Review and Evaluation of Lynn Bark Energy Center, LLC Site Assessment Report Case Number: 2024-00104

REPORT

Report

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Review and Evaluation of Lynn Bark Energy Center, LLC Site Assessment Report Case Number: 2024-00104

Prepared for

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SECTION A.

General Statement

SECTION A.
General Statement

This document provides a review of the Site Assessment Report (SAR) for the proposed Lynn Bark Energy Center merchant electric generating facility submitted to the Kentucky State Board on Electric Generation and Transmission Siting (the Siting Board). Lynn Bark Energy Center, LLC submitted an administratively complete document titled "Application of Lynn Bark Energy Center, LLC for a Certificate of Construction for an Up to 200 Megawatt Merchant Electric Solar Generating Facility in Martin County, Kentucky" (the "Application") to the Siting Board on June 7, 2024. The Siting Board assigned the case number 2024-00104 to the Lynn Bark Energy Center application. The proposed generating facility is subject to review by the Siting Board under KRS 278.700 *et seq.* (the Act), passed by the General Assembly of the Commonwealth of Kentucky in 2002. Siting Board staff retained BBC Research & Consulting (BBC) to perform this review.

Provisions of the Act Establishing the SAR Review Process

The part of KRS 278 entitled "Electric Generation and Transmission Siting" defined a class of merchant power plants and required them to obtain construction certificates as a prerequisite to the commencement of actual construction activity. Those statutes also created the Siting Board and gave it the authority to grant or deny construction certificates requested by individual applicants. The Siting Board is attached to the Kentucky Public Service Commission (PSC) for administrative purposes.

The Act created the application process and, within the process, a series of steps for preparing and submitting this report:

- The applicant files for a construction certificate and pays the fees. KRS 278.706.
- The applicant submits required items, including an SAR. KRS 278.706 & KRS 278.708.
- If it wishes, the Siting Board may hire a consultant to review the SAR and provide recommendations about the adequacy of the information and proposed mitigation measures. KRS 278.708.
- The consultant must deliver the final report so the Siting Board can meet its own statutory decision deadline — 120 days or 180 days from receipt of an administratively complete application, depending upon whether the Siting Board will hold a hearing. KRS 278.710.

SAR Review Methodology

BBC undertook the following tasks to review Lynn Bark Energy Center's SAR and complete this report:

- Reviewed prior SAR reviews prepared for the Siting Board by BBC and others since 2020 for proposed commercial solar generating facilities;
- Reviewed the contents of Lynn Bark Energy Center's SAR and Application;
- Identified additional information we considered useful for a thorough review, and submitted questions to the applicant through the Siting Board Staff's requests for information;
- Conducted the required site visit, including obtaining oral information supplied by the applicant, in July 2024;
- Completed interviews and data collection with a number of outside sources as sourced in this document; and
- Compiled and incorporated all of the foregoing in the analysis.

Report Format

This report is structured to be responsive to KRS 278 and BBC's contract. It begins with this general statement that introduces the review. In Section B of the report, we present the executive summary and list all of the mitigation measures recommended by BBC. Section C offers detailed findings and conclusions of the study and provides context for BBC's recommended mitigation measures.

Certain Limitations

There are inherent limitations to any review process of documents such as the SAR. These must be understood in utilizing this report for decision-making purposes.

Based on previous experience with the SAR review process, BBC has exercised judgment in deciding what information is most relevant and what level of detail is appropriate. This relates to project components, geographic extent of impacts, and assessment methodology. Siting Board staff has previously provided review and guidance in this context.

While BBC has thoroughly reviewed the information provided in Lynn Bark Energy Center's Application and Site Assessment Report and raised questions with the applicant regarding some apparent inconsistencies in that information, we have not conducted an audit of the information and data provided in those documents. Information regarding the layout and features of the proposed project and the surrounding area provided by the applicant are assumed to be accurate for purposes of this review. This review is based on the best available information at this time.

SECTION B.

Executive Summary

SECTION B.
Executive Summary

This report documents the evaluation of a Site Assessment Report (SAR) in compliance with KRS 278.704 and KRS 278.708. The Kentucky State Board on Electric Generation and Transmission Siting (the Siting Board) received an application from Lynn Bark Energy Center, LLC (Lynn Bark Energy) on June 7, 2024, for approval to construct a commercial, photovoltaic solar merchant electric generating facility in Martin County, Kentucky. Siting Board staff retained BBC Research & Consulting (BBC), a Denver-based firm, to review the SAR. BBC was directed to review the SAR for adequacy, visit the site, conduct supplemental research where necessary, and provide recommendations about proposed mitigation measures.

This is the summary of BBC's final report, which encompasses the SAR review, establishes standards for evaluation, summarizes information from the applicant, notes deficiencies, offers supplemental information, and draws conclusions and recommendations related to mitigation. Issues outside the scope of KRS 278.708, including electricity market or transmission system effects and broader environmental issues, were not addressed in this engagement. This report does evaluate and consider the regional economic impacts of the proposed project and plans for future decommissioning.

Description of the Proposed Facility/Site Development Plan

The SAR and supporting materials provide a description of the proposed Lynn Bark Energy facility in terms of surrounding land uses, legal boundaries, access control, utility service, setback requirements, visual impacts, impacts on surrounding property owners, noise levels, and traffic impacts. Additional detail on each topic was provided in the applicant's responses to the First and Second Requests for Information (RFI) from the Siting Board Staff during the SAR review process.

The proposed Lynn Bark Energy solar facility would be an up to 200-megawatt alternating current (MWac) photovoltaic electricity generation facility situated in Martin County, Kentucky. Martin County is in the easternmost part of the state and directly adjacent to the state's border with West Virginia. A 5.61-mile overhead transmission line would deliver electricity from the project substation to the point of interconnection (POI) with the existing Inez Substation, owned by Kentucky Power.

The proposed facility would comprise 357,588 fixed-tilt photovoltaic modules, associated racking and piles, 51 inverters, and a project substation situated on approximately 641 acres out of a total 1,514 acres of private land leased by Lynn Bark Energy in unincorporated Martin County. The site is a reclaimed mountaintop coal mine situated among low-density agricultural and agricultural/residential land.

The primary roadway in proximity to the proposed Lynn Bark Energy site is KY 3, which runs generally north to south on the western side of the proposed site. There are no schools or parks

within a two-mile radius of the project. The estimated total population within a one-mile radius of the project is 19 residents, which is markedly lower than the average population (119) within one mile for 14 solar facility applications reviewed by the Siting Board since June 2022.

Conclusions with respect to other descriptive elements of the facility follow:

- **Surrounding land use** — Overall, agricultural land comprises 96 percent of adjoining acres, while 1.2 percent is zoned agricultural/residential, and about 2.7 percent is solely residential. Measured by the number of properties rather than their acreage, agricultural uses constitute 41 percent of adjoining parcels, while 4 percent of adjoining parcels are agricultural/residential, and 53 percent are residential. The composition of surrounding land uses — where residential parcels comprise the largest share of adjacent parcels but a much smaller proportion of the total adjacent land area — is typical among the proposed solar facilities that BBC has reviewed for the Siting Board.

- **Proposed access control and security —** The SAR briefly describes proposed access control measures, noting that solar modules and facility infrastructure will be enclosed by perimeter fencing and that a separate fence will enclose the substation. In addition, the applicant states that the project will comply with the requirements of the National Electric Safety Code. Lynn Bark Energy anticipates two site access points, one each on the eastern and western boundaries of the project.

- **Utilities —** The SAR states that auxiliary electrical service will be secured from Kentucky Power.

- **Setback requirements —** Martin County does not have any ordinance establishing setback requirements. Lynn Bark Energy has filed a Motion for Deviation from Setback Requirements required by KRS 278.704(2). Two neighborhoods, located on the northeastern boundary of the project site, are within 2,000 feet of the proposed project boundary.

- **Other facility site development plan descriptions provided in the SAR —** Legal boundaries; location of facility buildings, transmission lines, structures; and location of access roads, internal roads, and railways are addressed in the SAR. When considered alongside additional information supplied by Lynn Bark Energy in their RFI responses during the review process, these materials appear to meet the informational requirements identified in KRS 278.708.

Compatibility with Scenic Surroundings

The applicant did not include a formal visual assessment in the SAR. However, Section II of the SAR summarizes the assessment of compatibility with scenic surroundings. The proposed project site is a reclaimed mountaintop coal mine and is substantially elevated above residences and roads in the vicinity. The area is rural with dense vegetation. BBC visited the proposed Lynn Bark Energy project site in July 2024 to review the site and its surroundings.

The proposed Lynn Bark Energy solar project would be a large, commercial solar facility similar in size to several previous solar projects reviewed by BBC and other consultants for the Siting Board. As with those similar projects, much of the project's compatibility with the scenic surroundings is dependent on site topography and vegetative screening. In this case, the project site having been a mountaintop coal mine before reclamation reduces potential concerns about scenic compatibility for the proposed Lynn Bark Energy project as the elevation and vegetation would largely shield surrounding residents and travelers from any view of the project components.

Lynn Bark Energy also commissioned a glare analysis study for the proposed project, which was included as Exhibit G of the SAR. The study found that approximately 10 to 20 minutes of green glare is expected to occur during June and July along a nearby flight path, however, this level of glare is not expected to be disruptive.

BBC concurs with Lynn Bark Energy's conclusion that the proposed facility would not be incompatible with its surroundings from a scenic standpoint. This assessment recognizes the elevated topography of the site and the existing vegetative screening.

Potential Changes in Property Values for Adjacent Property Owners

The central issue related to property values is whether or not, and to what extent, property values of other landowners will change as a result of development and operation of the proposed Lynn Bark Energy facility. Lynn Bark Energy engaged Kirkland Appraisals, LLC—which has conducted property value impact studies for several previous solar applications to the Siting Board—to examine the proposed project's potential impact on property values.

In a summary statement, Kirkland Appraisals concludes that there will be no property value impacts from the proposed Lynn Bark Energy facility on adjoining properties and that the proposed facility will be in harmony with the area.

The matched pair analysis shows no impact on home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land where the solar farm is properly screened and buffered. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all indicate that a solar

farm is a compatible use for rural/residential transition areas and that it would function in a harmonious manner with this area.[1]

To date, only a small handful of relevant property value impact studies of solar facilities have been conducted by academic researchers or other third-party analysts. Using different methods, and different data sources, recent studies by teams at the Lawrence Berkeley National Lab; the LBJ School of Public Affairs (University of Texas); and the University of Rhode Island have found that there could be small, negative impacts on property values from proximity to commercial solar facilities. Another recent econometric study (at the University of Georgia) focused on solar facilities in North Carolina found no impacts on the value of nearby agricultural land, but did find statistically significant negative effects to the value of smaller residential properties close to solar facilities.[2]

Given the low population density and rural setting for the proposed Lynn Bark Energy project—and acknowledging that both the hilly topography and existing dense vegetation will obscure the site's physical elements from nearby residences and neighborhoods—we conclude that the proposed solar facility is unlikely to have measurable adverse impacts on nearby properties.

Expected Noise from Construction and Operation

Noise levels generated by facility construction and operation are addressed in Section IV of the SAR (Anticipated Noise Levels at Project Site Boundary) and in the Acoustic Assessment—conducted by ERM with the Cadna-A® sound model—which is included as Exhibit D of the SAR. During project construction—including site preparation, excavation, and solar equipment installation—impacts on nearby noise-sensitive receptors (NSRs) will be generated by construction equipment and vehicles, particularly during pile driving for the solar panel racking. Operational sound levels are expected to be modest and non-disruptive for the operating lifetime of the project.

The setting for the Lynn Bark Energy project is a rural area with a low population density. During the construction phase, vehicles and machinery such as trucks, bulldozers, excavators, and pile drivers will generate noise onsite while preparing the site and installing the facility's panels, racking, inverters, substation, and associated structures. Maximum noise levels will occur during pile driving of the solar arrays, which is consistent with previous solar project noise impact studies reviewed by the Siting Board.

Information provided in Lynn Bark Energy's response to the Second RFI indicates that the projected maximum construction sound level at the nearest sensitive receptor would be 57 dBA

[1] SAR Exhibit B, page 1.

[2] Abashidze, Nino. *Essays on Economic and Health Effects of Land Use Externalities.* (Under the direction of Dr. Harrison Fell). Page 71. University of Georgia, 2019.

while a pile driver is in use. This level of noise is approximately equivalent to an air conditioner and is not hazardous.

During normal operation of the proposed Lynn Bark Energy facility, noise levels from inverters and the substation transformer will not surpass the ambient daytime noise levels in the area.

Impacts on Transportation

Section V of the SAR (Effect on Road, Railways and Fugitive Dust) and Exhibit E of the SAR (Traffic Impact Study) provide information regarding anticipated impacts on transportation at and around the proposed project site during construction and operation.

KY 3, on the western side of the proposed project, is the primary roadway for access to the Lynn Bark Energy project site. The Traffic Impact Study reviewed available traffic volume data from the Kentucky Transportation Cabinet (KYTC) for two count stations located along KY 3.

The Traffic Impact Study states that, during the construction phase of the project, traffic flow will be impacted by the commute of construction workers to and from the site (assumed to occur during peak AM and PM hours) as well as the frequent arrival and departure of large trucks necessary for equipment delivery. However, no significant or adverse traffic impacts are expected, and KY 3 would continue to operate at an acceptable level of service.

The Traffic Impact Study projects that one vehicle would travel to the project site each day during the operational lifetime of the project, and that this level of traffic to the project site would have no measurable impact on the traffic and/or transportation infrastructure.

Other Considerations

Applicant economic impact study. Attachment G to the Lynn Bark Energy Application (Estimated Economic Impact) contains a study of the projected economic impacts from the proposed facility. The analysis was conducted by Dr. Paul Coomes, Emeritus Professor of the University of Louisville, using IMPLAN modeling.

Key findings from the analysis include:

- There will be a one-time spike in construction-related employment over an 18-month period. The spike will include about 573 new jobs in Martin County in the first year, with a new payroll of $32 million and a one-time yield of $647,000 in occupational tax revenues for the County.

- If employee compensation in the operational life of the proposed project is fully captured by Martin County, the County would receive an additional $25,000 each year in occupational tax revenues.

The level of investment in Martin County projected in the economic impact analysis appears to be roughly consistent with industry standards for a solar project of the size of the proposed Lynn Bark Energy facility. The overall conclusions that the operating phase will have very modest economic impacts, but that the proposed solar facility will enhance local government revenue while requiring very few services, are consistent with the findings of other commercial solar economic impact studies. The largest impact on employment will be felt during the initial construction period.

