacts of solar facilities in diverse locations, concluding that the Wood Duck Solar Project would have no effect on residential property values or undeveloped land.

To further assess potential property value impacts, HE: (1) reviewed existing literature related to solar facility impacts; (2) interviewed the Barren County Judge Executive and Barren

County Property Valuation Administrator; (3) conducted additional evaluation of the data provided by Mr. Kirkland; and (4) examined the potential for impacts to residential and other properties closest to the Project.

Recent studies examining the effects of utility-scale solar facilities on nearby property values are mixed, with some studies indicating decreases in property values, others suggesting increases in property values and still others indicating no impacts to property values. Overall, any changes indicated (positive or negative) were relatively small. Most studies noted that visibility of the facilities (or lack thereof) was an important component of the potential impact to property values. The Applicant has proposed vegetative screening along many roadways and along property fence lines across the Project site to reduce visibility of Project infrastructure. Review of those studies also suggests that impacts to property values may be project specific and property specific, rendering application of broad assumptions to properties across a large geographic area inappropriate.

The Barren County Judge Executive and the Property Valuation Administrator are uncertain about the potential impacts on property values from the Wood Duck project; however, the Judge Executive commented that there is high demand for housing in the area and residential development is taking place. HE believes that a relatively strong local market for housing can mask any potential negative effects on property values due to the Wood Duck project.

HE's evaluation of the data provided by Mr. Kirkland also suggests that, overall, property values are unlikely to be affected by solar facilities. In evaluating this particular Project, we find that the visual and noise impact to proximate structures will likely be minimized by the existing natural vegetation and proposed vegetative screening. However, five homes on non-participating properties are located within 300 feet of a solar panel and 16 non-participating homes are located within 900 feet of the substation, where the extent of proposed screening is uncertain.

Therefore, HE concludes that negative impacts to property values from this Project are unlikely as a general rule, but that property value impacts are site specific, within a narrow range. This conclusion is predicated on the assumption that the mitigation strategies discussed in Section 6 are adopted by Wood Duck Solar and the Siting Board. Mitigation of visual and other effects, with close property owner coordination, can minimize uncertainties related to property values.

Anticipated Peak and Average Noise Levels

Neither the Commonwealth of Kentucky nor Barren County have noise ordinances applicable to this Project. As such, HE adopted the noise recommendations generated by the Environmental Protection Agency and the World Health Organization to gauge acceptable levels of sound.

Construction activities are expected to generate noise emissions greater than 55 decibels (dBA) at neighboring residences during the 18-month construction period. This level is above standards for annoyance, but the noise will be sporadic and decrease with distance from nearby residences. The pile driving process is the loudest part of the construction process. During that period, noise emissions will exceed 72 dBA for 82 residences within 1,000 feet of the panels.

Road construction, substation construction and trenching activities may also be loud activities. Those activities will only occur in any one location for a short period of time, moving around the Project site until construction is complete. Since these construction activities are not sustained, no hearing loss or long-term annoyance to residents is expected.

Noise from Project components during operations (inverters, transformers) is not anticipated to result in an increase in the local sound environment. Operational components would emit relatively low sounds during daylight hours and little sound at night. For all nearby residences, operational sound levels would be less than the 50.0 dBA noted by the World Health Organization (WHO) as potentially causing moderate annoyance. Noise from the Project's operational components is not likely to be annoying and may not be noticeable.

Natural vegetation borders many parcels within the Project site; this vegetative buffer will help mitigate noise emissions that may be caused by Project construction and operations for nearby homeowners.

Road and Rail Traffic, Fugitive Dust and Road Degradation

The major roads providing access to the Project site are I-65 and Cumberland Parkway. These roads feed into local roads that provide access to the Project site from the north and south.

Construction activities will cause noticeable increases in traffic volumes on several local roads, given light existing traffic volumes in the area. These impacts will be temporary, occurring over the anticipated 18-month construction period, but may be annoying to local residents. The Amish community might experience particular traffic impacts. Local roads are generally paved, two-lane roads, without shoulders present. Local road conditions vary, some requiring improvements. Vehicle traffic, including commuting workers and heavy deliveries, may also have the potential to cause road degradation. The Applicant has committed to surveying the conditions of local roads before and after Project construction to assess for and fix damage caused by their vehicles. The Applicant does not anticipate improving public roads or right of ways prior to construction.

Given the few employees and deliveries required for Project operations, traffic impacts during the operational phase will be minimal.

The CSX Transportation (CSX) rail lines are located to the north of the Project area, along a diagonal route between Park City and Glasgow. The Project does not anticipate use of the railway for delivery of Project components. As currently proposed, vehicles will not travel over CSX road crossings to access the site for construction or operation.

Fugitive dust should not be an issue given the vegetative buffer surrounding the Project site and the Applicant's commitment to using best practices during construction activities, including the application of water for dust suppression.

Economic Impact Analysis

Construction and operation of the Wood Duck Solar facility will provide some limited economic benefits to Barren County and the Commonwealth. Construction employment and income opportunities will be temporary, but local hires will increase employment and income in an area that needs it. The bulk of construction purchases will be made outside of Kentucky, limiting opportunities for local business activity or generation of additional sales tax.

Economic benefits during operations will be largely confined to property taxes. Annual property tax payments will be made to Barren County taxing authorities, including the Barren County School District; however, those payments will likely amount to a small percentage of total tax revenues. Operational employment will be minimal, and purchases of materials or supplies will be small on an annual basis. Annual lease payments to participating landowners will also provide economic benefits, with new household spending supporting a small number of local jobs.

Economic losses during operations focus on the reduction in agricultural activities within Project boundaries, including crop production and cattle grazing. The reduced acreage available to agriculture represents less than one-tenth of one percent of total farmland in Barren County. A small number of jobs and income in the agricultural sector will be lost during the operational period.

Overall, the economic impacts of the Wood Duck Solar facility represent a positive, albeit small, contribution to the region.

Decommissioning

The Applicant assumes a useful life of approximately 40 years for the Wood Duck Solar facility. The Applicant's Decommissioning Plan includes information about the dismantling and removal of solar facility components, site restoration and decommissioning cost estimates. The Applicant states that they will commit to financial surety in compliance with the specific requirements of Kentucky statutes.

Above- and below-ground Project facilities will be removed from the Project site, including panels, wiring, piles, inverter stations, security fencing, and access roads (unless a landowner requests that internal access roads or fencing remain on-site). Underground cabling will be removed and salvaged. The Project substation and transmission line will also be removed, according to Barren County regulations. Site restoration activities include de-compacting subsoils as needed, and restoration and revegetation of disturbed land to pre-construction conditions to the extent practicable. The Applicant will provide a bond or similar financial security to ensure decommissioning occurs once the Project ceases operation.

After site restoration, the land would return to pre-Project uses and property values, thereby eliminating long-term Project-related impacts, compared with simply shuttering the solar facility. The decommissioning process will also add a modest, temporary positive economic stimulus to the region.

Public Outreach and Communication

The Applicant has engaged in various public outreach activities in Barren County and in the Project area, including hosting two public meetings, posting notice in the local newspaper, mailing informational letters to adjacent landowners, meeting with County officials and creating a Project website. However, the public has voiced concerns about various aspects of the Project and a perceived lack of communication from the Applicant. Given the apparent level of public opposition to the Project and the varied concerns identified by public commentors, the Applicant should continue to engage with local residents, businesses and others to provide additional information about the Project and respond to questions and concerns.

Complaint Resolution

The Applicant has not yet implemented a complaint resolution program but has stated that Wood Duck Solar will establish such a program prior to commencing construction. Additionally, the Applicant has committed to working with adjoining landowners and the local community to address site-specific concerns that may arise during construction or operation of the facility. HE encourages the development of a detailed complaint resolution plan and formal complaint resolution process, applicable to both the construction and operational periods. Given the questions and concerns voiced by the public, this type of program will be important in the case of Wood Duck Solar Project.

Conclusions and Recommendations

Based on our findings related to the specific siting considerations in the statutes and as addressed in this report, HE recommends that the Siting Board approve Wood Duck Solar, LLC's application for a certificate to construct a merchant electric generating facility. This finding assumes that the Project is developed as described in the SAR and the supplemental information provided, and that the mitigation measures set forth in Section 6 of this report are adopted.

SECTION 3
Project Overview and Proposed Site Development Plan

Project Overview

Wood Duck Solar application documents describe the Project as an approximately 100-megawatt merchant electric solar facility and nonregulated transmission line situated on approximately 2,259 acres near the City of Glasgow in Barren County, Kentucky.

Photovoltaic (PV) solar modules are used to convert sunlight into direct current (DC) electricity which is then converted to alternating current (AC) electricity through inverters. Transformers step up the AC electricity to a higher voltage so that it can connect to the regional transmission grid via the Project's nonregulated electric transmission line.

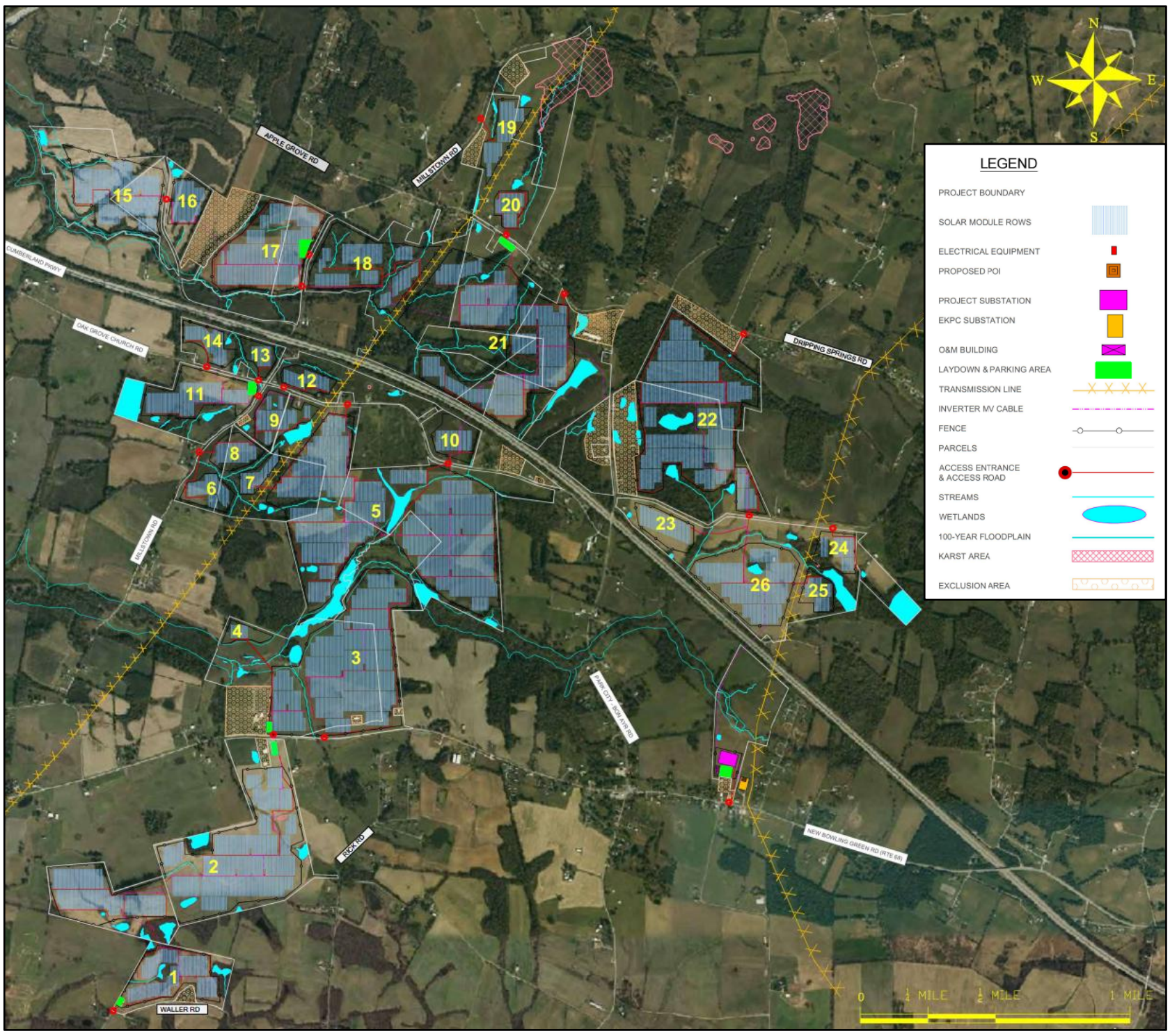
Project components will include a PV solar array field (approximately 204,550 panels), an onsite substation, a DC collection system of underground cabling and combiner boxes, and power conversion stations (PCS) with inverters, transformers, and emergency backup power to convert DC to AC. An underground and overhead collection system will be used to convey electricity from the solar array field to the substation. An operation and maintenance (O&M) area for the Project will also be installed and could include, as necessary, an O&M building, parking area, and other associated facilities such as above-ground water storage tanks, security gate, and signage. In addition, the Project will also include an on-site transmission line, fiber optic cable for communications via underground or on overhead lines, interior access ways, and a facility perimeter road.

Approximately 25 inverters and approximately 59,141 linear feet of collection system cables would be installed throughout the Project. The Project will require one substation that will include one 110-megavolt ampere (MVA) transformer and control building foundation and will interconnect into the existing 69 kV Bon Ayr substation owned and operated by East Kentucky Power Cooperative (EKPC), located adjoining the Project substation area. The substation gen-tie line will be approximately 500 feet in length and will be located entirely within the Project footprint and EKPC substation parcel.

Approximately 99,714 linear feet of private access roads will be utilized within the facility, and the solar arrays will be secured with approximately 159,740 linear feet of perimeter fence. Fixed lighting at the perimeter will be limited to gates and the substation area and will be motion-activated to minimize light spillage.

Exhibit 3-1 illustrates the Project boundaries and identifies locations of Project components, as provided by the Applicant in the SAR.

Exhibit 3-1.
Location, Overview and Project Facilities Map for the Proposed Wood Duck Solar Project



Notes: (1) Individually fenced areas containing solar panel arrays are labeled with yellow numbering from 1 to 26.
(2) The “electrical equipment” noted on the legend refers to placement of Project inverters.

Source: Wood Duck Solar, LLC, July 2025; Harvey Economics, September 2025.

The Project site is located approximately 90 miles south of the City of Louisville and about 30 miles east of the City of Bowling Green. The Project site is approximately 12 miles west of the City of Glasgow.

Construction Activities

Construction of the Wood Duck Solar facility is expected to occur over a period of approximately 18 months. Construction activities can be broken down into the following four main phases:

- *Phase 1, Preparation*: Fencing, access, staging, inverter pad preparation and deliveries. This phase is expected to take approximately two months;
- *Phase 2, Foundations and Racking*: This includes piles and racking assembly and will take approximately six months with three to four weeks of peak activity;
- *Phase 3, Module Assembly*: This will be the longest phase and will begin once the first rack is complete and ready for module mounting until the final rack is completed; and
- *Phase 4, Electrical*: this includes inverter mounting, underground wiring and substation. This will take place parcel by parcel as each of the parcels complete Phases 1-3.

It is anticipated that the Project's transmission line will be developed within the same 18-month window as the generation facility.

Construction activities will occur both sequentially and concurrently across the Project site. Construction will occur sequentially in a given area to complete any clearing and grading activities before commencing installation of Project components. Construction activities will occur concurrently in that multiple areas of the site will commence construction activities simultaneously.

Construction activities are expected to occur five days per week, Monday through Friday, with additional construction activities occurring on Saturdays only if necessary to accommodate deliveries or comply with scheduling deadlines.

Peak construction activity is anticipated to occur over about nine months of the full 18-month construction period. Approximately 240 construction workers are estimated to be on-site during the peak construction period. On average, between 160 and 200 construction workers will be on-site each day over the duration of the construction period.

Life of the Project

The Wood Duck Solar facility is anticipated to operate for approximately 40 years. Project decommissioning (the process of closing the facility to retire it from service) is discussed in Section 5 of this report.

Proposed Site Development Plan

The following discussion addresses each of the SAR requirements for a proposed site development plan, as laid out in KRS 278.708(3)(a).

Surrounding land uses. Land surrounding the Project site predominantly consists of forested and agricultural land, as well as residential properties. Land uses in the area immediately surrounding the Project site can be categorized as predominantly agricultural and residential, as shown in Exhibit 3-2.

Exhibit 3-2.
Land Uses of Properties Adjoining the Proposed Wood Duck Solar Project

Land Use	% Total Adjoining Acres
Agriculture / Residential	58.64%
Agricultural	35.37%
Residential	5.64%
Utility	0.33%
Commercial	0.02%
Total	100.00%

Source: Wood Duck Solar, LLC, May 2025.

Section 4 of this report provides a general overview of the County's demographic and economic characteristics.

The Applicant also provided information describing the distances between nearby residential and non-residential structures and the Project boundary, solar panels, inverters and the substation. The area within 2,000 feet of the Project site includes 266 homes and 88 non-residential structures.[3] Exhibit 3-3 summarizes information about the distances between structures and the Project boundary.

[3] The majority of non-residential structures within 2,000 feet the Project boundary are buildings such as barns, sheds or other unoccupied structures.

Exhibit 3-3.
Distances between Residential and Non-Residential Structures and the Proposed Wood Duck Solar Project Boundary

Distance from Project Boundary	Residential Structures	Non-Residential Structures
0 - 300 feet	78	69
301 - 600 feet	44	8
601 - 900 feet	29	9
901 - 1,200 feet	25	2
1,201 - 1,500 feet	37	0
1,501 - 1,800 feet	27	0
1,801 - 2,000 feet	26	0
Total Structures	**266**	**88**

Note: Of the 78 residential structures within 300 feet of the Project boundary, 18 are participating landowners.
Source: Wood Duck Solar, LLC, August 2025.

The shortest distance between residences and Project generation facilities are as follows:

- Solar panels: 83 feet (non-participating landowner)
- Inverter: 430 feet (participating landowner)
- Project substation: 597 feet (non-participating landowner)

Legal boundaries. Attachment C to the SAR provides a parcel map of the proposed Project site. The map identifies individual parcels, notes the acreage of each parcel and lists parcel ownership. According to the Applicant, the Project site is comprised of 28 individual parcels secured from 15 landowners pursuant to real estate agreements with each landowner.

Access control. A total of 21 separate entrances (access points) to different locations across the Project site are proposed for construction and operational access. All entrances and driveways will comply with applicable design requirements for safe access and egress. Each Project access point will have its own security gate during construction and operations.

The Project solar arrays and inverters will be secured with approximately 159,740 linear feet of perimeter fence, consisting of eight-foot game style fence. A security fence meeting National Electric Safety Code (NESC) requirements will secure the substation, consisting of six-foot game style fence with three strand barbed wire at the top.

Wood Duck Solar representatives plan to provide Project site plan to local fire, EMS and other first responders. These activities typically occur once an EPC partner (construction contractor) is selected for the Project, as EPCs have established safety programs and their involvement is crucial for effective planning and implementation of safety protocols. The Project will plan to engage in Project-specific training for local emergency services and first responders. Once an EPC is hired, coordination with emergency service providers will begin for both the construction and operations phase.

Location of buildings, transmission lines and other structures. Approximately 204,552 solar panels, 25 inverters and a Project substation will be located across about 1,250 acres within the Project site. The preliminary locations of the panels, inverters and substation can be seen in Exhibit 3-1 of this report. As depicted in that Exhibit, the solar panels will be grouped into multiple separate sections within the site. Additionally, below-ground collection cables will be used to deliver electricity to the Project substation, which will be located on the southeastern side of the Project site.

An O&M building would be located near the Project substation. A meteorological station will most likely be located at the O&M building but may be located central to the solar array if final engineering plans determine the area is more suitable location for recording meteorological data. The Project substation will be located to the south and east of the main Project site, on the north side of New Bowling Green Road and west of Bent Creek Drive.

A small portion of the Project site will be used as temporary construction mobilization and laydown area, which will contain the office trailer, worker parking, equipment and material staging or storage, above ground water and fuel tanks, and assembly areas for the duration of construction activities. Where possible, these will be placed in areas where the proposed solar array will be located. Once construction is complete, all temporary office trailers, equipment, unused materials, and any debris will be removed from the Project Site.

A proposed transmission line, approximately 500 feet in length, will connect the Project to the existing 69 kV Bon Ayr substation owned and operated by East Kentucky Power Cooperative (EKPC), located adjacent to the proposed Project substation site.

Location and use of access ways, internal roads and railways. As noted previously, 21 separate entrance locations will allow access to different sections of the Project site during construction and operations. The location of each entrance is indicated on the Project facilities map provided in Exhibit 3-1.

Approximately 99,714 linear feet of private access roads will be utilized within the Project site and will be constructed of all-weather gravel. Roads will not exceed 16 feet in width, except for turning radii, which will not exceed 50 feet in radius.

No railways would be used for construction or operational activities related to the Project.

Existing or proposed utilities to service facility. Electricity utility service is anticipated to be obtained from Farmers RECC and water utility service from Glasgow Water Company. At this time, sanitary sewer and gas utility services are not anticipated for the Project.

Water for construction-related dust control and operations will be obtained from several potential sources, including an on- or off-site groundwater well, or trucked from an off-site water purveyor. The primary use of water would be during site preparation for the dust control, grading of access roads, foundations, and equipment pads. Water will also be used for vegetation management needs, including screening vegetation installation and during prolonged periods of drought.

Designated waste management companies will manage any waste generated on-site. Waste produced on-site is expected to be minimal and will be mainly related to maintenance or repair of construction equipment. Additionally, portable toilets will be placed on-site for construction workers. Licensed contractors will be responsible for pumping sewage from the portable toilets. The sewage waste will be disposed of at a permitted location selected by the toilet contractor.

Compliance with applicable setback requirements. KRS 278.706(2)(d) states that a completed Application shall include "A statement certifying that the proposed plant will be in compliance with all local ordinances and regulations concerning noise control and with any local planning and zoning ordinances. The statement shall also disclose setback requirements established by the planning and zoning commission as provided under KRS 278.704(3)."

KRS 278.704(3) reads:

"If the merchant electric generating facility is proposed to be located in a county or a municipality with planning and zoning, then setback requirements from a property boundary, residential neighborhood, school, hospital, or nursing home facility may be established by the planning and zoning commission. Any setback established by a planning and zoning commission for a facility in an area over which it has jurisdiction shall:

> (a) Have primacy over the setback requirement in subsections (2) and (5) of this section;[4] and
>
> (b) Not be subject to modification or waiver by the board through a request for deviation by the applicant, as provided in subsection (4) of this section."

Barren County setback requirements applicable to this Project are described in Article 503.1.5 of the Subdivision Regulations of Barren County, Kentucky. Under those Subdivision Regulations, the following setbacks apply to the Project: 50-foot front yard; 10-foot side yard; and 20-foot rear yard.[5]

Accordingly, the setback requirements identified in KRS 278.704(2) and KRS 278.706(2)(e) do not apply to this Project. The Project will comply with those setback requirements over which Barren County has primacy. However, the Applicant requested a variance from the Barren County setback requirements noted above specifically related to properties owned by participating landowners. According to the Applicant, the variance removes setback requirements for interior property lines (property lines between parcels that are within the Project boundary). This will only impact participating property owners whose parcel

[4] In part, KRS 278.704(2) states all proposed structures or facilities used for generation of electricity must be 2,000 feet from any residential neighborhood, school, hospital, or nursing home facility. Section (5) is related to locating on the site of a former coal processing plant.

[5] In May 2025, Barren County passed an ordinance revising the setback requirements for solar facilities to include a standard 1,000 foot setback, with certain exceptions. That ordinance was passed subsequent to the Wood Duck Application submittal to the Siting Board and therefore, the new ordinance is not applicable to the Wood Duck Project.

boundaries adjoin another participating parcel. The Applicant's variance application was approved by the Joint City-County Planning Commission in 2023.[6]

Evaluation of noise levels produced by facility. Noise levels related to facility construction and operations are discussed in detail in Section 5 of this report.

Results of SAR Review – Proposed Site Development Plan

Conclusions. Based on HE's review of the Wood Duck Solar SAR, the subsequent information provided by the Applicant in response to two rounds of inquiries, direct discussions with the Applicant, and other secondary area research, HE offers the following conclusions regarding the proposed site development plan:

- We believe that the Applicant has generally complied with the legislative requirements for describing the facility and a site development plan, as required by KRS 278.708.

- Security and access control measures appear to be adequate, given the type of facility and its location in a rural area.

- The Wood Duck Solar Project meets the Barren County setback requirements for solar facilities that were in place at the time that the Application was submitted to the Siting Board. However, those setback requirements are relatively short distances, and some non-participating landowners have voiced concerns about the view of solar facilities, compatibility with surrounding land uses, glare and impacts to property values. Barren County setback requirements for solar facilities have been modified since the submittal of the Wood Duck application.

