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ELECTRIC GENERATION AND
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**Review and Evaluation of
ecoPower Generation, LLC
Site Assessment Report**

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March 19, 2010

Review and Evaluation of ecoPower Generation, LLC Site Assessment Report

Prepared for

Kentucky State Board on Electrical Generation and Transmission Siting
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602

Prepared by

BBC Research & Consulting
3773 Cherry Creek N. Drive, Suite 850
Denver, Colorado 80209-3868
303.321.2547 fax 303.399.0448
www.bbcresearch.com
bbc@bbcresearch.com

Table of Contents

A. General Statement

Provisions of the Act Establishing the SAR Review Process.....	A-1
SAR Review Methodology.....	A-2
Report Format	A-2
Certain Limitations	A-2

B. Executive Summary

Description of the Proposed Facility/Site Development Plan	B-1
Compatibility with Scenic Surroundings.....	B-2
Potential Changes in Property Values for Adjacent Property Owners	B-3
Expected Noise from Construction and Operation.....	B-3
Impacts on Land-based Transportation	B-4
Recommendations	B-4

C. Findings and Conclusions

Description of the Proposed Facility/Site Development Plan	C-2
Compatibility with Scenic Surroundings.....	C-15
Potential Changes in Property Values for Adjacent Property Owners	C-24
Expected Noise from Construction and Operation.....	C-30
Impacts on Transportation	C-36

D. Recommendations

Specific Mitigation Recommendations Related to SAR Elements	D-1
Overall Recommendations Concerning Siting Issues Related to the Proposed ecoPower Project....	D-2

SECTION A.
General Statement

SECTION A.

General Statement

This document provides a review of the Site Assessment Report (SAR) for the proposed biomass-fueled electric generating plant and transmission line submitted to the Kentucky State Board on Electrical Generation and Transmission Siting (the “Board”). ecoPower Generation, LLC (ecoPower) submitted an administratively complete document titled “Application to the Kentucky State Board on Electric Generation and Transmission Siting” (the “application”) to the Board on February 18, 2009. The SAR and supporting documents and reports were included with the application. ecoPower has submitted the SAR to support its application for a certificate to construct a merchant electric generating facility in Perry County under KRS 278.216 (the Act), passed by the General Assembly of the Commonwealth of Kentucky in 2003. Board staff retained BBC Research & Consulting (BBC) to perform this review.

Provisions of the Act Establishing the SAR Review Process

In 2002, 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 Board and gave it the authority to grant or deny construction certificates requested by individual applicants. The Board is attached to the Kentucky Public Service Commission (PSC) for administrative purposes.

In 2003, the siting assessment reporting and review requirements for proposed new merchant power plants were extended to apply to construction of any new electric generating facilities capable of generating more than 10 megawatts.¹

The Act created the application process and, within the process, a series of steps for preparing and submitting this report:²

- The applicant files for a construction certificate and pays the fees.
- The applicant submits required items, including an SAR.
- If it wishes, the Board may hire a consultant to review the SAR and provide recommendations about the adequacy of the information and proposed mitigation measures.
- The consultant must deliver the final report so the Board can meet its own statutory decision deadline — 90 days or 120 days from receipt of an administratively complete application, depending upon whether the Board will hold a hearing.

¹ Kentucky Revised Statutes 278.216(1), effective June 24, 2003.

² The same process applies to the Board.

SAR Review Methodology

BBC undertook the following tasks to review ecoPower's SAR and complete this report:

- Reviewed BBC's prior SAR reviews prepared for the Board regarding the Kentucky Mountain Power and LG&E Energy Corporation projects;
- Upon receipt of the site assessment and application, reviewed its contents;
- Identified additional information we considered useful for a thorough review, and submitted questions to the applicant via the Board;
- Conducted the required site visit, including obtaining oral and written information supplied by the applicant, over a period of two days in March 2010;
- 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 our contract. It begins with this general statement that introduces the review. In Section B of the report, we present the executive summary. Section C offers detailed findings and conclusions of the study, and in Section D, we present the detailed recommendations concerning mitigation measures and future Board actions.

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 relevant and what level of detail is appropriate. This relates to project components, geographic extent of impacts and assessment methodology. Board staff has provided review and guidance in this context.

At this point in the planning process, ecoPower has not finalized many of the details related to the future design, construction and operation of the plant. The SAR, and this review, are based on the best available information at this time. BBC's review attempts to bracket and otherwise incorporate these uncertainties and to ensure, through appropriate mitigation measures, that they do not create undue siting impacts later.

SECTION B.
Executive Summary

SECTION B.

Executive Summary

This report documents the evaluation of a Site Assessment Report (SAR) in compliance with KRS 278.216, KRS 278.704 and KRS 278.708. The Kentucky State Board on Electrical Generation and Transmission Siting (the “Board”) received an application from ecoPower Generation LLC (ecoPower or applicant) for approval to construct a 50 megawatt biomass-fired generating unit in Perry County on February 18, 2010. Board staff retained BBC Research & Consulting (BBC), a Denver-based firm, to review the SAR. BBC was directed by Board staff to review the SAR for adequacy, visit the site and conduct supplemental research where necessary and to 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 278.216 and KRS 278.708 such as regional economic impact, electricity market or transmission system effects and broader environmental issues were not addressed in this engagement.

Description of the Proposed Facility/Site Development Plan

The SAR provides a description of the proposed ecoPower 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. The proposed ecoPower generating unit would be located at the Coal Fields Regional Industrial Park, approximately ten miles north of the City of Hazard. Conclusions with respect to other descriptive elements of the facility follow:

- Surrounding land use — The proposed site is located on a 125 acre parcel in the industrial park, which is located on reclaimed mining lands. Other industrial occupants include Sykes Communications, AOD Transport, Inc., M.B. Lumber Company, American Woodwork and Weyerhaeuser. Operations at the Weyerhaeuser facility, which formerly housed Truss Joist, have been suspended at present due to economic conditions. Pine Branch Coal Sales has a facility adjacent to the industrial park.

There are five residential properties located within or adjacent to the industrial park. All of the homes are at least 2,000 feet from the proposed stack. The Wendell H. Ford Regional Airport is located about one mile northeast of the site, on the other side of KY 15. While there is a residential development in proximity to the airport that would view the proposed ecoPower facility from a distance, the surrounding terrain provides a buffer between the proposed facility and many of the nearby property owners.

- Proposed access control and security — The SAR provides an abbreviated description of proposed access control and security during operations. This description was enhanced by the applicant, and further information was provided regarding security during construction, in response to information requests during the SAR review process.
- Utilities — The SAR indicates that water and wastewater services will be provided by the City of Hazard. Due to recent reliability issues affecting the Hazard water system, the applicant is also investigating alternative or supplemental supply options. Electricity will be purchased from American Electric Power or self-generated. Propane will be used for plant startup, as there will be no natural gas service to the site.
- Setback requirements — There are no local setback requirements for the site. The site meets the requirement in KRS 278.704 (2) that the proposed exhaust stack is at least 2,000 feet from any residential neighborhood, school, hospital, or nursing home facility. The site does not meet the requirement that the stack is at least 1,000 feet from any adjoining property owner. Two vacant industrial properties lie within 1,000 feet of the proposed location for the stack. However, the owners of both of those properties have provided letters indicating their awareness that their property is within the 1,000 foot setback requirement and their support for construction of the proposed ecoPower facility.
- Other facility site development plan descriptions provided in the SAR — Legal boundaries; location of facility buildings, transmission lines, structures; location of access roads, internal roads and railways are addressed. Noise levels are briefly addressed and then evaluated more fully in a subsequent section of the SAR. These materials, as enhanced through information requests to ecoPower during this SAR review and described later in this report, appear to meet the informational requirements identified in KRS 278.708.

Compatibility with Scenic Surroundings

Visual impact analysis commonly includes a description of the visual setting, visual features of the facility and its appurtenances, and an identification of places where humans might observe the facility or its components. These factors contribute to the evaluation of visual impacts and the facility's compatibility with the existing setting.

The BBC team evaluated the methodology and the analyses performed in the SAR that supports the visual impact assessment of the proposed ecoPower facility. The methodology, data sources and execution of that methodology are appropriate and acceptable for this evaluation. Particularly useful is the “line of sight profile” demonstrating that the proposed facility will not be visible from KY 15 or the neighborhoods along that road and the conceptual site views showing the potential view of the facility from the airport and from the closest residence to site. The SAR did not address stack or on-site lighting, but ecoPower indicated their intention to minimize nighttime lighting subject to safety and security requirements — including FAA regulations.