Some information that would provide a more complete picture, but which is not provided in the applicant's economic study, includes the direct, indirect, and induced economic benefits from the current use of the site in agriculture; and the potential induced economic benefits from the additional income received by the participating landowner if at least a portion of that income is spent locally. The former would at least slightly reduce the projected net economic benefits from ongoing operations of the facility, while the latter would likely increase those projected net benefits. Neither of these aspects would likely result in a material change to the results of the economic impact analysis.

Facility Decommissioning. In prior solar projects reviewed by the Siting Board, plans and assurances for decommissioning the sites at the end of their functional lives have been an important issue of concern to both the Siting Board and local governments.

Exhibit F of the SAR (Decommissioning Plan) contains a plan for the decommissioning of the proposed facility. The plan was authored by ERM on behalf of the applicant. Within the Decommissioning Plan, Lynn Bark Energy describes the sequence and project components to be decommissioned, including net decommissioning costs accounting for expenses as well as potential salvage revenue.

Summary Findings

Lynn Bark Energy has generally provided the required information for the site assessment, including responses to BBC's questions (included in the requests for information from Siting Board Staff) following our review of their SAR. The Lynn Bark Energy site appears to be well selected in terms of compatibility with the area and access to transmission infrastructure. The mountain topography and vegetation of the reclaimed mine site help the facility to be compatible with the surrounding area.

Mitigation Recommendations

Including mitigation identified by Lynn Bark Energy in their Application and SAR, BBC recommends the following mitigation measures:

Regarding KRS 278.708 (3) (a)– description of the proposed facility –

1. Lynn Bark Energy should provide a final site layout plan to the Siting Board when site design is finalized and before site preparation begins. Any change in project boundaries or site layout from the information reviewed during this evaluation—including changes to the locations of solar panels, inverters, transformers, the substation, project fencing or other project facilities—should be clearly documented and submitted to the Siting Board for review.

2. Lynn Bark Energy or its contractor should control access to the site during construction and operation. All construction entrances should be gated and locked when not in use. The applicant's access control strategy should include adequate signage at all site entrances and boundaries—particularly in locations visible to the public, local residents, and business owners—to warn potential trespassers.

3. According to National Electric Code regulations, the security fence must be installed prior to any electrical installation work. Further, the substation must have its own separate security fence, with locked access.

4. Should Lynn Bark Energy's Motion for Deviation from Setback Requirements be approved, the applicant should promptly and fully meet the terms of the setback provisions as outlined.

Regarding KRS 278.708 (3) (b)– compatibility with scenic surroundings –

5. Existing vegetation between the solar arrays and nearby roadways and homes should be left in place to the extent feasible to help minimize visual impacts and screen the project from nearby homeowners and travelers.

6. Lynn Bark Energy should cultivate at least two acres of native pollinator-friendly species onsite.

7. Lynn Bark Energy should use panels with anti-reflective coating to reduce glare and corresponding visual impacts.

8. Lynn Bark Energy should be open to communication with adjacent landowners regarding viewshed impacts and the implementation of strategic vegetative screening, if needed.

9. Communication regarding viewshed impacts and concerns should be incorporated into the Complaint Resolution Program described further in mitigation recommendation #14 later in this section.

Regarding KRS 278.708 (3) (c)– potential changes in property values and land use –

10. Existing vegetation on the site should be left in place to the extent feasible to help minimize visual and noise impacts and to screen the project from nearby residents.

Regarding KRS 278.708 (3) (d)– noise impacts –

11. Lynn Bark Energy should conduct construction activity only between 8 AM and 7 PM, Monday through Sunday, and pile driving only between 9 AM and 5 PM, Monday through Friday.

12. Lynn Bark Energy should notify residents and businesses within 2,000 feet of the project boundary about the construction plan, the noise potential, and mitigation plans one month prior to the start of construction.

13. During construction, Lynn Bark Energy should locate stationary noise-generating equipment, such as air compressors or portable power generators, as far as practicable from neighboring residences.

14. Lynn Bark Energy should implement a Customer Resolution Program to address any complaints from surrounding landowners. Lynn Bark Energy should submit an annual status report on the Customer Resolution Program to the Siting Board, identifying any complaints, the steps taken to resolve those complaints, and whether the complaint was resolved to the satisfaction of the affected landowner.

Regarding KRS 278.708 (3) (e)– transportation impacts and fugitive dust –

15. Lynn Bark Energy should submit a final construction schedule, including updated estimates of on-site workers and commuter vehicle traffic, as necessary, to the Siting Board prior to commencement of construction.

16. Lynn Bark Energy should develop and implement a traffic management plan for the construction phase of the project to minimize impacts on traffic flow and keep traffic safe. As part of this plan, Lynn Bark Energy should implement ridesharing between construction

workers; use appropriate traffic controls; or allow flexible working hours outside of peak hours to minimize any potential delays during AM and PM peak hours.

17. Lynn Bark Energy and its construction contractors should comply with all laws and regulations regarding the use of roadways.

18. Lynn Bark Energy should obtain permits from the KYTC and local road authorities as needed for overweight and overdimensional vehicle transport to the site and comply with all permit requirements, coordinating with the KYTC Permits Engineer and the Martin County Road Department as needed.

19. Lynn Bark Energy should determine whether shoulder stabilization and/or road widening is necessary on any local route to accommodate deliveries to the site. Lynn Bark Energy should coordinate with the Martin County Road Department regarding any necessary improvements.

20. Lynn Bark Energy should commit to rectifying any damage to public roads by fixing or fully compensating the appropriate transportation authorities for any damage or degradation to the existing road network that it causes or to which it materially contributes.

21. Lynn Bark Energy should properly maintain construction equipment and follow best management practices related to fugitive dust throughout the construction process. Dust impacts should be kept to a minimal level.

Regarding economic impacts, project decommissioning, and other issues –

22. Lynn Bark Energy should commit to prioritizing local hiring and seeking to hire Martin County residents to fill the projected direct construction jobs.

23. Lynn Bark Energy should follow the decommissioning plan as laid out in Exhibit F of the Site Assessment Report submitted to the Siting Board; and

24. Lynn Bark Energy should work with Martin County to address any concerns that arise at any point regarding its proposed decommissioning plan.

Subject to the foregoing mitigation measures, BBC recommends that the Siting Board approve the application for a certificate to construct based upon the siting considerations addressed in this review. This recommendation presumes that the project is developed as described in the applicant's SAR and supplemental information, and that the mitigation measures above are implemented appropriately. If these presumptions are correct, and based upon the information available to BBC at the time of this report, there are unlikely to be significant unmitigated impacts from construction and operation of the Lynn Bark Energy generation project regarding scenic compatibility, property values, noise, or traffic.

SECTION C.

Detailed Findings and Conclusions

SECTION C.
Detailed Findings and Conclusions

This section provides detailed review and evaluation of each element of the Lynn Bark Energy Center, LLC (hereafter Lynn Bark Energy) Site Assessment Report (SAR) as prescribed in Section 5 of KRS 278.708. It is organized into six subsections:

1. Description of Proposed Facility/Site Development Plan;

2. Compatibility with Scenic Surroundings;

3. Potential Changes in Property Values for Adjacent Property Owners;

4. Expected Noise from Construction and Operation;

5. Impacts on Transportation; and

6. Other Issues – Economic Impacts, Project Decommissioning, and Site-Specific Considerations

Although the Siting Board will likely consider other issues in making its decision, these are beyond the present scope of our inquiry and so are not addressed here.

In evaluating these components of the SAR, BBC has followed a consistent pattern:

- First, BBC describes the generally accepted assessment criteria or methodology necessary to evaluate impacts of a project of this nature (**Potential Issues and Standard Assessment Approaches**).

- Secondly, we summarize relevant information included in the initial SAR (**Information Provided in the Applicant's SAR**).

- Thirdly, we describe supplemental information about the proposed Lynn Bark Energy project facility, along with other information BBC was able to gather about the project and its impacts (**Supplemental Investigations, Research, and Analysis**).

- Finally, BBC draws its own conclusions about the project's potential impacts and recommended mitigation (**Conclusions and Recommendations**).

We believe that this format transparently presents the basis for our conclusions and recommendations.

Description of Proposed Facility/Site Development Plan

Potential Issues and Standard Assessment Approaches

As required by KRS 278.708(3)(a), the SAR must contain the following information:

- Subsection 1—surrounding land uses for residential, commercial, agricultural, and recreational purposes;
- Subsection 2—the legal boundaries of the proposed site;
- Subsection 3—proposed access control to the site;
- Subsection 4—the location of facility buildings, transmission lines, and other structures;
- Subsection 5—location and use of access ways, internal roads, and railways;
- Subsection 6—existing or proposed utilities to service the facility;
- Subsection 7—compliance with applicable setback requirements as provided under KRS 278.704(2), (3), or (4); and
- Subsection 8—evaluation of the noise levels expected to be produced by the facility.

BBC found each of these required information items in the SAR and examined them. To some extent, the required elements of the description of the facility and site development plan specified in the legislation overlap with topic-specific evaluations also required in the statute. In particular, the statute calls for specific evaluations of impacts on nearby property values, traffic, and noise levels. Both the applicant's SAR and the BBC team's evaluation provide further detail on these topics in subsequent sections.

Information Provided in the Applicant's SAR

The required description of the proposed Lynn Bark Energy facility and site development plan is mainly set forth in Tab 2 of the Application (Proposed Site Description), Attachment A (Map of Proposed Project Site), Section 1 of the SAR (Description of the Proposed Project Site), Exhibit A of the SAR (Project Site Map), and Exhibit B of the SAR (Property Value Impact Study). Other related or supplementary information comes from various other sections of the SAR and other attachments included with the Application.

Overview of proposed facility. The proposed Lynn Bark Energy solar facility would be an up to 200-megawatt alternating current (MWac) photovoltaic electricity generation facility situated in Martin County, Kentucky. Martin County is in the easternmost part of the state and directly adjacent to the state's border with West Virginia.

The proposed Lynn Bark Energy solar facility would be located in the central part of the County, approximately 6 miles south of the county seat of Inez. The area is rural, mountainous, and forested. The proposed project site is a reclaimed mountaintop coal mine. Figure C-1 shows a satellite imagery map of Martin County and the proposed Lynn Bark Energy site.

Figure C-1.
Location of Proposed Lynn Bark Energy Solar Facility in Martin County, KY

Note: The site of the proposed Lynn Bark Energy Center solar facility is marked with a grey geolocation pin.

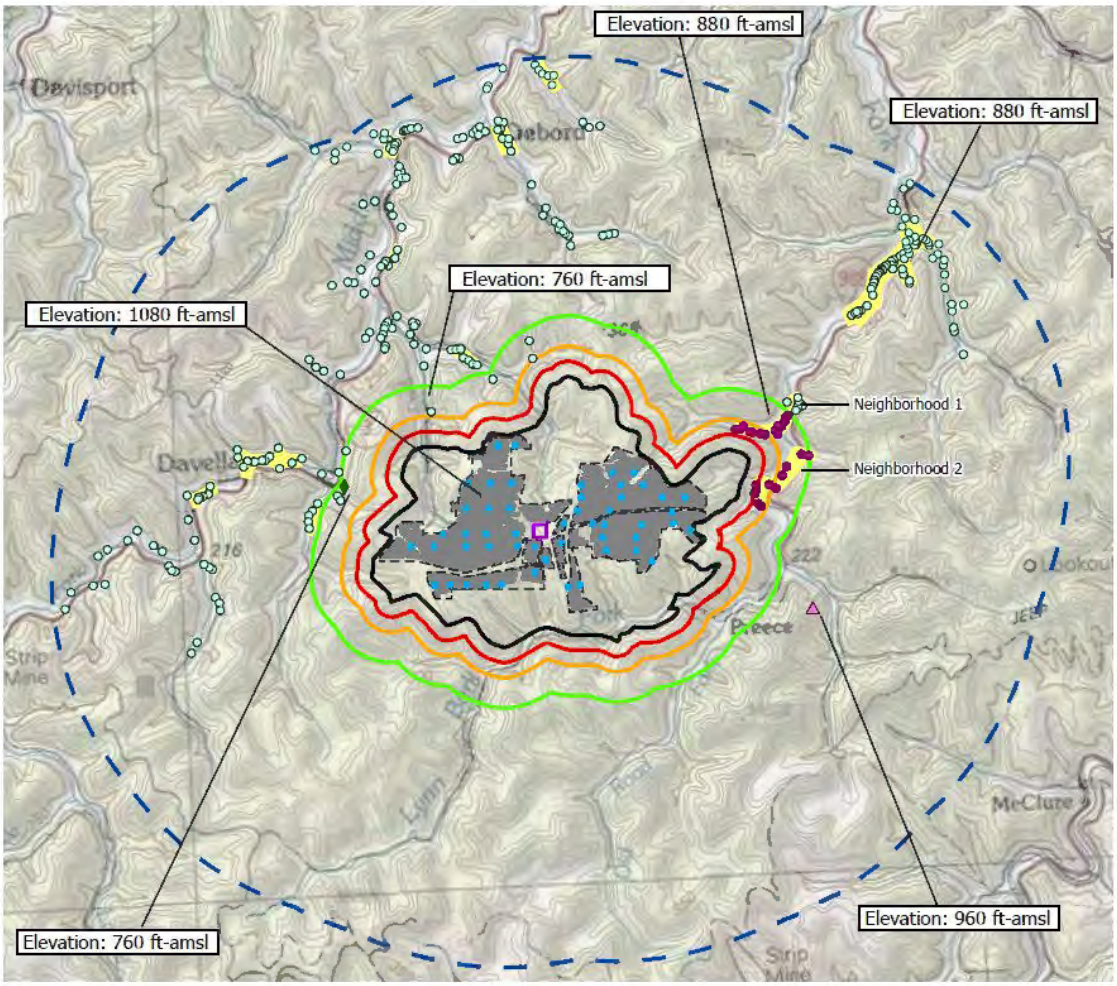
Source: BBC Research & Consulting; Google Maps, 2024.

Tab 2 of the Application (Proposed Site Description) supplies an overview of the project. Based on the information provided in the SAR and Application, the proposed facility would comprise 357,588 fixed-tilt photovoltaic modules, associated racking and piles, 51 inverters, and a project substation situated on approximately 641 acres out of a total 1,514 acres of private land[1] leased by Lynn Bark Energy in unincorporated Martin County. The proposed site is reclaimed mountaintop removal mining land. A 5.61-mile overhead transmission line would deliver electricity from the project substation to the point of interconnection (POI) with the existing Inez Substation, owned by Kentucky Power.