Need for mitigation. Recommended mitigation measures related to the description of the facility and the proposed site development plan include:

1. A final site layout plan should be submitted to the Siting Board upon completion of the final site design. Future deviations from the preliminary, exiting site layout plan, which formed the basis for HE's review, should be clearly indicated on a revised graphic. Those changes could include, but are not limited to, the location of solar panels, inverters, transformers, substation, O&M building or other Project facilities or infrastructure, including internal access roads.

2. Any change in Project boundaries, including easements, from the information which formed this evaluation should be submitted to the Siting Board for review.

3. The Siting Board will determine if any deviation in the site boundaries or site layout plan is likely to create a materially different pattern or magnitude of impacts. If not, no further action is required, but if yes, the Applicant will support the Siting Board's effort to revise its assessment of impact and mitigation requirements.

[6] Included in the Applicant's response to the Siting Board's second data request.

4. A final, Project-specific construction schedule, including revised estimates of on-site workers and commuter vehicle traffic, should be submitted to the Siting Board. Future deviations from the preliminary construction schedule should be clearly indicated.

5. The Siting Board will determine whether any deviation to the construction schedule or workforce estimates is likely to create a materially different pattern or magnitude of impacts. If not, no further action is required. If so, the Applicant will support the Siting Board's effort to revise its assessment of impacts and mitigation requirements.

6. The Applicant shall submit a status report every six months until the project commences construction to update the Siting Board on the progress of the Project.

7. The Applicant or its contractor will control access to the site during construction and operation. Site entrances will be gated and locked when not in use.

8. The Applicant's access control strategy will include appropriate signage to warn potential trespassers. The Applicant will ensure that the site entrance and boundaries have adequate signage, particularly in locations visible to the public, local residents and business owners.

9. The fence enclosing the substation will adhere to North American Electric Reliability Corporation (NERC) safety standards and will be appropriately spaced, bonded, and grounded in compliance with National Electrical Safety Code (NESC) requirements prior to installation of any electrical equipment.

10. The Applicant will meet with local law enforcement agencies, EMS and fire services to provide information and ensure they are familiar with the plan for security and emergency protocols during construction and operations.

11. Prior to construction, the Applicant will provide an Emergency Response Plan to the local fire district, first responders, and any County Emergency Management Agency. The Applicant will provide site-specific training for local emergency responders at their request. Access for fire and emergency units shall be set up after consultation with local authorities.

SECTION 4
Project Setting

Description of the Area

This section provides a description of the area surrounding the proposed Project site in Barren County. The Project site is located in south-central Kentucky, west of the city of Glasgow, which is the Barren County seat, and just south of Park City. The area's topography is generally flat, with small hills and ridges in some areas. The maximum elevation in the County is about 1,000 feet above sea level[7]. The County was named after "The Barrens", an area of meadowlands that cover the northern third of the County. The Barren River flows through the western part of the County. The soil is quite fertile and has contributed to the area's success in farming.[8] Mammoth Cave National Park spans three counties, one of which is Barren. The Park encompasses the longest cave system in the world and is a popular year-round tourist destination.[9]

Population and housing density. Approximately 44,700 people currently reside in Barren County.[10] The County's population has increased steadily over the past 20 years due largely to in-migration associated with economic development. In 2000, the population was approximately 38,000 and by 2010, the population was 42,200.[11,12] Developments in industry, higher education, as well as transportation infrastructure and technology have contributed to the increase in population in the decade of 2010-2020.[13] More than 88 percent of the population is white and the median age of residents is 40.2 years.[14] Barren County is projected to continue growing in population; the Kentucky State Data Center estimates 49,700 people will reside in the County in 2050, which is more than a 11 percent increase from the existing population.[15] Currently, there

[7] Kentucky Geological Survey. Groundwater Resources of Barren County, Kentucky. https://www.uky.edu/KGS/water/library/gwatlas/Barren/Topography.htm
[8] American Counties List. History of Barren County, Kentucky. https://www.countryaah.com/history-of-barren-county-kentucky/
[9] National Geographic. National Parks. Mammoth Cave National Park. https://www.nationalgeographic.com/travel/national-parks/article/mammoth-cave-national-park
[10] U.S. Census Bureau. Barren County ACS Demographic and Housing Estimates. https://data.census.gov/table/ACSDP5Y2023.DP05?q=Barren+County,+Kentucky
[11] U.S. Census Bureau. Barren County, Kentucky, Profile of General Demographic Characteristics. https://data.census.gov/cedsci/table?q=barren%20county%20kentucky&y=2000&tid=DECENNIALDPSF42000.DP1&hidePreview=true
[12] U.S. Census Bureau. Barren County, Kentucky, Annual Estimates of the Resident Population: April 2010 – July 1, 2019. https://data.census.gov/cedsci/table?q=barren%20county%20kentucky&tid=PEPPOP2019.PEPANNRES&hidePreview=true
[13] Comprehensive Plan. 2024. Barren County. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://jccpc-ky.com/wp-content/uploads/2025/06/Chapter-3-Population.pdf
[14] U.S. Census Bureau. Barren County, Kentucky, Age and Sex. https://data.census.gov/table/ACSST5Y2022.S0101?q=barren%20county%20kentucky&hidePreview=false
[15] Kentucky State Data Center, Projections of Population and Households, State of Kentucky, Kentucky Counties, and Area Development Districts 2020 – 2050. https://louisville.app.box.com/s/rh39adf5ou0cd0aduxe5dnodanj3ftf0/file/993066674933

are about 18,000 households in Barren County, with an average of 2.45 persons per household.[16] With a density of 89 people per square mile, Barren County is more sparsely populated than many other counties in Kentucky.[17]

The City of Glasgow, population 15,000, is the most populous city in Barren County and is also the county seat. Glasgow is located approximately five miles southeast of the Project site. Barren County is home to four incorporated cities, as well as many residential communities. Park City, the third largest city in the County, is located about three miles to the north of the Project site.[18] The closest metropolitan areas to the Project site are Lexington-Fayette, Kentucky (population of about 350,000 people) and Nashville, Tennessee (population of about 1.3 million), which are equidistant away at about 95 miles.[19, 20]

Income. The per capita personal income in Barren County is approximately $28,422, which is about 21 percent less than the average per capita personal income of the Commonwealth of Kentucky and 43 percent less than the average in the United States.[21] About 21 percent of the Barren County population lives below the poverty line.[22]

Business and industry. About 18,500 civilians are employed in Barren County across multiple sectors:[23]

- Agriculture is not a large employment generator in the County, but it is an important component of the County's character, history and identity. Many local farms and farmstands can be found along the roadways.[24] In 2025, Barren County had the highest

[16] U.S. Census Bureau. Barren County Households and Families.
https://data.census.gov/table/ACSST5Y2023.S1101?q=barren+county+households
[17] Statistical Atlas. Barren County, Kentucky.
https://statisticalatlas.com/county/Kentucky/Barren-County/Population
[18] World Population Review. US Cities. Kentucky. Barren County.
https://worldpopulationreview.com/us-cities/kentucky/barren-county
[19] Macro Trends. Lexington-Fayette Metro Area Population.
https://www.macrotrends.net/datasets/global-metrics/cities/23047/lexington-fayette/population
[20] Macro Trends. Nashville Metro Area Population.
https://www.macrotrends.net/global-metrics/cities/23077/nashville/population
[21] U.S. Census Reporter. Per Capita Income. Barren County, State of Kentucky, United States.
https://censusreporter.org/data/table/?table=B19301&geo_ids=05000US21009,04000US21,01000US&primary_geo_id=01000US
[22] U.S. Census Bureau. Barren County.
https://www.census.gov/search-results.html?q=barren+county+poverty&page=1&stateGeo=none&searchtype=web&cssp=SERP&_charset_=UTF-8
[23] U.S. Census Bureau. Barren County. Industry by Occupation for the Civilian Employed.
https://data.census.gov/table/ACSST5Y2023.S2405?q=Barren+County,+Kentucky+employment
[24] Better in the Barrens.
https://betterinthebarrens.com/2025/03/19/draft-kentucky-proud-in-barren-county-a-celebration-of-local-agriculture/

cattle population of any county in Kentucky, with nearly 80,000 head.[25] Hay, soybeans, corn, and tobacco were the top crops by acre in 2022.[26]

- Manufacturing is the largest employment sector in Barren County, with 4,300 jobs.[27] The Commonwealth of Kentucky has created progressive tax incentive programs for companies to establish manufacturing facilities and provide workforce training.[28] Local manufacturing companies include 3A Composites (composite panels and materials for graphic displays); Akebono Brake Industry's brake production plant for their global automobile brake company; Midmark (manufacturer and supplier of healthcare products, equipment, and diagnostic software for the medical, dental, and veterinary industries); Nemak (lightweight electric car battery housings), and Suntec who makes fuel pumps for a variety of applications) and others.[29]

- The healthcare sector includes 2,400 jobs.[30] T.J. Regional Health employs over 1,300 people at 13 locations within Barren County, including a community hospital, surgery centers, oncology, urgent care and rehabilitation facilities.[31] The Barren County Nursing and Rehabilitation Center is located in Glasgow. The Barren River District Health Department also has a facility in Glasgow, offering health services to counties in south central Kentucky.

- The retail sector generates about 2,200 jobs in Barren County. Glasgow has a vibrant downtown area with shops and local restaurants.[32] Mammoth Cave National Park brings many tourists to Barren County, so lodging is abundant with hotels as well as a large resort at the Barren River Lake State Park, which offers amenities such as guided outdoor activities, boating, swimming, and golf.[33] The County includes many historical areas and offers the Highland Games, a festival honoring Scottish heritage with traditional games, bagpipes, and kilts, which supports tourism and retail spending.[34]

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[25] US Department of Agriculture. National Agricultural Statistics. Kentucky County Estimates. Cattle. https://www.nass.usda.gov/Statistics_by_State/Kentucky/Publications/County_Estimates/2025/Cattle25_KY.pdf

[26] US Census of Agriculture. County Profile, Barren County KY. https://www.kyfoodandfarm.info/county-data/barren-county-ky

[27] Statistical Atlas. U.S. Census Bureau Data. Industries in Barren County, KY. https://statisticalatlas.com/county/Kentucky/Barren-County/Industries#figure/industry

[28] Barren County Economic Authority. Why Barren County. https://barrencoea.com/whybarrencounty

[29] City of Glasgow. Manufacturing Businesses. https://cityofglasgow.gov/resources/manufacturing_businesses/

[30] Statistical Atlas. U.S. Census Bureau Data. Industries in Barren County, KY. https://statisticalatlas.com/county/Kentucky/Barren-County/Industries#figure/industry

[31] T.J. Regional Health. https://en.tjregionalhealth.org/

[32] Better in the Barrens. Explore. https://betterinthebarrens.com/explore/

[33] Kentucky State Parks. Barren River Lake State Resort Park. https://parks.ky.gov/explore/barren-river-lake-state-resort-park-7781

[34] Glasgow News1. Highland Games Return to Barren County. https://glasgownews1.com/2025/06/02/highland-games-return-to-barren-county/

Major and minor roads and railways. The Project site is intersected by the Louie B. Nunn Cumberland Parkway generally running northwest to southeast. Interstate 65 (I-65) is located north of the Project site and New Bowling Green Road (US 68) is located to the south. Park City-Bon Ayr Road (KY 255) is located on the east side of the Project site. A CSX Transportation railway route includes a short-line railroad that runs from Park City to Glasgow for freight only; that route runs north to southeast of the site.

Overall area description. Based on HE's research, the area around the Project site can be generally described as rural with residential communities nearby; the site is within relatively close proximity to the City of Glasgow. Income levels are relatively low, as compared with the Commonwealth, and residents currently experience a slightly higher rate of poverty than other areas of Kentucky.[35] Historically, Barren County was a prominent agricultural area, and it remains at the top of the state's production in cattle. Manufacturing activity is a major contributor to the Barren County economy. The area has a picturesque, rolling landscape with access to state parks and Mammoth Cave National Park. Barren County is expected to continue to grow over the next 30 years, given on-going commercial and economic development.

[35] U.S. Census Bureau. Poverty Status in the Past 12 Months. Barren County. https://data.census.gov/table?q=barren%20county%20poverty

SECTION 5
Description of Impacts

This section of the report addresses impacts to the following resource topics, as enumerated in KRS 278.708 and KRS 278.706(j):

- Compatibility of the facility with scenic surroundings;
- Potential changes in property values and land use for adjacent property owners;
- Anticipated peak and average noise levels;
- Road and rail traffic, fugitive dust and anticipated degradation of roads and lands; and
- Economic impacts on the region and the state.

The statutes require that the SAR provides information about impacts to the above resources resulting from short-term construction activities and longer-term operational activities. The Siting Board also directed HE to address the potential effects of decommissioning activities, and that discussion is included in this section.

For each resource topic, HE describes generally accepted assessment criteria or methodology necessary to evaluate impacts of a project of this nature. We then summarize the relevant information included in the SAR, as well as supplemental information about the Wood Duck Solar Project provided by the Applicant in response to data inquiries. HE also provides additional information gathered about the Project and its potential impacts on the region through secondary source research, including interviews. Finally, HE draws conclusions about Project impacts as well as recommended mitigation measures.

Facility Compatibility with Scenic Surroundings

This component of the statute relates to how well the proposed facility will "blend-in" or is compatible with its physical surroundings and associated land uses. For example, certain industrial facilities can be unsightly, visually unappealing, and generally incongruous with the surrounding area. Coal-fired electric generating plants often have large smokestacks that can be seen from far away. Wind turbines are tall, and their blades can be seen spinning from miles away, etc. Generally, solar farms are considered to be less visually intrusive, as they are relatively short in stature, and can be effectively visually blocked naturally with topographic variation or intervening vegetation, or through strategic means utilized by an applicant.

General methods of assessment. Visual impacts of solar facilities are highly dependent on the characteristics of the surrounding area, i.e., industrial, suburban residential, rural/agricultural. As a result, different methods may be used to assess the visual impacts of solar facilities, depending on location. The Argonne National Laboratory's Environmental Science Division and the National Park Service jointly developed the *Guide to Evaluating Visual Impact Assessments for Renewable Energy Projects*; that document is a guide designed to help planners

evaluate the quality and completeness of visual impact assessments for solar and wind facilities.[36] Additional reports have been published from public agencies and private firms on visual impact assessments for solar facilities.

Most visual impact assessments focus on visualization of the appearance of the project from key observation points (KOPs). Since it is impossible to visualize proposed projects from every observation point, it is common for planners to utilize a "worst-case" potential visual impact, i.e., locations where perceived change may be greatest. The overarching goal of visual impact assessments is to determine potential visual impacts that may result from construction, operations, and decommissioning of a project, in a manner that is logical, repeatable, and defensible.[37]

A standard visual analysis generally proceeds in this sequence:[38]

- Description of the project's visual setting;
- Identification of KOPs. KOPs are locations near the project site where there is potential for solar facility components to be seen from ground-level vantage points, i.e., a nearby residence or a passing vehicle;
- Analysis of the visual characteristics of the project, i.e., height of solar panels, descriptions of other facility components; and
- Evaluation of impacts from KOPs.

Glare from sun shining off solar panels can also be a potential issue in certain locations (i.e., along roadways, near airports, or close to residential properties) or at specific times of the day (generally in the early morning or later in the afternoon as the panels rotate to capture the light). Glare analyses evaluate the potential for different types of glare (red, which is the most severe; yellow, which is less severe; and green, which has the lowest severity rating) at different locations around a project site and the duration of potential glare, if applicable, at different times of the day. Measures can be implemented to reduce the potential for glare impacts, including the use of anti-glare panels, appropriate panel location and growth of vegetative buffers.

Project components with potential for visual impacts. Once constructed, the following Project components may result in visual impacts to local residents and drivers:

- ***Solar panels:*** The Project will include approximately 204,550 solar panels. Solar arrays consist of panels placed in rows on racking structures, supported by steel piles driven into the ground. Each array row will be 10 to 18 feet apart. With the tracking arrays, the height of the panels will vary as the structures tilt to follow the sun throughout the day. The maximum height of the solar arrays will not exceed 15 feet. However, the center

[36] National Park Service, U.S. Department of the Interior. *Guide to Evaluating Visual Impact Assessments for Renewable Energy Projects*. August 2014. http://visualimpact.anl.gov/npsguidance/.
[37] Dean Apostol, James Palmer, Martin Pasqualetti, Richard Smardon, Robert Sullivan. (2016). *The Renewable Energy Landscape: Preserving Scenic Values in our Sustainable Future*. September 2016.
[38] Environmental Design & Research. *Visual Impact Analysis*. May 2019.

height of the racking structures would only be between about four feet when flat and 6.8 feet above ground at full tilt.

- ***Inverters and transformers:*** 25 inverters will connect to the panel arrays, converting the direct current (DC) power generated by the solar panels to alternating current (AC) power from the inverters. Inverters may be grouped to minimize collection cable trenching; the Applicant estimates that Project inverters would be located within 25 or fewer separate locations.

- ***AC Collection system.*** The alternating current collection system will include overhead elements. Approximately 4.2 million feet of wire will be located above ground, running along the racking underneath the modules. Some cabling currently anticipated to be located underground could be developed above ground in limited areas if underground obstructions are encountered during construction.

- ***O&M Area/ Project substation:*** An O&M area/ collector station for the Project will be located in the southeastern portion of the Project site near the existing EKPC Bon Ayr substation. That area will include the Project substation, an O&M building, parking area, meteorological station and other associated facilities such as equipment storage, above ground water storage tanks, security gate, and signage. The O&M building is described as a single-story prefabricated pole barn-type structure, approximately 40 linear feet by 60 linear feet in size. The fenced footprint of the area will be one to two acres.

- ***Transmission line:*** The substation gen-tie line will be approximately 500 feet in length, located entirely within the Project footprint. Gen-tie poles will not exceed 85 feet in height. The transmission corridor will be about 50 feet wide.

- ***Fencing:*** Approximately 159,740 linear feet of eight-foot high game style fence will surround each solar array section.[39] A separate six-foot fence with three strand barbed wire on top will surround the Project substation. Fixed lighting at the perimeter will be limited to gates and the substation area and will be motion-activated to minimize light spillage.

- ***Access Roads:*** Approximately 99,714 linear feet of gravel access roads will be constructed within the Project boundary.

Summary of information provided by the Applicant. The Wood Duck SAR includes a Visual Resource Assessment and Mitigation Plan (Attachment E), Glare Hazard Analysis (Attachment F) and Landscape Plan (Attachment G), all completed by Stantec in 2023. The Visual Resource Assessment provides a general description of the scenic setting of the area, as well as photos of existing conditions and simulations of views of Project facilities from different locations around the Project site.

[39] According to the Applicant, because fencing will surround individual sections of panels, corridors will be present throughout the larger Project site to allow for wildlife movement and activity.

Scenic surroundings. According to the Visual Resource Assessment, the Project site and surrounding areas can be described as rural, where the majority of the landscape is agricultural or forested. A small portion of the area is developed, including individual single-family homes, churches or small business establishments.[40] An existing EKPC substation is located along New Bowling Green Road on the southeastern side of the Project site and several existing transmission lines run through the area.

Potential visual impacts from Project construction. The SAR does not address the potential for visual impacts to adjacent landowners or local drivers during the construction phase.

Vegetation removal. The Applicant estimates that no more than 223 acres of vegetation will be cleared during construction. Acres identified for potential clearing are located across the Project site.

Visually sensitive resources.[41] The Applicant's report identifies the following types of visually sensitive resources within the viewshed study area (an area within a five-mile radius of the Project):

- Landmarks such as districts, sites, buildings, structures, and objects that are recognized by, registered with, or identified as eligible for registration by the national registry of natural landmarks, the state historical preservation office, or the Kentucky Department of Fish & Wildlife.

- Recreation Areas that are any formally adopted land and water recreation areas, recreational trails, scenic rivers, scenic routes, or byways.

- Registered landmarks of historic, religious, archaeological, scenic, natural, or other cultural significance.

- Other public areas such as State, US, and Interstate Highways, Schools, Cities, and Villages

The SAR documents list a total of 91 visually sensitive resources within the study area (of which 61 are cemeteries); however, only seven of those (including five cemeteries, one highway segment and one designated scenic resource – non-highway road segment) are anticipated to have a view of the Project, prior to screening. Those visually sensitive resources include the following:

1. ***Denton Cemetery:*** 0.3 miles from the closest solar panel; partial view of Project

[40] As noted in Section 3 of this report and shown in Exhibit 3-2, more than half of the acreage adjoining the Project site includes some residential use.

[41] Subsequent information provided by the Applicant notes that the resources specifically evaluated in the Visual Resource Assessment analysis included those with the highest potential for impacts, focusing on public locations. Residences are interspersed throughout the Project area and the Project's potential effect on the character of the general area was evaluated. Information describing proposed screening, included in the Landscape Plan, address potential visual impacts at residential properties.

2. ***Gray-Barrick Cemetery:*** 0.34 miles from the closest solar panel; partial view of Project

3. ***Hodge Cemetery:*** 0.77 miles from the closest solar panel; partial view of Project

4. ***John B Bishop Cemetery:*** 0.96 miles from the closest solar panel; partial view of Project

5. ***Merry Oaks Cemetery:*** 0.64 miles from the closest solar panel; partial view of Project

6. ***New Bowling Green Road:*** full view of the Project

7. ***Cumberland Expressway:*** partial view of the Project

Visual simulations. Appendix A to the Visual Resource Assessment provides photos of existing conditions and simulations of the view of the Project (imposed on the existing conditions photos) without mitigation (vegetative screening) at six locations. At some of those locations, photo simulations including vegetative screening are also provided. Photos with mitigation include double rows of evergreen trees, spaced 15 feet apart, simulated to illustrate the view at the time of initial planting.[42] Photos are provided from the following locations:[43]

1. *Viewpoint 1 – New Bowling Green Road:* Viewpoint 1 is located in the southern portion of the Project site, at a distance of about 106 feet from Project facilities (panels). In the visual simulation without mitigation, panels and fencing can easily be seen from the road. The simulated vegetative screening suggests that fencing and panels may be largely shielded from view once evergreen trees are mature.

2. *Viewpoint 2 – Oak Grove Church Road:* Viewpoint 2 is located on the western side of the Project site, at a distance of about 260 feet from Project facilities (panels). At this location, existing vegetation is expected to provide a natural screen. Trees at this location appear to be deciduous, somewhat limiting their screening potential during certain times of the year.

3. *Viewpoint 3 – Park City-Bon Ayr Road:* Viewpoint 3 is located on the eastern side of the Project site, at a distance of about 530 feet from Project facilities (panels). Simulated panels are generally visible from the road but are relatively far from view.

4. *Viewpoint 4 – Mayhew Road:* Viewpoint 4 is located along the northeastern side of the Project site, at a distance of about 160 feet from Project facilities (panels). In the visual simulation photo, panels and fencing can easily be seen from the road, although some smaller existing vegetation is apparent.

5. *Viewpoint 5 – Apple Grove Road:* Viewpoint 5 is located along the northern portion of the Project site, at a distance of about 106 feet from Project facilities (panels). In the visual simulation without mitigation, panels and fencing can easily be seen from the road.

[42] According to the Applicant, planted vegetation will provide a robust screen within five to seven years after planting.
[43] Maps indicating the locations of the viewpoint sites are included with the photos.

The simulated vegetative screening suggests that fencing and panels may be largely shielded from view once evergreen trees are mature.

6. *Viewpoint 6 – Oak Grove Church Road:* Viewpoint 6 is centrally located within the Project site, at a distance of about 420 feet from Project facilities (panels). Panels and fencing can easily be seen in the visual simulation photo.

Photos of existing conditions were taken in early April (2023), and deciduous trees are still bare in the photos.

Applicant's approach to Project screening. The Applicant's Landscape Plan includes the following goals:

1. Provide visual interest to soften [the view] of the proposed infrastructure.
2. Provide screening and visual barriers that consider viewership intensity and adjacent land use.
3. Develop a module that would be appropriate for the existing landscape.
4. Utilize existing landscape where possible.
5. Avoid monocultures of the same species in order to increase biodiversity.
6. Utilize native plant material when possible.

The document notes that vegetation will not provide 100 percent screening or visual obstruction from the Project. The primary intent of the plan is to provide visual relief in order to break up the lines of the infrastructure and enhance the overall aesthetics of the Project. Where possible, existing vegetation will be utilized along roads, fence lines and property lines.

Proposed evergreen species used for vegetative screening include Eastern Cedar, American Holly and Virginia Pine. In locations identified for screening, planting will consist of a double row of evergreens spaced 15 feet on center, anticipated to reach 10 to 15 feet in height at maturity.[44] Wood Duck will monitor the plantings annually and will replace plantings that die within the first five years to ensure adequate establishment. Supplemental plantings, where necessary, will be a minimum of six feet at the time of planting. The interior of the Project site will be seeded with a fescue mix and groundcover, maintained at 12 inches in height.