The plant will be visible to most residences in or adjacent to the industrial park and located in the neighborhood across KY 15 adjacent to the airport. The site topography, coupled with the baseline

setting of a industrial park and former and active surface mining, renders the proposed ecoPower facility, including the stack, compatible with its scenic surroundings in large part. The potential relocation of the berm to the southern edge of the site may further obstruct the view of the plant from several residences and occupants of the industrial park. Visual effects from stack emissions and traffic are likely to be negligible.

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 land owners will increase or decrease as a result of development and operation of the proposed ecoPower facility. The property value analysis contained in the SAR focuses entirely on properties that adjoin the proposed site — all of which are either in industrial use, agricultural use or vacant — and concludes the development of the plant would have a neutral or positive effect on the value of each of these nine properties.

In prior power plant siting evaluations (such as Kentucky Mountain Power and Trimble County Number 2 proposed facilities), the Board has also considered potential property value impacts on properties located in the vicinity of the proposed project as well as immediately adjoining properties. To further evaluate potential impacts on property values, the study team conducted interviews with the applicant, the Perry County Property Value Assessor (PVA), industrial park representatives, the airport, and other local officials and visited the residential areas in closest proximity to the proposed site.

The individuals we interviewed noted that the land uses surrounding the proposed ecoPower plant currently consist of industrial use and former and active surface coal mining. The residential neighborhood most affected by views of the proposed ecoPower facility is situated in much closer proximity to the regional airport and is likely more affected by the airport than it would be by the proposed power plant. Overall, the siting of the proposed ecoPower plant would not represent a significant change in residents' or potential buyers' opinion of their surroundings. Furthermore, many interviewees believe that property values may increase since the proposed ecoPower facility would represent new economic development in the area and could create jobs for the local residents.

Expected Noise from Construction and Operation

The noise studies performed for ecoPower as part of this SAR utilized appropriate methodology and applied that methodology correctly. The noise analysis focused on noise levels associated with routine operations of the proposed facility and estimated cumulative noise levels at four locations around the perimeter of the proposed site and one location between the site and KY 15 in the direction of the airport. In BBC's judgment, the most important of these locations were noise measurement location #2, which represents sound levels in the direction of most of the industrial park tenants, and propagated location C, which indicates noise levels in the direction of the airport and the closest neighborhood situated at a similar elevation to the proposed facility. Based on the results of the noise evaluation, EPA guidelines regarding noise would not be exceeded at these points and minimal noise impacts are anticipated from normal operations.

The noise modeling did not analyze noise impacts during construction, but the applicant stated that “construction noise emissions are not expected to exceed the respective equipment noise emissions.”¹ The noise impact evaluation also did not address noise from additional traffic during construction and operations, but such traffic would be similar in magnitude to the previous activity at the industrial park generated during Weyerhaeuser construction and operations.

More importantly, the noise impact evaluation did not consider potential peak noise levels from less routine activities such as steam blows. A steam blow occurs as steam is emitted under very high pressure from the pipes in the plant following planned and unplanned outages. Noise modeling in prior siting evaluations considered by the Board (Kentucky Mountain Power) and the actual experience with the Trimble County existing generating facility confirm that steam blows are likely to be the most significant noise-related concern. In response to our inquiry, the applicant provided information indicating that only one steam blow was expected, of very short duration, prior to initial plant startup.

Impacts on Land-based Transportation

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 from fuel and material transportation during subsequent operations.

Access to the ecoPower site is provided via Coalfields Industrial Drive. The industrial drive is a two lane, paved road that is accessed via KY 15, approximately 10 miles north of Hazard. Kentucky Transportation Cabinet modeling indicates that KY 15 in the vicinity of the proposed facility currently operates at between 37 percent and 47 percent of its capacity. BBC estimates that peak construction activity may temporarily increase traffic levels on KY 15 to between 41 percent and 54 percent of capacity. Operations of the proposed ecoPower facility would increase traffic on KY 15 to between 38 percent and 49 percent of its capacity.

In general, and relative to previous siting evaluations conducted by the study team for the Board, the proposed ecoPower site is well situated from a transportation standpoint. Close proximity to KY 15, one of the three State Primary System highways in Perry County (along with KY 80 and the Hal Rodgers Parkway), provides considerable volume and load capacity to the site.

Recommendations

BBC has noted a number of deficiencies in the SAR within this review document. However, we believe that these deficiencies have been largely addressed through supplemental research and investigation, including additional information provided by the applicant. We believe that further studies would not modify the findings and conclusions, and therefore recommend that the applicant not be required to revise its initial SAR.

Specific mitigation measures set forth in Exhibit B-1, below, summarize BBC recommendations regarding the proposed ecoPower facility.

¹ Smith Management Group (SMG). 2010. Environmental Noise Impact Study.

**Exhibit B-1.
Summary of Impacts and Recommended Mitigation**

SAR Criteria	Level of Impact/Deficiency	Recommended Mitigation
Description of Facilities	Supplemented information adequate.	Continue to evaluate water supply options.
	Does not meet setback requirements, but has support from affected property owners	Review security plans with Perry County Sheriff.
Compatibility with Scenic Surroundings	Compatible with other development in industrial park.	Select colors to minimize contrast.
	Buffered by site topography except for area near airport and other industrial park tenants and residents.	Minimize night time lighting subject to safety and security requirements.
Property Values	No significant impact	Hire locally to extent feasible to maximize local economic benefits
Noise Impacts	Negligible effects, except possibly for steam blows	If steam blows will occur beyond initial plant startup, install silencers to limit noise from steam blows and consider a system to communicate steam blow schedule to nearby residents.
Traffic Impacts	Minimal impact	Pave internal access roads.
		Schedule fuel deliveries during daytime hours as far as possible.

These mitigation measures are discussed in Sections C and D of this review.

BBC recommends that the Board approve the application for a certificate to construct based upon the siting considerations addressed in this review, assuming 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 assumptions are correct and based upon the information available to BBC in early 2010, there are unlikely to be significant unmitigated impacts from construction and operation of the ecoPower project regarding scenic compatibility, property values, noise or traffic.

SECTION C.
Findings and Conclusions

SECTION C.

Findings and Conclusions

This section provides detailed review and evaluation of each element of the SAR as proscribed in Section 5 of KRS 278. It is organized into five 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

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

Within each subsection, BBC has followed a consistent pattern. First, BBC describes generally accepted assessment criteria or methodology necessary to evaluate impacts of a project of this nature. Secondly, we summarize what relevant information was included in the initial SAR. Thirdly, we describe supplemental information about the proposed ecoPower facility, along with other information BBC was able to gather about the project and its impacts. Finally, BBC draws its own conclusions about the project's potential impacts and recommended mitigation. 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 utilities to service the facility;
- Subsection 7—compliance with applicable setback requirements as provided under KRS 278.704(2), (3), and (5); 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 facility and site development plan is mainly set forth in Section 1.0 of the SAR. Other related or supplementary information comes from various other sections of the SAR and application.

Surrounding land uses. Section 1.0 of the SAR notes that the proposed site for the proposed ecoPower plant is located on a 125-acre parcel in the Coal Fields Regional Industrial Park (the "industrial park") about 10 miles north/northwest of the City of Hazard (Hazard) in Perry County, Kentucky.¹ The proposed project would also include the construction of an approximately one-mile long transmission line beginning on the site and ending at the American Electric Power (AEP) Engle

¹ SAR, page 3 and page 4.

(Engle) substation located at the entrance to the industrial park. The proposed route for the transmission line would consist of existing easements as well as easements to be acquired.²

The site lies on reclaimed surface mining land. Exhibit C-1 lists other occupants of the industrial park.

**Exhibit C-1.
Industrial Park
Occupants**

Note:
“Distances from project”.
Pine Branch Coal Sales is actually outside of,
but adjacent to, the industrial park.

Source:
SAR.

Company	Distance (feet)	Direction
Sykes Communication	2,000	Southeast
AOD Transport, Inc.	2,500	Southeast
Weyerhaeuser	3,000	Southeast
M.B. Lumber Company	3,000	Southeast
American Woodwork	4,500	South/Southeast
Pine Branch Coal Sales	5,000	South

Five residential properties are located within or adjacent to the industrial park—all at least 2,000 feet from the proposed stack. The industrial park also contains several undeveloped tracts.

As noted in Section 1.2 of the SAR, “the areas surrounding the industrial park are rural and consist of active and reclaimed mining operations, wooded areas and scattered residences.”³ The Wendell H. Ford Airport is located approximately one-mile northeast of the site across Kentucky Highway 15 (KY 15).

The map on the following page (Figure 4 from the application) shows an aerial depiction of the site, surrounding areas and locations of residential areas.

² SAR, page 4.

³ SAR, Page 5.

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

Description of Document: Figure 4, 2-Mile Site Vicinity Map

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps may be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$6 per sheet plus postage.

Maps may be available for viewing at the Public Service Commission and at any public hearing.