[1] Application Tab 2, page 2.

Figure C-2, excerpted from Attachment A to the Application (Map of Proposed Project Site), shows the proposed project footprint (shaded), ringed with a solid black line representing the entire acreage leased to the project. Two residential neighborhoods sit near the northeastern boundary of the project within 2,000 feet of the site boundary (500-, 1,000-, and 2,000-foot radii are outlined in red, orange, and green, respectively). Encompassing most of the map shown in Figure C-1 is a two-mile radius (blue dashed line).

Figure C-2.
Context Map of Proposed Project Site, Lynn Bark Energy Solar Project, Martin County, KY



The applicant states "There are no schools, public parks, or private parks within a 2-mile radius of the Facility Area. Additional maps showing the preliminary Facility layouts in greater detail are included with Tab 12, the Site Assessment Report."[2]

The primary roadway in proximity to the proposed Lynn Bark Energy site is KY 3, which runs generally north to south on the western side of the proposed site.

[2] SAR Tab 2, pages 2-3.

Surrounding land uses. Exhibit B of the SAR (Property Value Impact Study) provides some detail on the composition of the surrounding land. Figure C-3, excerpted from Exhibit B, summarizes the use of land adjoining the proposed project.

Figure C-3.
Adjoining Parcel Land Use for Proposed Lynn Bark Energy Project

	Acreage	Parcels
Residential	2.70%	53.06%
Agricultural	96.06%	40.82%
Agri/Res	1.23%	4.08%
Cemetary	0.01%	2.04%
Total	**100.00%**	**100.00%**

Overall, agricultural land comprises 96 percent of adjoining acres, while 3 percent is zoned residential, and 1 percent is agricultural/residential. Land zoned for the cemetery comprises 0.01 percent of adjoining acres.

Measured by the number of properties rather than their acreage, agricultural uses constitute 41 percent of adjoining parcels, while 53 percent of adjoining parcels are residential, 4 percent are agricultural/residential, and 2 percent are for cemetery use.

Appendix A also provides 2023 population estimates for the surrounding area.[3] In 2023, an estimated 19 people lived within a one-mile radius of the project area; 1,186 within a three-mile radius; and 3,814 within a five-mile radius.

Legal boundaries. Exhibit C of the SAR (Legal Description) contains a very brief description of the participating property for the proposed project site. In the Siting Board's First Request for Information (RFI), Lynn Bark Energy was asked to provide copies of the lease agreements for all participating properties.

Access control. The Lynn Bark Energy SAR briefly describes proposed security measures:

The proposed facility layout is included in SAR Exhibit A, as well as Attachment A of the overall application. Six-foot chain link type fencing meeting National Electric Safety Code (NESC) requirement will secure the solar panel arrays clusters with locked access gates. Six-foot chain link type fencing with three-strand barbed wire angled outward, meeting NESC requirements, will secure the substation.[4]

In the Siting Board's First Request for Information (RFI), Lynn Bark Energy was asked to provide an updated site layout map depicting necessary information on access points and other features.

Location of buildings, transmission lines, and other structures. Page 2 of the SAR states that the locations of project structures are depicted in Exhibit A of the SAR (Project Site Map). BBC examined Exhibit A. These plans depict the proposed substation, gen-tie line, and locations of project components such as security fencing, inverters, and solar panels.

[3] SAR Exhibit B, ESRI Housing Profiles, pages 11-13.

[4] SAR, page 2.

Location and use of access ways, internal roads, and railways. Page 2 of the SAR states that the locations of access points are depicted in Exhibit A of the SAR (Project Site Map), however BBC could not locate the information on the referenced map and the applicant was asked to supply an updated map in the First RFI.

There are no railways present at the proposed site.

Existing or proposed utilities. The SAR does not describe what utilities would be used for services if required during the construction or operations phases of the proposed project. In the Siting Board's First RFI, the applicant was asked to identify any potential need and provider for utilities for the project.

Compliance with applicable setback requirements. Kentucky statute 278.704(2) states that "… If the facility is not proposed to be located on a site of a former coal processing plant and the facility will use on-site waste coal as a fuel source or in an area where a planning and zoning commission has established a setback requirement pursuant to KRS 278.704(3), a statement that the exhaust stack of the proposed facility and any wind turbine is at least one thousand (1,000) feet from the property boundary of any adjoining property owner and all proposed structures or facilities used for generation of electricity are two thousand (2,000) feet from any residential neighborhood, school, hospital, or nursing home facility, unless facilities capable of generating ten megawatts (10MW) or more currently exist on the site. […] If the facility is proposed to be located in a jurisdiction that has established setback requirements pursuant to KRS 278.704(3), a statement that the proposed site is in compliance with those established setback requirements."

Martin County does not have any ordinance establishing setback requirements. Lynn Bark Energy has filed a Motion for Deviation from Setback Requirements required by Kentucky statute. Within their Motion, the applicant states that there are no school, hospitals, churches or nursing homes within 2,000 feet of the proposed project's structures or electric generating facilities. Lynn Bark Energy identifies two residential neighborhoods (defined as per the KRS) that are within 2,000 feet of the project boundary (note that the actual project components do not extend to the edge of the project boundary).

Residential Neighborhood 1 is to the northeast of the Project and includes 14 residences. The nearest proposed structures or facilities used for the generation of electricity are solar panel arrays located approximately 2,287 feet away from the boundary of Residential Neighborhood 1.

Residential Neighborhood 2 is located to the east of the Project and includes 11 residences. The nearest proposed structures or facilities used for the generation of electricity are solar panel arrays located approximately 1,578 feet away from the boundary of Residential Neighborhood 2.

As set forth in more detail in Exhibit A because the Project Area is atop a mountaintop reclaimed coal mine, there are also significant elevation differences between the Residential Neighborhoods within 2,000 feet (which sit at the base of the mountain) and the Project Site. The

relatively high elevation of the Project Site further lessens impacts that are predicted from construction and operation of the Project upon any nearby residence.[5]

Evaluation of noise levels. Exhibit D of the SAR (Acoustic Assessment Report) provides the assessment of the noise levels that will be generated during the construction and operation of the Lynn Bark Energy solar facility. During the construction phase of the project, activities on site will generate intermittent noise at the nearest receptors (nearby residences). The construction phase is expected to last approximately 18 months and the operation phase 35 years.

During construction, the applicant estimated a maximum noise level from pile driving of 47 dBA at the nearest sensitive receptor. During the operational life of the project, Lynn Bark Energy modeled a daytime noise level of 20 dBA when measured at the nearest residence.

Noise levels and the details of Exhibit D are discussed in greater depth and detail on page 36 of this report section (Expected Noise from Construction and Operation).

Supplemental Investigations, Research, and Analysis

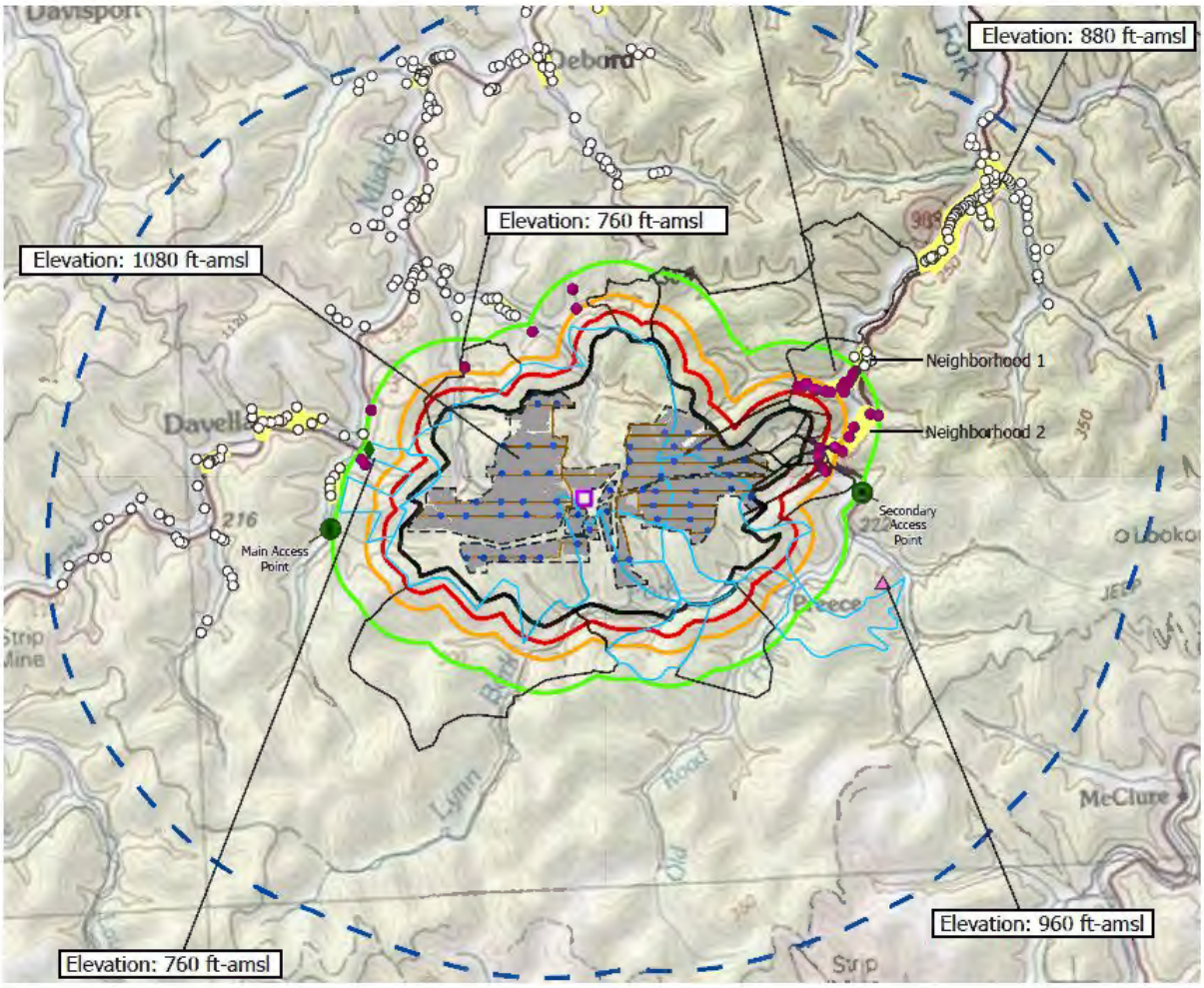
After reviewing the applicant's SAR, the BBC team sought to supplement the information provided in the SAR where necessary to describe the proposed facility and site development plan more fully.

Overview of proposed facility. In their Response to the Second RFI, Lynn Bark Energy provided an updated site map including project entrances and access roads. The applicant's updated map is excerpted as Figure C-4.[6]

[5] Lynn Bark Energy Motion for Deviation, page 2.

[6] Lynn Bark Energy Center, LLC's Response to Siting Board Staff's Second Request for Information, Attachment C.

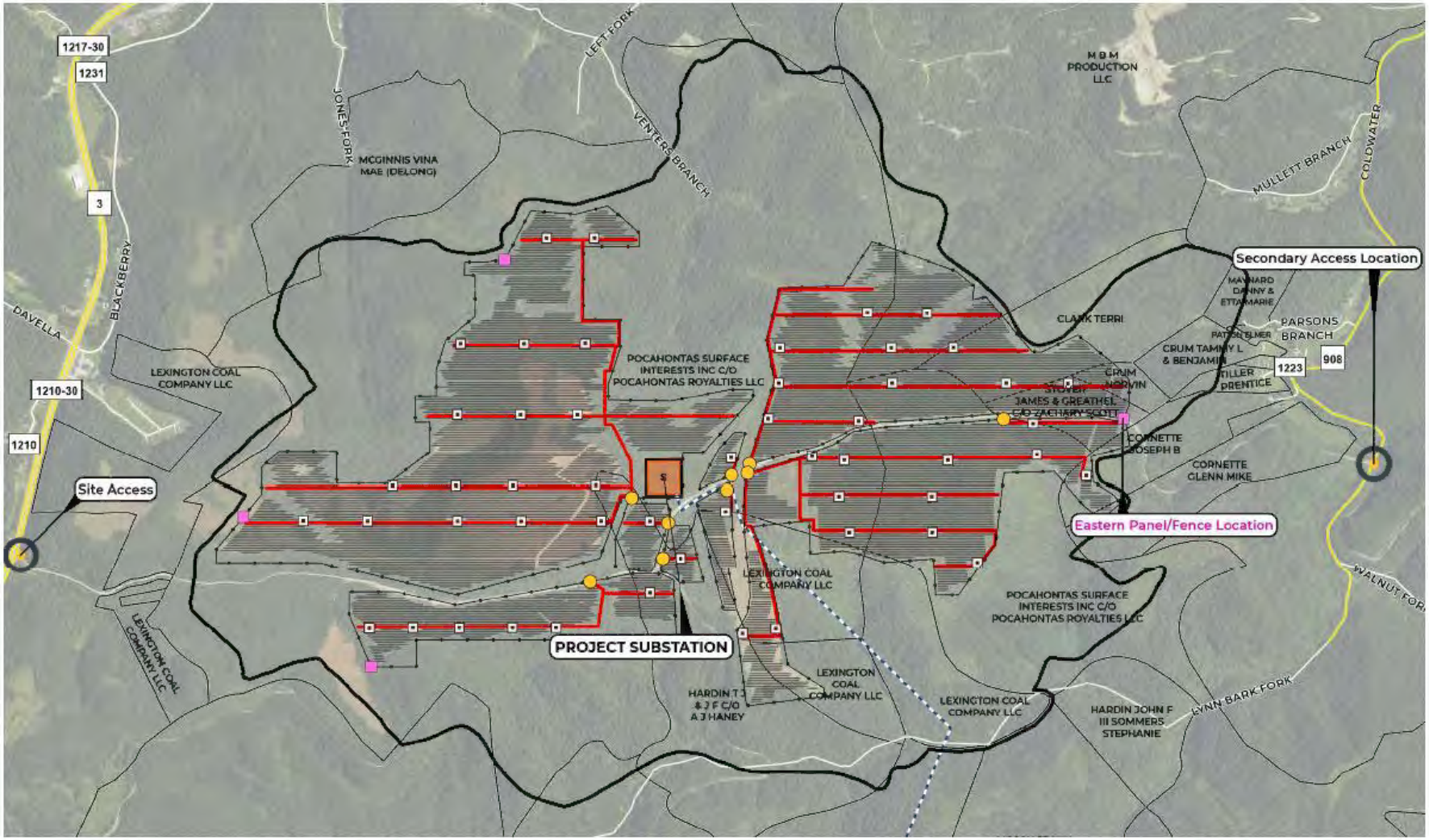
Figure C-4.
Updated Context Map of Proposed Project Site, Lynn Bark Energy Solar Project, Martin County, KY



Additionally, the applicant supplied a detailed project layout map showing site access points on KY 3 to the west and Coldwater Road to the east, as well as all facility components within the project boundary—solar arrays in grey, internal access points (orange dots) and roads (red lines), and the project substation at the center of the project—and the parcel boundaries relevant to the proposed project.[7] This is included as Figure C-5.