Appendix A of the Landscape Plan identified specific locations proposed for vegetative screening across the Project site. At the time that the plan was developed, no screening was planned for areas adjacent to the proposed Project substation, with the assumption that, due to the presence of the existing electrical substation owned and operated by EKPC at that location, the Project substation would not result in any further diminishment of the viewshed.[45]

Subsequent information provided by the Applicant includes revisions to the original screening plan, including a map illustrating: (1) proposed screening along the east side of the O&M/

[44] Planted trees are anticipated to reach maturity within 5 to 7 years.
[45] Included in the Applicant's response to the Siting Board's first data request.

substation area and (2) additional supplemental screening in areas where logging has occurred in recent months.[46] Approximately 8.6 miles of vegetative screening are proposed in areas around the Project site.[47] However, that same document also states that "landscaping the substation is not anticipated due to the height of Project components and existing features surrounding this portion of the site. Wood Duck acknowledges that the existing utility substation is visible to the residents of the Bent Creek Drive neighborhood, located east of the Project's substation parcel."

Appendix C of this report provides the revised overview map of the screening proposed by the Applicant. Locations for screening were selected due to proximity of Project infrastructure to all roadways and to both participating and non-participating residences. Screening will also be implemented along non-participating residences' fence lines, and the Project's buildable areas were screened along roadways.

Potential for glare from Project panels. The Glare Hazard Analysis describes use of ForgeSolar software to determine the potential for glare from solar panels to affect airports/ aircraft, local residents and area drivers. That document notes that PV panels are designed to absorb rather than reflect sunlight to maximize energy capture; however, some reflection can occur, especially during sunrise and sunset, when the angle of the panels is highest. The Project's solar panels will include anti-reflective coatings, which reduces the potential for glare.

The Project's glare analysis addressed the potential for glare at the Glasgow Municipal Airport and the helipad at the TJ Samson Community Hospital, along 17 road segments adjacent to solar panels and at 147 residences in the vicinity of the Project. The report provides the following results regarding glare from project panels:

- Glare is not predicted at the airport or at the hospital helipad at any time of the day or at any time throughout the year.

- Green glare is predicted for drivers along one segment of Oak Grove Church Road for a maximum of approximately 48 minutes of the day, primarily in late fall and winter months, during the mid-day hours. At other times of the year, glare in this area will be much less than 48 minutes per day.

- Green glare is also predicted for four of the 147 residences analyzed. Two of those structures would experience glare for up to 18 minutes per day, mainly between October and February. The other two structures would experience glare for between two and five minutes per day, mainly between October and February. In both cases, that glare is predicted to occur in the late morning to early afternoon hours.

  Subsequent information provided by the Applicant identified one of the residential structures as a barn. The remaining three residences affected by glare are located on non-participating parcels. The Applicant has stated that they will install supplemental landscape screening to create a buffer between those structures and the Project to further reduce or eliminate glare.[48]

[46] Included in the Applicant's response to the Siting Board's second data request.
[47] Included in the Applicant's response to the Siting Board's second data request.
[48] Included in the Applicant's response to the Siting Board's second data request.

HE's evaluation of impacts. HE reviewed maps and Google Earth satellite imagery of the site and used Google Maps to "drive" around the area to assess viewpoints of the Project from a vehicle commuter's point of view. In addition, HE staff made a visit to the Project site on August 6, 2025. During this site visit, HE staff drove around the Project site to gain line-of-sight to various viewpoints and compiled a photo log of the different areas. The photo log index map and site photos can be found in Appendices A and B of this report, respectively.

Visual setting. HE's site visit confirmed information provided by the Applicant and gathered as part of the Project evaluation, with regards to the rural nature and "look" of the area. The area surrounding the Project is largely rural and agricultural, with lots of natural vegetation. Existing vegetation includes trees, bushes and grasses, and vegetation is relatively dense in many areas surrounding the Project site.

In certain areas surrounding the Project site, some residences are clustered in low-density "neighborhoods"; in other areas, homes are spread out on larger properties.[49] Several homes are located in close proximity to the Project boundary, some of which are owned by participating landowners.

With the exception of Cumberland Parkway, most local roads surrounding the Project site are paved, two-lane roads without existing shoulders. Several local roads are relatively narrow. Traffic in the Project area is generally light, especially on smaller, local roads. Cumberland Parkway is more heavily traveled.

About 72 percent of land in Barren County is considered farmland (approximately 230,540 acres), with about half of farmland acreage used for crop production (mainly hay, beans and corn) and half used for pasture, woodland or other uses.[50]

The Applicant provided information about the distances between nearby residential and non-residential structures and the Project boundary, solar panels, inverters and the substation.[51] Exhibit 3-3 of this report described proximity of residential and non-residential structures to the Project boundary. A total of 266 residential structures are located within 2,000 feet of the Project boundary. Exhibit 5-1, below, presents data on the distances between residences and Project infrastructure - solar panels, inverters and substation.

[49] According to the Applicant's Sound Study, 130 of the 266 residences located within 2,000 feet of the Project boundary "are located within eight areas that meet the definition of "residential neighborhood" according to KRS 278.700, which include populated areas of five or more acres containing at least one residential structure per acre."
[50] USDA, National Agricultural Statistics Service, 2022 Census of Agriculture, Barren County profile.
[51] The Applicant provided data for structures within 2,000 feet of the Project boundary.

Exhibit 5-1.
Distances between Nearby Residential Structures and the Proposed Wood Duck Solar Project Solar Panels, Inverters and Substation

Distance from Residence (ft)	Inverter	Solar Panel	Substation
0 - 300 feet	0	9	0
301 - 600 feet	4	26	1
601 - 900 feet	6	39	17
901 - 1,200 feet	6	29	15
1,201 - 1,500 feet	17	22	11
1,501 - 1,800 feet	23	30	11
1,801 - 2,000 feet	8	15	5
Total Homes:	**64**	**170**	**60**

Note: Structures include those within 2,000 feet of the Project boundary line.
Source: Wood Duck Solar, LLC, July 2025.

As noted in Section 3 of this report, the shortest distance between residences and generation infrastructure within the Project site are as follows:

- ***Solar panels*:** 83 feet (non-participating landowner). Of the nine homes located within 300 feet of a solar panel, four are owned by participating landowners and five are owned by non-participating landowners.
- ***Inverter:*** 430 feet (participating landowner). Of the four homes located within 600 feet of an inverter, two are owned by participating landowners and two are owned by non-participating landowners.
- ***Project substation:*** 597 feet (non-participating landowner). This home is the only residence located within 600 feet of the substation. However, of the 18 residences located within 900 feet of the substation, only two are owned by participating landowners.

Construction activities. Adjacent landowners and commuters driving along surrounding local roads may be able to see construction equipment and activity as it occurs.

- Several hundred homes are located within a half mile of the Project site and local residents will be able to see trucks and other equipment during construction.
- Drivers on surrounding roadways, including local roads near the Project site, will be able to see construction activities occurring on the Project site from certain locations.
- Existing vegetation in much of the area will reduce visibility of Project construction activities.
- According to the general construction schedule provided by the Applicant, construction activity would occur over approximately 18 months, with peak activity occurring over a period of about nine months. Construction activity would be limited in duration.

Because of the rural nature of the area and the fact that construction will be temporary, HE expects the visual impacts from construction activities to be minimal.

Project facilities. HE's focus of the scenic compatibility evaluation is upon the above-ground Project components, including the solar panels, inverters, Project substation and other structures as those components may be visible from local residences and roads for the 40 years of Project operations.

- The Project site includes existing natural vegetation, such as trees, shrubs and hedgerows. Additionally, the Applicant's Landscape Plan includes strategically placed vegetative screening across the Project site to reduce views of Project facilities from residences and roadways. However, some Project facilities may be more visible in winter and early spring months in areas where existing vegetation is mainly deciduous.

- The smallest distance between a residence and a Project solar panel is about 83 feet; other components are located at further distances. Given the area's natural vegetation and the Applicant's proposed vegetative screening plan, few homes or other buildings would likely have a view of Project facilities during most of the year. However, many of the homes in close proximity to those facilities are not owned by participating landowners.[52]

- Information provided by the Applicant is unclear regarding the intent to develop a vegetative screen near the O&M area/ substation. While the Applicant's revised screening plan map shows proposed vegetation along the eastern side of the O&M/ substation area, presumably to reduce the view of those facilities from homes located along Bent Creek Drive, other information provided states that no vegetation is proposed for that area.

- It appears that drivers on a very small portion of New Bowling Green Road and several homes located on the north side of that road may have a view of the O&M/ substation area without additional screening.

- Glare affecting roadways and drivers in the Project area would be limited to one location, occurring on one segment of Oak Grove Church Road, mainly in the late fall and winter months. This road sees moderate amounts of traffic, mainly from local residents; it is not considered a major local thoroughfare.

- Glare affecting local residences would be confined to three homes, occurring for less than 20 minutes each day, mainly in the fall and winter months. The site lines from these homes will be to panels on hills extending above Project perimeter fencing, not easily screened.

- The overhead transmission line and support poles may be visible from nearby homes; however, existing vegetation may block some of that view.

[52] HE assumes that participating landowners are not averse to view of Project facilities.

Due to the rural nature of the Project area, the existing vegetation and the Applicant's proposed vegetative screening, HE would expect the visual impacts associated with the presence of Project facilities to be minimal.

An interview with the Barren County Judge Executive and review of comments submitted to the Siting Board by the public indicate that local residents have concerns about the Project's compatibility with the surrounding landscape and land uses, especially with regard to agricultural use.[53]

Conclusions and recommendations. Based on our review of the SAR, supplemental information provided by the Applicant, and additional research conducted by HE, we offer the following conclusions and recommendations regarding scenic compatibility:

- Construction vehicles and activity will likely be visible from local roadways and at different vantage points around the Project site, but these effects will be temporary and limited due to the rural nature of the Project site. Natural vegetation exists in many areas along the Project boundary line and will reduce visibility of construction activities occurring on-site in many areas.

- Operational infrastructure, including solar panels, fencing and the O&M area/ substation, will be visible to drivers along local roads, as well as to local residents surrounding the Project site. However, the Applicant's Landscape Plan includes 8.6 miles of vegetative screening in different areas around the Project site, which will reduce views of Project facilities in many locations. The existence of relatively few homes in close proximity to Project infrastructure will reduce the extent of visual effects. Even so, many of those homes are owned by non-participating landowners, who may be more sensitive to changes in the nearby visual landscape.

- The Project substation, O&M building and associated facilities will be located in the eastern portion of the Project site, north of New Bowling Green Road, near an existing EKPC substation. The closest residence will be about 600 feet from the Project substation. Visibility of those components will be high for a number of homes along Bent Creek Drive, especially if vegetative screening is not implemented. HE recommends that vegetative screening is included in this section of the Project site to reduce visibility of the substation, O&M building and associated facilities.

- The use of anti-glare panels will reduce the potential for glare from solar panels for local residents and drivers. The Applicant's glare study predicted limited glare, occurring on one road segment and at three homes for a small part of the day, mainly in fall and winter months.

- The Applicant has stated that "the Project has not implemented a complaint resolution program at this time but will establish the program prior to commencing construction. Additionally, the Project will work with adjoining landowners and the local community

[53] An interview with Ms. Jamie Byrd, Barren County Judge/Executive, was conducted during the site visit trip on August 6, 2025.

to address site-specific concerns that may arise during construction or operation of the facility." At this point, no specific details have been provided regarding the resolution of potential complaints related to scenic impacts during construction or operations. A clearly defined complaint resolution process should be developed, especially since many of the nearby homes are not owned by participating landowners.[54]

- A large portion of Barren County is considered farmland, including active crop production, acreage used as pasture and woodlands. Farmland and other undeveloped areas surrounding the Project site include existing natural vegetation in many locations. However, the general Project area also includes residential development, including dispersed and clustered single-family homes, as well as agricultural structures such as barns. Vegetative screening proposed by the Applicant would add to the rural and natural feel of the area, while also shielding Project facilities from view.

- Based on our understanding of the Project area in Barren County and of Project-specific characteristics, HE believes that the Wood Duck solar facility would not be incompatible with the existing scenic conditions for most residents and businesses.

Need for mitigation. The visual impacts are likely to be such that the Applicant should consider certain mitigation:

1. Existing vegetation between the solar arrays and nearby roadways and homes shall be left in place, to the extent feasible, to help minimize visual impacts and screen the Project from nearby homeowners and travelers.

2. The Applicant will not remove any existing vegetation except to the extent it must remove such vegetation for the construction and operation of Project components.

3. The Applicant will implement vegetative screening as proposed in the revised Screening Plan as a minimum, including vegetative screening near the O&M area/ Project substation.

4. The Applicant will provide any changes to the revised Proposed Screening Plan to the Siting Board.

5. Any changes to the site infrastructure layout (i.e., panels, inverters, etc.) included in the Application materials will be submitted to the Siting Board for review. If the Siting Board deems those changes to be significant, the Siting Board may require the Applicant to revise the submitted Landscape Plan.

6. The Applicant shall consult with local homeowners or businesses adjacent to the Project site to determine whether there are adverse impacts to the viewshed. The Applicant will work with those homeowners and businesses to address and resolve complaints related to view of Project facilities.

[54] The topic of Complaint Resolution is addressed later in this report, including a recommended mitigation measure.

7. The Applicant will adhere to the vegetation maintenance described in the Landscape Plan, including establishment, supplemental plantings and on-going maintenance.

8. The Applicant will use anti-glare panels and operate the panels in such a way that glare from the panels is minimized or eliminated. The Applicant will work with affected local residents and Barren County representatives to address and resolve complaints about glare from those living, working or traveling in proximity to the Project.

Potential Changes in Property Values and Land Use

The construction and operation of industrial facilities have the potential to affect property values and/or land uses of those properties adjacent to, or even in the general vicinity of, the facility in question. The magnitude, timing, and duration of increased traffic volume, noise, odor, visual impairments, or other emissions associated with the facility can influence the marketability and value of nearby properties. Each of those factors are addressed in this report and are considered here in examining property value impacts.

General methods of assessment. The value of a residential property is based on many factors, including characteristics of the home and the land on which it is situated, the uses and values of the surrounding property, among other attributes. The value of a residential property will take into account things such as lot size, age of home, size of home, number of bedrooms and bathrooms, etc. A residential property located near public lands or open spaces may be more highly valued, whereas the same property located near a heavy industry facility might have a lower value. Residential property values may vary differently than agricultural or industrial properties.

Several methods are available to assess the impacts of a new development on nearby property values. A technique known as hedonic pricing analysis can be used to determine the impacts of a specific characteristic on the price or value of a property. However, this method of valuation requires large amounts of data, statistical experience, and careful evaluation. Formal appraisal is a technique which uses the concept of specific property characteristics in comparing different properties. Matched pair analysis is another technique. A matched pair analysis makes a comparison between similarly situated properties that sold before and after a new industrial facility is constructed. This approach is described in more detail below.

Summary of information provided by the Applicant. The Property Value Impact Analysis (provided as Attachment B to the SAR) was completed by the Applicant's consultant, Richard Kirkland of Kirkland Appraisals, LLC. Referred to here as the Kirkland report, that document, along with additional follow-up information from Mr. Kirkland provides the following relevant information:

- ***Land uses of adjacent properties*** – Mr. Kirkland describes adjoining land as primarily a mix of residential and agricultural uses. About 59 percent of the acreage adjacent to the Project site is mixed agricultural / residential; an additional 35 percent is agricultural and about six percent is identified as residential. A small amount of acreage adjacent to the Project site is identified as for commercial or utility purposes (less than half of one percent).

- ***Distances between solar panels and homes on adjacent properties*** – The Kirkland report indicated that the closest non-participating home will be about 300 feet away from a solar panel.[55] In response to HE's inquiries, the Applicant provided additional information about the distance between various structures and the potential Project footprint. Altogether a total of 266 homes, and 88 non-residential structures are located within 2,000 feet of the Project boundary.[56]

- ***Academic research studies, appraisal market studies, other publications and broker comments –*** The Kirkland report provides summaries of several research papers and articles addressing property value impacts of solar or wind facilities. Based on his understanding of each study, Mr. Kirkland concludes that proximity to a solar facility has no impact (positive or negative) on property values. Mr. Kirkland also provides the results of several appraisal market studies focused on the presence of solar facilities, which all conclude finding no impacts on property values due to proximity to solar facilities. Comments from real estate brokers during the course of Mr. Kirkland's work also indicate that solar farms have had no impact on the marketing, timing, or sales price for the adjoining homes.

- ***Assessor surveys –*** The Kirkland report describes the findings from a survey of assessors in Kentucky counties with existing or proposed solar projects and assessor surveys in other states conducted by Mr. Kirkland. In Kentucky, Mr. Kirkland contacted 10 county Property Value Administrators (PVAs) regarding impacts to property value near a solar facility; of the six PVAs that responded, all stated that there was no impact to property values from the facility. Surveys completed in other states reflected similar results.

- ***Discussion of a "matched pair" analysis*** – The Kirkland report employs an analytical approach described as a matched pair analysis, which aims to determine the impact of a specific feature or attribute on property value. This form of "matched pair" analysis compares differences between the sales prices of properties adjacent to a solar facilities and sales prices of properties located further from that same facility.[57] Mr. Kirkland identifies and compares the sales prices of properties sold using data from solar farms across multiple states, including Kentucky. In general, the solar farms included in the analyses are relatively similar in terms of rural, less densely populated locations. Nearby land uses are typically residential and agriculture in nature.

- ***Effects of landscaping buffers on property values*** – The Kirkland report also provides an analysis of home price differentials based on Project size in combination with the amount of vegetative buffer (light, medium or heavy) from existing landscaping and Project planting and the distance between the home and solar panels. Mr. Kirkland concludes that once Project facilities have been substantially screened with a light buffer

[55] Subsequent data provided by the Applicant indicates that the smallest distance between any home and a solar panel is 83 feet.
[56] The majority of non-residential structures within 2,000 feet the Project boundary are buildings such as barns, sheds or other unoccupied structures.
[57] Mr. Kirkland adjusts for such factors as date of sale, age of home, square footage, number of bedrooms and bathrooms and garage spaces prior to comparing sales prices.

(such that no price differential exists), additional buffering has no further beneficial effect on property values, regardless of Project size.

- ***Narrative discussion of specific factors related to impacts on property values*** – Mr. Kirkland briefly addresses the topics of hazardous materials, odor, noise, traffic, stigma, and appearance as related to solar facilities in general and concludes that the "proposed solar farm [Wood Duck Solar] will not negatively impact adjoining property values." He does state that "the only category of impact of note is appearance, which is addressed through setbacks and landscaping buffers."

- ***Construction related impacts to property values*** – Mr. Kirkland states that no impacts to property values are anticipated due to construction activity on the Project site. The report notes that "construction will be temporary and consistent with other development uses of the land and in fact dust from the construction will likely be less than most other construction projects given the minimal grading."

Kirkland's conclusions. The Kirkland report presents three sets of analysis: (1) property price differentials for 13 solar facilities (35 matched pairs) located in Kentucky and adjoining states; (2) property price differentials for 24 solar facilities (59 matched pairs) located in the Southeastern U.S.; and (3) property price differentials for 39 solar facilities (89 matched pairs) located across the entire U.S.[58] Those analyses note the degree of vegetative buffer (light to heavy) between the adjacent property and the solar facility for each matched pair set.

Kentucky and adjoining states solar facility data. Based on analysis of the 35 residential dwelling matched pairs associated with the 13 solar facilities located in Kentucky and adjoining states, Kirkland states that evaluation of the matched pairs shows a pattern of results ranging from -7% to +7%, with most data points between -2% and +5%.[59] He concludes that "these results strongly support an indication of no impact on property value due to the adjacent solar farm."

Southeastern U.S. solar facility data. Based on analysis of the 59 residential dwelling matched pairs associated with the 24 solar facilities located in the Southeastern part of the U.S., Kirkland states that the range of differences (in sales prices) is from -10% to +10% with an average of +1% and median of +1%.

Kirkland acknowledges that the range is "seemingly wide" but notes that the "vast majority of the data falls between -5% and +5% and most of those are in the 0 to +5% range." He concludes that "these matched pairs support a finding of no impact on value at the subject property for the proposed project."

[58] The size of the solar facilities evaluated ranges from 2.7 MW up to 617 MW and from an overall property size of 34 acres (2.7 MW facility) up to 3,500 acres (617 MW facility). The majority of those facilities are 80 MW or less.

[59] This excludes the one significant outlier showing a 22 percent increase in property value, likely due to renovations done at that property.

National solar facility data. Mr. Kirkland's analysis of the 89 matched pair sets associated with solar facilities across the U.S. found the following:

> "The matched pairs show no negative impact at distances as close as 105 feet between a solar panel and the nearest point on a home. The range of impacts is -10% to +10% with an average and median of +1%".

Mr. Kirkland notes that the range is "broad," but that only three data points out of the 89 matched pairs show a negative impact. Nine sets indicate a positive impact, and the remaining sets show no impact. Mr. Kirkland states that he considers this data "to strongly support a finding of no impact on value as most of the findings are within typical market variation and even within that, most are mildly positive findings."

Supplemental analysis. In response to a Siting Board data request, Mr. Kirkland provided the following additional analyses:[60]

- Mr. Kirkland notes that rural areas tend to have fewer and less frequent home sales than suburban areas, regardless of the presence of solar. However, he was able to provide a sale/ resale analysis of 16 properties located near solar facilities (sales price before and after development of the facility, adjusted for inflation). Ten of those properties are located in Kentucky and several are located near recently developed large scale projects (i.e., Turkey Creek, Mt Olive Creek, Russellville). He found price differences ranging from -5 percent to +15 percent, with an average impact of +3 percent and a median impact of +2 percent.

- Expanded analysis of matched pair sets for the Kentucky and adjoining states dataset to include 47 matched pairs. Impacts ranged from -7 percent to +12 percent with an average impact of +1 percent and a median impact of +0 percent.

HE's evaluation of impacts. To assess the topic of impacts to property values, HE: (1) reviewed relevant existing literature related to solar facility impacts; (2) conducted an interview with the Barren County Property Valuation Administrator; (3) conducted additional evaluation of the data provided in the Kirland report; and (4) examined the potential for impacts to residential and other properties closest to the Project.

Literature review. HE reviewed the existing literature related to the relationship between property values and utility – scale solar facilities. A summary of recent studies that address the issue of changes in property values specifically related to solar facilities can be found in Appendix D of this report.[61] Based on review of the identified academic studies, HE offers the following observations:

- The results and conclusions of recent studies examining the effects of utility-scale scale solar facilities on nearby property values are mixed, with some studies indicating

[60] Provided as part of the Applicant's response to the Siting Board's first data request.
[61] Several of these studies are also addressed in the Kirkland report and considered in his evaluation and conclusions.

decreases in property values within a certain distance, others suggesting increases in property values and still others indicating no impacts to property values.

- In all the studies reviewed, potential positive or negative changes in property values were relatively small, generally less than five percent.

- In most cases, researchers noted that property values are influenced by a wide range of factors and that the presence of a solar facility is not the main driver of a property's value (or sales price).

- In most studies, researchers noted that visibility of the facilities was an important component of the potential impact to property values.

- Many of these studies use large databases, including many solar projects and thousands of housing transactions, as inputs into various statistical models. While use of those extensive datasets is beneficial for developing results that might reflect an average effect over a large geographic area, it is likely that the impacts to individual properties will differ from the average based on the characteristics of that property.

- Impacts to the value of individual homes may be different than an estimated average impact to property values at a regional level. For individual homes, considerations might include the types of other surrounding land uses and the ability for project facilities to be screened. For example, the value of a home located near other commercial or industrial activity may be unaffected by development of a solar facility. Homes without any views of the solar project (due to existing vegetation, screening, slope or other factors) may be unaffected by the solar facility even if they are in relatively close proximity. The value of specific features of the home or property may outweigh the effects of a nearby solar facility. The real estate market and demand for housing in a specific area may also have influences that outweigh the effects of a nearby solar facility.

In addition to academic literature, HE also reviewed several reports developed by independent property appraisers. Independent appraisers are often hired to conduct analyses related to property value impacts for solar companies. Those analyses focus on property value trends of lands adjacent to existing solar farms across the country, using a paired sales or matching pair approach. The appraisal reports reviewed indicate differences in property values ranging from about -3.2 percent to as much as +27 percent, although generally in cases with positive impacts, property values increased by about 5 percent or less. Overall, the conclusions were that solar facilities do not negatively impact property values.[62]

[62] McGarr, P. and A. Lines, CohnReznick, Property Value Impact Study, Proposed Soar Farm, McLean County, IL, 2018; McGarr, P. and A. Lines, CohnReznick, Property Value Impact Study, Proposed Soar Farm, Kane County, IL, 2018; McGarr, P., CohnReznick, Property Value Impact Study, Adjacent Property Values Solar Impact Study: A Study of Nine Existing Solar Farms Located in Champaign, LaSalle, and Winnebago Counties, Illinois; and Lake, Porter, Madison, Marion, And Elkhart Counties, Indiana, 2018; McGarr, P., CohnReznick, Property Value Impact Study, Adjacent Property Values Solar Impact Study: A Study of Eight Existing Solar Farms Located in Lapeer County, Michigan; Chisago County, Minnesota;

It is interesting to note that local residents often raise concerns about property values during public hearings or open houses related to specific solar facilities, despite the fact that many existing studies related to this issue generally indicate no impacts to property values, In many cases, including the Wood Duck Project, newspaper articles and other media indicate that residents believe that property values will be reduced by nearby solar farms. Residents of Barren County have also voiced these concerns via comments submitted to the Siting Board. It appears that there is a perception of negative effects on property values, at least from a portion of the community.