Legal boundaries. Section 1.3 of the SAR references Exhibit A1 – Site Option Agreement of the Application for a description of the legal boundaries of the proposed site.⁴ Exhibit A1 contains an option to purchase and grant of right of entry between the industrial park and ecoPower and a legal description of the 124.98-acre proposed site. The SAR also references Exhibit A2 – Property Survey Map of the application that contains a graphical depiction of the legal boundaries.

Access control. Section 1.4 of the SAR provides an abbreviated description of access control and security for the site, indicating that the site will be fenced and monitored at all times with two security gates accessible only to employees, fuel delivery trucks and documented visitors and vendors.⁵ Additional information was requested from and provided by ecoPower and is described later in this section.

Location of buildings, transmission lines and other structures. Section 1.5 of the SAR references several figures in the application which depict various features of the proposed site including:

- Figure 2 – Conceptual Site Plan shows the location of proposed improvements on the site including buildings, structures, storage areas, internal roads and parking.
- Figure 3 – Setback Site Layout & 2000' Vicinity Map overlays the proposed site plan on an aerial photograph. In addition to outlining the locations of major structures and storage areas, the figure depicts the locations of proposed water and sewer lines, transmission line, off-site roads (existing and proposed), site access roads and internal roads.
- Figure 5 – Transmission Route and 1-Mile Vicinity Plan and Figure 6 – Transmission Line detail the proposed route of the transmission line to the Engle substation. Figure 5 shows the complete proposed route overlaid on an aerial photograph with the location of each proposed transmission line structure labeled on the map. Figure 6 consists of three pages showing greater detail of the proposed route including both a birds-eye-view and elevation profile of the transmission line.

Location and use of access ways, internal roads and railways. Coalfields Industrial Drive, an existing road, provides access to the industrial park from KY 15. Figure 4 shows KY 15 and Coalfields Industrial Drive. No additional access or internal roads have been constructed for the proposed site. Section 1.6 of the SAR references Figures 2 and 3 for a graphical depiction of the proposed locations of site access and internal roads.

No rail access to the industrial park or site is planned.

⁴ SAR, page 6.

⁵ SAR, pages 6 and 7.

Existing or proposed utilities. Section 1.7 of the SAR indicates that water and sewer services will be provided by Hazard and electricity will be provided by AEP.

ecoPower has entered into an option agreement with Hazard to purchase up to a monthly average of 100,000 gallons per day. Figure 3 depicts the location of a proposed 3-inch water line to serve the site. However, ecoPower identified two other potential sources of water supply in the SAR “in the event water supply from Hazard becomes unavailable.”⁶ The possible need for an alternative water supply is described later in this section.

One alternative option would rely on surface water from the Hollybush impoundment located approximately 4,000-feet northeast of the site. ecoPower has collected water quality samples from the impoundment to determine possible pretreatment requirements and “conducted initial inquiries to determine the requirements to access the water.”⁷ The second option would be to use groundwater—ecoPower is currently developing a study to further investigate this option.

Hazard has confirmed that adequate capacity at their treatment plant exists to receive wastewater from the facility. Figure 3 in the application depicts the location of a proposed 10-inch sewer line to serve the site. The service is contingent on a pretreatment agreement between ecoPower and Hazard following the identification of wastewater constituents during the final design of the project.

ecoPower plans to receive electricity for the site from the proposed transmission line using a transformer.

Compliance with applicable setback requirements. As stated in Section 4.0 of the application, “no local noise ordinances or regulations are applicable to the site, nor are there any planning and zoning regulations or associated setback requirements for Perry County.” The Chairman of the Coal Fields Regional Industrial Authority, Inc confirmed that “there are no local planning and zoning, or noise ordinances that apply to the affected property.”⁸

In the absence of local setback requirements, KRS 278.704(2) requires the exhaust stack of the proposed facility to be least 1,000 feet from the property boundary of any adjoining property owner and 2,000 feet from any residential neighborhood, school, hospital, or nursing home facility. The applicant discusses setback compliance in Section 1.8 of the SAR. ecoPower provided a graphical depiction of the 1,000 foot and 2,000 foot setbacks in Figure 3.

The proposed stack location is more than 2,000 feet from any residential structures or neighborhoods, schools, hospitals or nursing home facilities⁹ — thus complying with this element of the setback requirements identified in KRS 278.704(2). Exhibit C-2 lists these types of facilities in closest proximity to the proposed stack location.

⁶ SAR, pages 7 and 8.

⁷ SAR, page 8.

⁸ ecoPower. 2010. Application to the Kentucky State Board on Electric Generation and Transmission Siting. Page 12.

⁹ SAR, page 9.

**Exhibit C-2.
Nearest Facilities from
Proposed Stack**

Source:
SAR, Section 1.2, pages 5 and 6.

Nearest facility	Approximate Distance	Direction
"Residence #1"	3,000 feet	South
Chavies elementary School	3.5 miles	Southwest
Hospital, clinic or nursing home	7 miles	City of Hazard
Public park	7 miles	City of Hazard
Buckhorn Lake State Park	10.5 miles	West
Daniel Boone National Forest	25 miles	Northwest

The proposed stack location is less than 1,000 feet from adjacent properties owned by two separate owners¹⁰—thus not complying with second element of the setback requirements identified in KRS 278.704(2). The industrial park owns several tracts south and southeast of the proposed stack within the 1,000 foot setback. The other property, owned by Mountain Properties, Inc, is located west of the proposed stack.

ecoPower noted that “KRS 278.710 (4) allows the Board to grant a deviation from these setback requirements if the proposed facility is designed and located to meet goals of other applicable statutes (KRS 224.10-280, 278.010, 278.212, 278.214, 278.216, 278.218, and 278.700 to 278.716).” In the SAR, ecoPower requests a deviation from the setback requirement. ecoPower’s interpretation of the purpose of these statutes is to protect property owners “who had no reason to expect the construction of a merchant power plant near their property.” The SAR directs the reader to Exhibit D of the application which contains letters from both property owners stating “no objection to the facility.”

Evaluation of noise levels. The noise assessment provided by the applicant is found in Sections 1.9 and 5.0 of the SAR. BBC presents its evaluation of the applicant’s noise information later in this report.

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 more fully describe the proposed facility and site development plan. Interviews and additional data collection were conducted with the applicant, local officials and representatives of the industrial park and the Wendell H. Ford Regional Airport. BBC visited the proposed plant site, the industrial park as a whole and nearby communities. The following discussion focuses on the elements of the facility description and site development plan that the study team believed required further examination.

Surrounding land uses. During the site visit, the study team gathered additional information related to the industrial park. The SAR identified Pine Branch Coal Sales as an industrial park occupant, but this property is actually located outside the southern boundary of the industrial park. It should also be noted that the Weyerhaeuser facility ceased operations in the 2009. Weyerhaeuser remains the owner of the property and continues to maintain the facility. Several local individuals indicated that the facility may reopen in the future.

¹⁰ SAR, page 8.

As observed during the site visit, the relatively high elevation of the industrial park and proposed ecoPower site provides a buffer and visual obstruction for many of the surrounding areas including State Route 15 and Tenmile Creek. BBC confirmed that the industrial park and proposed site were not visible from residential properties located along KY 15 and Tenmile Creek Road.

The Wendell H. Ford Airport and two neighborhoods near the airport can be seen from the site and vice versa. These areas are also located on reclaimed surface mining land, separated from the site by the valley which KY 15 runs through.

Pine Branch Coal operates an active surface mine to the northwest of the proposed site and can be observed from the proposed site and parts of the industrial park.

Legal boundaries. BBC confirmed that the SAR meets the legal boundaries description requirement.

Access control. In our initial information request to ecoPower and during the course of discussions with ecoPower representatives during the study team's site visit, we requested further clarification and detail regarding the plans for access control and security during construction and operation of the proposed plant.

ecoPower representatives indicated that their intent is to employ standard industry practices for site safety and security and to require all ecoPower employees and contractors to comply with OSHA standards and programs during construction. ecoPower provided BBC with additional details of their site security program during construction:

- A construction employee parking lot will be utilized which will be located outside the project area.
- Access to the project area by construction employees will be through a secure gate. Entry to the site will be controlled at all times and only individuals approved for work will be admitted.
- Contractors will be required to confirm that appropriate training and background checks have been completed for all employees and will be required to issue and monitor the use of employee passes.
- The project area will be fenced and perimeter lights will be installed to the extent necessary for safety.
- Storage areas and structures containing hazardous materials will be secured.
- Contracts with companies providing services or delivery to the site will include a requirement that all employees and vehicles may be searched at any time in the discretion of ecoPower.
- Companies charged with providing transportation will be required to confirm that all drivers are appropriately trained and licensed for the work they are performing.