[7] Lynn Bark Energy Center, LLC's Response to Siting Board Staff's Second Request for Information, Attachment A

Figure C-5.
Lynn Bark Energy Proposed Project Layout



Surrounding land uses. The composition of surrounding land uses — where residential parcels comprise the majority of adjacent parcels but a small proportion of the total adjacent land area — is typical among the proposed solar facilities that BBC has reviewed for the Siting Board. Among the facilities BBC has reviewed for the Siting Board since early 2020[8], residential land uses have averaged 58 percent of the surrounding parcels, and 8 percent of the surrounding acreage (compared to 53 percent and 3 percent, respectively, for the proposed Lynn Bark Energy site).

Apart from just the immediately adjacent properties, the information provided in Exhibit B (Property Value Impact Study) also indicates the low population density surrounding the site up to a radius of five miles. Since June of 2022, the two consulting firms used by most applicants to the Siting Board to evaluate potential impacts on property values—Kirkland Appraisals, LLC and CohnReznick LLP—have also typically provided information obtained from ESRI regarding the estimated number of residents living within a three-mile radius of the proposed facilities. Kirkland Appraisals has also been providing information regarding the number of residents within a one-mile and a five-mile radius of the proposed facilities they have evaluated.

As shown in Figure C-6, 12 of the 14 facilities reviewed by the Siting Board since June 2022 have provided estimated population densities for a three-mile surrounding radius. The average population estimate for the surrounding three miles among these facilities is 1,741 residents, while the median population estimate for the same radius is 1,143 residents. The proposed Lynn Bark Energy facility has a population density within three miles that sits near the median among the 12 facilities, with an estimated 1,186 residents. Nine of the 14 facilities have also provided estimates of the population living within one mile and within five miles. Among those nine facilities, Lynn Bark Energy has the lowest estimated population within one mile and the fifth lowest estimated population living within five miles.

[8] Prior BBC reviews include Turkey Creek Solar, Unbridled Solar, Ashwood Solar, Flat Run Solar, Martin County Solar, Green River Solar, Rhudes Creek Solar, Russellville Solar, Telesto Energy, Pine Grove Solar, Song Sparrow, and Dogwood Corners projects.

Figure C-6.
Estimated Population Totals Within 5 Miles of Proposed Solar Facilities Reviewed by the Siting Board Since June 2022

Case Number	Filing Date	Facility Name	Radius from Project			County
			1 Mile	3 Miles	5 Miles	
2022-00096	June 2022	Telesto Energy Project	203	6,457	31,123	Hardin
2020-00243	August 2022	Golden Solar	NA	376	NA	Caldwell
2022-00115	October 2022	Thoroughbred Solar	NA	1,924	NA	Hart
2022-00262	November 2022	Pine Grove Solar	232	2,528	7,509	Madison
2022-00131	April 2023	Seebree Solar II	NA	NA	NA	Henderson
2022-00272	June 2023	Hummingbird Energy	109	1,088	4,181	Fleming
2022-00274	September 2023	Bright Mountain Solar	NA	2,647	NA	Perry
2023-00256	September 2023	Song Sparrow Solar	53	562	3,761	Ballard
2023-00246	September 2023	Dogwood Corners LLC	98	1,131	3,589	Christian
2023-00263	September 2023	Banjo Creek Solar	33	786	2,927	Graves
2023-00360	December 2023	Frontier Solar	123	1,155	8,811	Marion; Washington
2024-00105	May 2024	Pike County Solar	203	1,048	3,425	Pike
2024-00099	June 2024	Weirs Creek Solar	NA	NA	NA	Webster; Hopkins
2024-00104	**June 2024**	**Lynn Bark Energy Center**	**19**	**1,186**	**3,814**	**Martin**
		Average population	119	1,741	7,682	
		Median population	109	1,143	3,814	

Legal boundaries. In response to the First Request for Information (RFI) from the Siting Board, Lynn Bark Energy submitted redacted copies of the confidential lease agreement[9] for parcels in the proposed project to supplement the brief description provided in Exhibit C of the SAR.

Access control. In response to requests in the First and Second RFI, the applicant supplied an updated map of the site layout as well as a description of emergency services with whom they would communicate regarding the site, safety, and emergency access.

Applicant's representatives plan to engage with local law enforcement and fire services to provide information and to ensure they are familiar with the plan for security and emergency protocols during construction and operations. These departments include the Martin County Sheriff's office, Inez Police Department, Martin County Emergency Management, Inez Volunteer Fire and Rescue.[10]

Location and use of access ways, internal roads, and railways. The updated proposed project layout map (Figure C-5) depicts two site access locations—one to the west from KY 3 and one to the east from Coldwater Road—as well as nine internal gates within the project footprint, denoted with orange dots.

[9] Lynn Bark Energy Center, LLC's Response to Siting Board Staff's First Request for Information, Item 1 and Attachment A.

[10] Lynn Bark Energy Center, LLC's Response to Siting Board Staff's Second Request for Information, Item 10.

Existing or proposed utilities. In response to BBC's question in the Siting Board's First Request for Information regarding utility services required during construction or operations, Lynn Bark Energy stated:

Local electrical service will be required during construction and operation of the Project and is expected to be provided via distribution line by the local electric utility, which is Kentucky Power.[11]

Compliance with applicable setback requirements. The Siting Board's First RFI, Lynn Bark Energy was asked to summarize the justification for requesting a deviation from the 2,000-foot setback requirement for residential neighborhoods.[12] The applicant responded:

In short, the goals of the statutory setbacks can be achieved with a lesser setback due to the unique site and applicable topography. Specifically, as a former mountain top coal mining site, there is significant elevation change between the closest residences and the site, resulting in significantly decreased potential impacts. […]

Due to the limitations on buildable area within the Project site and some challenging topography, the Project's panel layout could not be re-configured to meet the 2,000 setback and still allow the Project to construct capacity at or near its nameplate of 200 megawatts ("MW").

Evaluation of noise levels. BBC's investigation of the proposed project's expected noise levels is addressed in full in a subsequent section of our report (Expected Noise from Construction and Operation) which begins on page C-36.

[11] Lynn Bark Energy Center, LLC's Response to Siting Board Staff's First Request for Information, Item 12.

[12] Lynn Bark Energy Center, LLC's Response to Siting Board Staff's First Request for Information, Items 19 and 20.

Conclusions and Recommendations Regarding the Description of the Proposed Facility and Site Development Plan

Based upon review of the applicant's SAR, subsequent information gathered from the applicant, and additional data collected by the BBC team, we reach the following conclusion concerning the description of the facility and the proposed site development plan:

- The applicant has generally complied with the legislative requirements for describing the facility and site development plan.

Recommended mitigation. Based on our review of the SAR and Application, the applicant's responses to the RFIs from the Siting Board and BBC, and our visit to site—as well as recent Siting Board orders in other solar cases—BBC recommends the following mitigation measures regarding this portion of the Kentucky statutory requirements (KRS 278.708(3)(a):

- Lynn Bark Energy should provide a final site layout plan to the Siting Board when site design is finalized and before site preparation begins. Any change in project boundaries or site layout from the information reviewed during this evaluation—including changes to the locations of solar panels, inverters, transformers, the substation, project fencing or other project facilities—should be clearly documented and submitted to the Siting Board for review.

- Lynn Bark Energy or its contractor should control access to the site during construction and operation. All construction entrances should be gated and locked when not in use. The applicant's access control strategy should include adequate signage at all site entrances and boundaries—particularly in locations visible to the public, local residents, and business owners—to warn potential trespassers.

- According to National Electric Code regulations, the security fence must be installed prior to any electrical installation work. Further, the substation must have its own separate security fence, with locked access.

- Should Lynn Bark Energy's Motion for Deviation from Setback Requirements be approved, the applicant should promptly and fully meet the terms of the setback provisions as outlined.

Compatibility with Scenic Surroundings

This section of the SAR review addresses the compatibility of the proposed Lynn Bark Energy facility with the scenic surroundings. This component of the SAR is identified in KRS 278.708(3)(b).

Potential Issues and Standard Assessment Approaches

Various government agencies throughout the country employ visual assessment methodologies based on professionally accepted techniques. These techniques are fundamentally consistent in their approach to evaluating the elements of a project and its compatibility with existing landscapes and other surroundings.

An example of a visual assessment methodology in use by a state power plant siting agency is the methodology employed by the staff of the California Energy Commission. In California siting assessments, the assessment of potential incompatibility between a project and its scenic surroundings focuses on project structures, such as smokestacks. Typically, the assessment also addresses project lighting and the potential for visible cooling tower plumes.

A standard visual analysis generally proceeds in this sequence:

- Analysis of the project's visual setting;
- Identification of key observation points (KOP);
- Descriptions of visual characteristics of the project; and
- Evaluation of impacts to KOPs.

A KOP is a location where people may periodically or regularly visit, reside, or work within the viewshed of the project's structures or emissions. [13]

In general practice, visual impact evaluations are conducted within one of three general frameworks, depending upon the relevant jurisdiction and its level of involvement at the project site. These are listed in order of structural formality:

- A formal visual resource or scenery management system, typically in effect only on federal lands, such as the U.S. Forest Service Scenery Management System or the U.S. Bureau of Land Management Visual Resource Management System;
- Locally applicable laws, ordinances, regulations, or standards, where imposed by state or local governments; and
- The cultural context, including the influence of previous uses on the landscape and public attitudes toward the compatibility of various types of land use.

[13] The viewshed is defined as an area of land, water, or other part of the environment visible to the eye from a vantage point. Conversely, the vantage point is presumed to be visible from locations within the viewshed.

Each framework, in its own way, embodies explicit or implicit consideration of some or all of the standard measures of visual impact: viewer exposure and sensitivity; relative project size, quality, visibility, exposure, contrast and dominance; and prevailing environmental characteristics, such as season and light conditions. Local regulations especially focus on screening facilities from public view and the effects of glare from outdoor lighting upon adjacent property.

In this instance, the visual impact evaluation followed the final of the three approaches listed above. The selected approach is appropriate as there is no ordinance specifying conditions relating to scenic compatibility.

Information Provided in the Applicant's SAR

In compliance with KRS 278.708, Section II of the SAR summarizes the assessment of compatibility with scenic surroundings. The SAR describes the visual setting of the proposed project:

The majority of the PV panel arrays will be located on previously cleared and disturbed areas, which occupy the hilltops that were partially flattened during past mining operations. Due to: (1) residences, businesses, and roads in the Project Site vicinity being located in narrow valleys approximately 300 feet lower in elevation than most of the proposed PV arrays; (2) distances of at least 1,067 feet of hilly topography between the nearest residences and the PV arrays; and (3) existing vegetation on hillsides in the area, there will be no direct views of PV arrays from these sensitive receptor locations.[14]

Two attachments to the SAR substantiate the finding that the proposed project would be compatible with the surrounding area. First, the Property Value Impact Study concludes that a solar farm is a compatible and harmonious use for rural agricultural/residential areas such as the proposed Lynn Bark Energy project site.

Second, the applicant's Glare Analysis Study, conducted by ERM and included as Exhibit G of the SAR, concludes that the proposed project would be minimally disruptive with respect to glare:

As currently designed, the Project Site would potentially generate a maximum of approximately 10 to 20 minutes of green glare per day along FP 2 during mornings in June and early July (Table 1). The contributing PV arrays are located 5.9 to 6.7 miles northeast of the threshold of Runway 03 (the end of FP 2). In addition, pilots on final approach would likely experience only a few moments of glare before the aircraft moves into a position from which glare is no longer visible.

In 2021, the FAA issued an updated policy regarding reviews of solar projects on federally obligated airport property in which the FAA concluded that in most cases "glare from solar energy systems to pilots on final approach is similar to glint and glare pilots routinely experience from water bodies, glass facade buildings, parking lots, and similar features."7 FAA policy focuses on potential impacts on crews in ATCTs, which would not apply to airports without ATCTs such as Big Sandy Regional Airport. Based on these factors, including the limited duration of predicted green glare along

[14] SAR, page 6.

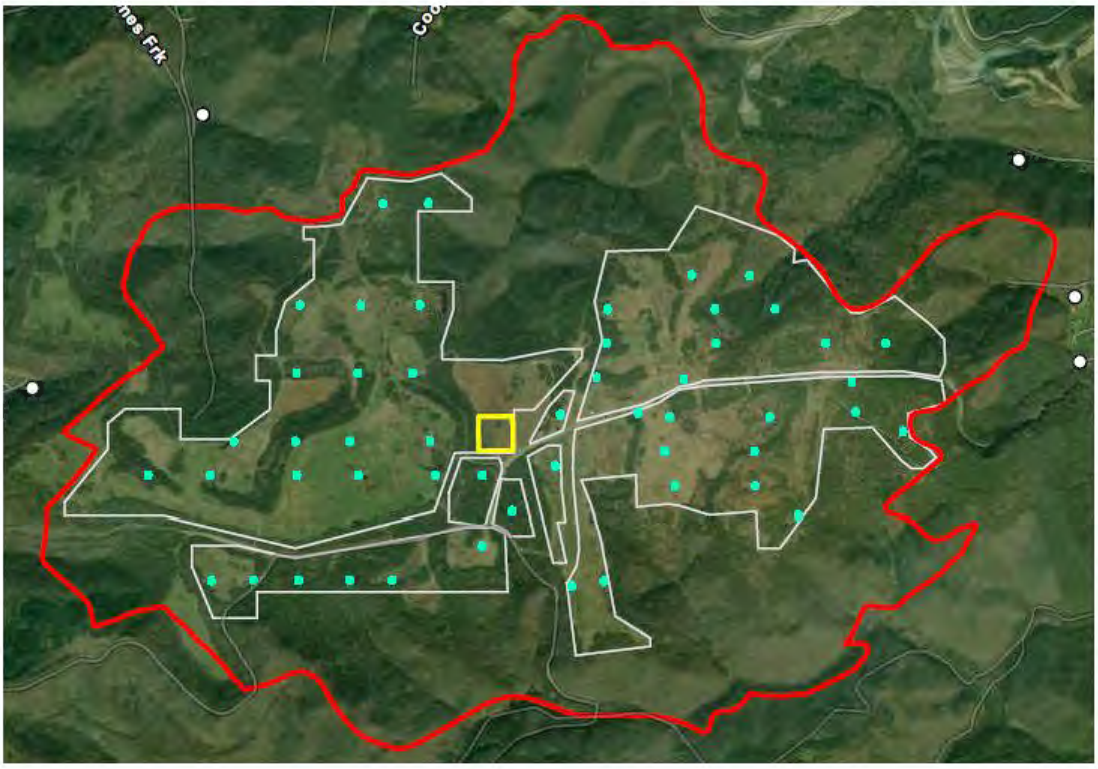
FP 2 and the absence of predicted yellow glare, impacts on pilots caused by the Project are expected to be minimal.[15]

The proposed Lynn Bark Energy solar project would be a large, commercial solar facility similar in size to several previous solar projects reviewed by BBC and other consultants for the Siting Board. As with those similar projects, much of the project's compatibility with the scenic surroundings is dependent on site topography and strategic vegetative screening. In this case, the project site having been a mountaintop coal mine before reclamation is a benefit to the proposed Lynn Bark Energy project as the elevation and vegetation would largely shield the surrounding residents and travelers from a view of the project components.