Interview with Barren County officials. HE spoke with the Barren County Judge/Executive (Ms. Jamie Byrd) and the Barren County Property Value Administrator (PVA) (Ms. Kim Shipley) on August 6, 2025, as part of the on-site visit. Ms. Shipley stated that there are no other large-scale solar facility projects in the county that would provide data or evidence of changes in property values specific to the area; therefore, any impacts associated with the Wood Duck Project are uncertain. She believes that the perceived negative impact remains to be seen. Ms. Byrd commented that properties in Barren County are selling for higher prices than in the past, which might suggest a relatively strong real estate market with high demand. She also noted that the county is currently in the midst of a housing shortage and that incentives for developers are available. Recent development trends appear to include on-going construction of lower priced residential homes, resulting in higher density neighborhoods in some parts of the county.

Review of Kirkland data and conclusions. Although Mr. Kirkland concludes that there would be no impact on property values from the Wood Duck Solar facility, the matched pair analyses do indicate the potential for a range of positive or negative effects. Therefore, HE examined more closely the data provided in the matched pair sets for facilities in Kentucky and adjoining states to determine the likelihood of a positive impact, negative impact, or no impact.

Exhibit 5-2 presents a detailed picture of the distribution of price differences for matched pair sets associated with solar facilities in Kentucky and adjoining states. About 83 percent of matched pair comparisons reflected a sales price differential of between negative five percent and positive five percent, with about six percent of comparisons showing no price differential at all. About 43 percent of all comparisons showed a negative impact on home prices, while another 51 percent indicated a positive effect. Overall, these data appear to support Mr. Kirkland's conclusion of no property value impacts due to proximity to solar facilities when averaging all the data.[63]

Marion County, Indiana; LaSalle County, Illinois; Bladen, Cumberland, Rutherford and Wilson Counties, North Carolina; and Isle of Wight County, Virginia, 2020.

[63] Mr. Kirkland states that impacts of between -5 percent and +5 percent can be considered within the typical variation of real estate transactions.

Exhibit 5-2.
Distribution of Sales Price Differences for Matched Pair Sets, Kentucky and Adjoining States

	Kentucky / Adjoining States Solar Facility Analysis	
# Facilities Included	16	
# Matched Pair Sets	47	
Range of Price Impact	**Number of Sets**	**% of Sets**
-6% or greater	1	2%
-1% to -5%	19	40%
0%	3	6%
1% to +5%	17	36%
+6% or greater	7	15%
Total	47 Pairs	100%

Note: The largest negative difference a matched pair set was -7 percent; The largest positive difference was 12 percent.
Source: Kirkland data set, Applicant's response to Siting Board's first data request, July 2025.

The range of price differences reflected in all of the datasets provided in the Kirkland materials also appears to support the proposition that any impacts to property values associated with the presence of a solar facility are largely site- or property-specific and may occur within a range, likely to be small.

Residential properties in close proximity to the Project site. Information obtained in HE's literature search indicates that impacts to the values of adjacent or surrounding properties may be largely related to the ability to see or hear the Project and that vegetation or other visual barriers may reduce the potential for adverse impacts to property values. Therefore, HE more closely examined the locations and situations of nearby residential properties in terms of distance to the Project and potential viewshed impacts when considering potential impacts to property values.

- The nearest home would be located about 83 feet from a solar panel; that home is not owned by a participating landowner. A total of 170 homes would be located within 2,000 feet of a panel (Exhibit 5-1). Twenty of those homes are owned by participating landowners; five non-participating residences are located within 300 feet of a panel. The closest home to an inverter would be 430 feet (participating landowner) and the closest home to the Project substation would be 597 feet away (non-participating landowner).

- The Applicant is proposing vegetative buffers along specific roadways and along the fence lines of non-participating properties. Additionally, the presence of existing trees, shrubs and other vegetation will also limit the view of the Project from nearby residences. However, 60 homes would be located within 2,000 feet of the substation, where the extent of proposed vegetative screening is uncertain.

- As described in the next section of this report (noise evaluation), operational noise levels are expected to be low, and Project generated noise levels may not be noticeable to nearby residents.

Conclusions and recommendations. Based upon review of the Kirkland report and our additional research efforts and interviews, HE offers the following conclusions related to potential impacts to property values or land uses for adjacent property owners:

- Construction activities will be temporary, occurring over a period of about 18 months. Those activities will result in increased traffic and noise in the vicinity of the Project. However, homebuyers and those interested in buying other types of properties often have a longer-term mindset when considering the purchase price.

- There are 150 homes on non-participating properties within 2,000 feet of a solar panel, including five homes within 300 feet of a panel. A total of 26 homes on non-participating properties are located within 1,000 feet of the substation where, as noted above, the extent of proposed screening is uncertain.

- Certain literature suggests that concerns surrounding impacts to property values from solar facilities stem from visibility of panels and other infrastructure. If that is the case, existing vegetation in the Project area should help mitigate any potential reductions in property values.

- Additionally, the Applicant is proposing vegetative buffers along certain roadways and along the fence lines of non-participating properties. However, the extent of proposed vegetative screening near the Project substation is uncertain.

- As discussed in a later section of this report, operational noise levels are estimated to be below the World Health Organization's estimates of moderate or annoying noise levels for all nearby residences.

- Current research suggests that the existence of solar facilities does not, in general, measurably result in changes to property values, although there may be small risk of negative impacts in certain cases.

- After considering the available research and other information, it is HE's opinion that any impact on property values due to the presence of a solar facility will be site specific, project specific and property specific. Application or assumption of a single, blanket percentage change in property values is not appropriate or accurate, when it comes to the presence of a solar facility. A small, narrow range is more meaningful.

- The Barren County Property Valuation Administrator is uncertain about Wood Duck's impact on local property values, given that no other solar facilities are currently located in the county. The Judge Executive noted that the residential real estate market in Barren County is strong, with high demand and increasing prices, which HE believes will dampen any potential negative effects from the Wood Duck facility.

- HE concludes that, overall, property values in the Project area and in Barren County are unlikely to be affected by the siting of the Wood Duck Solar facility. This conclusion assumes that the mitigation strategies discussed in Section 6 are adopted by Wood Duck Solar.

Need for mitigation. No unique mitigation measures are recommended related to potential impacts to property values or adjacent land uses because other mitigation already recommended can accomplish this. However, close coordination by the Applicant with impacted and concerned homeowners regarding potential visual impacts and impacts from noise, traffic or other Project activities should be initiated.

Anticipated Peak and Average Noise Levels

Noise issues stem from construction activities and operational components of the solar facility. During construction, noise sources will include dozers, pile drivers, cranes, cement mixers, dump trucks, loaders, and other equipment. During operations, noise will be emitted from inverters, and the substation transformer. Distance from noise emitters to noise receptors is important since noise levels decrease the further a noise receptor is from a noise emitter.

General methods of assessment. Sound levels are measured in decibel units (dB). Decibels are measured on a logarithmic scale that quantifies sound intensity. Sound levels are typically described as dBA, which is the measure of the overall noise level of sound across the audible spectrum to compensate for the varying sensitivity of the human ear to sound at different frequencies. The impacts of noise are not strictly related to loudness – the time of day when noise occurs, the duration of the noise, and baseline or background noise levels are also important factors in determining the "loudness" of a noise.

Generally speaking, an increase in 10 dBA is perceived as a doubling of loudness, which is to say, 70 dBA is perceived as twice as loud as a level of 60 dBA is.[64] A change of three decibels is barely noticeable, but a change of five decibels is typically noticeable. Once sounds reach 90 dBA humans can experience pain from the noise and sounds above 150 dBA can cause permanent hearing damage.[65] For additional context, 30 dBA is the sound emitted by a whisper, 55 dBA are emitted from a percolating coffeemaker, and 90 dBA would be the sound emitted by an individual's yell.

A standard noise impact assessment focuses on several key factors:[66]

- Measurement of existing ambient noise levels;
- Identification of noise-sensitive receptor sites;

[64] RECON Environmental, Inc. *Noise Analysis for the Drew Solar Project, Imperial County, California*. July 24, 2018. http://www.icpds.com/CMS/Media/Drew-Solar---Appendix-G.pdf
[65] Alpine Hearing Protection website, https://www.alpinehearingprotection.co.uk/5-sound-levels-in-decibels/#:~:text=0%20decibel%20is%20the%20so,permanent%20damage%20to%20your%20hearing.
[66] Department of Energy. Noise and Vibration Impact Assessment Methodology. https://www.energy.gov/sites/prod/files/edg/media/EIS0250F-S2_0369_Volume_V_Part_3.pdf;

- Calculation of distances between noise sources and sensitive receptors;

- Estimation of project-related (construction or operational) noise production and exposure, including cumulative noise effects.

Summary of information provided by the Applicant. A Sound Study for the Project (Tab H, Attachment D of the SAR) was prepared by Stantec Consulting Services, Inc. (Stantec), focusing on noise emissions during construction and the operational phases, with descriptions of existing noise conditions in the area. Limited additional data on expected noise conditions during construction was provided in response to the two Siting Board data requests.

Baseline (ambient) noise levels. Existing land uses in the Project area are mainly rural residential; significant agricultural and forested land is also present in the area. The Applicant indicated that baseline noise levels for a rural/ agricultural area, similar to the area surrounding the Project, would result in daytime sound levels of approximately 50 to 55 dBA.[67] The area surrounding the Project site includes a parkway, secondary roads, active agricultural lands and residential structures. The CSX rail line is generally located to the north and east of the Project site but is unlikely to contribute to the existing ambient noise profile of the area.

Noise sensitive receptors. Noise sensitive receptors are generally defined as locations where people reside or where the presence of unwanted sound may adversely affect the existing land use. Typically, sound sensitive locations include residences, places of worship, hotels, auditoriums, athletic fields, day care centers, hospitals, offices, schools, parks and recreational areas. Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community annoyance). Local conditions such as traffic, topography and wind characteristics of the region can alter background sound conditions.

Construction noise emitters. During the construction phase, a variety of heavy equipment will be utilized. The Applicant's consultant, Stantec, utilized the Federal Highway Administration's Roadway Construction Noise Model (RCNM) to develop typical and maximum estimated sound pressure levels for equipment anticipated to be used during Project construction.

Peak construction noise will be created by pile driving at 101 dBA from a distance of 50 feet, with compactors, dozers, excavators, tractors, pneumatic tools, and cranes emitting sound levels greater than 80 dBA at a distance of 50 feet.[68] Pile driving will be used to install the Project solar arrays. Exhaust noise from diesel engines that power construction equipment is a significant source of noise generation.[69]

Exhibit 5-3, below, provides the range for general construction equipment sound levels, with and without pile driving, at the closest residence (non-participating) to Project facilities from the Stantec sound study. The RCNM modeling applied by Stantec included three pile drivers, one

[67] SAR Tab H, Exhibit D - Wood Duck Solar Project Sound Study, Table 2, and provided in the Applicant's response to the Siting Board's first data request.
[68] SAR Tab H, Exhibit D – Wood Duck Solar Project Sound Study, Figure 2.
[69] Identification of Dominant Noise Sources in a Diesel Power Group. Hassoun, et al., 2019. https://d-nb.info/1214765556/34

crane, one pickup truck, and a front loader operating simultaneously. The average sound levels (Leq) for sunrise to sunset are shown.

Exhibit 5-3.
Estimated Construction Sound Levels at Closest Residence to Project Facilities

Receptor ID	Distance to Solar Array (ft)	Construction Condition	Estimated Leq Sound Level (dBA)
SR-154	83	With Pile Driving	94
		Without Pile Driving	74

Note: Construction sound levels reflect range of noise levels generated by the operation of multiple pieces of construction equipment from the nearest panel to a noise sensitive receptor.

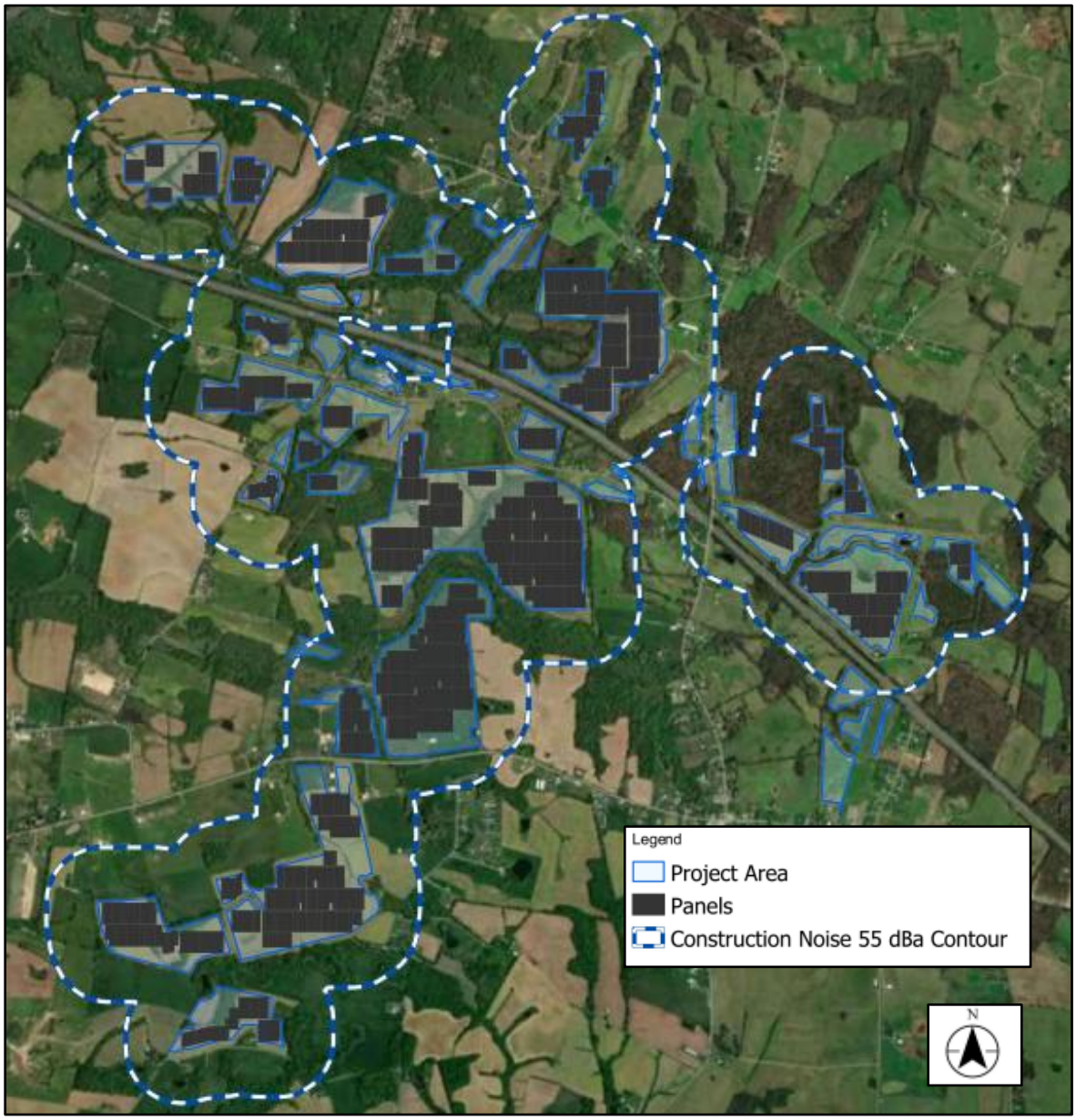
Source: Stantec Consulting Services, Inc., March 2025.

There are 266 residences (24 participating) located within 2,000 feet of the Project boundary. The Applicant provided a construction noise contour map in response to the Siting Board's data requests that indicated a 55 dBA sound level contour at a distance of approximately 1,000 feet from panels but did not provide data for individual receptors.[70]

The construction noise contour map is provided in Exhibit 5-4, below. The Applicant stated that this map was modeled for "three pile drivers working in close proximity to each other".[71] However, without additional supporting data available, this map is insufficient for determining the impact of construction sound levels at sensitive receptors and in contrast to the provided construction noise level data for SR-154. Additional information about construction Leq sound levels was requested twice in Siting Board data requests but was not provided.

[70] Construction sound levels would be greater than 55 dBA for noise receptors closer than 1,000 feet. The Applicant did not provide additional sound contours to indicate increasing or maximum construction sound levels.
[71] Applicant's response to the Siting Board's second data request.

Exhibit 5-4.
Estimated Construction Sound Level Contour for Project Solar Arrays



Note: Construction sound levels reflect range of noise levels generated by the operation of construction equipment from the nearest panel to a noise sensitive receptor.

Source: Wood Duck Solar, LLC., August 2025.

Of the 266 noise sensitive receptors, 82 residences (17 participating) are located within this 1,000 foot contour. The Woodland United Baptist Church and Cemetery (SR-114) is located 348 feet from the nearest solar panel. HE calculated the Leq sound level for these receptors during peak construction using the modeled data provided for SR-154 to estimate the "worst case" sound

levels.[72] All 82 residences within 1,000 feet of panels are estimated to experience Leq sound levels between 72 dBA and 94 dBA during peak construction when pile installation is occurring. Data from HE's calculations are provided in Exhibit 5-5 for select receptors.

Exhibit 5-5.
Peak Construction Sound Levels for Residences within 1,000 feet of a Solar Array

Receptor ID	Participating Residence	Distance from Solar Array (ft)	Estimated Leq Sound Level (dBA)
SR-154		83	94
SR-155		141	89.4
SR-021	Y	143	89.27
SR-117	Y	151	88.8
SR-046		189	86.85
SR-137	Y	243	84.67
SR-126		267	83.85
SR-134	Y	273	83.66
SR-118		295	82.99
SR-133		303	82.75
SR-122		323	82.2
SR-114		348	81.55
SR-127		397	80.42
SR-023		449	79.34
SR-120	Y	491	78.56
SR-008		544	77.67
SR-042	Y	624	76.48
SR-140		649	76.14
SR-025		696	75.52
SR-053		753	74.85
SR-007		814	74.17
SR-009		875	73.54
SR-146	Y	975	72.76
SR-152		999	72.39

Notes: (1) Construction sound levels reflect range of noise levels generated by the operation of multiple pieces of construction equipment including pile drivers from the nearest panel to a noise sensitive receptor.

(2) Construction sound levels were calculated using the inverse square law for sound attenuation formula and do not account for variable factors including topography, wind, humidity, etc.

Source: Wood Duck Solar, LLC., August 2025; Harvey Economics, September 2025.

Construction noise at these "worst case" levels will be noticeable and potentially annoying for local residents but will not be sustained long-term. For comparison, city traffic ranges from 70

[72] HE applied the inverse square law for sound attenuation formula to calculate estimated sound levels during pile driving using the data for the closest receptor to a solar array, provided in Exhibit 5-3.

to 85 dB from inside a vehicle and hair dryers operate at 80 to 90 dB; these levels can be challenging but will not affect hearing unless exposure is for an extended period.[73]

Peak construction activities are expected to occur over a period of about nine months. Pile installation will occur during Phase 2 of the Project, which is anticipated to last for about six months. However, this activity will move across the Project area such that noise impacts to individual residences will occur for much shorter periods. The "worst case" noise levels would be expected to occur over even briefer periods.[74]

As the distance from the source of noise increases, the sound level attenuates or decreases. A doubling of distance results in a decreased noise level of approximately six dBA.[75] Therefore, residences more than 2,000 feet from the panels would experience lower levels of noise from the construction of the panels. The existing natural vegetation in much of the area surrounding the Project site will likely contribute to further reduction of sound pressure levels for residences.

Operational noise emitters. During the Project's operational phase, the primary sources for noise will be (1) the Project substation transformer; and (2) twenty-five inverters, which will be distributed throughout the Project. Most of the operational noise will occur during daylight hours, as Project inverters are not in operation at night. No sensitive receptor will be closer than 500 feet to the substation; the nearest residence (SR-082, non-participating) is located about 597 feet from the substation transformer, with the next closest residences being further than 633 feet from the substation.[76]

Stantec modeled operational noise levels using CadnaA modeling software, developed by Datakustik, for all receptors located within 2,000 feet of Project boundaries. For this model, Stantec determined "worst case" daytime noise levels from all project inverters and the substation transformer operating at full load.[77]

Modeling results are illustrated in Exhibit 5-6, which shows the locations for each of the 266 receptors and noise-generating Project infrastructure, as well as the modeled operational daytime sound level contours. The contours depict sound levels between 30 dBA (yellow contour lines) and 60 dBA (blue contour lines) in 5 dBA increments during daytime operations.[78]

Focusing on daytime operations and noise levels, all sensitive receptors are outside of the 50 dBA sound contour. The highest predicted sound level during operations is 46 dBA at SR-126 (non-participating) and SR-137 (participating).

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[73] Alpine Hearing Protection website, https://www.alpinehearingprotection.co.uk/5-sound-levels-in-decibels/#:~:text=0%20decibel%20is%20the%20so,permanent%20damage%20to%20your%20hearing.

[74] A more detailed schedule of construction activities was not available as of the Siting Board's first data request.

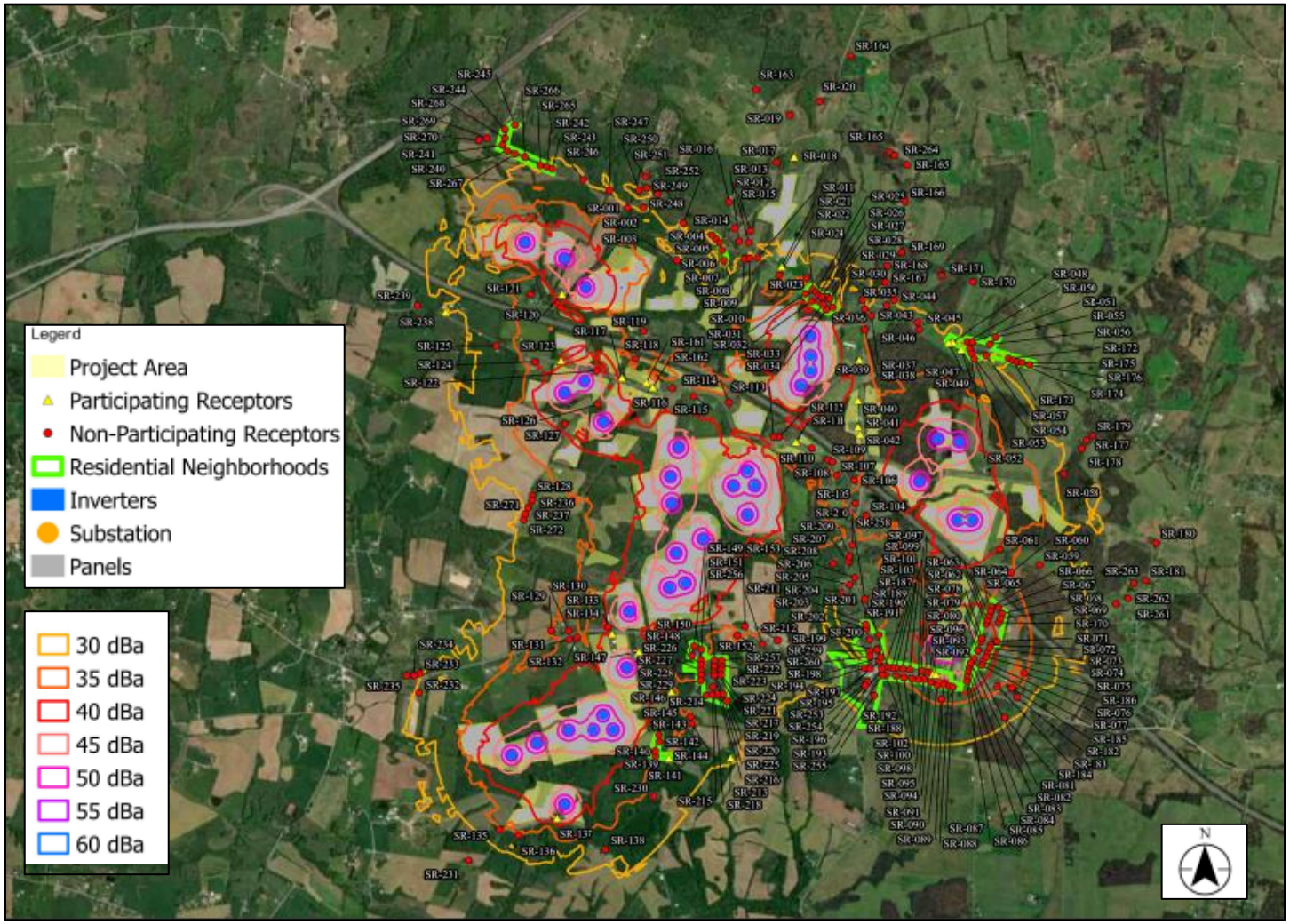
[75] http://hyperphysics.phy-astr.gsu.edu/hbase/Acoustic/isprob2.html#c1

[76] Applicant's response to the Siting Board's second data request.