- Site speed limits will not exceed 15 MPH.^{11,12}

ecoPower representatives also indicated that their intent is to employ standard industry practices for site safety and security during plant operations. ecoPower provided BBC with additional details of their site security program during plant operations:

- The perimeter of the plant will be fenced.
- Employee parking areas will be designated and access to the plant site will be through a security gate.
- Employees will be required to keep their security pass on their persons at all times.
- Employees will agree that a condition of their employment is a random search of their person, vehicle or personal items at the discretion of ecoPower.
- Delivery personnel, vendors and visitors to the site will be required to check in and retain a security pass on their person at all times.
- Any vehicle entering the site is subject to search at the discretion of ecoPower.
- Storage buildings and areas with hazardous materials will be secure.
- Employees will not be permitted to work in an area without appropriate training for the work and the job hazards within that area.
- Appropriate lighting will be used at the plant in conformance with applicable regulation and safety standards.
- Site speed limits will not exceed 15 MPH.^{13,14}

The Perry County Sheriff's department expects a slight increase in law enforcement challenges posed for the rural county by a major construction effort with many temporary workers.¹⁵ Close coordination between plant security and the Sheriff can enhance security and help mitigate any added burden on local law enforcement.

Location of buildings, transmission lines and other structures. The SAR provides sufficient information and graphical representation of proposed locations of buildings, transmission line and other structures.

¹¹ Components may be added to ecoPower's access and security program prior or during construction.

¹² Wyatt, Tarrant & Combs, LLP. Response to BBC information request. March 5, 2010.

¹³ Components may be added to ecoPower's final access and security program prior to or once the plant becomes operational.

¹⁴ Wyatt, Tarrant & Combs, LLP. Response to BBC information request. March 5, 2010.

¹⁵ Tony Eversole, Perry County Sheriff's Department, personal communication, March 11, 2010.

Location and use of access ways, internal roads and railways. Section 5.3 of the SAR indicates that permanent roads and parking lots will be paved. In our initial information request, BBC requested further clarification regarding design standards of internal access roads. ecoPower indicated that all constructed roads will meet permit requirements and good engineering practices. Roads will be “designed to support the truck and equipment traffic where appropriate.”

In response to BBC’s supplemental information request, ecoPower provided a figure that more clearly shows the locations of proposed access and internal roads compared to the other figures included in the application. The figure, included on the following page, shows and labels the entrance to the industrial park, existing roads, proposed off-site roads (outlined in pink) and proposed on-site roads (outlined in green).

For reasons of Homeland Security, this document is not available on-line:

Case Number: 2009-00530

Description of Document: Figure 9, Industrial Park Development Plan

Persons requiring access to this document may contact the Public Service Commission in person or in writing at:

Public Service Commission
211 Sower Boulevard
P.O. Box 615
Frankfort, KY 40602
Attn: GIS Coordinator
Phone (502) 564-3940

Written requests must include a signature, name, title of organization (if applicable), mailing address, phone number and optional e-mail address and the following statement: *I understand that since September 11, 2001, location data of critical utility structures is considered sensitive information for security reasons. I will not publish this map or any part of it on the World Wide Web. I will not redistribute this map to others, but shall refer requests by others for such information to the Kentucky Public Service Commission.*

Maps may be sent as pdf files by e-mail or on CD at no cost to the party. If printed "oversized" maps are requested, there will be a charge of \$6 per sheet plus postage.

Maps may be available for viewing at the Public Service Commission and at any public hearing.

Utilities. The BBC team gathered further information regarding the utility arrangements described in the site development plan. ecoPower indicated that a formal agreement has not yet been reached with AEP for electric service. AEP currently supplies electricity to other occupants of the industrial park and will be obligated to supply electricity to the proposed ecoPower site.¹⁶

As discussed previously, ecoPower has entered into an option agreement with Hazard to purchase water, but has also explored two additional water supply alternatives. ecoPower representatives and Hazard officials indicated that this past winter Hazard's water supply system experienced an outage for approximately two weeks. Following this outage, Hazard identified several deficiencies in the existing supply system including infrastructure problems leading to substantial leakage and issues with the system's water intake structure. Hazard has begun an aggressive program to repair the infrastructure and improve long-term reliability. Hazard officials are uncertain as to whether they could currently fulfill their water supply agreement with ecoPower. However, officials anticipate system repairs over the next two year will be sufficient to reliably supply ecoPower with water.¹⁷

Hazard officials indicated the city would benefit from the revenues that would result from having ecoPower as a water customer once the city's system becomes more reliable within the next two to three years. ecoPower's current strategy of continuing to examine the potential to use other supplies as a supplement or an alternative to city water appears prudent.

Although no agreement for sewer service has been completed between Hazard and ecoPower, Hazard officials confirmed that their wastewater treatment plant has sufficient capacity to handle wastewater discharged from the proposed ecoPower facility.¹⁸ The sewer system relies on several lift stations to transport wastewater discharge from the Industrial Plant to the treatment plant. Hazard officials expect the capacity of the lift stations to be sufficient to handle the additional wastewater flows from the proposed ecoPower site but can be not be certain until the final design of the plant.¹⁹

As noted above, electric supply will come from the proposed transmission line using a transformer. Based on conversations with ecoPower representatives, ecoPower currently expects to purchase electricity from AEP. However, if financially advantageous, ecoPower will use electricity generated by the plant.

Section 1.0 of the SAR notes that the design plans for the proposed ecoPower plant includes a diesel-fired emergency fire water pump for wood fires.²⁰ Hazard officials indicated that a volunteer fire department serves the industrial park. However, the Hazard Fire Department provides firefighting support if needed.²¹

The BBC team requested additional information on how utility services, including water, sewer and electricity, would be provided to the site during construction. In response to BBC's supplemental

¹⁶ Ibid.

¹⁷ Sam Stacy, Hazard Fire Chief and Carlos Combs, Hazard City Manager, personal communication, March 4, 2010.

¹⁸ Hank Spaulding, Hazard City Engineer, person communication, March 12, 2010.

¹⁹ Ibid.

²⁰ SAR, page 3.

²¹ Sam Stacy, Hazard Fire Chief, personal communication,

information request, ecoPower indicated that they expect to receive water and sewer services from Hazard and electricity from AEP. ecoPower expects to gain access to each utility through the existing infrastructure located at the intersection of Sykes Boulevard and Coalfields Industrial Drive, south of the plant.²²

Compliance with applicable setback requirements. As discussed above, the SAR indicates that the proposed project does not comply with the setback requirements identified in KRS 278.704 since the proposed stack location is less than 1,000 feet from adjacent properties.

KRS 278.708(3)(a)(7) states:

A completed site assessment report shall include a description of the proposed facility that shall include a proposed site development plan that describes compliance with applicable setback requirements as provided under KRS 278.704(2), (3), or (5)

KRS 278.704(2) provides the specific language for the setback requirement in which the site does not comply. KRS 278.710 (4) and KRS 278.710 (5) identify circumstances in which a plant can be sited while not complying with KRS 278.704(2).

KRS 278.710 (5) states:

If the merchant electric generating facility is proposed to be located on a site of a former coal processing plant in the Commonwealth where the electric generating facility will utilize on-site waste coal as a fuel source, then the one thousand (1,000) foot property boundary requirement in subsection (2) of this section shall not be applicable.

This statute is not applicable to the proposed ecoPower plant.

The SAR points to KRS 278.710 (4) which “allows the Board to grant a deviation from these setback requirements if the proposed facility is designed and located to goals of other applicable statutes (KRS 224.10-280, 278.010, 278.212, 278.214, 278.216, 278.218, and 278.700 to 278.716).”

To demonstrate compliance with KRS 278.710 (4), ecoPower contacted affected property owners and received letters of support for the project from them. These letters are contained in Exhibit D of the application.

Conclusions and Recommendations

Based upon review of the applicant's SAR, subsequent conversations with the applicant and additional data collected by the BBC team, we reach the following conclusions 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.
- ecoPower provided the study team with a more detailed description of access and security plans during construction and operation—the plans appear to adequately address this topic. The large temporary workforce may place an added burden on Perry County law

²² Wyatt, Tarrant & Combs, LLP. Response to BBC supplemental information request. March 18, 2010.

enforcement, but should be manageable based on previous experience with similar construction projects.

- Due to the uncertainty surrounding the reliability of the Hazard's water supply system, ecoPower should continue to explore water supply alternatives. ecoPower should actively communicate with Hazard to stay informed on the status of system repairs and the ability of the system to service the site.
- Approval from the Board will be contingent on granting ecoPower a deviation from the setback requirements described in KRS 278.704(2). BBC concludes that ecoPower has taken the appropriate steps to provide the Board with information needed to make a judgment on this matter and that the owners of the affected properties are supportive of the proposed deviation.