Supplemental Investigations, Research, and Analysis

The agricultural and agricultural/residential setting for the Lynn Bark Energy project—in rural Martin County where population density is low—is similar to many other proposed solar projects that have come before the Siting Board. However, the site's natural elevated topography, dense forestation, and status as reclaimed mine land is unusual compared with many other solar projects. In their Response to the Second RFI, Lynn Bark Energy suppled a satellite imagery map showing the density of vegetation at the site and in the surrounding area (Figure C-7).[16]

Figure C-7.
Tree Removal Anticipated at Project Fenceline and for Solar Facility Components



[15] SAR Exhibit G, page 6.

[16] Lynn Bark Energy Center, LLC's Response to Siting Board Staff's First Request for Information, Attachment J.

Lynn Bark Energy plans to remove existing vegetation only as necessary in order to make possible the installation of project components including fences, solar modules, inverters, and the substation.

Visual assessment. BBC visited the proposed Lynn Bark Energy project site in July 2024 to review the site and its surroundings. The following pages present photos from the site visit.

Figure C-8 shows a portion of the Main Street in Inez, the closest town to the Lynn Bark Energy site and shows the hilly topography and dense vegetation typical in the area.

Figure C-8.
Scene from Main Street at Community Center Parking Lot in Inez, KY

Figure C-9 shows a view towards the site from one of the closest residential developments. Views of the site from this location would be fully obscured by the topography and vegetation.

Figure C-9.
Closest Residences on Holden Spur to West of Site. Site is Ahead and Above. Shown as NSA-1 in Noise Study.

Figure C-10 is a photograph taken from the primary access road, on the western side of the site, looking back at the intersection with KY 3.

Figure C-10.
View from Private Mine Road West to Access Point from KY 3

Figure C-11 shows the existing gate near the bottom of the access road from the western side of the site.

Figure C-11.
Existing Gate at Bottom of Access Road

Figure C-12 shows a field which would become a panel area in the western portion of the site.

Figure C-12.
Future Panel Area Near West End of Site

Figure C-13 shows more of the existing access road from the west. The substation would be located to the north, along the road after it bends to the left in this photo.

Figure C-13.
Future Panel Area South of Anticipated Substation Location

Figure C-14 shows some of the existing vegetation and trees that would need to be removed to install solar panels and other project infrastructure.

Figure C-14.
Some of the Forested Areas Likely to Be Cleared for Solar Arrays

Figure C-15 shows an area south of the proposed substation where solar panels would be located.

Figure C-15.
Future Panel Area South of Substation Location

Figure C-16 shows the approximate location of the proposed substation from the existing access road.

Figure C-16.
Anticipated Substation Location

Figure C-17 shows more of the existing access road, including an existing farm shed that would be removed during project installation.

Figure C-17.
Existing Farm Shed East of Substation, Likely to be Removed

Figure C-18 shows an existing electric distribution line on the site. The project would use electricity from Kentucky Power as needed during construction.

Figure C-18.
Old Electric Distribution Line in Eastern Portion of Site

Figure C-19 shows an area near the eastern edge of the site. The closest residential neighborhoods to the site are located beyond and below the trees shown in this photo.

Figure C-19.
Near Eastern End of Site

Conclusions and Recommendations Regarding Compatibility with Scenic Surroundings

The proposed Lynn Bark Energy solar facility would be located in a rural, hilly area surrounded by some low-density agricultural and residential land. The applicant's proposed 1,500-foot setback (from Lynn Bark Energy's Motion for Deviation) is greater than the modified setbacks proposed in other applications BBC has reviewed for the Siting Board, and the site's topography and vegetation in key places means that the proposed Lynn Bark Energy solar project is very unlikely to be visible from nearby residences. BBC considers that the proposed project would be generally compatible with the scenic surroundings.

Recommended mitigation. BBC recommends the following mitigation measures regarding this portion of the Kentucky statutory requirements (KRS 278.708(3)(b):

- Existing vegetation on the site should be left in place to the extent feasible to help minimize visual and noise impacts and to further screen the project from nearby residents.
- Lynn Bark Energy should cultivate at least two acres of native pollinator-friendly species onsite.
- Lynn Bark Energy should use panels with anti-reflective coating to reduce glare and corresponding visual impacts, particularly with regard to flight traffic using the local airport.
- Lynn Bark Energy should be open to communication with adjacent landowners regarding viewshed impacts and the implementation of strategic vegetative screening, if needed.

Potential Changes in Property Values for Adjacent Property Owners

Potential Issues and Standard Assessment Approaches

Development of new power plants can raise issues related to potential changes in property values for nearby property owners. These issues may arise from the widespread perception that a power plant and its ancillary facilities—such as ash disposal landfills, overhead electric transmission lines and electric transformer sites—may be "undesirable land uses" whose impacts are expected to be translated economically into negative effects on property values. Studies also show that impacts may extend for some distance from the site, and possibly beyond the immediately adjacent properties. These findings, however, primarily apply to conventional, fossil fuel-fired plants.

Criteria for evaluating property values effects that reflect the concerns of a broad range of interested parties typically include these aspects of the issue:

- Land use compatibility;
- Findings from other empirical studies; and
- Potential for effects to other than adjacent property owners.

Land use compatibility. State and local governments around the country use standards of land use compatibility to minimize the effect of industrial land uses, like power plants, upon nearby properties. KRS Chapter 278 incorporates setback requirements as its primary standard for buffering the siting of power plants. Land use compatibility, in the strict sense of legal use, and in the general sense of reasonably probable use for a given location and "neighborhood," are also factors in a general appraiser's judgment and analysis concerning the "highest and best use" of a property.

Other general issues are also considered to encourage facility siting in compatible settings where negative effects would be minimal to the uses and values of nearby properties. In Wisconsin, for example, the Public Service Commission publishes this general definition of the range of potentially compatible sites for power plants:

"Typically, active or vacant industrial lands may be more compatible and urban residential lands may be less compatible with power plants. Generally, sites that are more compatible with present and planned land uses are more desirable, as are those where the plant would comply with existing land use regulations."

General land use planning practice offers the option to adopt or negotiate for performance standards for outdoor lighting, noise, vibration, odor, smoke, or particulate matter, and so forth to minimize off-site impacts to adjacent uses.

Findings from empirical studies. Standard real estate appraisals are the most common type of empirical study used to evaluate potential changes to property values. The appraiser generally relies upon an examination of as many actual sales as possible of comparable properties in similar locations and with similar expectations for highest and best use.

Academic studies published in the land and environmental economics literature have used a variety of property value-based analyses to estimate the actual effect of power plants and other "undesirable

land uses" whose impacts may have translated economically into negative effects on adjacent property values. So called "undesirable" uses that have been studied in this fashion over time include nuclear and non-nuclear power generation; hazardous, toxic, and nuclear waste disposal; conventional solid waste disposal; waste incineration; and hazardous industrial facilities.

For example, one study investigated the effect newly opened power plants had on property values in neighborhoods located within five miles of the plant. The study included 60 power plants, several of which were located in Kentucky and the surrounding states. The study found that housing values decreased by 3 to 5 percent between 1990 and 2000 in these neighborhoods compared to neighborhoods located further away from the plant. Another study of 262 undesirable or "noxious" facilities located across the country, including 92 coal, natural gas, or oil-fired power plants (of which two were in the East South Central region that includes Kentucky), illustrates this effect. Power plants were found to significantly decrease property values in the communities where they are located. The literature also includes numerous studies of the effect of electric transmission lines upon property values.

The standard statistical technique for evaluating the potential effects of an environmental amenity (such as beach frontage) or a disamenity (such as proximity to a hazardous waste site) is called hedonic pricing analysis. This technique recognizes that before one can evaluate the impact of an external characteristic on property values, the influences of other important value factors must be isolated and held constant using statistical techniques (e.g., multiple regression analysis). A hedonic pricing model treats the good in question (in this case local property values) as a bundle of amenities (size, aesthetic quality of property, access to local town, etc.) and disamenities (pollution, noise, etc.). Such a model is designed to isolate and quantify the implied effect on overall property value from each amenity or disamenity. Hedonic pricing models have been used to evaluate the impacts of many different factors contributing to the value of a piece of property. Examples include examining the effect of the proximity to hog farms (Palmquist, Roka and Vukina, 1997), beaches (Pompe and Rinehart, 1995), airports, and electric power plants (Blomquist, 1973).

Hedonic models are statistically estimated using multiple regression analysis. However, hedonic studies are complex and require extensive statistical training and large amounts of data. Moreover, not all factors that influence a home's selling price can be measured, and housing markets vary greatly from one region to another.

Potential for more distant off-site effects. Most analyses of property value impacts are local in scope. However, the effect of power plants and other facilities on property values has been shown to extend well beyond the site. This has been shown in at least one study, where negative effects of a small power plant located within the city of Winnetka, Illinois, were significant out to a distance of 11,500 feet, or more than two miles. As noted earlier, these findings also primarily apply to conventional, fossil-fuel fired plants.

Information Provided in the Applicant's SAR

Lynn Bark Energy engaged Kirkland Appraisals, LLC—which has conducted property value impact studies for several previous solar applications to the Siting Board—to examine the proposed project's potential impact on property values.

Exhibit B of the SAR (Property Value Impact Study) provides a comparative study of property values in proximity to solar facilities in Kentucky and in other states across the US, using a matched pairs design. The study draws its conclusions regarding the impacts of the proposed facility on adjacent property values based on market analysis of value impacts from numerous other solar facilities.

Exhibit B states that the closest home to the proposed project will be 1,575 feet from the nearest solar panel and that the average distance will be 3,122 feet.[17] Additionally, surrounding residential density is low and 97 percent of the surrounding acreage is agricultural or agricultural/residential. In a summary statement, Kirkland Appraisals concludes that there will be no property value impacts from the proposed Lynn Bark Energy solar facility on adjoining properties and that the proposed facility will be in harmony with the area.

The matched pair analysis shows no impact on home values due to abutting or adjoining a solar farm as well as no impact to abutting or adjacent vacant residential or agricultural land where the solar farm is properly screened and buffered. The criteria that typically correlates with downward adjustments on property values such as noise, odor, and traffic all indicate that a solar farm is a compatible use for rural/residential transition areas and that it would function in a harmonious manner with this area.[18]

Supplemental Investigations, Research, and Analysis

BBC's investigation of additional research. To obtain further perspective on this issue, BBC reviewed recent studies regarding solar facility effects on nearby property values. As commercial scale solar facilities become more prevalent in the central and eastern portions of the United States, the research and information concerning potential impacts on property values is also continuing to evolve.

In 2018, a study of the potential effects of commercial solar farms on nearby property values was conducted by the LBJ School of Public Affairs at the University of Texas. That study contacted public sector property assessors in 430 counties across the United States that had at least one utility-scale PV solar facility in place. Thirty-seven residential property assessors agreed to fill out the on-line survey asking their opinion on the likelihood that a solar farm would impact nearby residential property values. Among the findings of that study were that:

- "The majority of responses suggested either no impact (66 percent of all estimates) on home prices, or a positive impact (11 percent of all estimates), as a result of proximity to solar installations."
- "However, some respondents did estimate a negative impact on home prices associated with solar installations." In the 23 percent of cases where negative impacts on value were estimated, the negative effect was estimated to increase with closer proximity and larger scale solar installations. Respondents who had actual experience in assessing homes near solar installations estimated a 3 percent decline in value for homes within 100 feet of a 20 MW solar installations and a 5 percent decline in value within 100 feet of a 102 MW solar facility.

[17] SAR Exhibit B, page 5.

[18] SAR Exhibit B, page 1.

- "The results also suggest that experience assessing near a solar installation is associated with a much less negative estimate of impact."[19]

A 2020 study published by economists from the University of Rhode Island using the hedonic pricing analysis approach described earlier identified statistically significant negative impacts on home prices due to proximity to commercial solar sites in Rhode Island and Massachusetts —under certain conditions. Of the studies BBC has reviewed, this study appears to be the most robust in the sense that is covers a wide and diverse geographic area, observes hundreds of thousands of home sales transactions over a long period of time pre- and post-solar farm development, and has results that are robust to many different model specifications.

The study, based on "over 400,000 transactions within three miles of a solar site", found that residential property values in suburban areas within one mile of a solar facility declined by 1.7 percent (on average) compared to surrounding properties, with larger effects on home values within 0.1 miles (500 feet) of a solar site (-7.0 percent). However, solar sites in industrial or rural areas[20] had no statistically significant impact on home prices.[21]

Another recent contribution to the research on this topic is the 2019 PhD Dissertation of Dr. Nino Abashidze, an economist at the University of Georgia. Dr. Abashidze used the hedonic pricing model approach and econometric regression analysis to evaluate the effects from proximity to solar farms on both agricultural land values and residential property values in North Carolina. Dr. Abashidze found that proximity to solar farms had no discernable effect on *agricultural* land values (properties 30 acres or larger in size). However, Dr. Abashidze did find statistically significant negative impacts on *residential* property values. Dr. Abashidze's econometric analysis found that (on average) homes within one mile of solar facilities experienced an estimated nine percent decrease in value, while homes closer to the facilities (within one-half mile) experienced an estimated 12 percent decrease in value. It is also important to note, however, that most of the residential properties in Dr. Abashidze's analysis were located on relatively small lots (average lot size of 0.9 acres, sample standard deviation in lot size of 1.6 acres) and that the study was based on a relatively small number of home sales transactions compared to the University of Rhode Island study.[22]

Most recently, a team from the Lawrence Berkeley National Lab and the University of Connecticut examined the impact of large-scale non-rooftop photovoltaic projects on residential home prices in California, Massachusetts, Minnesota, North Carolina, New Jersey, and Connecticut.[23] This 2023 study

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[19] *An Exploration of Property-Value Impacts Near Utility-Scale Solar Installations.* Project Director: Dr. Varun Rai. Policy Research Project (PRP), LBJ School of Public Affairs, The University of Texas at Austin, May 2018.