[77] Stantec's model included 35 inverters; more recent information from the Applicant indicates that 25 or fewer inverters will be used for the Project.

[78] Noise modeling does not include cumulative sound pressure levels from existing ambient noise. Daytime ambient sound pressure levels for the area, estimated to be approximately 50-55 dBA, are higher than the modeled operational sound levels for all 266 noise sensitive receptors.

Exhibit 5-6.
Predicted Sound Contours of the Wood Duck Solar Facility during Daytime Operation, dBA



Source: Wood Duck Solar, LLC, August 2025.

Exhibit 5-7 summarizes the expected daytime operational sound levels for residences within 2,000 feet of the project boundary.

Exhibit 5-7.
Operation Sound Levels for Residences near the Wood Duck Solar Project

Estimated Sound Level (Leq)	Number of Receptors
Greater than 45 dBA	2
40 to 45 dBA	32
35 to 39 dBA	83
30 to 34 dBA	92
Less than 30 dBA	57

Note: Operation sound levels reflect noise levels generated by the Project inverters and substation transformer.
Source: Stantec Consulting Services, Inc., March 2025.

In addition to the noise generated by the Project inverters and transformers, the Project solar arrays will briefly produce noise at sporadic intervals while they tilt to follow the sun. Routine maintenance and repair activities will occur during operations but will not materially impact noise levels in the area.

HE's evaluation of impacts. Neither the Commonwealth of Kentucky nor Barren County have a noise ordinance that is applicable to the Project. As such, HE utilized the noise limit recommendations generated by the Environmental Protection Agency (EPA) and the World Health Organization (WHO) to gauge acceptable levels of sound.

- The EPA determined that a constant sound of 70 dBA over a 24-hour period is enough to start causing permanent hearing loss for individuals, and a sound of 55 dBA outdoors is enough to cause activity interference and annoyance.[79]

- The WHO determined that daytime noise emissions greater than 55 dBA over a 16-hour period can cause serious annoyance, and noise emissions greater than 50 dBA over a 16-hour period can cause moderate annoyance. The WHO recommends limits of 45 dBA over an 8-hour period during the night.[80]

Construction noise. Construction activities will produce sporadic noise that will substantially exceed 55 dBA during daytime hours. Residential noise sensitive receptors less than 1,000 feet from pile driving locations will experience estimated sound levels of greater than 72 dBA during pile driving. Access road construction and other construction activities will also generate noise. However, the nature of the Project, which requires that construction activities

[79] United States Environmental Protection Agency. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. March 1974. https://nepis.epa.gov/Exe/ZyPDF.cgi/2000L3LN.PDF?Dockey=2000L3LN.PDF
[80] World Health Organization. *Guidelines for Community Noise*. April 1999. https://www.who.int/publications/i/item/a68672

move around the site as each task is completed, will reduce the timeframe for the annoyance created by loud, though sporadic, noise. The natural vegetation surrounding the Project area will likely diminish the noise impacts as well.

Project construction has the potential for a number of loud activities to occur simultaneously, but the timing of activities is such that it is not realistic to predict which sources of noise will contribute to these periods of cumulative sounds. The anticipated construction timeframe provided by the Applicant indicates a nine-month peak period. The Applicant provided data on noise levels generated by different construction equipment utilized for those activities; however, cumulative noise levels from operating multiple pieces of equipment simultaneously were not provided except at the closest residence to a solar panel. It is unlikely that construction noise would be limited to that shown in Exhibit 5-4. Therefore, HE examined methods for calculating cumulative sound levels.

As a reference, one decibel is the "just noticeable difference" in sound intensity for the human ear.[81] However, the frequencies of different sounds will affect the perceived loudness of cumulative noise. "Compared with dB, A-weighted measurements underestimate the perceived loudness, annoyance factor, and stress-inducing capability of noises with low frequency components, especially at moderate and high volumes of noise."[82] This means that very different types of noises could have a greater cumulative impact than expected. Cumulative impacts from two noise sources can be calculated based on the difference in the sound levels as shown in Exhibit 5-8.

Exhibit 5-8.
Calculation of Additional Sound Power, in Decibels

Signal Level Difference between Two Sources (dB)	Decibels to Add to the Highest Signal Level (dB)
0	3
1	2.5
2	2
3	2
4	1.5
5	1
6	1
7	1
8	0.5
9	0.5
10	0.5
>10	0

Source: https://www.engineeringtoolbox.com/adding-decibel-d_63.html.

[81] http://hyperphysics.phy-astr.gsu.edu/hbase/Sound/db.html#c3
[82] https://www.softdb.com/difference-between-db-dba/

This suggests that even multiple sources of loud noise will produce only modest increases to overall sound levels, providing the sources of noise are not of very different frequencies.

Sound levels during peak construction with pile driving are anticipated to exceed 90 dBA at one residence, SR-154, and exceed 80 dBA for 23 residences located within 415 feet of a solar array.[83] The WHO indicates that exposure to sound levels greater than 80 dBA Leq can increase the risk of noise-induced hearing impairment.[84]

Although residences within 2,000 feet of the Project site will likely experience noise at levels expected to cause annoyance (55 dBA or greater) during construction, the sporadic nature of the noise will not be sufficient to cause damage to residents' hearing.

Operational noise. The nature of solar projects dictates that noise from operations will occur mainly during daylight hours. The closest receptor to a panel (SR-154) will experience predicted noise levels of about 38 dBA during daytime operations. The closest non-participating receptor to an inverter (SR-122) is predicted to experience the greatest sound levels during daytime operations, at 46 dBA. These levels are below the 50-55 dBA estimated daytime ambient conditions and within the WHO's recommended maximum noise level of 50 dBA. HE concludes that, overall, noise impacts from Project operations will be minimal.

Conclusions and recommendations. Based on our review of the SAR, supplemental information provided by the Applicant, and additional research conducted by HE, we offer the following conclusions and recommendations regarding noise emissions:

- 82 residences within 1,000 feet of panels are estimated to experience Leq sound levels over 70 dBA during peak construction when pile installation is occurring, and those residents will be subject to negative noise impact, albeit temporary.

- Construction phase noise may be annoying for other residents surrounding the Project area for short periods of time. The intermittent nature of the noise might ameliorate the impacts, but residents close to the Project site might find construction noise to be troublesome even if it does not present actual damage to hearing.

- Wood Duck Solar has stated that during the construction phase, noise-producing work will occur during daytime hours and between the hours of 8:00am to 5:00pm; however, it is likely that some noise, for example from deliveries or worker vehicles, would occur outside those hours. Noise occurring in the early hours of the morning and later hours of the evening should be minimized.

- The current trend of employees working from home could make daytime noise more of an issue than it would have been previously.

[83] SAR Tab H, Exhibit D – Wood Duck Solar Project Sound Study; Harvey Economics, 2025.
[84] World Health Organization. *Guidelines for Community Noise*. April 1999. https://www.who.int/publications/i/item/a68672

- Noise from Project components during operations (inverters, transformers) is not anticipated to result in increases beyond the local sound environment. In most locations, project operations would be unnoticeable to residents or drivers in the area.

- The existing natural vegetation and planned vegetation buffering might help mitigate noise emissions that may be caused by construction or operational components of the Project.

Need for mitigation. Mitigation measures described in the SAR, or recommended by HE, which are related to the reductions of noise impacts include:

1. The Applicant shall notify all residents and businesses within 2,000 feet of the Project boundary about the construction plan, noise potential, complaint resolution process, and mitigation plan at least one month prior to the start of construction.

2. The Applicant shall respond to any complaints related to noise levels or noise causing activities occurring during construction or operations via a timely, formal and clearly developed complaint resolution program.

3. If pile driving activity occurs within 1,000 feet of a noise sensitive receptor, the Applicant shall implement a construction method that will suppress the noise generated during the pile driving process (i.e., semi-tractor and canvas method; sound blankets on fencing surrounding the Project site; or any other comparably effective method).

4. The Applicant should limit the construction activity, process and deliveries to the hours of 8:00 am to 5:00 pm, Monday through Saturday. No construction work should be conducted on Sundays.

5. The Applicant shall maintain functional mufflers on all diesel-powered equipment.

6. The Applicant should coordinate with the Woodland United Baptist Church and Cemetery to limit pile driving and heavy or oversize deliveries passing near the Church during their services, including funerals.

7. The Applicant shall place panels, inverters and substation equipment consistent with the distances to noise receptors indicated in the Applicant's acoustic assessment and with the Applicant's proposed setbacks. Nevertheless, the Applicant shall not place solar panels or inverters closer than 83 feet from a residence, church or school, 20 feet from non-participating adjoining parcels, and 50 feet from adjacent roadways. The Applicant shall not place a central inverter, and, if used, energy storage systems closer than 450 feet from a residence, church, or school. These setbacks shall not be required for residences owned by landowners involved in the Project that explicitly agree to lesser setbacks and have done so in writing. All agreements by participating landowners to lesser setbacks must be filed with the Siting Board prior to commencement of construction of the Project.

Road and Rail Traffic, Fugitive Dust and Road Degradation

Traffic concerns related to the development of the Wood Duck Solar facility during the construction or operational phases are addressed in this section. The 18-month construction phase will include commuting construction workers, vehicles, and equipment on-site, plus the delivery of heavy loads of solar components, infrastructure, and other equipment. Traffic during operations will occur as employees travel to and from the property to monitor and maintain the site.

General methods of assessment. A typical evaluation of traffic-related impacts includes:

- Establishing existing traffic conditions in the area;
- Identifying primary access points that will be used by the project;
- Estimating changes in traffic due to construction and operations; and
- Assessing the impacts of project-related traffic on local areas. This includes determining whether additional traffic will lead to congestion, changes in service levels of existing road networks and identifying any potential degradation to existing bridges and roadways.

Summary of information provided by the Applicant. Tab H, Exhibit E of the SAR is a Traffic Impact Study (Traffic Study) prepared by Stantec. The study provides a narrative on existing road and traffic conditions; average daily traffic statistics for select roads; estimates of the Project's construction and operational traffic; and an opinion on potential impacts to road infrastructure. More detailed and updated information was provided during the in-person site visit and in the Applicant's responses to the Siting Board's data requests. HE assumes that responses to the second data request are the best available information; that information was used if it conflicted with previous information.

Site access, vehicle parking and internal roadways. Vehicles traveling to the Project site will use I-65 and Cumberland Parkway to reach local roads accessing the site. Local roads used to reach the 21 access points/entrances proposed for the Project include Park City-Bon Ayr Road (KY 255), New Bowling Green Road (KY 68), Oak Grove Church Road, Apple Grove Road (CR 1399), Millstown Road, Dripping Springs Road, Rick Road, Waller Road, Mayhew Road, and R. Crump/C. Bellamy Road. Local roads around the Project site will be traveled by worker vehicles and delivery trucks, including for delivery of the substation transformer.

Seven laydown yards are planned within the Project area, including a larger laydown located at the substation near the O&M building, with smaller staging areas at access points across the site within individual panel areas.[85]

Approximately 99,714 linear feet of private access graveled roadways will be constructed across the Project site. Internal roads will not exceed 16 feet in width, except for turning radii,

[85] Provided in Applicant's response to the Siting Board's first data request; see Exhibit 3-1 of this report.

which will not exceed 50 feet in radius. Access road construction will take place during the approximately two-month period of Phase 1 at the start of the Project.[86]

Baseline traffic volumes and road conditions. The Applicant provided traffic data and other descriptors for major and local roads used to access the Project during construction. Annual average daily traffic (AADT) and other road descriptors are provided in Exhibit 5-9.

Exhibit 5-9.
Baseline Traffic Data for Roads in the Project Area

Roadway	AADT	Speed Limit	Weight Limit	Road Width (ft)	No. of Lanes	Shoulder
Interstate 65	60,651	70	AAA	78	6	Y
Cumberland Parkway	14,067	70	AAA	36	4	Y
New Bowling Green Road / US 68	1,879	55	AAA	22	2	N
Park City - Bon Ayr Road / KY 255	1,021	55	A	22	2	N
Apple Grove Road / CR 1399	280	55	A	20	2	N
Oak Grove Church Road	82	55	County	16	2	N
Millstown Road	0	N/A	County	16	2	N
Dripping Springs Road	N/A	N/A	County	16	2	N
Rick Road	N/A	N/A	County	16	2	N
Waller Road	N/A	N/A	County	16	2	N
Mayhew Road	N/A	N/A	County	12	2	N
R. Crump / C. Bellamy Road	N/A	N/A	County	12	2	N

Notes: (1) N/A indicates data not available.
(2) "AAA" rating is 40 tons gross vehicle weight (gvw); "A" rating is 22 tons gvw; "County" rating is 18 tons gvw.

Source: Wood Duck Solar, LLC, May 2025 & August 2025; Kentucky Transportation Cabinet, 2025; Harvey Economics, 2025.

Construction related traffic volumes and routes utilized. Construction-related traffic for the Project site is anticipated to include (1) passenger vehicles and trucks; (2) heavy-duty trucks; (3) water trucks; and (4) cement/gravel trucks:

- An average of 100 worker vehicles traveling to and from the Project site are predicted on any individual day. Workers are anticipated to drive personal vehicles, cars and pickup trucks, with one to two workers per vehicle. During peak periods, 192 worker vehicles are anticipated.
- An average of 10 delivery trucks, two cement trucks, and a water truck are anticipated per day, with the potential for 20 trucks or more during peak periods.
- Delivery trucks will include cement/gravel trucks with 80,000 pounds max load weight, tractor trailers with 80,000 pounds max load weight, and general delivery trucks with 20,000 pounds max load weight. Weights for trucks or deliveries of the solar panel modules and inverters have not been specified.

[86] Provided in Applicant's response to the Siting Board's first data request.

- The Project's substation transformer will be an especially heavy delivery, with an approximate load weight of 40,000 to 60,000 pounds. The transformer will be delivered by semi-truck with flatbed trailer with 105,000 pound max load weight.
- Worker vehicles will access the Project site via 21 access points located at the Project substation and in proximity to the 26 panel areas. Internal access roads will be utilized to move between panel areas that do not have direct access points (Exhibit 3-1).
- Project construction delivery traffic will access the site via ten Project access points that have been identified for deliveries. Seven of the delivery points are in proximity to Project laydown areas.

A summary of the local roads with access points for delivery, construction and operations is provided below, in Exhibit 5-10.

Exhibit 5-10.
Summary of Wood Duck Solar Access Points and Laydown Areas

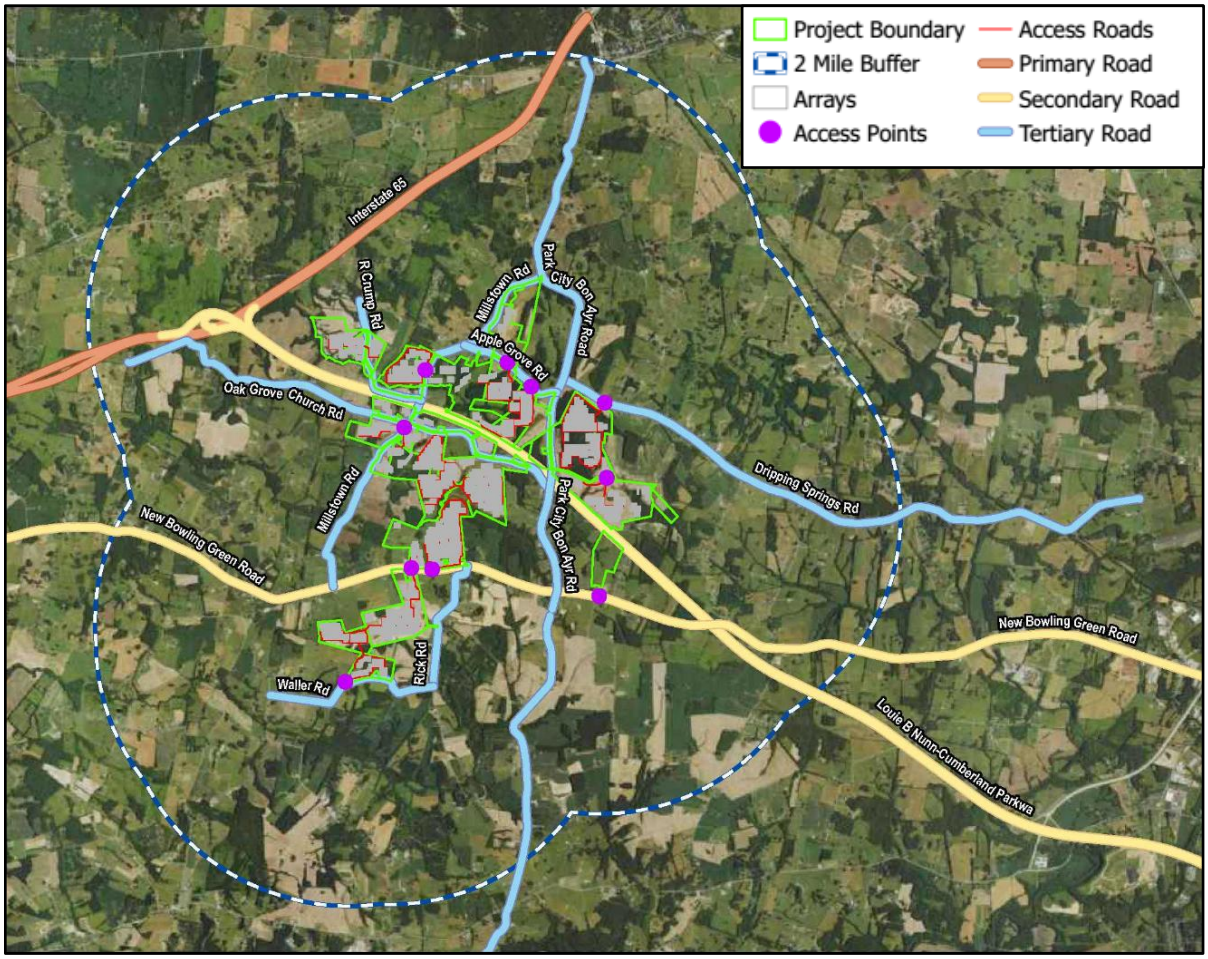
Roadway	Access Points	Areas Served	Laydown Areas	Delivery Points
New Bowling Green Road / US 68	3	Area 2, 3, and Substation	3	3
Apple Grove Road / CR 1399	2	Area 20, 21	1	2
Oak Grove Church Road	5	Area 5 (x2), 12, 13, 14		
Millstown Road	5	Area 6, 11, 17, 18, 19	2	2
Dripping Springs Road	1	Area 22		1
Waller Road	1	Area 1	1	1
Mayhew Road	2	Area 24, 25		
R. Crump / C. Bellamy Road	2	Area 15, 16		

Note: Internal access roads will be utilized to move between panel areas to reach those that do not have direct access points, including Areas 4, 7, 8, 9, 10, 23, and 25.

Source: Wood Duck Solar LLC, July 2025.

The Applicant provided a delivery route map in response to the Siting Board's first data request, which identifies the ten Project delivery points and routes used for deliveries. This map is provided in Exhibit 5-11, below.

Exhibit 5-11.
Wood Duck Solar Delivery Routes and Delivery Access Points



Notes: (1) Seven of the delivery access points are co-located with Project laydown areas.
(2) Cumberland Parkway does not exit between I-65 and the Veterans Outer Loop, located on the western edge of the City of Glasgow.

Source: Wood Duck Solar LLC, July 2025.

The Applicant has stated that large deliveries will occur via I-65; however, travel on local roads will also be necessary for direct site access. Wood Duck Solar will obtain all necessary permits for oversized or overweight deliveries.[87]

During the site visit, HE staff observed portions of local roads used to access the Project site to be in poor condition or damaged, and several local roads are narrow at points. Improvements to local roads may be necessary prior to construction to allow for large and/or overweight deliveries. Such improvements may include road widening or surface repairs. Wood Duck Solar indicated that they would coordinate with the Barren County Road Department or the Commonwealth about traffic plans and mitigation measures.

[87] Applicant's response to the first data request, July 2025.

Construction traffic management. The Applicant addressed traffic management during construction as follows:

- Appropriate signage and traffic guidance will be used during construction, in accordance with the Manual on Uniform Traffic Control Devices and Kentucky Transportation Cabinet.
- Wood Duck Solar will coordinate with the Barren County Road Department to obtain proper road use permits and execute road use agreements, as necessary.
- Wood Duck Solar will coordinate with the Edmondson County Road Department to obtain proper road use permits and execute road use agreements, as necessary.[88]
- Temporary road closures are not anticipated during Project construction. Any anticipated stoppages are expected to be brief in duration and minimal in occurrence.
- Entrances to laydown areas and the substation will be constructed with large turning radii to accommodate large trucks and tractor trailers.
- A Traffic Management Plan will be developed by the Applicant and their engineering contractor in coordination with the Barren County Road Department prior to construction.
- A Traffic Management Plan will be developed by the Applicant and their engineering contractor in coordination with the Edmonson County Road Department prior to construction.

The Traffic Study encouraged implementing traffic mitigation measures to minimize the potential for delays during morning and evening peak hours including ridesharing for construction workers, using appropriate traffic controls, and allowing flexible working hours.

Operations related traffic volumes. The Traffic Study indicated that traffic in the operational phase will be negligible and limited to one vehicle traveling to the site each day. The study concluded that traffic volume and function would not be significantly impacted.

Road degradation. Wood Duck Solar does not anticipate any damage to existing roadway infrastructure.

Railways. There is one railway line in the Project area, the CSX Transportation Railroad (CSX). Wood Duck Solar has indicated that they will not use this method of transportation for Project deliveries and they have not had any discussions with CSX. Construction vehicles will not need to cross the railroad along the proposed routes for delivery.

Fugitive dust. The Applicant expects some dust generation from Project construction and has indicated that best management practices (BMPs) will be employed. These BMPs include

[88] The Applicant indicated that construction vehicles may travel Edmonson County roads to reach the Project site in their response to the Siting Board's first data request. No additional information on Edmonson County road use was provided by the Applicant.

covering loads and applying water to suppress dust. Compacted gravel access roads may also contribute to airborne dust particles and water will be applied as needed.

HE's evaluation of impacts. HE conducted additional research and analyses related to traffic, road degradation and fugitive dust, as described below.

Local road conditions. New Bowling Green Road (US 68), Park City-Bon Ayr Road (KY 255), Millstown Road, and Oak Grove Church Road will be the primary local roadways traveled by workers and delivery vehicles connecting to site entrances. To assess road capabilities, gross vehicle weight (gvw) is used as the total weight of the vehicle, including passengers and cargo. According to information provided by the Applicant and obtained from the KYTC Highway Information View and Extract Interface, New Bowling Green Road is rated 80,000 pounds (40-tons) gvw. Park City-Bon Ayr Road is rated 44,000 pounds (22-tons) gvw. Oak Grove Church Road and Millstown Road are both rated 36,000 pounds (18-tons) gvw.[89]

HE made the following observations about local roads during the Project site visit:

- *New Bowling Green Road / US 68* – two-lane, striped, blacktop road; recently paved; no shoulders.
- *Park City-Bon Ayr Road / KY 255* – two-lane, striped, blacktop road in good condition; no shoulders.
- *Apple Grove Road / CR 1399* –two-lane, unlined, blacktop road with no shoulders.
- *Oak Grove Church Road* – narrow, unlined, two-lane, aggregate road; no shoulder present; sections are in poor condition with cracking present.
- *Millstown Road* –narrow, unlined, two-lane, blacktop road in good condition; no shoulders. A culvert in unknown condition is present near the southern access point.
- *Dripping Springs Road* – narrow, unlined, two-lane, aggregate road; no shoulder present; sections are in poor condition with cracking present.
- *Mayhew Road* – narrow, unlined, two-lane, aggregate road; no shoulder present; sections are in poor condition with cracking present and difficult for two cars going in opposite directions to pass.
- *Rick Road* – narrow, unlined, two-lane, aggregate road; no shoulder present; sections are in poor condition with cracking present; difficult for two vehicles going in opposite directions to pass.
- *Waller Road* – narrow, unlined, two-lane, aggregate road; sections are in poor condition with cracking; no shoulder present and difficult for two vehicles going in opposite directions to pass.
- *R. Crump Road* - narrow, unlined, two-lane, aggregate road; no shoulder present and difficult for two cars to pass in opposite directions. A narrow, unmarked bridge in poor

[89] https://datamart.kytc.ky.gov/EDSB_SOLUTIONS/HISEXTRACTS/

condition is present south of the access points; a narrow culvert in poor condition is present north of the access points.

During the site visit (a weekday), there was little traffic on many local roads surrounding the Project site. Appendix B provides photos from the site visit, including several of local road conditions.