Recommended mitigation. No mitigation measures specific to the description of the facility or the site development plan are identified in the applicant's SAR. The BBC team suggests the following mitigation measures should be adopted:

- To ensure an adequate and reliable water supply for the site, ecoPower should continue to evaluate water supply alternatives.
- Prior to the outset of construction, ecoPower should review security plans and systems with the Perry County Sheriff. Throughout construction, ecoPower should have regular contact and share information about the construction workforce with the Sheriff.

Compatibility with Scenic Surroundings

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

Standard Methodology and Issues for Scenic Studies

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.²³ In California siting assessments, the assessment of potential incompatibility between a project and its scenic surroundings focuses on project structures, such as smoke stacks. 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 in the general viewshed vicinity of the project's structures or emissions.

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.

²³ California Energy Commission. Energy Facility Licensing Process: Developers Guide of Practices & Procedures (staff report/draft) [online]. Document P700-00-007. November 2000 (revised December 7, 2000). Retrieved July 9, 2002, from http://www.energy.ca.gov/siting/2000-12-07_700-00-007.PDF.

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.²⁴ Local regulations especially focus on screening of facilities from public view²⁵ and the effects of glare from outdoor lighting upon adjacent property.²⁶

In this instance, the project features under consideration for scenic compatibility are the project structures, any of the project appurtenances, project lighting and the exhaust stack plumes. Depending upon the traffic patterns of the fuel trucks and employees, it is also important to examine scenic compatibility associated with changing traffic patterns.

Applicant's Submittal

In compliance with KRS 278.216, the applicant completed an evaluation of the scenic compatibility of the project with the surrounding area through a visual assessment. This evaluation is set forth in Section 2.0 of the SAR. The purpose of this analysis was to determine the degree to which the project would visually impact the surrounding area. In addition, ecoPower retained consultants to conduct a cultural and historic survey. ecoPower has also conducted various public involvement activities to inform the community about the proposed project and to receive feedback.

Visual assessment. ecoPower's visual assessment approach focused on evaluating scenic compatibility for residential properties in the surrounding area. The methodology consisted of the following components:

- A description of the relevant physical characteristics of the proposed plant and transmission line.
- Visiting all residential properties, neighborhoods and residential clusters²⁷ to evaluate current views and potential views of the proposed ecoPower facility;
- Creating a "line-of-sight profile" between KY 15 and the proposed plant;
- Photographing current view sheds of select residential properties; and
- Developing conceptual site views of the proposed plant from select residential properties and from the Wendell H. Ford Regional Airport.

²⁴ See California Energy Commission, *op cit.*; U.S. Forest Service. *Landscape Aesthetics: A Handbook for Scenery Management*. Agriculture Handbook Number 701. 1995; U.S Bureau of Land Management. *Visual Resource Inventory*. BLM Handbook H-8410-1; and U.S. Bureau of Land Management. *Visual Resource Contrast Rating*. BLM Handbook H-8431-1.

²⁵ Douglas County (Washington) Code, Chapter 18.80 - Conditional Use.

²⁶ Georgia Department of Community Affairs. *Model Code: Alternatives to Conventional Zoning, Performance Standards for Off-Site Impacts* [online]. April 2002.

²⁷ ecoPower discusses the concept of residential cluster in Section 1.2 of the SAR. Many residential properties are situated along KY 15 and Tenmile Creek. These properties may not meet the definition of "residential neighborhood" is defined by KRS 278.700(6). Therefore, this areas are generally referred to as clusters.

ecoPower provides a detailed description the proposed transmission line route. Figures 5 and 6 in the application show this route overlaid on a topographic map and identify the owners of the tracts the proposed transmission will cross. As discussed in Section 2.0 of the SAR, “the route for the transmission line was selected to minimize impact to residences or sensitive land, minimize impact on property parcels, minimize overall route length, maximize use of existing linear corridors by following existing transmission lines or roads, minimize number of line angles, and minimize crossings of public roads.”²⁸

The proposed plant structures with the highest elevations (and greatest potential visual impact) include the stack and boiler. Section 2.0 references Figure J1 – Plant Elevation which shows an elevation profile of the proposed ecoPower plant. The stack and boiler heights are approximately 280 feet and 175 feet above the ground surface; respectively. As previously discussed, the proposed plant will be situated on a mountain previously used for surface coal mining.

Figure 4 in the application shows the location of residential properties, neighborhoods and residential clusters within a two-mile radius of the proposed stack. Several properties are located about ½-mile north of the stack along Tenmile Creek and ½-mile east of the stack along KY 15. Several more properties are located along Tenmile Creek, KY 15 and Grapevine Creek, but at distances greater than ½-mile. All of these areas are located at lower elevations than the industrial park and the steep slope up to the proposed site obstructs any possible views of proposed structures. Section 2.0 references Figure J2 – Line of Sight Profile and Location Map which demonstrates that the line-of-sight between KY 15 and the proposed facility will be obstructed—confirming that the proposed facility will not be visible to residents or traffic along KY 15.

ecoPower performed visual assessments at each of the five residences in or adjacent to the industrial park and at the neighborhood located east of the site and adjacent to the airport. Since topographic data surrounding these residential properties has not been updated to reflect elevation changes resulting from surfacing mining, ecoPower was unable to develop line-of-site profiles for these locations. As an alternative, the visual assessment consisted of photographs of the current view sheds—Exhibit J5 contains copies of these photographs. In addition, ecoPower developed conceptual views of the proposed plant from the residence closest to the plant (approximately 3,000 feet south of the proposed stack) and from the airport neighborhood—Exhibits C-3 and C-4 show these conceptual view graphics.

Based on this assessment, the proposed plant will be visible to four of the five residences and the neighborhood. The one residence visually obstructed from the plant will have a view of the proposed transmission line. As noted in the SAR, the current view sheds of all the residences include several other major industrial structures within the industrial park.

As previously noted, the Wendell H. Ford Airport is located approximately one-mile northeast of the site across KY 15. The neighborhood included in the visual assessment is located adjacent to the southeastern portion of the airport property. This neighborhood views most of the existing structures in the industrial park as well as current and former surface coal mining.

²⁸ SAR, page 11.

The transmission line will be visible from various locations in the industrial park. ecoPower concluded that the proposed transmission line and associated structures are “unlikely to alter the scenic view of any observer” given the current surrounding land use and views.²⁹

²⁹ SAR, page14.

**Exhibit C-3
Conceptual Site View of Proposed ecoPower Plant from Closest Residential Property.**



Source: SAR, Exhibit J6.

**Exhibit C-4.
Conceptual Site View of Proposed ecoPower Plant from the Neighborhood Adjacent to the Airport**



Source: SAR, Exhibit J6.

Additional studies. Studies confirmed there would be no impact from the proposed project on cultural and historic assets or on threatened or endangered species.³⁰

Public involvement. Although not referenced in the SAR, Section 6.0 of the application identifies public involvement activities conducted by ecoPower including:

- Discussions with adjacent property owners and several individuals who live within the area surrounding the proposed site; and
- Hosting a public meeting on January 5, 2010 at Chavies Elementary School.

ecoPower used these outreach efforts to inform potentially affected parties about the project and to respond to any questions. Based on the documentation provided in the application, no concerns were raised regarding visual impacts of the proposed facility.

Supplemental Investigations, Research and Analysis

ecoPower's visual assessment correctly employs the methodology of identifying key project components that could potentially create visual impacts and identifies KOPs to test those impacts. The study also appropriately describes the project setting in terms of the topography which will prevent most nearby residential areas at lower elevations from viewing the proposed facilities. Lastly, the report correctly notes that the incremental visual effects of the proposed project will likely be minimal given the other industrial facilities already located in the industrial park and former and active surface coal mining in the vicinity.

BBC found that the scenic evaluation did not address certain issues comprehensively:

- The analysis did not discuss certain project components which could result in visual impacts or incompatibility. Additional project components which can create visual impact include the lighting at the facility, plumes from the stack and project-related traffic.
- The analysis did not address possible visual impacts to visitors of the surrounding area during operation, such as those viewing wildlife, hunting or employees of the industrial park.

Supplemental investigation. BBC extensively traveled the site, the industrial park and surrounding area and confirmed the information and conclusions in Section 2.0 of the SAR. During the visit, representatives indicated that ecoPower plans to relocate a berm situated on the western portion of the site to the southern portion. The berm could eliminate most or all views of the proposed plant for some residences and occupants of the industrial park.

³⁰ SAR, page 12.

In the initial information request to ecoPower, BBC inquired about ecoPower's knowledge of any known concerns from local residents or businesses regarding visual effects. ecoPower referenced the public outreach activities discussed previously and indicated that they did not receive "comments expressing a question or concern about visual impacts."³¹

BBC also asked representatives from the industrial park, the airport and Hazard officials if they have any concerns or if they had been approached by local residents or businesses regarding visual effects. None of the individuals were aware of any concerns related to visual impacts from the proposed site.