[20] In the study by Gaur and Lang cited below, "rural" is defined as areas with municipal population density of less than 850 people per square mile. The proposed Lynn Bark Energy facility would sit in unincorporated Martin County, and the surrounding area has a low population density.

[21] *Property Value Impacts of Commercial-Scale Solar Energy in Massachusetts and Rhode Island.* Vasunda Gaur and Cory Lang, University of Rhode Island. September 29, 2020. Available at https://works.bepress.com/cory_lang/33/

[22] Abashidze, Nino. *Essays on Economic and Health Effects of Land Use Externalities.* (Under the direction of Dr. Harrison Fell). Page 71. University of Georgia, 2019.

[23] *Shedding light on large-scale solar impacts: An analysis of property values and proximity to photovoltaics across six U.S. states.* Elmallah, S., Hoen, B., Fujita, K.S., Robson, D., and Brunner, E; Energy Policy 175 (2023) 113425, January 2023. Available at https://www.sciencedirect.com/science/article/pii/S0301421523000101

analyzed data on 1,630 large solar facilities combined with data from the USGS National Land Cover Database (to determine land use type); urban-rural classification data from the US Census Bureau; and CoreLogic home sales data for more than 1.8 million transactions. Overall findings were that homes within half a mile of a large-scale solar project see an average price reduction of 1.5 percent compared to homes more than two miles away from the facility; that there was no statistically significant impact beyond one mile; and that property value impact was only measurable for certain states (Minnesota, North Carolina, New Jersey), for rural homes, and for larger projects located on agricultural land.

The results of this study indicate that, in a rural agricultural context, there is potential for a slight negative impact on property values for homes within one mile of a large solar project. However, the authors note in their discussion the wide variety among the 1,630 solar projects included in the study and that policy practices to mitigate potential negative impacts of solar development include vegetative screening and land use co-location (e.g., integrating solar development and agricultural production).

Conclusions and Recommendations Regarding Potential Changes in Property Values

With the proliferation of commercial solar facilities across the U.S., there is an increasing focus on the potential effects on residential property values from proximity to such facilities.

Most studies sponsored by solar developers have analyzed this question using sales price comparisons of homes near solar facilities to comparable homes that are not proximate to a solar facility, using techniques similar to the approach used in appraising homes. These studies identify similar homes (except for their proximity to solar facilities) and use appraisal techniques, which may be more subjective than the statistical techniques used in econometric studies, to adjust for differences in age, square footage, and other home characteristics. BBC has reviewed several of these studies and can confirm that they have consistently found no impact on property values from proximity to solar installations.

To date, relatively few studies have been conducted by academic researchers or other "third-party" analysts, but the body of research is slowly growing. Using different methods, and different data sources, recent studies by professors at the LBJ School of Public Affairs (University of Texas), the University of Rhode Island, and the Lawrence Berkeley National Laboratory have found that there could be small, negative impacts on property values from proximity to commercial solar facilities. In some studies, those negative effects appear to be more likely in suburban settings, rather than rural settings. Another recent study by a University of Georgia economist of impacts to property values from solar farms in North Carolina – using a hedonic pricing model and econometric approach similar to the University of Rhode Island study – found that solar facilities did not impact nearby *agricultural land* values but did reduce nearby *residential* values (within one mile) by nine to 12 percent, on average. And in the case of the recent 2023 study of property value impacts across six U.S. states, impacts were found in only three states and were limited to rural homes in agricultural settings, with no consideration for the presence or absence of a vegetative screen.

Overall, research and literature on this topic continues to grow and has not reached a consensus on any universal relationship between home values and proximity to nearby solar facilities. Two econometric property value studies indicate that the likelihood of adverse impacts on property values from nearby solar facilities increases with proximity to the solar site and with residential

density, and decreases in more rural, agricultural settings. Another study indicates that the land use context and geographic location (e.g., state) of the solar project are essential factors in projecting any possible impacts. The duration of any adverse effects on nearby residential property values has yet to be established.

As shown earlier in Figure C-3, about 97 percent of the land use adjacent to the proposed Lynn Bark Energy solar facility is considered to be either agricultural or large lot "agri/residential," while about 3 percent of the adjacent land is considered residential. Theoretically, based on some of the recent studies these properties could be at risk of a reduction in value, though the findings from the studies discussed and cited above are not consistent in determining factors that influence value impacts.

Acknowledging that the project site's existing vegetation and substantial elevation above neighboring residences will obscure the site's physical elements from nearby residences and roads, we conclude that the proposed solar facility is unlikely to have adverse impacts on adjacent property values.

Recommended mitigation. It is important to note that while some of the academic studies discussed above have documented negative impacts to home values, the cause of the impacts has not been well researched. The studies hypothesize that solar farms may act as a visual disamenity, which suggests there is potential to mitigate negative impacts through actions designed to buffer the view of solar facilities from nearby homes.

The topography of the site—which is a reclaimed mountaintop coal mine site in elevated and heavily forested terrain—naturally shields nearby residences from a view of the site or facility components. Consequently, BBC believes the Lynn Bark Energy solar facility would not cause any adverse impact on nearby residential property values but recommends the following measure to ensure minimal impact to the surrounding properties.

- Existing vegetation on the site should be left in place to the extent feasible to help minimize visual and noise impacts and to screen the project from nearby residents.

Expected Noise from Construction and Operation

This section evaluates the studies and conclusions discussed in the SAR concerning peak and average noise levels associated with construction and operation of the proposed Lynn Bark Energy facility. This component of the SAR is identified in KRS 278.708(3)(d).

Potential Issues and Standard Assessment Approaches

Various governmental agencies throughout the country employ noise assessment methodologies based on professionally accepted techniques. In evaluating the construction and operational stages of a project, these techniques are fundamentally consistent in that they seek to estimate the potential contribution to ambient noise levels at the site in terms of sensitive receptors. Generally, assessment methodologies are meant to measure the increase in noise levels over the ambient conditions at residential and non-residential sensitive receptors.

A standard noise impact assessment focuses on several key factors:

- Identification of sensitive receptor sites;
- Existing local ambient noise levels;
- Estimated construction or operational noise intensities;
- Distances between noise sources and sensitive receptors;
- Time of day during which peak noises are anticipated;
- Noise created by transportation features such as conveyors, trucks, and rail lines; and
- Calculation of the cumulative effect of the new noise sources when combined with the existing ambient noise level, recognizing that new noise sources contribute to the ambient noise level, but not in an additive way.

Information Provided in the Applicant's SAR

Noise levels generated by facility construction and operation are addressed in Section IV of the SAR (Anticipated Noise Levels at Project Site Boundary) and in the Acoustic Assessment—conducted by ERM with the Cadna-A® sound model—which is included as Exhibit D of the SAR. During project construction—including site preparation, excavation, and solar equipment installation—impacts on nearby noise-sensitive receptors (NSRs) will be generated by construction equipment and vehicles, particularly during pile driving for the solar panel racking. Operational sound levels are expected to be modest and non-disruptive for the operating lifetime of the project.

Noise generated during construction. Section 4 of the SAR summarizes key findings from the Acoustic Assessment (Exhibit D). Exhibit D states that a maximum noise level of 47 dBA at the nearest residence is expected during the construction phase of the proposed project when pile drivers would be operating at the site.

The Acoustic Assessment Report notes that project construction will likely occur in five phases and typical equipment to be used in the construction of the Lynn Bark Energy solar facility includes

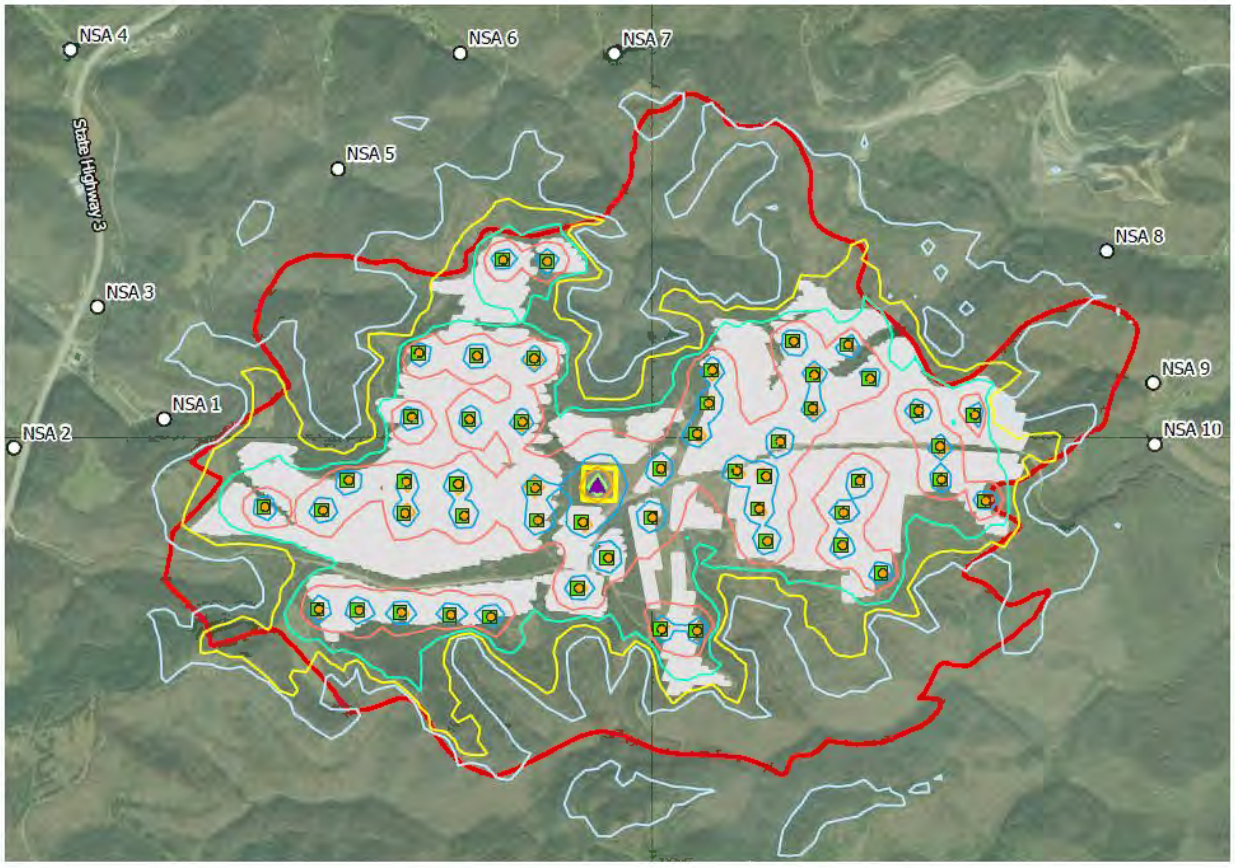
vehicles and machinery such as backhoes, bulldozers, excavators, graders, dump trucks, and pile drivers; this is similar to all other solar facility applications that BBC has reviewed. The Acoustic Assessment Report utilizes standard sound emissions levels for construction vehicles and equipment (as published by the Federal Highway Administration Roadway).

From the nearest noise-sensitive receptors to the proposed Lynn Bark Energy project, the applicant's projected maximum construction noise levels are lower than BBC has observed for several other applications submitted to the Siting Board. This level of noise emission is unlikely to cause excessive disturbance.

Noise generated during operation. During normal facility operation, select solar equipment will emit noise – specifically, the project substation transformer and the project inverters. The Acoustic Assessment in Exhibit D finds that the highest expected daytime sound level at the nearest sensitive receptor due solely to facility operation is 20 dBA, which is far below the estimated daytime ambient noise condition of 40 dBA in the area. Sound generated at nighttime will be much lower as the facility components will be in standby and will not resume electricity generation until the sun rises.

Figure C-20 presents the noise contour map for daytime operational noise during the project lifetime. The red outline indicates the proposed project's boundary and the light blue contour line (outermost and closest to the noise sensitive area receivers (NSAs) is indicative of a noise level of 30 dBA.

Figure C-20.
Daytime Operational Noise Contours Map



The Acoustic Assessment Report summarizes the impacts of construction and operational noise emissions as follows:

The construction noise assessment, conducted for both pile driving and general construction activity, revealed that pile driving noise levels would be below the estimated existing ambient condition at about half of the NSA locations, due to the shielding effect provided by area topography. The other half of NSA locations were shown to have pile driving noise levels above ambient, but only when pile driving is occurring at the nearest approach to the NSA. General construction related noise levels would be lower than pile driving noise.

The operational noise assessment revealed that Project-generated noise levels would be well below estimated existing conditions at all identified NSA locations during daytime hours with all equipment in operation at full load. Much lower operational noise levels, well below the estimated ambient condition, would occur during nighttime hours when the Project inverters are not in operation. Modeled levels were also shown to be well below the USEPA recommended protective noise level at all nearby NSAs during both daytime and nighttime operating conditions.[24]

[24] SAR Exhibit D, page 10.

Supplemental Investigations, Research, and Analysis

In the course of responding to the Siting Board's First and Second Requests for Information, Lynn Bark Energy provided an updated construction schedule for the proposed project, attached here as Figure C-21.