Baseline traffic volumes. The Applicant provided traffic counts for roads in the Project area, as shown previously in Exhibit 5-9. HE confirmed that no additional data for other roads is available.

Construction related traffic impacts. Wood Duck Solar provided estimates of the number of construction vehicles accessing the Project site on an average day, provided in Exhibit 5-12. Peak day construction traffic estimates were provided by the Applicant in subsequent data requests and are predicted to be highest while multiple construction activities overlap. The peak construction period is expected to occur over a period of about nine months.

Exhibit 5-12.
Estimated Daily Vehicle Trips to the Wood Duck Solar Project Site

	Vehicle Trips	
	Average Day	Peak Day
Worker Vehicles	200	384
Delivery Trucks	20	40
Cement Trucks	4	4
Water Trucks	2	4
Total	**224**	**428**

Notes: (1) Vehicle trips account for trips going to the Project site and trips going away from the Project site each day.
(2) Each worker vehicle is predicted to transport one to two workers.

Sources: Wood Duck Solar, LLC, August 2025; Harvey Economics, 2025.

The estimated traffic increases may create noticeable, but acceptable, increases on I-65. However, it is difficult to determine the effects on local roads in the Project area. Those roads are lightly to moderately traveled, so increases in traffic volume are likely to be noticeable. Although the magnitude of change to any single road cannot be determined, HE offers the following observations:

- The numerous entrance points and dispersed Project parcels will tend to reduce construction traffic impacts, with the exception of New Bowling Green Road, which will experience the bulk of construction traffic.
- On peak construction days, the relative increase in traffic on local roads could be substantial and will be noticeable. Since the impact will likely be on local residents, this change may create negative attitudes about the Project.

- The narrow roads and lack of shoulders on several local roads in the Project area will require drivers to pull over to pass and will increase the inconvenience to local residents during the construction period.
- Large trucks and a lack of shoulders may create situations where there is nowhere for either the truck or oncoming vehicles to pull over.
- There is a local Amish community in the Project vicinity that travel local roads by horse-drawn buggies. Increases in traffic due to Project construction may impact their travel, especially on roads with no shoulders.

This information suggests that carpooling will be important for minimizing traffic impacts to local residents during the construction period. This also suggests that additional traffic management strategies and planning around peak travel times should be implemented for Project deliveries.

Operations related traffic impacts. With limited staff members working regular business hours and the occasional off-hours maintenance and repair, traffic impacts during operations should be minimal. HE does not expect significant traffic effects related to the operation of the facility.

Impacts to railways. As proposed, the Project will not impact the local CSX railway. The Applicant should communicate with CSX to determine if railway crossings by Project delivery trucks will be an issue once construction details have been finalized.

Road degradation. Potential for degradation due to construction traffic on local roads including R. Crump Road, which has existing areas of damage, should be assessed during the pre- and post-construction road surveys. The lack of information about baseline traffic levels on some roads makes it difficult to predict if road degradation will occur. The existing condition and nature of some local roads to be used to access the Project suggests that either preventative work will need to be done in advance of Project onset or that degradation will occur, and Wood Duck Solar will need to work with Barren County road authorities to correct the damage.

The KYTC's Pavement Conditions interactive map provides data regarding road conditions for individual segments of state and county roads; pavement condition data are not available for local or city roads.[90] Pavement conditions are rated on a scale of green/good, yellow/fair and red/poor. New Bowling Green Road near the Project site is color coded red, and treatments were recommended to occur in 2024. HE staff observed during the site visit that this roadway had been recently repaved. Pavement conditions data for I-65, Cumberland Parkway, and other local roads are unavailable.

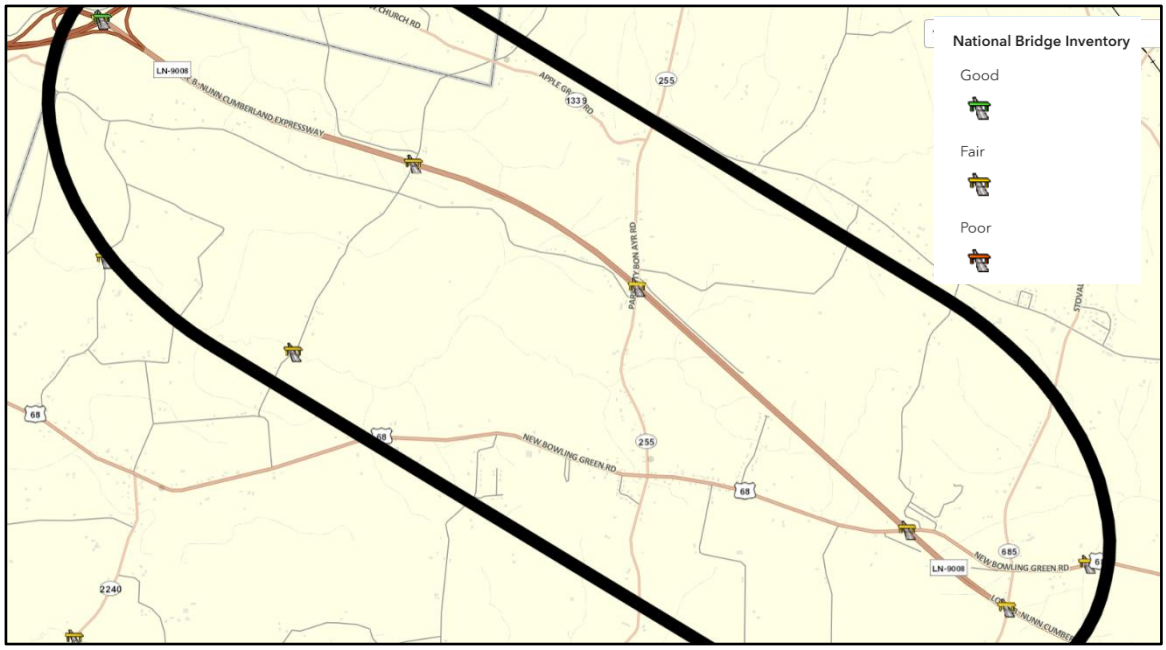
Bridges The Applicant identified 15 bridges on local roads within two miles of the Project site. Of these, HE focused on eight bridges located along identified Project delivery routes and consulted the KYTC's Bridge Weight Limits and Bridge Data Miner Maps for additional

[90] https://maps.kytc.ky.gov/pavementconditions/

information.[91] Four of these bridges are located on Cumberland Parkway, including two bridges located at I-65 on and off ramps, and one bridge each crossing Millstown and Stovall Roads. One bridge on Park City-Bon Ayr Road crosses Cumberland Parkway. New Bowling Green Road has a bridge crossing Cumberland Parkway and another crossing Little Beaver Creek. One bridge on Millstown Road crosses Little Sinking Creek.

Seven of the bridges are shown as black on the Bridge Weight Limit Map, which indicates "no restrictions". One bridge along Park City–Bon Ayr Road at Cumberland Parkway is blue, indicating a "gross posted" restriction, with a maximum limit of 40 gross tons. This bridge was observed to be in acceptable condition during the site visit, and confirmed by KYTC's Bridge Data Miner, as shown in Exhibit 5-13.[92] Seven bridges are rated yellow, which indicates "fair" condition. One bridge at the intersection of Cumberland Parkway and I-65 is rated green, which indicates "good" condition.

Exhibit 5-13.
Bridge Conditions along the Wood Duck Solar Project Delivery Route



Notes: The eight bridges along Project delivery routes are indicated by the black oval.
Sources: KYTC Bridge Data Miner, August 2024; Harvey Economics, 2024.

Additionally, HE staff noted an unidentified bridge and culvert on R. Crump Road, and an additional culvert on Millstown Road during the site visit. These features are not marked with weight limits, and the features on R. Crump Road are narrow and in poor condition.[93] These features are along routes that construction and delivery traffic will travel to reach designated Project access points and laydown areas.

[91] https://maps.kytc.ky.gov/bridgedataminer/; https://maps.kytc.ky.gov/bridgeweightlimits/
[92] https://maps.kytc.ky.gov/bridgedataminer/
[93] Pictures of the bridge and culverts are included in Appendix B, Site Visit Photos.

The culvert on Millstown Road, located just south of SR-127, is in close proximity to the access point for Areas 6, 7 and 8. The road has recently been paved and condition of the culvert is unknown.

The Applicant stated they will not use the bridge on R. Crump Road, south of two access points and a laydown area, due to its condition. Construction traffic will instead travel to Areas 15 and 16 via the north end of R. Crump Road.[94] During the site visit, however, the Applicant stated that the culvert on R. Crump Road, north of the access points and laydown, would not be sufficient to use for Project deliveries. A route for construction traffic and deliveries to Areas 15 and 16 is unclear to HE at this time without improvements on R. Crump Road prior to construction start.

Fugitive dust. Fugitive dust should not be an issue given the Applicant's proposed efforts to reduce dust with the use of best practices, including the application of water, and the natural vegetation surrounding the Project site.

Conclusions and recommendations. Based on our review of the SAR and subsequent information provided by the Applicant, other secondary research conducted regarding roads and dust, and visual inspection during a site visit, HE offers the following conclusions regarding traffic, fugitive dust, and road degradation:

1. The numerous entrance points and dispersed Project parcels will tend to reduce construction traffic impacts.
2. Access to the Project site from I-65 and Cumberland Parkway will require cars and semi-trucks to travel on local roads. The site entrances and delivery points planned for the Project site will consolidate construction vehicle traffic primarily to these routes, potentially minimizing the distribution of traffic impacts, or might result in a feeling of overwhelming traffic on those routes for local residents.
3. Construction traffic will likely be noticeable on local roads surrounding the Project site, including Oak Grove Church Road, Apple Grove Road, Dripping Springs Road and Rick Road, as several neighborhoods are located in these areas. Millstown Road and New Bowling Green Road each have several access and delivery points, and the increased traffic will likely be noticeable to local drivers, as well as residents of the Bon Ayr and Bent Creek Road neighborhoods near the Project substation. Construction traffic could be irritating to these local residents.
4. The nature of several of the local roads will require that drivers pull over for large vehicles. While residents may be accustomed to this, it might be a point of frustration. Additionally, some local roads may not be wide enough to allow for safe passage of multiple vehicles, in their current condition.
5. The Amish community might face unique traffic impacts during the construction period, given their horse and buggy means of travel on public roads.

[94] Provided in the Applicant's response to the Siting Board's second data request.

6. The route for access to Areas 15 and 16 on R. Crump Road will require further evaluation. Special care should be taken in developing a plan to consider road conditions, bridges and culverts, the presence or lack of road shoulders, and vehicle weights in finalizing Project delivery routes.

7. Road degradation may be an issue for other local roads, depending on the amount of traffic using certain smaller or less maintained roads. Some local roads and bridges or culverts may need improvements prior to the start of Project construction.

8. Wood Duck Solar should consider incentives or other means of encouraging carpooling to reduce the number of worker vehicles and to minimize traffic-related effects, including the potential for congestion, accidents, noise or dust issues.

9. Heavy delivery vehicles will exceed the gross vehicle weight limits on local roads traveled to reach site entrances and for the bridge along Park City-Bon Ayr Road.

10. Given the estimates of Project-generated traffic during construction and the lack of available information about road conditions, the Applicant should be prepared to repair any damage due to commuting workers or heavy trucks traveling on the local roadways.

11. Given the small number of employees on-site during operations, HE does not anticipate any noticeable traffic impacts during the operational period.

12. Fugitive dust should not be an issue given the Applicant's proposed efforts to reduce dust with the application of water and other best management practices.

Need for mitigation. The Applicant should consider certain mitigation to reduce impacts associated with traffic and dust:

1. The Applicant shall comply with all laws, permits and regulations regarding the use of roadways and bridges.

2. The Applicant shall consult with the Kentucky Transportation Cabinet (KYTC) regarding truck and other construction traffic and obtain necessary permits from the KYTC.

3. The Applicant shall coordinate with the Barren County Road Department (BCRD) regarding truck and other construction traffic and obtain necessary permits from the BCRD.

4. The Applicant shall develop a transportation plan for the heavy truck delivery route(s) within Kentucky, taking into consideration any weight restricted bridges.

5. The Applicant shall work with the Commonwealth road authorities and the BCRD to perform road surveys, before and after construction activities, on all roads in the Project area to be used by construction vehicles.

6. The Applicant shall comply with any road use agreement executed with Barren or Edmonson County or their road departments. Such an agreement might include special considerations for overweight loads, routes utilized by heavy trucks, road weight limits and bridge weight limits.

7. The Applicant shall fix or pay for damage resulting from any Project-related commuting or heavy vehicle transport to the Project site during construction.

8. The Applicant shall implement a ridesharing plan for construction workers if feasible and if needed, use appropriate traffic controls or allow flexible working hours outside of peak hours to minimize any potential delays during AM and PM peak hours.

9. The Applicant shall develop and implement a traffic management plan for the Project to minimize the impacts on traffic flow and keep traffic and people safe.

10. The Applicant shall make a good faith effort to communicate its traffic management plan with the Amish community elders, and respond, if practicable, to their concerns.

11. The Applicant shall consult with CSX and the KYTC to evaluate potential impacts or specific mitigation measures related to Project traffic over railroad crossings, as necessary.

12. The Applicant shall properly maintain construction equipment and follow best practices related to fugitive dust throughout the construction process.

Economic Impacts

Evaluation of the potential economic effects of the Wood Duck Solar Project is based on knowledge of the Project's construction timeline and activities and the solar facility's long-term operational activities. Project employment needs, local expenditures (labor, materials/supplies, equipment) and payment of applicable taxes and other fees are considered over the short- and long-term and placed within the context of existing demographic and economic conditions.

General methods of assessment. Both the construction and operational phases should be evaluated to include:

- Detailed understanding of the project: Specific activities to occur, the timeline of those activities, geographic extent of project effects;

- Quantification of direct effects: Number and domicile of employees, range of wage levels, materials purchases, supplies and equipment and associated sales tax payments, other tax payments including property taxes. Determining the portion of purchases to occur in the local area or within the Commonwealth is key;

- Estimation of total effects: Use of region and industry specific multipliers to estimate indirect and induced effects to calculate total effects such as employment, income and overall economic activity;

- Other social or economic benefits, including potential non-monetary benefits, to the local community or surrounding area; and

- Potential curtailments or impacts to other industries.

Summary of information provided by the Applicant. The Wood Duck Solar Application included an Economic Impact Assessment (Exhibit F) prepared by consulting economist Dr. Paul Coomes. That report includes a discussion and explanation of the Project's economic benefits, including estimates of employment, labor income and total economic output generated by Project construction and operations within Barren County and for the Commonwealth of Kentucky. According to the Report, the employment and economic impacts of the facility were assessed using a series of IMPLAN models. Additionally, Dr. Coomes addresses the economic benefits associated with lease payments made to participating landowners and the losses resulting from reduced agricultural production within the Project site.

Information provided by the Applicant in the Application materials and as part of subsequent data requests includes the following:

Capital investment: The Applicant expects to invest approximately $130 million in the solar project. The investment involves land acquisition, site preparation, solar panel and electrical equipment installation, plus landscaping and security fencing. The majority of the $130 million investment will be spent on equipment for the solar site, including electrical infrastructure. However, very little, if any, of these materials would be available from vendors in the Barren County region or the Commonwealth of Kentucky. Local purchases might include construction materials such as concrete, earth moving equipment, timber cutting, fencing, and landscaping.

Construction employment and earnings: An Engineering, Procurement, and Construction contractor has not yet been engaged for this Project; therefore, the exact number of construction workers or amount of worker compensation was not available to Dr. Coomes for this evaluation. He estimated the construction workforce and compensation for the Project based on the details of other, existing solar facilities.

Construction of the facility is estimated to generate approximately 240 full-time equivalent (FTE) jobs.[95] Those jobs will include construction managers, heavy equipment operators, installers, electricians, fencers and other skilled labor positions. The number of construction workers anticipated to be hired from Barren County is unknown. The construction industry is prone to traveling workers moving from site to site and workers may not live in the local area where construction activities are taking place. Given the historical lack of solar farms in the Barren County region, solar panel installers are likely to live outside of the area. However, workers in other occupations, such as earth moving, concrete powering, fencing, and landscaping might be hired locally.

[95] 1 job = 1 FTE = 2,080 hours worked in one year. A part-time or temporary position would constitute a fraction of one job or FTE. Therefore, the number of individual people hired for construction will likely be greater than the estimated number of FTEs.

Assuming average annual earnings per construction worker of about $59,100 (including benefits), Dr. Coomes estimated direct construction labor compensation to be $14.6M. The circulation of construction-related monies throughout the local area (induced and indirect effects) would also generate additional new jobs, or FTEs, and income in other economic sectors.[96] As with the construction workforce, the indirect and induced employment generated by the Project would be temporary; however, these jobs may be more likely to be filled by residents of Barren County or surrounding counties as the result of local construction related spending. Exhibit 5-14 presents the estimated employment and labor income generated by Project construction.

Exhibit 5-14.
Estimated Economic Benefits of the Proposed Wood Duck Solar Project, Construction Phase

	Jobs (FTEs)	Earnings
Direct	240.0	$14.2 M
Indirect / Induced	55.4	$3.5 M
Total	295.4	$17.7 M

Notes: (1) Jobs are measured as Full-Time Equivalents (FTEs); the number of individual workers may be greater than the number of FTEs.

(2) The number of jobs filled by Barren County residents is unknown.

Source: Wood Duck Solar, LLC, May 2025 and August 2025.

Project employment and earnings during operations: Approximately three FTEs would be required to perform the Project's regular operations activities. Salaries for operational employees are estimated to be approximately $102,500 per FTE per year.[97] The circulation of operations-related monies throughout the local area (induced and indirect effects) would also generate additional new jobs, or FTEs, and income in other economic sectors. Jobs generated by Project operations are more likely to be filled by residents of Barren County or surrounding counties. Exhibit 5-15 presents the employment and income generated by Project operations.

[96] Indirect impacts stem from expenditures made in industry sectors that support firms directly engaged in construction activities. Induced impacts are associated with increased household spending from income generated by construction activities.

[97] Salary estimates are based upon industry standards and are not only from within Barren County or Kentucky.

Exhibit 5-15.
Estimated Economic Benefits of the Proposed Wood Duck Solar Project, Operations Phase

	Jobs (FTEs)	Earnings
Direct	3.2	$328,000
Indirect / Induced	5.5	$208,000
Total	8.7	$536,000

Note: Jobs are measured as Full-Time Equivalents (FTEs); the number of individual workers may be greater than the number of FTEs.

Source: Wood Duck Solar, LLC, May 2025.

Tax revenues: Barren County and the Commonwealth of Kentucky levy property taxes on real estate and tangible property, and the Commonwealth taxes the value of manufacturing machinery.[98] Much of the capital expenditures will be for equipment classified as manufacturing machinery, which is taxed at the state level, but not locally. The value of the real estate is enhanced by two factors. The solar project will add fencing and other improvements that increase the land value; and the lease payments to the landowners greatly increase the valuation as compared to its former agricultural use.

The Applicant provided the following information describing total tax payments to various entities over the life of the facility (40 years):

- Commonwealth: $5.2 million
- Barren County School District:[99] $11.0 million
- Other Barren County Jurisdictions:[100] $4.1 million

Lost economic activity from farming: The conversion of agricultural land to a solar farm involves both positive and negative economic effects on the regional economy. The negative effects involve the reduction in farming activity, and the linkages that it has on local suppliers of seed, feed, fertilizer, equipment and labor, summarized by a reduction in business activity employment and personal income. The Economic Impact Assessment and subsequent information provided offers the following information regarding the agricultural impacts of the Wood Duck Project.

- Approximately 1,688 acres within the Project site are currently used for pastureland or crop production. That acreage amounts to a little more than half of one percent of the total farmland in Barren County.

- According to the Applicant, the primary agricultural activity is pasture and hay for cattle, accounting for almost one-half of the site, followed by crop cultivation. The

[98] Barren County does not levy a countywide occupational or net profits tax.
[99] The net financial benefit to the schools is complex. Extra property tax revenues to the County school system would trigger a reduction in state funding to the district
[100] Including Ambulance, Extension Service, Fiscal Court, Library and Health services.

remaining land is forested or nonfarm acreage. For crops, Dr. Coomes assumes the land is split equally between corn and soybeans, roughly the countywide proportions.

- Applying county-wide yields and prices to the assumed agricultural activity at the Project site results in an estimate of $536,200 in current total annual agricultural revenue, generating a total of $745,363 in economic activity.

- The full economic impact of the agricultural revenues currently generated on the Project site includes a total of 6.4 jobs and a total of $207,500 in labor income. This includes direct jobs and income in the agricultural sector, as well as the indirect and induced jobs created by business and household spending.

The loss of direct agricultural jobs due to the transition from active agriculture to solar facility activity amounts to about one-half of one percent of total hired farm labor in Barren County.

New income from landowner leases: Dr. Coomes did not have exact lease details available to him, as those are confidential. However, based on his research, he assumes an average lease payment of about $750 per acre per year. Dr. Coomes assumes that all the lease income is available for household spending, resulting in a total of 7.3 new jobs generated by the lease income, and a total of $317,500 in in new labor income each year in Barren County.

Net economic impacts from Project operations. Exhibit 5-16 presents the net annual economic impacts of Wood Duck operations, accounting for operation and maintenance of the solar facilities, the effects of additional household spending by participating landowners associated with lease payments, and the loss of agricultural activity within the Wood Duck project site. Overall, during operations, a net of 9.5 jobs will be created, generating approximately $646,000 each year.

Exhibit 5-16.
Net Estimated Annual Economic Benefits of the Proposed Wood Duck Solar Project, Operations Phase

	Employment	Labor Income
Solar Facility Operations	8.7	$536,000
Lease Payment Spending	7.3	$317,500
Lost Agricultural Activity	-6.4	-$207,500
Net	**9.5**	**$646,000**

Source: Wood Duck Solar, LLC, May 2025 and September 2025.

HE's evaluation of impacts. An economic impact analysis can be an opportunity to identify the monetary and other benefits provided by Project construction and operational activities. A meaningful discussion of the monetary and other benefits must provide some quantification of said benefits, along with additional context to determine the magnitude of those benefits:

- For most solar facilities, the purchase of materials, supplies and equipment makes up a large portion of total project construction costs. The majority of those capital expenditures are likely to occur out-of-state, limiting the economic benefits to Barren County or the Commonwealth. Therefore, the economic benefits of construction will come mainly from labor activities.

- It is also important to note that direct construction jobs, as well as indirect and induced, will be temporary, resulting from the approximately 18-month construction period. Additionally, the portion of construction period jobs realized for Barren County residents will depend on the number of available and qualified workers in the area.

- Annual operations and maintenance expenditures for the Project would be small. The majority of economic benefits generated during operations would result from employee earnings and various tax payments.

- Lease payments to participating landowners would provide those households with additional income. Household spending would generate additional local jobs and income over the operational period.

- Economic losses would result from reduced agricultural production within the Project site during operations. Overall, the lost agricultural revenues and reduced employment and labor income would amount to a minor portion of the County's overall agricultural economy.

- Loss of landowner revenue from the sale of agricultural products due to the transition from active agriculture to solar facility activity will be more than offset by the lease payments.

- Property tax payments distributed to local entities within Barren County will provide additional revenue to those entities; however, the additional revenue will generally amount to a small percentage of total tax revenues for any individual entity in any single year.

Conclusions and recommendations. Construction and operation of the Wood Duck solar facility will provide some limited economic benefits to the region and to the Commonwealth. Overall, the Project will result in measurable, but temporary, positive economic effects to the region during the construction phase. Construction activity will generate regional employment and income opportunities. Those effects will be temporary, but local hires will increase employment and incomes for local residents. Most construction purchases will be made outside of Kentucky.

Operational economic benefits will be confined mostly to tax revenues, although these are assumed to be relatively minor in terms of total County tax revenues. Those payments will generally amount to a small percentage of total tax revenues for any individual public entity. Operational employment will be very small, but will generate local income, and local purchases of materials or supplies will generate additional economic activity.

Need for mitigation. Socioeconomic impacts of the Wood Duck solar facility represent a positive, albeit small, contribution to the region. The following mitigation measures could be implemented to increase economic benefits within Barren County and provide more detailed information about the Project's local economic benefits:

1. The Applicant should attempt to hire local workers and contractors to the extent they are qualified to perform the construction and operations work.

2. The Applicant should consider opportunities to optimize local benefits; for example, by purchasing materials, if possible, in the local area during construction and operation.

Decommissioning Activities

Decommissioning is the process of safely closing the solar facility to retire it from service and subsequently returning the land to its original condition.[101] This might include removal of solar panels and all associated facilities, and restoration of the property to pre-Project conditions. Although not specifically addressed in the statutes, the Siting Board requested that HE discuss the potential impacts associated with decommissioning activities.

General methods of assessment. The types of impacts likely to result from decommissioning might be similar in nature to those experienced during construction. For example, workers would need to commute to the site daily, trucks would be required to haul equipment away using local roads and noise may be generated by all of the activity. Therefore, the methods of assessing decommissioning impacts would be similar to those employed to evaluate the construction phase effects. Removal and disposal of the project components should also be addressed in this assessment.