Visible emissions from stack. ecoPower representatives indicated during the site visit that few or no visible emissions will be emitted from the stack during operations.³² Since the proposed ecoPower plant will rely on air cooling, visible steam emissions will be substantially less than from plants using water cooling. Smoke or steam plumes do not appear likely to pose any significant visual impact issues for this proposed facility.

Stack and on-site lighting. The SAR does not address stack or on-site lighting, nor is lighting mentioned in any of the permit application materials reviewed by BBC. ecoPower representatives indicated that safety will be the primary determinant of the level of lighting used on-site. Furthermore, the type and level of lighting on the stack will depend on the Federal Aviation Administration (FAA) requirements for air traffic safety. Subject to safety and security requirements, ecoPower indicated the intention to minimize night time lighting of the facility to avoid potential visual concerns.

Visual effects of traffic. The visual effects of traffic will be evident during the temporary construction period, lasting about two years, and during operation of the plant. According to Section 5.0 of the SAR and supplemental information provided by ecoPower, the peak daily construction traffic will consist of approximately 50 trucks and as many as 300 to 400 vehicles to transport workers. During operation of the proposed plant, ecoPower projects approximately 40 workers and 100 truck deliveries per day. The increase in traffic will be minimal compared to existing traffic counts in the area, particularly along KY 15—this topic is discussed in greater detail later. Furthermore, previous traffic levels during the construction and operation of the Weyerhaeuser/Trus Joist facilities exceeded the projected levels for the proposed ecoPower plant. According to Hazard officials and representatives of the industrial park, no complaints arose regarding visual impacts from Weyerhaeuser /Trus Joist traffic. Therefore, adverse visual effects from traffic during the construction and operation of the proposed plant are unlikely.

Industrial park visitors, hunting and wildlife viewing. The stack, boiler and increased truck traffic will be at least partially visible to individuals working or visiting the industrial park or viewing wildlife or hunting in surrounding areas. However, these visual effects of the proposed plant would not be inconsistent with the current scenic characteristics of the industrial park and former and active surface coal mining in the surrounding areas. While the visual impact of the proposed power plant might discourage some potential tenants from locating in the industrial park, others may be drawn to the location because of complementary business considerations. Recreationists using the industrial

³¹ Wyatt, Tarrant & Combs, LLP. Response to BBC information request. March 5, 2010.

³² Sara Smith, Smith Management Group, Inc., person communication, March 3, 2010.

park already experience the industrial setting and are unlikely to be greatly affected by the addition of the proposed facility.

Conclusions and Recommendations

The plant will be visible to most residences in or adjacent to the industrial park and located in the neighborhood across KY 15 adjacent to the airport. The topography, coupled with the baseline setting of the industrial park and former and active surface mining renders the proposed ecoPower project site, including the stack, compatible with its scenic surroundings in large part. Furthermore, the relocation of the berm to the southern edge of the site may further obstruct the view of the plant from several residences and occupants of the industrial park. Visual effects from stack emissions and traffic are likely to be negligible.

Recommended mitigation. The study team agrees with ecoPower’s recommendation to “paint the Project structures a neutral color, with the exception of markings which may be required by OSHA, the Federal Aviation Administration (FAA) and/or Kentucky Airport Zoning Commission (KAZC) or to otherwise protect the safety of employees.”³³

ecoPower should also ensure that the final design of night time lighting of the facility minimizes potential visual concerns, subject to safety and security requirements.

³³ SAR, page 14.

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.³⁴ Studies also show that impacts may extend for some distance from the site, and possibly beyond the immediately adjacent properties.

Criteria for evaluating property values effects that reflect the concerns of a broad range of interested parties typically include these aspects of the issue:³⁵

- 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.*³⁶

³⁴ Farber, Stephen. Undesirable Facilities and Property Values: A Summary of Empirical Studies. *Ecological Economics* 24 (1998) 1-14.

³⁵ See the following document for a summary of criteria developed by the Power Plant Siting Collaborative covered in 1993 by the Public Service Commission of Wisconsin: PSC Overview Series: Common Power Plant Siting Criteria. Retrieved July 5, 2002, from <http://psc.wi.gov/consumer/electric/document/brochure/plntsitg.pdf>.

³⁶ Public Service Commission of Wisconsin. PSC Overview Series: Common Power Plant Siting Criteria. Retrieved July 5, 2002, from <http://psc.wi.gov/consumer/electric/document/brochure/plntsitg.pdf>.

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.³⁷

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.^{38,39}

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 2 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.⁴⁰ The literature also includes numerous studies of the effect of electric transmission lines upon property values.⁴¹

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

³⁷ Georgia Department of Community Affairs. Model Code: Alternatives to Conventional Zoning. Retrieved July 5, 2002, from <http://www.dca.state.ga.us/planning/ModelCode/3-1PerformanceStandards.pdf>.

³⁸ Farber, Stephen. Op cit.

³⁹ While no studies have focused explicitly on the impact on property values from the siting of a bio-mass fired power plant, we would expect these types of plants to have property value impacts similar to other non-nuclear power generation plants.

⁴⁰ Clark, David E. and Leslie A. Nieves. An Interregional Hedonic Analysis of Noxious Facility Impact on Local Wages and Property Values. *Journal of Environmental Economics and Management* 27 (1994) 235-253.

⁴¹ Hamilton, Stanley W. and Gregory M. Schwann. Do High Voltage Transmission Lines Affect Property Value? *Land Economics* 71 (1995) 436-44.

proximity to hog farms (Palmquist, Roka and Vukina, 1997)⁴², beaches (Pompe and Rinehart, 1995)⁴³, airports, and electric power plants (Blomquist, 1973).⁴⁴

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.⁴⁵ 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.⁴⁶

Information Provided in the Applicant's SAR

Section 3.0 of the SAR summarizes the potential changes in adjacent property values from the siting of the proposed project. The conclusions are based on a real property appraisal study conducted by Kentucky Field Service Realty (KFSR) on behalf of ecoPower. In this study, provided in Exhibit J7 of the application, KFSR identified the nine properties adjoining proposed ecoPower site (i.e., sharing a property line). For each property, KFSR discussed the highest and best use and land classes and evaluated potential property value affects from the proposed ecoPower project. KFSR characterized property value effects as positive, negative or neutral.

The study provides a brief description of the site proposed for the ecoPower plant. The site has historical industrial activity, but currently no improvements, fixtures or personal property on the site. Perry County has no zoning in place. The study concluded that the proposed ecoPower project fits the "highest and best use" criteria since the project is "physically possible, financially feasible and legally permissible for such uses."

As part of the scope of work cited in the study, KFSR "searched the market area of the subject for similar sales by obtaining information from other appraisal firms, PVA, County Court Clerk, and City Offices in other Kentucky counties." KFSR did not include any information regarding this property search and any corresponding analysis in the report.

The evaluation of the properties adjoining the proposed ecoPower site consisted of a brief description of the property, location in relation to the site and potential property value affect to the site. Exhibit C-5 summaries the analysis:

⁴² Palmquist, Raymond B., Fritz M. Roka and Tomislav Vukina. 1997. "Hog Operations, Environmental Effects, and Residential Property Values." *Land Econoimcs* 73(1): 114-124.

⁴³ Pompe, Jeffrey J. and James R. Rinhart. 1995. "Beach Quality and the Enhancement of Recreational Property Values." *Journal of Leisure Research* 27(2): 143-154.

⁴⁴ Blomquist, Glenn. The Effect of Electric Utility Power Plant Location on Area Property Value. *Land Economics* 50 (1974) 97-100.

⁴⁵ Clark and Nieves. Op cit.

⁴⁶ Blomquist. Op cit.

**Exhibit C-5.
Summary of KFSR’s Property Value Evaluation**

Owner	Relative Location	Current Use	Property Value Effect	Basis for Conclusion
John Napier	East/Southeast	Hay production	Neutral	Situated at lower elevation
Payne Napier	East/Southeast	Pasture	Neutral	Situated at lower elevation
AODD Transport Inc.	South/Southeast	Commerical vehicle repairs	Positive	Expected increase in business as a result of the proposed ecoPower plant
Sykes Inc.	South	Data processing	Neutral	Enclosed facility
Regional Industrial Authority Inc.	South	Vacant	Neutral	Highest and best use - industrial
Mountain Properties	West	No current use	Neutral	Highest and best use - industrial
Floyd Mullins Estate	West/Northwest	No current use	Positive	May be used by ecoPower for future expansion
VG Combs	Northwest	Pasture	Positive	Property "seems to be ready for use as a supporting facility"
ACIN, LLC	East	No current use on most land, some active mining	Neutral	Current property use is industrial

Source: Kentucky Field Service Realty, Inc. (KFSR). 2009. Real Property Appraisal Report

Based on this study, the proposed ecoPower plant will either have a neutral or positive effect on the property value of adjoining properties.