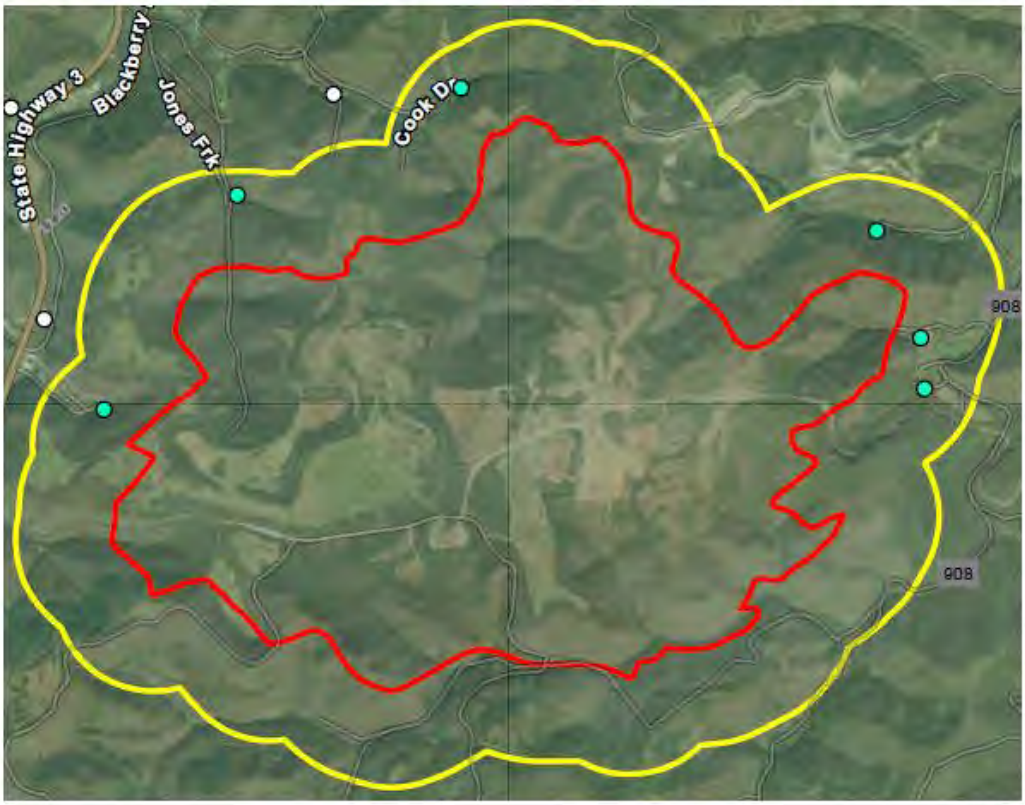
Figure C-21.
Proposed Lynn Bark Energy Solar Project Construction Schedule

		LYNN BARK CONSTRUCTION SCHEDULE		
PROJECT MILESTONE	START	FINISH	CONSTRUCTION EQUIPMENT	DURATION
NOTICE TO PROCEED	June 30, 2026	-	-	1 DAY
MOBILIZATION	June 30, 2026	-	-	1 DAY
CIVIL WORKS INCLUDING FENCING, ACCESS ROADS, AND EROSION CONTROL	June 30, 2026	March 31, 2027	EXCAVATORS, DOZERS, DUMP TRUCKS, BACKHOES	9 MONTHS
PIER INSTALLATION	August 1, 2026	January 30, 2027	PILE DRIVERS	5 MONTHS
RACKING AND MODULES	September 1, 2026	June 1, 2027	ATVS AND PICKUP TRUCKS	8 MONTHS
COMBINER TO INVERTER ELECTRICAL	September 1, 2026	May 1, 2027	BACKHOES AND SKID STEERS	7 MONTHS
SUBSTATION (ENERGIZE)	-	August 1, 2027	MOBILE CRANE	TBD (ESTIMATED 2 WEEKS)
COMMISSIONING	May 1, 2027	July 1, 2027	-	
MECHANICAL COMPLETION	-	July 1, 2027	-	
SUBSTANTIAL COMPLETION	-	August 1, 2027	-	
FINAL COMPLETION	-	September 30, 2027	-	

The applicant plans to commence site construction in June 2026 and complete the project in September 2027, for a total construction duration of 15 months. Pile driving activity, which will generate the greatest noise levels on site, is scheduled to occur across a five-month period within the construction phase.

In order to provide a better visualization of the receptors that have the potential to be disrupted by construction noise, Lynn Bark Energy supplied a map showing the closest residences to the project site. This is shown in Figure C-22.

Figure C-22.
Noise Sensitive Receptors (Residences) Within 1,500 Feet of Project Boundary



The red outline indicates the project boundary (although project components will not necessarily be built to the edge of the boundary line), and the yellow outline is a 1,500-foot radius from the project boundary. There are six residences within 1,500 feet of the boundary line.

Pile driving noise estimates for KY solar projects. BBC compared the projected construction and operational noise levels from the Lynn Bark Energy project to previous estimates for other Kentucky solar projects we have reviewed for the Siting Board over the past four years.[25] We found that the noise level estimates in the Lynn Bark Energy Acoustic Assessment for pile driving activity (101 dBA at 50 feet) are consistent with the noise level projections from these other proposed solar facilities. Figure C-23 summarizes the pile driving noise levels estimated in several proposed solar facility applications.

[25] In addition to the proposed Lynn Bark Energy project, BBC also reviewed the proposed Turkey Creek, Unbridled, Ashwood, Flat Run, Martin County, Green River, Rhudes Creek, Russellville, Telesto, Pine Grove, Song Sparrow, and Dogwood Corners solar facilities.

Figure C-23.
Estimated Noise Levels from Pile Driving, KY Solar Project Proposals (dBA)

	Maximum estimated noise level at 50 ft (dBA)
Lynn Bark Energy	
Pile driver	101.0
Dogwood Corners	
Pile driver (impact)	101.0
Pile driver (sonic)	95.0
Song Sparrow Solar	
Pile driver	100.0
Pine Grove Solar	
Pile driver	101.0
Telesto Energy	
Pile driver (impact)	90.0
Russellville Solar	
Pile driver (impact)	102.0
Rhudes Creek Solar	
Pile driver & other equip.	90.0
Green River Solar	
Pile driver	94.9
Martin County Solar	
Pile driver (impact)	101.0
Pile driver (sonic)	95.0
Flat Run Solar	
Pile driver	100.6
Ashwood Solar	
Pile driver (impact)	101.0
Pile driver (sonic)	95.0
Unbridled Solar	
Pile driver (impact)	101.0
Turkey Creek Solar	
Pile driver (impact)	101.0
Pile driver (sonic)	96.0

The Lynn Bark Energy Acoustic Assessment models noise levels at nearby receptors based on a pile driver noise measurement that is consistent with the Federal Highway Administration and the majority of pile driver noise estimates from previous solar facility applications before the Siting Board. The alternative setback requirements requested by Lynn Bark Energy are larger than the modified setback distances requested in some of the previous applications that have come before the Siting Board. These setback distances, along with the site's topography result in a relatively modest noise impact for the nearest residences to the project during pile driving activity.

Figure C-24 presents Lynn Bark Energy's table of cumulative noise levels modeled at the residences nearest to the proposed project site.[26]

[26] Lynn Bark Energy Center, LLC's Response to Siting Board Staff's Second Request for Information, Item 12.

Figure C-24.
Updated Cumulative Pile Driving Noise at Receptors

Receiver [2]	Maximum Pile Driving Noise from Nearest Pile Driver	Estimated Daytime Ambient Condition [1]	Cumulative Noise Level (Pile Driving Plus Ambient)	Increase Over Estimated Daytime Ambient Condition
Residence 1	40	40	43	3
Residence 2	50	40	50	10
Residence 3	56	40	56	16
Residence 4	57	40	57	17
Residence 5	49	40	49	9
Residence 6	41	40	44	4
Residence 7	42	40	44	4
Residence 8	41	40	44	4
Residence 9	41	40	43	3
Residence 10	54	40	54	14
Residence 11	41	40	44	4
Residence 12	43	40	45	5
Residence 13	43	40	45	5
Residence 14	42	40	44	4
Residence 15	42	40	44	4
Residence 16	41	40	43	3
Residence 17	41	40	43	3
Residence 18	38	40	42	2
Residence 19	44	40	46	6
Residence 20	38	40	42	2
Residence 21	45	40	46	6

Figure C-24 updates the maximum noise level expected at the nearest residence due to pile driving. Four receptors are anticipated to experience cumulative noise levels between 50 and 57 dBA.

Commonly accepted noise level exposure limits. BBC researched noise level exposure limits advocated by public health agencies such as the CDC and the National Institute for Occupational Safety and Health (NIOSH). NIOSH has a recommended exposure limit of 85 dBA (note that decibels are measured on a logarithmic scale).[27] Figure C-25 identifies the time that it takes for a person to reach their full daily noise dose based on differing levels of noise exposure.

[27] Noise and Hearing Loss Prevention. The National Institute for Occupational Safety and Health. https://www.cdc.gov/niosh/topics/noise/default.html

Figure C-25.
Time to Reach 100 Percent of Daily Noise Dose

Source: Centers for Disease Control and Prevention, The National Institute for Occupational Safety and Health, Guidance and Regulations

Time to reach 100% noise dose	Exposure level (dBA)
8 hours	85
4 hours	88
2 hours	91
1 hour	94
30 minutes	97
15 minutes	100

At 57 dBA—the reported maximum noise level experienced during pile driving at the nearest receptor as shown in Figure C-24 —the level of noise does not approach hazardous. A noise level of 57 dBA is approximately as loud as an air conditioner. However, it warrants management to ensure that no nearby sensitive receptor experiences prolonged continuous exposure to pile driver noise.

Conclusions and Recommendations

During construction, noise from the pile drivers will have the most substantial impact on the nearest noise receptors. However, maximum noise levels at the nearest receptors are not projected to reach a hazardous level, and the activity of pile driving is intermittent and unlikely to disturb any one receptor for an extended period.

During normal operation of the proposed Lynn Bark Energy solar facility, noise levels from inverters and the substation transformer are unlikely to be disruptive to local residents.

The area in which the proposed project site sits is a mountainous, agricultural and rural residential landscape with a low population density and few noise sensitive receptors within 2,000 feet of the proposed project boundary. It is unlikely that the noise levels at the site during facility operation will be incongruous with the existing noise profile of the area.

Recommended mitigation. Lynn Bark Energy should clarify precisely where pile driving will occur and mitigate hazardous or annoying noise as necessary, depending on the proximity to nearby residences. Further:

- Lynn Bark Energy should conduct construction activity only between 8 AM and 7 PM, Monday through Saturday, and pile driving only between 9 AM and 5 PM, Monday through Friday.
- Lynn Bark Energy should notify residents and businesses within 2,000 feet of the project boundary about the construction plan, the noise potential, and mitigation plans one month prior to the start of construction.
- During construction, Lynn Bark Energy should locate stationary noise-generating equipment, such as air compressors or power generators, as far as practicable from neighboring residences.
- Lynn Bark Energy should implement a Customer Resolution Program to address any complaints from surrounding landowners. Lynn Bark Energy should submit an annual status report on the Customer Resolution Program to the Siting Board, identifying any complaints, the steps taken to resolve those complaints, and whether the complaint was resolved to the satisfaction of the affected landowner.

Impacts on Transportation

This portion of the SAR review examines the impact of the proposed Lynn Bark Energy facility on road transportation. This also includes traffic effects, such as congestion, safety, fugitive dust, and degradation of the transportation infrastructure. This component of the SAR corresponds to KRS 278.708(3)(e).

Potential Issues and Standard Assessment Approaches

Development of a new power plant can raise a variety of potential traffic related issues. These issues may arise from the movement of construction workers and heavy and oversized loads during the construction process and added congestion during both construction and subsequent operations.

Standard components of the evaluation of traffic-related impacts include:

1. Identification of access methods, and a description and visual portrayal of primary access routes to the site during construction and during operation.

2. Description of baseline traffic conditions: existing traffic counts, road capacity and level of service and any major existing constraints (e.g., bridge weight limitations, etc.).

3. Identification of any special transportation requirements during construction (e.g., the need to reinforce or "ramp over" existing bridges, detours, temporary closures, etc.).

4. Projection of traffic volumes related to construction and operation.

5. Determination of whether the additional traffic, during construction and operation, would lead to congestion, changes in the level of service of the existing road network or additional road maintenance costs.

Information Provided in the Applicant's SAR

Section V of the SAR (Effect on Road, Railways and Fugitive Dust) and Exhibit E of the SAR (Traffic Impact Study) provide information regarding anticipated impacts on transportation at and around the proposed project site during construction and operation.

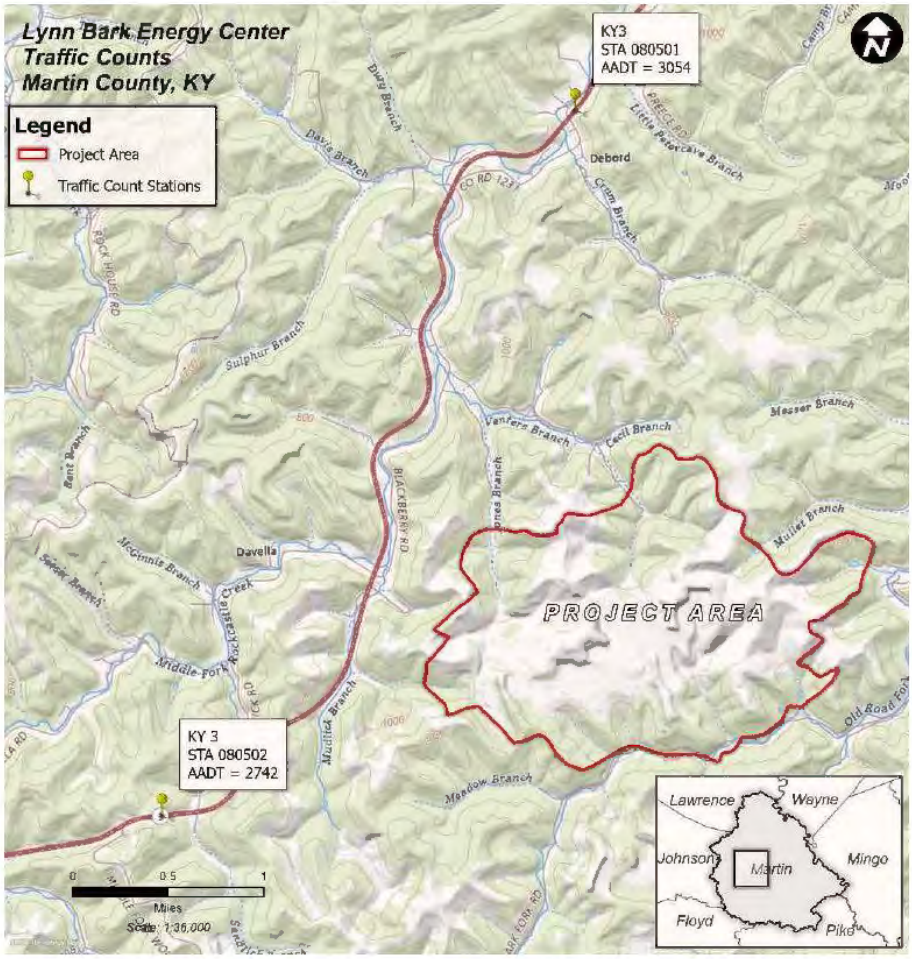
A solar facility development is proposed for a property located in Martin County east of KY 3. The petitioner proposes to utilize the existing land to establish a solar facility on the site which is approximately 1,514 acres in size. The project site will have a primary access point along KY 3. […]

KY 3 is a rural minor arterial that provides local and regional access to the proposed project. KY 3 generally runs in a north-south direction. Lane widths measure approximately 12 feet. In the vicinity of the project site, this road consists of two thru lanes in each direction, a two-way left turn lane, and wide shoulders (approximately 10') on both sides of the roadway. The existing speed limit is posted at 55 mph.[28]

[28] SAR Exhibit E, pages 1 & 4.