Summary of information provided by the Applicant. Exhibit I of the Application provides the Decommissioning Plan for the Project, which includes an overview of the primary decommissioning activities, including the dismantling and removal of facilities and restoration of land, as well as a summary of projected costs and salvage values associated with decommissioning the Project. This plan was prepared for the Applicant by Stantec in December 2024. According to the Applicant, the Wood Duck solar facility would have an expected useful life of approximately 40 years.

Decommissioning plan and activities. According to the Decommissioning Plan, it is anticipated that decommissioning will begin within six (6) months of the facility ceasing to produce electricity. The facilities will be removed at the owner's or operator's expense within

[101] Project decommissioning may be triggered by events such as the end of a power purchase agreement, expiration of lease agreement(s), abandonment or when the Project reaches the end of its operational life. (KRS) 278.706(2)(m) requires that decommissioning activities be completed within 18 months of the Project ceasing to produce electricity for sale unless the deadline has been extended by the Secretary of the Kentucky Energy and Environment Cabinet ("EEC"). Monitoring and site restoration may extend beyond this period to ensure successful revegetation and rehabilitation.

twelve (12) months of the date it begins decommissioning activities.[102] The following general decommissioning activities are anticipated:

- Reinforce access roads, if needed, and prepare the Site for component removal.
- Install temporary erosion perimeter controls and best management practices (BMPs) to protect sensitive resources.
- De-energize solar arrays.
- Dismantle and remove panels and above ground wiring.
- Remove tracking equipment and piles.
- Remove inverter / transformer stations and associated foundation components.
- Remove underground electrical cables and conduits.[103]
- Remove array fence.
- Remove access and internal roads and grade site (if required).
- Remove Project substation and associated overhead transmission tie-in line.[104]
- De-compact subsoils as needed, restore and revegetate disturbed land to pre-construction conditions to the extent practicable.

Some components may be left in place under certain circumstances, as noted in the Decommissioning Plan. For example, access roads and fencing may be left in place if requested and/or agreed to by the landowner.

The Decommissioning Plan assumes the O&M building will be sold or will revert to the landowner at the time of decommissioning.

According to the Decommissioning Plan, the Project will be restored to reasonably similar conditions that existed immediately prior to project construction. Restored areas will be revegetated in consultation with the current landowner and in compliance with regulations in place at the time of decommissioning. If permitted by the landowner, Wood Duck will monitor the site and ensure revegetation has been completed.

Anticipated decommissioning costs. Decommissioning costs include costs associated with disposal of components not sold for salvage, including materials which will be disposed of at a licensed facility, as required. Decommissioning costs also include backfilling, grading, and restoration of the proposed Project site. Total estimated decommissioning costs are $6,957,861,

[102] Barren County regulations (Subdivision Regulations, Article 5, Section 511.2)
[103] Although KRS 278.706(2)(m)(2) states that underground cabling located greater than three feet in depth may be abandoned in place, Barren County regulations (Subdivision Regulations, Article 5, Section 511.2) require all Solar Energy System components to be removed from a project site.
[104] Although KRS 278.706(2)(m)(4) states that interconnections or other facilities may be left in place, Barren County regulations (Subdivision Regulations, Article 5, Section 511.2) require all Solar Energy System components to be removed from a project site.

including costs to remove access roads and fencing.[105] After returns for salvaged materials, the net decommissioning costs are projected to be $4,941,645.

Financial assurance. The Applicant will be responsible for providing a bond or similar security to ensure financial performance of decommissioning in accordance with the Decommissioning Plan. The bond or similar security will comply with the specific requirements of (KRS) 278.706(2)(m)(5).

Landowner coordination. The Project's lease agreements shall abide by all relevant Kentucky Revised Statutes. Additionally, the Applicant will communicate with each affected landowner at the end of the electric generating facility's useful life so that any requests of the landowner for the decommissioning phase that are in addition to lease requirements and the requirements of the Decommissioning Plan may, in the sole discretion of the Applicant or its successor or assign, be accommodated.

HE's evaluation of impacts. The impacts of decommissioning activities are likely to be somewhat smaller than those of construction. Fewer workers may be able to complete facility removal activities in a shorter time period, as compared to construction activities. Additionally, decommissioning work may not require the same level of experience or skill sets as project construction, resulting in the employment of more general laborers at lower wages. Therefore, the benefits to local employment and income during decommissioning would be somewhat less than those described for the construction phase.

Conclusions and recommendations. HE believes that decommissioning the facility and returning the site to its original condition can be accomplished once all the components have been removed. Completion of reclamation activities would eliminate long term Project-related negative impacts, as compared with simply shutting the solar facility. This process will also have a modest and temporary positive economic stimulus to the region.

The Applicant has suggested that economic incentives exist for decommissioning, but HE believes that is highly uncertain due to variable costs for decommissioning and metal prices 40 years in the future.

Need for mitigation. The Applicant's approach to decommissioning and restoration includes removal of applicable above ground and underground structures associated with the Project, as well as site restoration activities. To ensure that all decommissioning commitments are met, we recommend the following:

1. The Applicant shall file a final decommissioning plan with the Siting Board, or its successors, as well as Barren County, which complies with Kentucky Revised Statutes (KRS) 278.706(2)(m) and applicable Barren County Subdivision Regulations (Article 5, Section 511.2). The plan shall commit the Applicant to the removal of all applicable

[105] Although some access roads and fencing may be left in place at the request of landowners, estimated decommissioning costs have been included for those items in the Decommissioning Plan.

Project components and required restoration activities. The final decommissioning plan shall be completed at least one month prior to construction of the Project.

2. The Applicant, its successors, or assigns shall notify Barren County officials of upcoming decommissioning activities at least 30 days prior to the commencement of decommissioning.

3. As applicable to individual lease and easement agreements, the Applicant, its successors, or assigns will abide by the specific land restoration commitments agreed to by individual property owners, as described in each executed lease and easement agreement.

4. The Applicant shall provide a bond or similar security to ensure financial performance of decommissioning in accordance with the requirements of (KRS) 278.706(2)(m)(5).

5. The bond amount should be reviewed and updated every five years at the expense of the Applicant to determine and update the cost of facility removal. This review shall be conducted by an individual or firm with experience or expertise in the costs of removal or decommissioning of electric generating facilities. Certification of this review shall be provided to the Siting Board or its successors and the Barren County Fiscal Court. Such certification shall be by letter and shall include the current amount of the anticipated bond and any change in the costs of removal or decommissioning.

6. If the Applicant proposes to retrofit the current proposed facility, it shall demonstrate to the Siting Board that the retrofit facility will not result in a material change in the pattern or magnitude of impacts compared to the original project. Otherwise, a new Site Assessment Report will be submitted for Siting Board review. The term retrofit is defined as the facility being re-designed such that the facility has a different type of operations or function, i.e., no longer operates as a solar electric generation facility.

7. The Applicant shall also prepare a new Site Assessment Report for Siting Board review if the Applicant intends to retire the currently proposed facility and employ a different technology.

8. The Applicant, its successors, or assigns must provide notice to the Siting Board if during any two-year period it replaces more than twenty percent of its facilities. The Applicant shall commit to removing the debris and the older facility components from the Project site upon replacement. The Applicant must inform the Siting Board of where the removed facility components are being disposed of.

9. Any disposal or recycling of Project equipment, during operations or decommissioning of the Project, shall be done in accordance with applicable laws and requirements.

Public Outreach and Communication

The Application details the public involvement activities undertaken by Wood Duck Solar, LLC staff in Exhibit B the Application. Those activities included the following events and actions taken to notify and inform Barren County officials and residents about the Project:

- Public meetings and events:
    - A Planning Commission hearing was held on December 18, 2023, at the Glasgow City Hall.
    - A pre-application information meeting was held on August 22, 2024, at the Cave City Convention Center. The meeting was described as an "open-house". According to Application materials, that meeting was attended by about 35 to 40 people.
    - A public information meeting was held on February 4, 2025, at the Cave City Convention Center. The Applicant and several consultants provided information about a variety of topics relevant to the Project. Prior to that meeting, on January 15, 2025, the Applicant mailed packets containing information about the Project and upcoming public information meeting to adjacent property owners. Notice of the meeting was also published in the Barren County Progress.
    - A local public hearing was held at the Barren County Fiscal Courthouse on July 1, 2025.
- Outreach to surrounding landowners and others:
    - On August 7, 2024, packets containing information about the Project were mailed to adjacent property owners.
    - On April 23, 2025, the Applicant published a notice of intent to file an Application in the Barren County Progress.
    - The Application suggests that the Applicant has also conducted various outreach activities / meetings with local stakeholders but does not specify who those groups were or when they occurred.
- A Project website was established in June 2023 to publish information about the Project, answer common questions, and to provide an e-mail and telephone number for feedback. The official Project website is: https://www.woodducksolar.com/.

Public comments. The Kentucky PSC document website for the Wood Duck Project provides all the formally submitted comments from members of the public. To date, numerous comments have been filed, covering a wide range of concerns, including topics such as compatibility with the rural agricultural nature of the area, losses of agricultural production, impacts to property values, glare, lack of Applicant communication with residents and other

entities, zoning issues, fire risks, water quality, water service, decommissioning activities and various types of environmental impacts.[106] Many of these letters provide research or other information developed or gathered by the commenter. HE considered the overall public concerns as relevant to the topics addressed in this report.

HE site visit summary. As part of HE's site visit to the Project area, HE met with local officials, including Ms. Jaime Byrd, the Barren County Judge/Executive and Ms. Kim Shipley, the Barren County Property Valuation Administrator. Overall, those officials confirmed the public concerns captured in the public comment letters submitted to Siting Board. Ms. Byrd also described concerns regarding visibility, glare, the future of agriculture in the county and general impacts on the rural character of the area.

Need for mitigation. Given the apparent level of opposition to the Project and the varied concerns voiced by the public, the following measures should be undertaken to continue public outreach and communication:

1. The Applicant should continue to engage with local residents, businesses and others to provide additional information about the Project, provide a forum for hearing comments and concerns, and to address questions as they arise.

2. The Applicant should make additional efforts to reach out to specific groups or entities within Barren County, potentially including the Amish community and local churches, which may have concerns regarding the Project.

Complaint Resolution

Wood Duck Solar has stated that "the Project has not implemented a complaint resolution program at this time but will establish the program prior to commencing construction. Additionally, the Project will work with adjoining landowners and the local community to address site-specific concerns that may arise during construction or operation of the facility."[107]

Need for mitigation. A formal process for addressing complaints should be developed prior to construction and followed during the construction and operational periods to address any issues associated with visual, noise or other Project-related impacts. The following measures should be undertaken to implement a complaint resolution process:

1. The Applicant should develop and implement a complaint resolution plan that describes the process for filing complaints during construction and during operations, and this plan should be provided to Barren County and the Siting Board. The complaint resolution plan should explain how to register the complaint; how it will be addressed; the timeframe in which a complainant can expect a response; and an explanation of how resolution will be determined if the complainant is not satisfied with the response from the Applicant.

[106] Public comment letters also include several letters of support for the Project.
[107] Information provided in response to the Siting Board's First Data Request.

2. The Applicant should submit to the Siting Board, annually, a status report associated with the complaint resolution plan, recounting the individual complaints, how the Applicant addressed those complaints and the ultimate resolution of those complaints.

3. The Applicant shall provide the Barren County Fiscal Court with contact information for individuals within the company that can be contacted with concerns. This shall include contact information for the general public to reach individuals that can address their concerns. The Applicant shall update this contact information yearly, or within 30 days of any change in contact information.

SECTION 6
Recommended Mitigation

This section identifies actions the Applicant can take to mitigate potential negative impacts on certain regional resources. Other regulatory processes will determine the need for particular actions on other resource topics. These are only noted here, and HE makes no recommendation as to their merit. Beyond those actions, HE recommends a list of mitigation actions for Siting Board and Applicant consideration.

Regulatory Actions and Mitigation Outside Siting Board Jurisdiction

The Siting Board should be aware of the following permitting and regulatory actions that will require Applicant compliance and possible mitigation efforts (in addition to this effort to obtain a Certificate of Construction from the Siting Board).[108] No action on these actions is required by the Siting Board since these are outside the Siting Board's jurisdiction. The Applicant states that Wood Duck Solar intends to comply with all applicable permitting requirements and provided a list of permits that may be required prior to either construction or operation of the facility. Exhibit 6-1 provides that list.

Additionally, the Applicant has prepared and submitted a Cumulative Environmental Assessment (CEA), as required by Section 224.10-280 of the KRS.

[108] Information provided in response to the Siting Board's first data request.

Exhibit 6-1.
Permits or Consultations Potentially Required for Construction or Operation of the Wood Duck Solar Facility

Permit	Agency	Level	Applicability
Pre-Construction: Ecological			
Clean Water Act Section 404 Permit (Wetlands) - NWP 51 - Land-Based Renewable Energy Generation Facilities	United States Army Corps of Engineers-Louisville District (USACE)	Federal	Applicable for wetland impacts
Clean Water Act Section 404 Permit - NWP 57 - Electric Utility Line and Telecommunications Activities	USACE	Federal	Applicable for wetland impacts
Federal Endangered Species Act (ESA) Section 7 Consultations, Bald and Golden Eagle Protection Act (BGEPA), and Migratory Bird Treaty Act (MBTA)	United States Fish and Wildlife Service (USFWS)	Federal	Applicable for NWP usage and compliance with BGEPA and MBTA.
CWA Section 401 Water Quality Certification	Kentucky Energy and Environment Cabinet (KYEEC)- Environmental Protection District (EPD)	State	Required for 404 permit
Pre-Construction: Additional Permits			
National Historic Preservation Act, Section 106 Compliance	State Historic Preservation Office (SFIPO) -Kentucky Heritage Council	State	Required for 404 permit
Construction: Stormwater			
Floodplain General Permit	KYEEC- Department of Water (DOW)	State	Required for floodplain impacts.
Construction Stormwater Permit	KYEEC - DOW	State	NOI will need to be submitted prior to construction
Notice of Intent (NOI) NPDES Construction General Permit No. KYR10	KYEEC - EPD	State	Notice of Intent is filed before the start of construction associated with the NPDES Permit
Notice of Termination (NOT) Permit No. KYR10	KYEEC - EPD	State	Termination Request is filed when contstruction is complete
Construction: Department of Transportation			
Oversize & Overload Transportation Permit	Kentucky Transportation Cabinet (KYTC)	State	Required for oversize and/or overweight loads.
Commercial Driveway Permit	KYTC	State	Required for access via state highways.
Permit Agreement for the Accommodation of Utility Facilities on Public Right-of-Way (ROW)	KYTC	State	Required for utilities within public ROW.
Local Requirements			
Joint City and County Planning Commission - Board of Adjustment Application	Barren County	County	Required for Development Plan
Joint City and County Planning Commission - Setback Variance Approval	Barren County	County	Variance for internal property lines of participating parcels.
Joint City and County Planning Commission - Soil Erosion and Sedimentation Control Ordinance	Barren County	County	E&SCP ordinance requirements.
Floodplain Variance	Barren County	County	A development permit shall be required in a SFHA based on the FEMA flood insurance study (FIS) for the county
Zone Change Application	Barren County	County	Required if zoning changes are required.

Source: Wood Duck Solar, LLC, July 2025.

Mitigation for Siting Board and Applicant Consideration

The following mitigation measures are based upon: (1) Applicant commitments set forth in the SAR; (2) measures discussed with the Applicant in subsequent information exchanges or discussions; and (3) additional mitigation steps HE believes will reduce or eliminate negative Project impacts and are reasonable for the Applicant to undertake.

In performing this comprehensive review of the Wood Duck solar Application and supplemental materials, HE has gained an understanding of the Project, the location, the construction and operational activities, the Applicant's intentions, and the Project's impacts. Our recommended mitigation actions are intended to reduce or eliminate potential adverse impacts.

A. Site development plan:

1. A final site layout plan should be submitted to the Siting Board upon completion of the final site design. Future deviations from the preliminary, exiting site layout plan, which formed the basis for HE's review, should be clearly indicated on a revised graphic. Those changes could include, but are not limited to, the location of solar panels, inverters, transformers, substation, O&M building or other Project facilities or infrastructure, including internal access roads.

2. Any change in Project boundaries, including easements, from the information which formed this evaluation should be submitted to the Siting Board for review.

3. The Siting Board will determine if any deviation in the site boundaries or site layout plan is likely to create a materially different pattern or magnitude of impacts. If not, no further action is required, but if yes, the Applicant will support the Siting Board's effort to revise its assessment of impact and mitigation requirements.

4. A final, Project-specific construction schedule, including revised estimates of on-site workers and commuter vehicle traffic, should be submitted to the Siting Board. Future deviations from the preliminary construction schedule should be clearly indicated.

5. The Siting Board will determine whether any deviation to the construction schedule or workforce estimates is likely to create a materially different pattern or magnitude of impacts. If not, no further action is required. If so, the Applicant will support the Siting Board's effort to revise its assessment of impacts and mitigation requirements.

6. The Applicant shall submit a status report every six months until the project commences construction to update the Siting Board on the progress of the Project.

7. The Applicant or its contractor will control access to the site during construction and operation. Site entrances will be gated and locked when not in use.

8. The Applicant's access control strategy will include appropriate signage to warn potential trespassers. The Applicant will ensure that the site entrance and boundaries have adequate signage, particularly in locations visible to the public, local residents and business owners.

9. The fence enclosing the substation will adhere to North American Electric Reliability Corporation (NERC) safety standards and will be appropriately spaced, bonded, and grounded in compliance with National Electrical Safety Code (NESC) requirements prior to installation of any electrical equipment.

10. The Applicant will meet with local law enforcement agencies, EMS and fire services to provide information and ensure they are familiar with the plan for security and emergency protocols during construction and operations.

11. Prior to construction, the Applicant will provide an Emergency Response Plan to the local fire district, first responders, and any County Emergency Management Agency. The Applicant will provide site-specific training for local emergency responders at their request. Access for fire and emergency units shall be set up after consultation with local authorities.

B. Compatibility with scenic surroundings:

1. Existing vegetation between the solar arrays and nearby roadways and homes shall be left in place, to the extent feasible, to help minimize visual impacts and screen the Project from nearby homeowners and travelers.

2. The Applicant will not remove any existing vegetation except to the extent it must remove such vegetation for the construction and operation of Project components.

3. The Applicant will implement vegetative screening as proposed in the revised Screening Plan as a minimum, including vegetative screening near the O&M area/ Project substation.

4. The Applicant will provide any changes to the revised Proposed Screening Plan to the Siting Board.

5. Any changes to the site infrastructure layout (i.e., panels, inverters, etc.) included in the Application materials will be submitted to the Siting Board for review. If the Siting Board deems those changes to be significant, the Siting Board may require the Applicant to revise the submitted Landscape Plan.

6. The Applicant shall consult with local homeowners or businesses adjacent to the Project site to determine whether there are adverse impacts to the viewshed. The Applicant will work with those homeowners and businesses to address and resolve complaints related to view of Project facilities.

7. The Applicant will adhere to the vegetation maintenance described in the Landscape Plan, including establishment, supplemental plantings and on-going maintenance.

8. The Applicant will use anti-glare panels and operate the panels in such a way that glare from the panels is minimized or eliminated. The Applicant will work with affected local residents and Barren County representatives to address and resolve complaints about glare from those living, working or traveling in proximity to the Project.

C. Potential changes in property values and land use:

1. No unique mitigation measures are recommended related to potential impacts to property values or adjacent land uses because other mitigation already recommended can accomplish this. However, close coordination by the Applicant with impacted and concerned homeowners regarding potential visual impacts and impacts from noise, traffic or other Project activities should be initiated.

D. Anticipated peak and average noise levels:

1. The Applicant shall notify all residents and businesses within 2,000 feet of the Project boundary about the construction plan, noise potential, complaint resolution process, and mitigation plan at least one month prior to the start of construction.

2. The Applicant shall respond to any complaints related to noise levels or noise causing activities occurring during construction or operations via a timely, formal and clearly developed complaint resolution program.

3. If pile driving activity occurs within 1,000 feet of a noise sensitive receptor, the Applicant shall implement a construction method that will suppress the noise generated during the pile driving process (i.e., semi-tractor and canvas method; sound blankets on fencing surrounding the Project site; or any other comparably effective method).

4. The Applicant should limit the construction activity, process and deliveries to the hours of 8:00 am to 5:00 pm, Monday through Saturday. No construction work should be conducted on Sundays.

5. The Applicant shall maintain functional mufflers on all diesel-powered equipment.

6. The Applicant should coordinate with the Woodland United Baptist Church and Cemetery to limit pile driving and heavy or oversize deliveries passing near the Church during their services, including funerals.

7. The Applicant shall place panels, inverters and substation equipment consistent with the distances to noise receptors indicated in the Applicant's acoustic assessment and with the Applicant's proposed setbacks. Nevertheless, the Applicant shall not place solar panels or inverters closer than 83 feet from a residence, church or school, 20 feet from non-participating adjoining parcels, and 50 feet from adjacent roadways. The Applicant shall not place a central inverter, and, if used, energy storage systems closer

than 450 feet from a residence, church, or school. These setbacks shall not be required for residences owned by landowners involved in the Project that explicitly agree to lesser setbacks and have done so in writing. All agreements by participating landowners to lesser setbacks must be filed with the Siting Board prior to commencement of construction of the Project.

E. Road and rail traffic, fugitive dust, and road degradation:

1. The Applicant shall comply with all laws, permits and regulations regarding the use of roadways and bridges.

2. The Applicant shall consult with the Kentucky Transportation Cabinet (KYTC) regarding truck and other construction traffic and obtain necessary permits from the KYTC.

3. The Applicant shall coordinate with the Barren County Road Department (BCRD) regarding truck and other construction traffic and obtain necessary permits from the BCRD.

4. The Applicant shall develop a transportation plan for the heavy truck delivery route(s) within Kentucky, taking into consideration any weight restricted bridges.

5. The Applicant shall work with the Commonwealth road authorities and the BCRD to perform road surveys, before and after construction activities, on all roads in the Project area to be used by construction vehicles.

6. The Applicant shall comply with any road use agreement executed with Barren or Edmonson County or their road departments. Such an agreement might include special considerations for overweight loads, routes utilized by heavy trucks, road weight limits and bridge weight limits.

7. The Applicant shall fix or pay for damage resulting from any Project-related commuting or heavy vehicle transport to the Project site during construction.

8. The Applicant shall implement a ridesharing plan for construction workers if feasible and if needed, use appropriate traffic controls or allow flexible working hours outside of peak hours to minimize any potential delays during AM and PM peak hours.

9. The Applicant shall develop and implement a traffic management plan for the Project to minimize the impacts on traffic flow and keep traffic and people safe.

10. The Applicant shall make a good faith effort to communicate its traffic management plan with the Amish community elders, and respond, if practicable, to their concerns.

11. The Applicant shall consult with CSX and the KYTC to evaluate potential impacts or specific mitigation measures related to Project traffic over railroad crossings, as necessary.

12. The Applicant shall properly maintain construction equipment and follow best practices related to fugitive dust throughout the construction process.

F. Economic impacts:

1. The Applicant should attempt to hire local workers and contractors to the extent they are qualified to perform the construction and operations work.

2. The Applicant should consider opportunities to optimize local benefits; for example, by purchasing materials, if possible, in the local area during construction and operation.

G. Decommissioning:

1. The Applicant shall file a final decommissioning plan with the Siting Board, or its successors, as well as Barren County, which complies with Kentucky Revised Statutes (KRS) 278.706(2)(m) and applicable Barren County Subdivision Regulations (Article 5, Section 511.2). The plan shall commit the Applicant to the removal of all applicable Project components and required restoration activities. The final decommissioning plan shall be completed at least one month prior to construction of the Project.

2. The Applicant, its successors, or assigns shall notify Barren County officials of upcoming decommissioning activities at least 30 days prior to the commencement of decommissioning.

3. As applicable to individual lease and easement agreements, the Applicant, its successors, or assigns will abide by the specific land restoration commitments agreed to by individual property owners, as described in each executed lease and easement agreement.

4. The Applicant shall provide a bond or similar security to ensure financial performance of decommissioning in accordance with the requirements of (KRS) 278.706(2)(m)(5).

5. The bond amount should be reviewed and updated every five years at the expense of the Applicant to determine and update the cost of facility removal. This review shall be conducted by an individual or firm with experience or expertise in the costs of removal or decommissioning of electric generating facilities. Certification of this review shall be provided to the Siting Board or its successors and the Barren County Fiscal Court. Such certification shall be by letter and shall include the current amount of the anticipated bond and any change in the costs of removal or decommissioning.

6. If the Applicant proposes to retrofit the current proposed facility, it shall demonstrate to the Siting Board that the retrofit facility will not result in a material change in the pattern or magnitude of impacts compared to the original project. Otherwise, a new Site Assessment Report will be submitted for Siting Board review. The term retrofit is defined as the facility being re-designed such that the facility has a different type of operations or function, i.e., no longer operates as a solar electric generation facility.