The study notes that the report “is based on the assumption that the property is not negatively affected by the existence of hazardous substances or detrimental environmental conditions.”

Supplemental Investigations, Research and Analysis

After reviewing the applicant’s SAR, BBC concluded that the real property appraisal study conducted by KFSR required independent verification. KFSR’s drew conclusions primarily based on professional opinion including assumptions regarding the future use of the properties.

The study also only evaluated potential effects on adjoining properties. KRS 278.708(3)(c) states:

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

In prior siting evaluations, the Board has also considered potential property value impacts on properties located in the vicinity or near the proposed project as well as immediately adjoining properties.

To evaluate and supplement the applicant’s SAR, BBC conducted interviews with the applicant, the Perry County Property Value Assessor (PVA), industrial park representatives, the airport, and other local officials. The BBC team also spent time visiting the residential areas in closest proximity to the proposed site.

Proximate land uses and topographical buffers. Each of the individuals the study team interviewed agreed that development of the proposed project would not negatively impact property values of properties located near or in view of the proposed ecoPower project. Individuals noted that the land uses surrounding the proposed ecoPower plant currently consist of industrial use and former and active surface coal mining. Therefore, the siting of the proposed ecoPower plant would not represent a significant change in residents' or potential buyers' opinion of their surroundings. Furthermore, many interviewees believe that property values may increase since the proposed ecoPower facility would represent new economic development in the area and could create jobs for the local residents.

BBC generally agrees with these conclusions after visiting these surrounding residential properties. It is possible that some residents or potential buyers may be concerned about potential visual, odor or health effects from the biomass-fired facility which could affect property values. However, a decrease in property value would be unlikely given the existing industrial activity and environmental conditions already in the vicinity of these properties.

BBC noted the following observations during the visit that support the conclusion that adverse property value affects are unlikely:

- Properties located along KY 15, Tenmile Creek and Grapevine Creek are situated at a lower elevation than the proposed ecoPower site and would not have a view of the facility.
- The five residences located in or adjacent to the industrial park already view most or some of the existing industrial facilities. Furthermore, these properties are situated on former surfacing mining land and near active mining areas which could be considered an “undesirable land use” in itself.
- The neighborhood located adjacent to the airport already views the industrial park. Furthermore, the close vicinity the airport would likely be considered a more significant “undesirable land use” than the proposed ecoPower plant. Airport representatives noted, however, that they have never received any complaints from residences regarding current operations at the airport.

Conclusions and Recommendations

Based upon review of the applicant's SAR, subsequent conversations with the applicant and additional data collected by the BBC team, we reach the following conclusions concerning the potential changes in property values for adjacent property owners:

- The proposed ecoPower plant site is located in an existing industrial park and surrounded by former and active surface coal mining. There are no planning and zoning regulations in place on or near the proposed site.
- Several residential properties are located in the vicinity of the proposed site and many will have views of the proposed ecoPower plant. Therefore, based on evidence found in previous studies, it is possible that the siting of the proposed ecoPower facility could have an adverse impact on property values for some residential properties.

However, given the topography of the area and existing land uses, significant negative property value affects are unlikely.

- Opinions of community leaders are that property values are unlikely to be negatively impacted and may be positively impacted by the siting of the proposed ecoPower plant. BBC believes beneficial impacts are most likely if much of the construction and operations workforce is drawn from the local area.

Recommended mitigation. The SAR does not specify any particular mitigation measures related to impacts on adjacent or nearby property values. As suggested in interviews with community leaders, it is possible that the net effects on regional property values could be positive, with gains due to the additional economic stimulus created by plant construction and operation outweighing any possible localized reductions in value in closest proximity to the plant site. In Section 10.0 – Local Economic Impact, ecoPower indicates they will maximize local hiring. The BBC team recommends that this goal should also be considered a mitigation measure for impacts on local property values.

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 ecoPower plant. This component of the SAR is identified in KRS 278.708(3)(d).

Standard Methodology and Issues for Noise Studies

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, the 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;
- 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.

In jurisdictions where there are no legal thresholds of impact, the determination of the significance of ambient noise impacts must rely on measures of compatibility and acceptability that are drawn from theory, from research or standards enacted elsewhere, or from a subjective assessment of community preferences, based on any available indicators.⁴⁷ In Kentucky, the coal mining industry may provide relevant indicators of general public preferences about noise impacts. For example, by far the largest share of complaints about coal mining activity (42 percent) are attributed to blasting noise.⁴⁸

In the instance of the proposed ecoPower project, potential noise issues stem from the construction and operation activities. Operation noise sources include the “steam blows” which occur at plant startup, the ID fan, transformer, air cooled condenser, wood chipper building and wood hog building. Noise from traffic is another potential consideration.

⁴⁷ See for example U.S. Department of Housing and Urban Development. The Noise Guidebook. No date, Figure 3, Land Use Compatibility Guidelines. (Available from the U.S. Government Printing Office.)

⁴⁸ 2000-2001 State of Kentucky’s Environment: A Report on Environmental Trends and Conditions [online]. Published by The Kentucky Environmental Quality Commission, June 2001, p. 147.

Applicant's Submittal

In compliance with this SAR requirement, the applicant submitted a noise impact study (Exhibit J2 of the SAR) conducted by Smith Management Group (SMG). Section 1.9 and 4.0 summarize the findings of this study.

The study consisted for the following elements:

- Review of human response to noise.
- Description of the existing acoustical environment and the results of ambient noise monitoring.
- Discussion of applicable governmental guidelines.
- Review of equipment noise sources.
- Evaluation of the noise emissions associated with the operation of the proposed ecoPower plant.
- Discussion of construction noise emissions.
- Overview of suggested mitigation.

Methodology. Absent any state, county, or local noise regulations, the SAR referenced guidelines established by the Environmental Protection Agency (EPA). Specifically, to protect public health and welfare the EPA has recommended constant sound thresholds of 55 dBA during daytime hours and 45 dBA during night time hours.⁴⁹ SMG's analysis also considered the incremental increase in noise levels induced by noise emissions from the proposed ecoPower plant. SMG notes a typical human ear will recognize a 3 dBA or greater change in noise levels.

The study measured ambient noise levels at the southeast and southwest corners of the proposed site. These monitoring locations are the closest points to potential noise receptors. SMS used the monitoring results at these two locations to model noise levels at three additional locations referred to as propagated noise locations. Appendix B of the noise impact study includes a map showing all five locations.

Baseline noise levels. The study identified several existing noise sources in the vicinity of the proposed ecoPower site including:

- Traffic noise associated with Sykes call center.
- Air traffic at Wendell H. Ford Airport.
- Hunting and recreational vehicles use in the surrounding areas.
- Operations at other facilities within the industrial park.

⁴⁹ According to the applicant, these thresholds are suggested without consideration for economic or technical feasibility of implementation. As such, they contain a margin of safety which guarantees that, for noise levels below these, there is no reason to suspect that the general population will be at risk.

The study also notes the potential noise contribution from the Weyerhaeuser facility if it becomes operational again in the future.

As noted, measurements of existing, baseline noise conditions were taken from two locations on the proposed site. “Noise measurement location #1,” located at the southwest corner of the proposed site, would be approximately 800 feet from the proposed chimney and baghouse and 780 feet from the proposed wood hog building. The 24-hour baseline measurement at this location equaled 44.9 dBA. “Noise measurement location #2,” located at the southeast corner of the proposed site, would be approximately 1,025 feet from the Sykes facility, 1,875 feet from the ID fan and chimney and 2,500 feet from KY 15. The 24-hour measurement at this location equaled 43.4 dBA.

Anticipated noise levels associated with operation of the project. To determine the impact of operating the project relative to current conditions, the applicant modeled the anticipated effect of typical noise levels emitted from various sources associated with operations of the proposed ecoPower plant. Exhibit C-6 shows the equipment included in the analysis and corresponding noise level.

**Exhibit C-6.
Major Noise Sources from
Associated with
Proposed ecoPower Plant**

Source:
SMS, 2010.

Noise Source	Noise Level
ID fan	85 dBA at 3-feet
Transformer	85 dBA at 3-feet
Air cooled condenser	55 dBA at 3-feet
Wood hog building	100 dBA at 3-feet
Wood chipper building	100 dBA at 3-feet

Modeling of the noise associated with the project specifically excluded those sounds associated with intermittent activities such as start-up, shut down and other atypical operating conditions.

Based on the noise levels from each proposed source, the study estimated the “intruding-operational noise levels” expected at each of the five locations. SMG adjusted the modeled results to account for the lower noise levels recommended by the EPA guidelines during night time hours. Therefore, these results can be directly compared to the recommended maximum average daytime noise level of 55 dBA.