Figure C-26, excerpted from Exhibit E, shows the proposed project site situated east of KY 3.

Figure C-26.
KYTC Count Stations Monitored for Lynn Bark Energy Traffic Impact Study



Palmer Engineering, on behalf of the applicant, reviewed available traffic volume data from the Kentucky Transportation Cabinet (KYTC) for two count stations along KY 3, as shown in Figure C-26.

The Traffic Impact Study states that, during the construction phase of the project, traffic flow will be impacted by the commute of construction workers to and from the site (assumed to occur during peak AM and PM hours) as well as the frequent arrival and departure of large trucks necessary for equipment delivery.

Construction workers will consist of laborers, equipment operators, electricians, supervisory personnel, support personnel, and construction management personnel. It is envisioned that workers will arrive from passenger vehicles and trucks daily during the AM (7:00 – 9:00 AM) and depart during the PM (3:00 – 6:00 PM) peak hours. Equipment deliveries will occur at various times during the day. During construction, the vehicle traffic expected is approximately 100 pickup trucks and passenger cars

and 5 to 10 tractor trailer trucks. Therefore, this study assumes 10 tractor trailer trucks per day. The construction of the proposed facility will take from twelve to eighteen months to complete.[29]

The Traffic Impact Study projects that one vehicle would travel to the project site each day during the operational lifetime of the project, and that this level of traffic to the project site would have no measurable impact on the traffic and/or transportation infrastructure.[30]

The Traffic Impact Study concludes by stating:

As demonstrated in the traffic analysis, the construction period trip generation of workers and trucks will not generate a significant number of trips on local roadways. KY 3 will continue to operate at an acceptable LOS during the scenario of when construction traffic is added to the existing peak traffic counts and during the scenario when post-construction traffic is added to existing peak traffic counts. Although no significant or adverse traffic impacts are expected during project construction or operation, using mitigation measures such as ridesharing between construction workers, using appropriate traffic controls, or allowing flexible working hours outside of the peak hour could be implemented to minimize any potential for delays during the AM and PM peak hours. It is recommended that all over-sized deliveries be scheduled during off-peak hours to mitigate any impacts.[31]

In the First RFI, BBC requested more information about the estimated number and class of delivery trucks anticipated on site and the load weight of the substation transformer delivery, as well as documentation of any correspondence between Lynn Bark Energy and the KYTC District Engineer or the Martin County Road Department.

Regarding fugitive dust, the SAR states that Lynn Bark Energy will use best management practices, including appropriate revegetation, water application, and covering of spoil piles and open-bodied transport trucks to minimize dust.[32]

Supplemental Investigations, Research, and Analysis

Vehicle load weights and compatibility with local roadways. BBC conducted further research on the weight limits and vehicle classes permitted to travel on specific roadways in Kentucky. The primary roadways serving the project area are rated for weight limits of 80,000 pounds, 44,000 pounds, or 36,000 pounds (KYTC Truck Weight Classification). Any vehicle loads exceeding these limits could subject the roadway and shoulder to damage or degradation. The smaller, local roads transited by delivery trucks may be more susceptible to degradation from heavy loads.

Regarding potential damage to local roadways, the most concerning delivery to site would be that of the proposed project's substation transformer. A 2012 publication on Large Power Transformers (LPTs) by the U.S. Department of Energy states:

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[29] SAR Exhibit E, page 6.

[30] SAR Exhibit E, page 7.

[31] SAR Exhibit E, page 8.

[32] SAR, pages 8 & 9.

Transporting an LPT is challenging – its large dimensions and heavy weight pose unique requirements to ensure safe and efficient transportation… When an LPT is transported on the road, it requires obtaining special permits and routes from the department of transportation of each state on the route of the LPT being transported. According to an industry source, obtaining these special permits can require an inspection of various infrastructure (e.g., bridges), which can add delay. In addition, transporting LPTs on the road can require temporary road closures due to traffic issues, as well as a number of crew and police officers to coordinate logistics and redirect traffic.

BBC consulted the Kentucky Transportation Cabinet's Department of Overweight/Over-dimensional Vehicles Route Evaluation online tool to ascertain potential route restrictions for oversized deliveries. The BBC team input information for several sample configurations into the KYTC Route Evaluation tool and found that there could be problems with load clearances, particularly during delivery of the power transformer, dependent on the exact configuration of the delivery load.

Any local roads that are not state routes are not covered by KYTC permits and must instead be permitted through the appropriate County entity. However, overall BBC finds that the limitations and challenges of the primary roadways adjacent to the proposed Lynn Bark Energy project site are comparable with those of several other recent solar facility applications reviewed and approved by the Siting Board over the past few years.

In the First RFI, BBC requested further information from the applicant regarding planning or correspondence between Lynn Bark Energy and the KYTC District Engineer or the Martin County Road Department. The applicant responded that no formal communication had yet occurred with either entity, but that they expect to begin those conversations soon.[33]

Delivery vehicles. Responding to questions posed in the First and Second RFI, Lynn Bark Energy supplied information regarding the planned peak number of construction vehicles accessing the project site as well as delivery load weights for varying truck types.

Applicant expects peak truck delivery will occur during module delivery. Applicant anticipates delivery of solar panels at approximately 10 pallets per truck and 41 modules per pallet, which equates to approximately 19 trucks per day for approximately a six-week period. During this time, additional deliveries may be made, resulting in peak truck delivery of approximately 20-30 trucks per day for that short period. […]

The Project has not yet chosen an EPC contractor nor finalized the construction schedule and therefore does not have the specifics for the maximum expected load weights for each type of delivery truck. Based on the traffic and economics reports and our experiences at the Martin County Solar Project, Applicant estimates that only a few heavy duty/oversized truck deliveries will be needed throughout the entire construction period. Greater detail will be known closer to construction. The Main Power Transformer (MPT) is the heaviest piece of equipment to be delivered to the site. There will be a unique delivery plan for the MPT.[34]

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[33] Lynn Bark Energy Center, LLC's Response to Siting Board Staff's First Request for Information, Item 47.

[34] Lynn Bark Energy Center, LLC's Response to Siting Board Staff's Second Request for Information, Items 7 & 8.

BBC expects that advance planning between Lynn Bark Energy and the KYTC (as well as the Martin County Road Department, as applicable) can mitigate problems resulting from overweight and over-dimensional load delivery.

Conclusions and Recommendations

During construction, daily deliveries on semi-truck trailers and workforce commuter traffic will substantially increase the amount of traffic on primary roadways near the project site. However, all impacted roadways are projected to maintain a high level of service (LOS).

Delivery of the project's substation transformer will likely present some challenges given the load ratings of surrounding roadways, but, in general, challenges can be overcome with careful advance planning with the KYTC and Martin County Road Department and by utilizing an appropriate traffic management plan.

Recommended mitigation. BBC recommends the following measures to mitigate potential impacts on traffic and the local road network:

- Lynn Bark Energy should submit a final construction schedule, including updated estimates of on-site workers and commuter vehicle traffic, to the Siting Board prior to commencement of construction.

- Lynn Bark Energy should develop and implement a traffic management plan for the construction phase of the project to minimize impacts on traffic flow and keep traffic safe. As part of this plan, Lynn Bark Energy should implement ridesharing between construction workers; use appropriate traffic controls; or allow flexible working hours outside of peak hours to minimize any potential delays during AM and PM peak hours.

- Lynn Bark Energy and its construction contractors should comply with all laws and regulations regarding the use of roadways.

- Lynn Bark Energy should obtain permits from the KYTC and local road authorities as needed for overweight and overdimensional vehicle transport to the site and comply with all permit requirements, coordinating with the KYTC Permits Engineer and the Martin County Road Department as needed.

- Lynn Bark Energy should determine whether shoulder stabilization and/or road widening is necessary on any local route to accommodate deliveries to the site. Lynn Bark Energy should coordinate with the Martin County Road Department regarding any necessary improvements.

- Lynn Bark Energy should commit to rectifying any damage to public roads by fixing or fully compensating the appropriate transportation authorities for any damage or degradation to the existing road network that it causes or to which it materially contributes.

- Lynn Bark Energy should properly maintain construction equipment and follow best management practices related to fugitive dust throughout the construction process. Dust impacts should be kept to a minimal level.

Other Issues

While not specifically required under the statutes authorizing SAR reviews by consultants for the Siting Board (KRS 278.708), it has become customary to consider additional issues in these reviews, including economic impacts and project decommissioning. This final portion of this section of BBC's report includes these aspects.

Economic Impacts

Current economic conditions and trends. As discussed previously, the proposed Lynn Bark Energy solar facility would be located in central Martin County, approximately 6 miles from the county seat of Inez. Martin County sits on the state border of Kentucky and West Virginia in a rural area with a long history of coal mining. Martin County has seen a decline in population over the past decade, with approximately 11,300 residents as of the 2020 census, compared with 12,900 in 2010.

Per capita personal income in Martin County was just under $32,000 in 2022. There are about 2,500 jobs located in Martin County as of 2022. The largest employment sector is government (34% or 863 jobs), followed by retail trade (14.9%) and several undisclosed employment sectors. The farming industry accounts for less than 1 percent of total employment in the County.[35]

Applicant economic impact study. Attachment G to the Lynn Bark Energy Application (Estimated Economic Impact) contains a study of the projected economic impacts from the proposed facility. The analysis was conducted by Dr. Paul Coomes, Emeritus Professor of the University of Louisville, using IMPLAN modeling.

Key findings from the analysis include:

- There will be a one-time spike in construction-related employment over about an 18-month period. The spike will include about 573 new jobs in Martin County in the first year, with a new payroll of $32 million and a one-time yield of $647,000 in occupational tax revenues for the County.

- If employee compensation in the operational life of the proposed project is fully captured by Martin County, the County would receive an additional $25,000 in tax revenues each year.

Review and assessment of applicant economic information. The level of investment in Martin County projected in the economic impact analysis appears to be roughly consistent with industry standards for a solar project of the size of the proposed Lynn Bark Energy facility. The overall conclusions that the operating phase will have very modest economic impacts, but that the proposed solar facility will enhance local government revenue while requiring very few services, are consistent with the findings of other commercial solar economic impact studies. The largest impact on employment will be felt during the initial construction period.

Some information that would provide a more complete picture but which is not provided in the applicant's economic study includes the direct, indirect, and induced economic benefits from the current use of the site in agriculture; and the potential induced economic benefits from the additional

[35] U.S. Bureau of Economic Analysis, Table CAEMP25N Total Full-Time and Part-Time Employment by NAICS Industry.

income received by the participating landowner if at least a portion of that income is spent locally. The former would at least slightly reduce the projected net economic benefits from ongoing operations of the facility, while the latter would likely increase those projected net benefits. Neither of these aspects would likely result in a material change to the results of the economic impact analysis.

Recommended mitigation. BBC recommends the following measures in regard to potential economic impacts:

- Lynn Bark Energy should commit to prioritizing local hiring and seeking to hire Martin County residents to fill the projected direct construction jobs.

Project Decommissioning

In prior solar projects reviewed by the Siting Board, plans and assurances for decommissioning the sites at the end of their functional lives have been an important issue of concern to both the Siting Board and local governments.

Applicant project decommissioning plan. Exhibit F of the SAR (Decommissioning Plan) contains a plan for the decommissioning of the proposed facility. The plan was authored by ERM on behalf of the applicant.

The anticipated lifetime of the proposed Lynn Bark Energy solar project is 35 years.[36] As required by KRS 278.706, decommissioning activities will be completed within 18 months of the project ceasing to sell electricity.

Equipment and vehicles required for decommissioning will be similar to those required for project construction, such as cranes, excavators, backhoes, bulldozers, dump trucks, front-end loaders, deep rippers, water trucks, disc plows, tractors, and ancillary equipment.[37] Decommissioning activities include the removal of all project components, including solar modules; mounting system and steel piles; inverters; electrical cabling; substation and transmission tie-in line; site access roads; and perimeter fencing. Figure C-27, excerpted from Exhibit F, is a table identifying the type and quantity of components to be removed upon project decommissioning.

[36] Exhibit F, page 4.

[37] Exhibit F, page 6.

Figure C-27.
Primary Components of Lynn Bark Energy Solar Project to be Decommissioned

Component	Approximate Quantity
Solar Modules	357,558 modules
Steel Piles	75,000 piles
Inverters	51
MV (medium voltage) collection system	52,800 linear feet
Perimeter Fencing	72,198 linear feet
Access Roads	52,800 linear feet
Overhead Transmission Line	29,892 linear feet (5.7 miles)
Substation	1

Project components in either working or salvageable condition may be sold in the secondary market or as salvage, providing revenue to offset decommissioning costs. Project components that are not suited for resale or salvage will be disposed of at a licensed facility. [38]

The sequence of decommissioning begins with de-energizing solar modules, installing erosion perimeter controls, and reinforcing internal roads and other site groundwork. Decommissioning then progresses to the removal of physical project components, and concludes with de-compacting subsoils and restoring and revegetating disturbed land to allow a return to pre-construction land use to the extent possible. The decommissioning plan provided appears adequate and details the installation placement and subsequent removal of each type of project equipment at the facility.

Figure C-28 shows the estimated net $11.9 million decommissioning cost ($16.7 million in costs and $4.8 million in estimated salvage revenue) of the facility, as excerpted from Exhibit F.

Figure C-28.
Net Decommissioning Cost Summary for Lynn Bark Energy Solar Project

Projected Totals	Cost/Revenue
Decommissioning Expenses	$16,700,900
Potential Revenue (salvage value)	$4,780,300
Net Decommissioning Cost	$11,920,600

Recommended mitigation. To mitigate concerns regarding decommissioning:

- Lynn Bark Energy should follow the decommissioning plan laid out in Exhibit F of the Site Assessment Report submitted to the Siting Board; and

- Lynn Bark Energy should work with the County to address any concerns that arise at any point regarding its proposed decommissioning plan.

[38] Exhibit F, page 8.