7. The Applicant shall also prepare a new Site Assessment Report for Siting Board review if the Applicant intends to retire the currently proposed facility and employ a different technology.

8. The Applicant, its successors, or assigns must provide notice to the Siting Board if during any two-year period it replaces more than twenty percent of its facilities. The Applicant shall commit to removing the debris and the older facility components from the Project site upon replacement. The Applicant must inform the Siting Board of where the removed facility components are being disposed of.

9. Any disposal or recycling of Project equipment, during operations or decommissioning of the Project, shall be done in accordance with applicable laws and requirements.

H. Public outreach and communication:

1. The Applicant should continue to engage with local residents, businesses and others to provide additional information about the Project, provide a forum for hearing comments and concerns, and to address questions as they arise.

2. The Applicant should make additional efforts to reach out to specific groups or entities within Barren County, potentially including the Amish community and local churches, which may have concerns regarding the Project.

I. Complaint resolution program:

1. The Applicant should develop and implement a complaint resolution plan that describes the process for filing complaints during construction and during operations, and this plan should be provided to Barren County and the Siting Board. The complaint resolution plan should explain how to register the complaint; how it will be addressed; the timeframe in which a complainant can expect a response; and an explanation of how resolution will be determined if the complainant is not satisfied with the response from the Applicant.

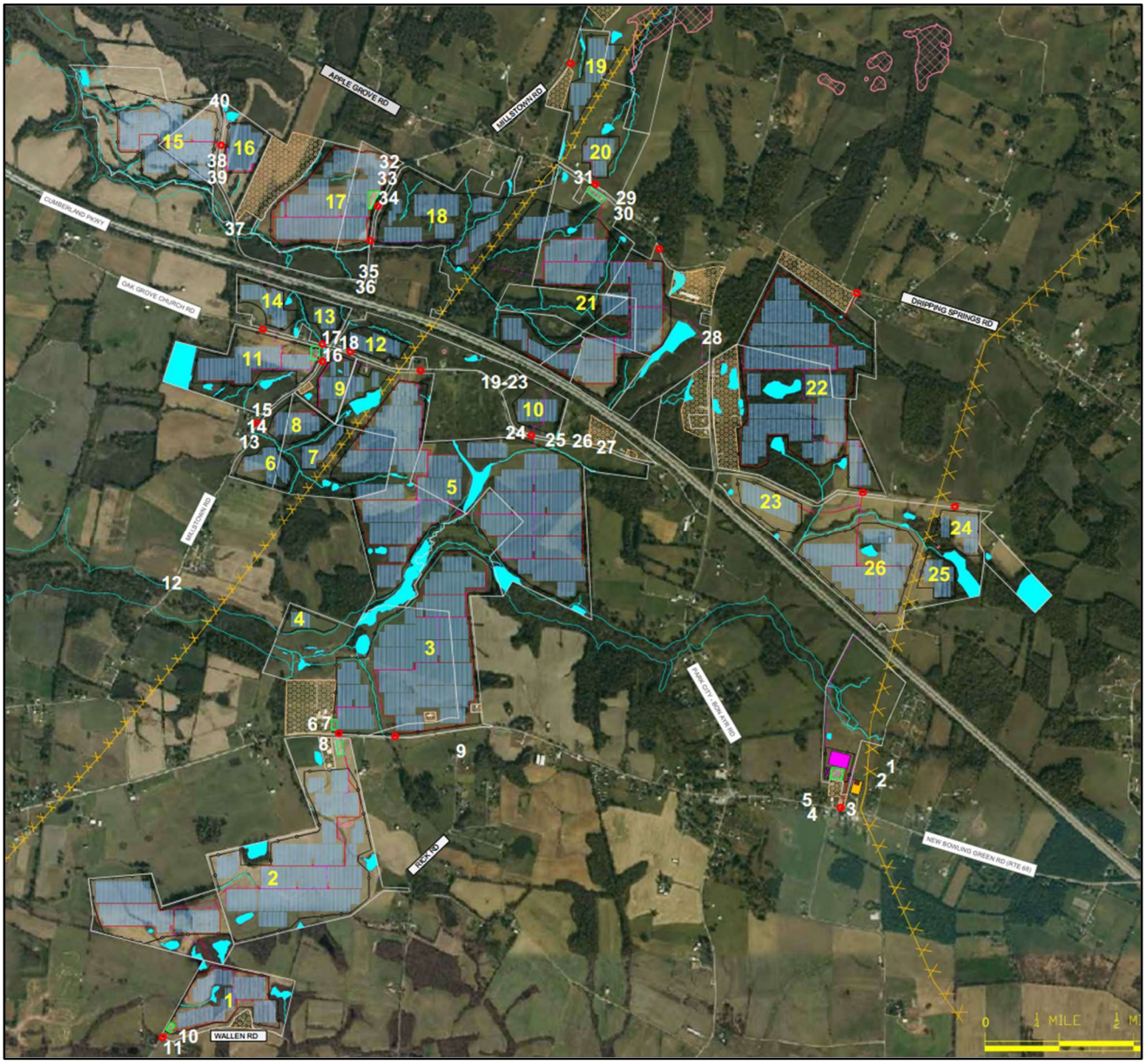
2. The Applicant should submit to the Siting Board, annually, a status report associated with the complaint resolution plan, recounting the individual complaints, how the Applicant addressed those complaints and the ultimate resolution of those complaints.

3. The Applicant shall provide the Barren County Fiscal Court with contact information for individuals within the company that can be contacted with concerns. This shall include contact information for the general public to reach individuals that can address their concerns. The Applicant shall update this contact information yearly, or within 30 days of any change in contact information.

APPENDICES

Appendix A

Photo Log Index Map



Notes: (1) Yellow numbers identify individually fenced areas of solar panel arrays.
(2) Locations for Exhibits B-1 through B-40 are indicated by numbers in white text.

Source: Wood Duck Solar, LLC, 2025; Harvey Economics, 2025.

Appendix B

Site Photos

Exhibit B-1.
View of Project Substation Area from SR-080 (NP), Bent Creek Dr, Facing SW

Note: NP indicates non-participating residence; P indicates participating residence.

Exhibit B-2.
View of EKPC Substation from SR-082 (NP), Bent Creek Dr, Facing W

Exhibit B-3.
EKPC Substation from Saver's Storage (P), New Bowling Green Rd, Facing N

Exhibit B-4.
Bon Ayr Missionary Baptist Church (NP) on New Bowling Green Rd

Exhibit B-5.
New Bowling Green Rd at Bon Ayr Missionary Baptist Church, Facing E

Exhibit B-6.
View of Area 3 from SR-133 (NP), New Bowling Green Rd, Facing NW/N

Exhibit B-7.
View of Area 3 / Laydown from SR-133 (NP), New Bowling Green Rd, Facing E/SE

Exhibit B-8.
View of Area 2 from SR-134 (P), New Bowling Green Rd, Facing S

Exhibit B-9.
View W/NW toward Area 3 from SR-149 (NP), Rick Rd – Den Dr Neighborhood

Exhibit B-10.
View to Laydown / Area 1 Near SR-136 (NP), Waller Rd, Facing NW - NE

Exhibit B-11.
Waller Rd Near SR-135 (NP), Facing WNW to Area 1 Access Point & Laydown

Exhibit B-12.
View of Millstown Rd, Facing N toward SR-265 (NP)

Exhibit B-13.
Culvert on Millstown Rd, South of Access Point for Areas 6/7/8 & SR-127 (NP)

Source: Google Earth, March 2025

Source: Google Earth, March 2025

Exhibit B-14.
View from SR-127 (NP), Millstown Rd, Facing SW to Area 6 & Access Point

Exhibit B-15.
View from SR-127 (NP), Millstown Rd, Facing NW toward Area 11

Exhibit B-16.
Millstown Rd & Oak Grove Church Rd, Facing S – W toward Areas 9/11/14

Exhibit B-17.
Millstown Rd Intersection, Facing N – E toward Areas 13/12/9

Exhibit B-18.
Oak Church Grove Rd at SR-117 (P), Facing E

Exhibit B-19.
Woodland United Baptist Church / SR-114 (NP), Oak Grove Church Rd

Exhibit B-20.
Woodland United Baptist Church Cemetery – North of Church

Exhibit B-21.
Woodland Church (NP), View E/SE of Panel Area 10

Exhibit B-22
Oak Grove Church Rd, South of Area 10, Facing E from Woodland Church

Exhibit B-23.
Woodland Church Cemetery, View E/SE of Panel Area 10


WELLS
WELLS
MAMAW
PARENTS OF


WELLS
POPPY
PARENTS OF

Exhibit B-24.
Potential Glare from Area 5, Oak Grove Church Rd, Facing E/SE to SR-113 (NP)

Exhibit B-25.
Culvert on Oak Grove Church Rd, W of SR-113 (NP), Near Area 5 Access Point

Source: Google Earth, March 2025

Source: Google Earth, March 2025

Exhibit B-26.
Oak Grove Church Rd, at SR-111 (P), Facing W

Exhibit B-27.
Potential Glare from Area 5, Oak Grove Church Rd, Near SR-111 (P), Facing SW

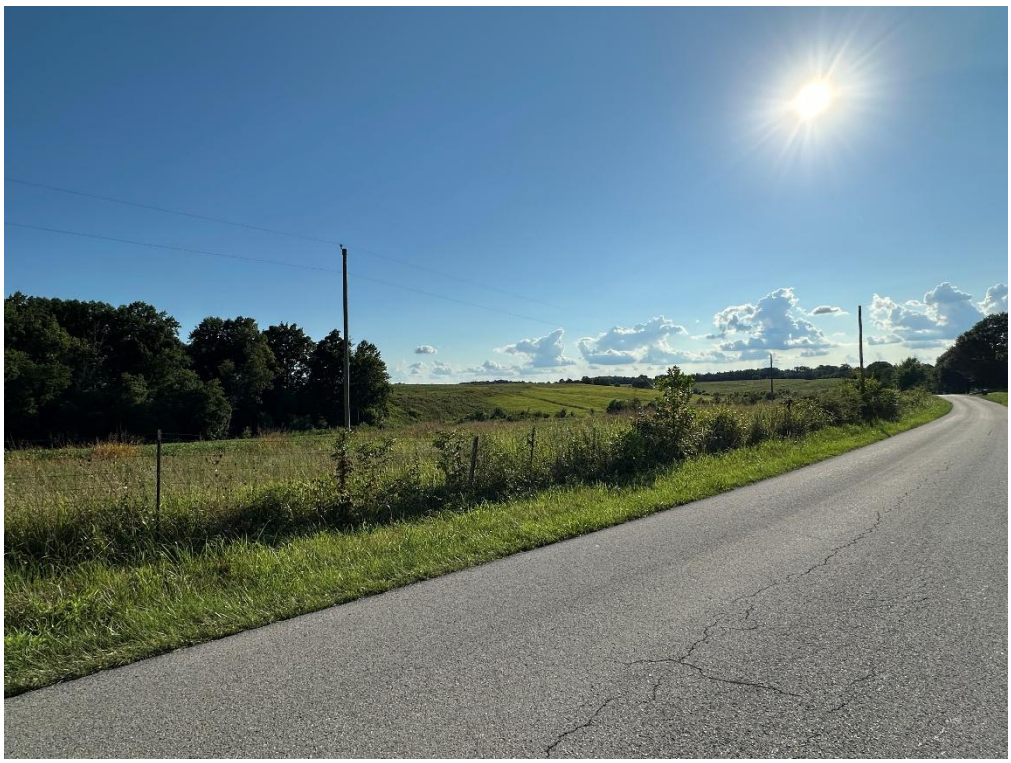


Exhibit B-28.
Park City-Bon Ayr Rd, View of Panel Area 22, Facing NE – SE

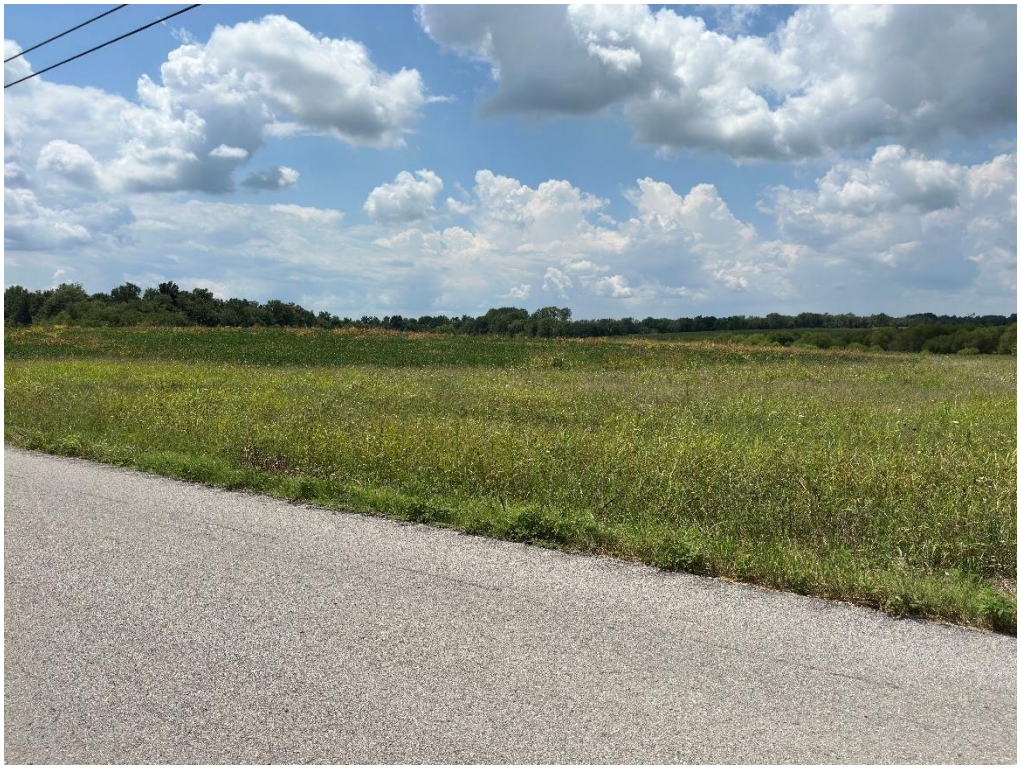


Exhibit B-29.
Apple Grove Rd, near SR-023 (NP), View S – W of Area 21 & Laydown/Access Point

Exhibit B-30.
Apple Grove Rd, near SR-023 (NP), Facing NW toward Area 20

Exhibit B-31.
Apple Grove Rd, SR-022 (NP), Facing S toward Area 21 & Laydown

Exhibit B-32.
Millstown Rd, View of Area 18 from NE Corner of Area 17, Facing E – S

Exhibit B-33.
Millstown Rd, View of Area 17 and Laydown from NE Corner, Facing S – W

Exhibit B-34.
Millstown Rd, View of Area 18, Recently Logged Clearing, Facing NE – SE

Exhibit B-35.
Amish Landowner on Millstown Rd, SR-119 (NP)

Exhibit B-36.
Intersection of Millstown Rd and R. Crump Rd, South of SR-119 (NP)

Exhibit B-37.
Unmarked Bridge on R. Crump Rd, South of Access Point for Areas 15 & 16

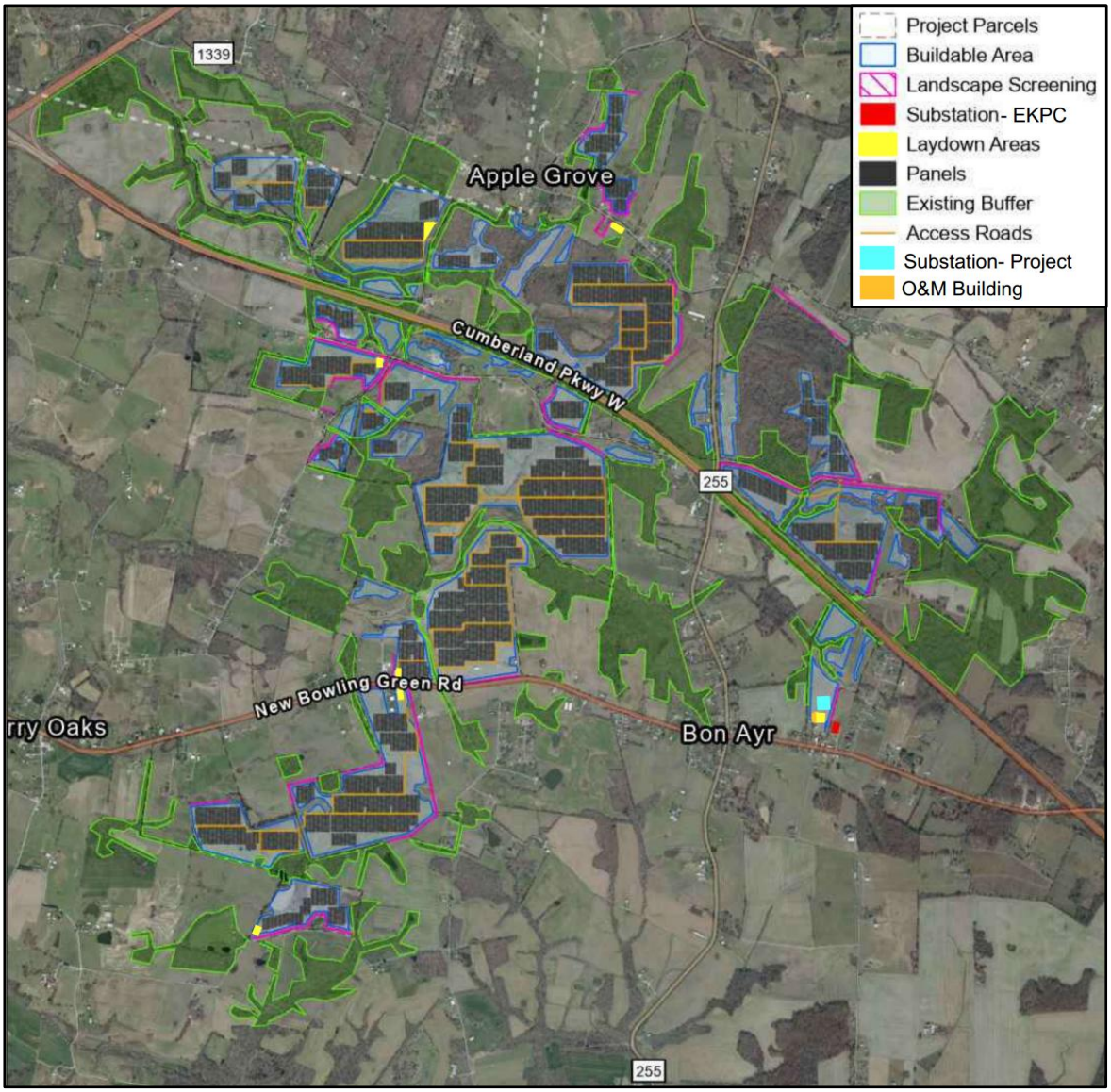
Exhibit B-38.
R. Crump Rd, View of Panel Area 15, Facing W – NW

Exhibit B-39.
R. Crump Rd, View of Panel Area 16, Facing NE

Exhibit B-40.
Culvert and Pothole on R. Crump/C. Bellamy Rd, North of Areas 15/16

Appendix C

Proposed Screening Plan Map



Source: Wood Duck Solar, LLC, August 2025; Harvey Economics, September 2025.

Appendix D

Summary of Literature Regarding Impacts of Solar Facilities on Property Values

Abashidze, N. ***The Local Cost of Clean Energy: Evidence from Solar Farm Siting and Home Prices.*** **May 2025.**

This study quantifying the impact of solar farm construction on residential property prices in North Carolina suggests an 8.7 percent reduction in price for homes within one mile of a solar facility, relative to homes further away. The largest effects were concentrated on homes within 0.5 miles of the facility; beyond one mile, no price differences were attributable to the solar facility. This study also found evidence that local housing market activity declines after a solar farm becomes operational, with the number of homes sold in the area falling by roughly 6%. However, this study mainly includes smaller scale facilities (less than 5 MWs) and notes that relatively few home sales have occurred near the larger facilities. Additionally, the authors note that "enhancing visual buffers or setbacks could alleviate aesthetic concerns, potentially reducing negative price effects."

Subsequent to HE's obtaining this study, the paper has been removed from the website at the request of the author or other parties.

Hao, S., and G. Michaud. ***Assessing property value impacts near utility-scale solar in the Midwestern United States.*** **Solar Compass, Volume 12, 2024.**[109]

This study focusing on the potential impacts to property values of utility-scale solar facilities in the mid-west found that the presence of these types of solar facilities increases property values by between 0.5 percent and 2.0 percent, although the study also notes that larger facilities (greater than 20 MWs) have less of a positive impact than small facilities. As noted in the report, many counties in the mid-west require relatively large setbacks; those setbacks may reduce views of the projects. The majority of projects included in this study were identified as being located in urban or suburban areas, with a smaller number of projects located in rural settings. Overall, the study acknowledges that utility scale solar projects are not the main driving factor for the change or differences in property values.

Gaur, V., and C. Lang. ***House of the rising Sun: The effect of utility-scale solar arrays on housing prices.*** **Energy Economics, forthcoming, 2023.**

This study focusing on utility-scale solar facilities in Massachusetts and Rhode Island found that homes within about 0.6 miles of a facility depreciate by between 1.5 percent and 3.6 percent following facility construction. In this study, researchers found that those reductions are primarily driven by developments on farm and forest lands in rural areas.[110] At least a

[109] This article was noted as being published on behalf of International Solar Alliance.
[110] Previous work by Guar and Lang (2020) indicated that declines in property values as associated with commercial scale solar facilities were driven by developments in non-rural areas.

portion of the effects may be related to distance to the solar facility, visibility of the facility, loss of open space and changes in rural character.

Elmallah, S. et al. *Shedding light on large-scale solar impacts: An analysis of property values and proximity to photovoltaics across six U.S. states*, Energy Policy, Vol. 175, April 2023.

This study examining the impact of large-scale photovoltaic projects on residential home prices in six U.S. states found that homes within 0.5 mi of the solar facility experienced an average home price reduction of 1.5%, as compared to homes two to four miles away. Measurable effects were seen for facilities constructed on agricultural land, for larger solar facilities and for rural homes. However, adverse effects on property values were only seen in three of the six states analyzed.[111]

Abashidze, N. and Taylor, R. *Utility-Scale Solar Farms and Agricultural Land Values*, Land Economics, Vol. 99, Issue 4, November 2023.

This study using property value models found that utility-scale solar facilities do not have direct positive or negative spillover effects on nearby agricultural land values. However, the authors did "find evidence that suggests construction of a solar farm may create a positive option-value for landowners that is capitalized into land prices." Specifically, after construction of a nearby solar farm, study findings indicated that agricultural land that is also located near transmission infrastructure could increase in value.

Gaur, V., and C. Lang. *Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island*. University of Rhode Island, Department of Environmental and Natural Resource Economics, September 2020.

This study completed by economists at the University of Rhode Island found that in areas of high population density, houses within a one-mile radius depreciate by about 1.7 percent following construction of a solar array. The study found "substantially larger negative effects for properties within 0.1 miles and properties surrounding solar sites built on farm and forest lands in non-rural areas." However, additional analysis focused on impacts in more rural areas found that the "effect in rural areas is effectively zero (a statistically insignificant 0.1%) and that the negative externalities of solar arrays are only occurring in non-rural areas." The researchers note that this may be due to solar facilities being less visible in rural areas (due to land abundance for vegetative buffers).

Koster, H. and M. Droes. *Wind turbines and solar farms drive down house prices*. VoxEU, September 2020.

This study focusing on the property value effects of wind turbines and solar facilities in the Netherlands states evidence suggesting that the negative effects of solar facilities (including noise (buzzing sounds), glare and visibility) results in decreased residential housing prices (2-

[111] A webinar presented by the study authors indicated that the results should not be applied to larger projects (i.e., those above 18 MWs) and that the study did not consider site design, setbacks or landscaping features.

3%). They found these effects to be localized (within 1km of the facility, or a little more than half a mile). However, the researchers also note that the relatively small number of solar facilities in the Netherlands makes the results less precise (as compared to the wind farm analysis).

Coffey, Darren. *Planning for Utility-Scale Soar Energy Facilities*. American Planning Association, PAS Memo, September – October 2019.

This article produced by the American Planning Association (APA) indicates that the "impact of utility-scale solar facilities is typically negligible on neighboring property values." The issue of property value impacts "can be a significant concern of adjacent residents, but negative impacts to property values are rarely demonstrated."

Al-Hamoodah, Leila, et al. *An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations.* Policy Research Project, LBJ School of Public Affairs, The University of Texas at Austin, May 2018.

This study included a geospatial analysis and a survey of residential property assessors to determine the potential for property value impacts. The results show "that while a majority of survey respondents estimated a value impact of zero, some estimated a negative impact associated with close distance between the home and the facility, and large facility size. Regardless of these perceptions, geospatial analysis shows that relatively few homes would be impacted."