The top panel in Exhibit C-7 shows the estimated combined ambient and intruding-operational noise levels at each location. The bottom panel shows the estimated change to current ambient noise levels from noise emissions during daily operation of the proposed ecoPower plant.

**Exhibit C-7.
Noise Impact Analysis Results**

Location	Noise Level (dBA)				
	Measurement Location #1	Measurement Location #2	Propagated Location A	Propagated Location B	Propagated Location C
Combined noise level					
ID fan	46.8	43.6	44.8	44.4	44.2
Transformer	45.8	43.8	45.5	44.4	44.2
Air cooled condenser	52.6	47.4	55.0	47.7	44.9
Wood chipper bldg	57.8	45.4	47.9	46.6	44.8
Wood hog bldg	54.0	45.2	49.5	48.0	44.8
Change from ambient					
ID fan	1.9	0.2	0.6	0.2	0.0
Transformer	0.9	0.4	1.3	0.2	0.0
Air cooled condenser	7.7	4.0	10.8	3.5	0.7
Wood chipper bldg	12.9	2.0	3.7	2.4	0.6
Wood hog bldg	9.1	1.8	5.3	3.8	0.6

Note: Bolded columns identify the two locations (measurement location #2 and propagated location C) closest to potentially sensitive noise receptors. BBC discusses this observation later.

Source: SMG, 2009.

The results indicated that the EPA guideline of 55 dBA may be exceeded at measurement location #1 (or southwest of proposed ecoPower facility) as a result of noise emissions from the wood chipper building—the projected noise level also corresponds to a 12.9 dBA increase from ambient levels. The results also show a noticeable increase in noise levels at this location from noise emissions from the air cooled condenser and wood hog building. SMG notes that the one projected exceedance only slightly exceeds the EPA guideline. Furthermore, this receptor location is not adjacent to any sensitive receptors such as residential, commercial or retail properties.

Based on the analysis, the EPA guideline is not expected to be exceeded at the other locations around the proposed site or from any of the other proposed sources. However, a noticeable increase in noise levels at propagated location A may be induced by noise emissions from the air cooled condenser.

SMG did not analyze noise impacts during construction, but notes that “construction noise emissions are not expected to exceed the respective equipment noise emissions.”⁵⁰

Mitigation. ecoPower concluded that “no mitigation is required for this site” since the results of the study found no sensitive receptors to be significantly impacted from the projected noise sources.⁵¹ However, ecoPower plans to “increase” the enclosures for the “two highest noise sources.”⁵² While the primary purpose of this design is for dust suppression, the enclosures can also be considered a noise mitigation measure.

⁵⁰ Smith Management Group (SMG). 2010. Environmental Noise Impact Study.

⁵¹ SAR, page 20.

⁵² Ibid.

Supplemental Investigations, Research and Analysis

The noise impact study utilized appropriate methodology and applied that methodology correctly to evaluate potential noise impacts from average projected noise levels during daily operation of the proposed ecoPower plant. Based on BBC's site visit and tour of surrounding areas, we believe noise measurement location #2 and propagated location C are the most important points for the noise evaluation. The former indicates the noise levels in the direction of other tenants (and isolated residences) in the industrial park. The latter indicates noise levels in the direction of the closest residential neighborhood at a similar elevation to the proposed ecoPower facility (proximate to the airport). These locations are shown in bold in Exhibit C-7.

BBC found that the SMG study did not comprehensively address other relevant noise issues:

- Identification, characterization and potential impacts of intermittent noise sources that may result in noise levels that exceed levels observed during daily operations (i.e., peak noise levels).
- Evaluation of possible traffic related noise impacts during both construction and operation.

During discussions with ecoPower representatives, BBC inquired about other potential noise sources beyond the sources during daily operations. BBC specifically asked whether “steam blows” will be required during plant startup—a common procedure at power plants. A steam blow occurs as steam is emitted under very high pressure from the pipes in the plant following planned and unplanned outages. Steam blows typically create very loud, brief noise periods and, although intermittent, would likely represent the peak noise at the plant. The applicant confirmed that steam blows will be used during plant start up and provided BBC with additional information related to the noise impacts from this source. The supplemental analysis conducted by ecoPower indicated that the applicant anticipated only one steam blow prior to initial plant operations and that the steam blow would have a duration of approximately 18 seconds. Further, noise modeling by the applicant indicated that the steam blow would not result in noise levels exceeding the 55 dBA Ldn guideline from EPA.⁵³ That finding, however, appears to largely stem from the effect of averaging the short duration of the steam blow over a full day's noise levels. In our view, the 55dBA Ldn guideline is appropriate for evaluating routine or average noise levels for operation, but the daily average is not a useful metric for evaluating a peak noise issue such as steam blows.

The SAR also did not address potential noise impacts from traffic during construction and operation of the proposed ecoPower plant. Most traffic associated with the plant will occur along KY 15. Although increased traffic will inevitably add to noise effects, these effects should not be substantial beyond baseline conditions of KY 15. Traffic increases along KY 15 are discussed in greater detail later in this section. Also, as previously discussed, traffic levels during the construction and operation of the Weyerhaeuser/Trus Joist facilities were comparable to or exceeded the projected levels for the proposed ecoPower plant. According to Hazard officials and representatives of the industrial park, no complaints arose regarding noise impacts from Weyerhaeuser /Trus Joist traffic. Therefore, adverse noise effects from traffic during the construction and operation of the proposed plant are unlikely.

⁵³ Response to Supplemental Information Request. March 18, 2010. ecoPower Generation, LLC.

Although the SMG study did not model noise impacts from construction, the study team concurs that excessive noise is unlikely during the construction period at the plant site.

Conclusions and Recommendations

Minimal noise impacts are anticipated during the operation of the proposed facility. EPA guidelines may be exceeded on the southwestern edge of the site, but the SMG study correctly notes that no sensitive noise receptors are in the vicinity of this location.

Noise from the traffic during construction and operation of the proposed ecoPower plant will not be a substantial issue relative to baseline conditions.

Potentially, the most important noise related issue associated with the proposed ecoPower plant relates to steam blows. These are an inevitable aspect of proper steam generating plant operation. However, ecoPower has indicated that it anticipates only a single steam blow prior to initial facility operations. If correct, the peak noise impact will be a short-duration, one-time event. In our experience, other steam plants often require steam blows at least once a year following routine outages for maintenance.

Recommended mitigation. As noted in the applicant's SAR, current design plans for the proposed ecoPower plant include enclosures around the wood processing equipment. While the primary purpose of the enclosure is dust suppression, it will also act as a noise migration measure.

If the facility will only experience a single steam blow prior to initial startup, no mitigation should be required. However, if further engineering analysis determines steam blows will occur on a regular, even if infrequent, basis, ecoPower should install silencers to dampen the resulting noise. In that event, ecoPower should also consider developing a system to notify residents in the vicinity of the plant in advance of planned steam blows. This could include newspaper advertisements and/or a telephone warning system in which a recording would automatically call interested residents.

Impacts on Transportation

This portion of the SAR review examines the impacts of the proposed ecoPower facility on local roads. 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, will 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

Road and traffic impact-related information specific to the construction and operation of the proposed facility is primarily provided in Section 5.0 of the applicant's SAR. Data on existing traffic volumes was obtained from the Kentucky Transportation Cabinet (KTC) and is provided in Exhibit J8. All equipment, materials and personnel will be transported to the industrial park via existing roads – primarily KY 15 and Coalfields Industrial Drive. Additional access roads within the site would be constructed by the applicant.

Transportation via roads. Access to the ecoPower site is provided via Coalfields Industrial Drive. The industrial drive is a two lane, paved road that is accessed via KY 15, approximately 10 miles north of Hazard. The SAR also indicates that access will be provided, "to a lesser extent" via KY 28.

The SAR focuses upon KY 15 and KY 28. KY 15 is classified as a rural principal arterial highway by the KTC. Based on data downloaded from the KTC web-site, the SAR indicates that the most recent actual traffic counts on KY 15 were 8,710 vehicles at the station closest to the turnoff for the industrial park (station #768 in 2008) and 6,032 vehicles at the station north of the turnoff at the Perry County/Breathitt County line (station #251 in 2007). The SAR also provides KTC's computer

estimates of 2009 traffic at these two locations, which are about two percent higher than the most recent actual counts.

Similarly, the SAR provides traffic count data for KY 28. KY 28 is classified as a rural major collector and the traffic counts in 2007 (at station #761, approximately 1 mile west of the intersection of KY 28 and KY 15) was 4,060. KTC's computer model projects about a ten percent increase in traffic on KY 28 in 2009.

The SAR does not provide information on the level of service or capacity of KY 15 or KY 28.

Traffic volumes related to construction. The SAR notes that “construction is expected to provide employment for up to 400 workers over a 2-year period of time.” And, “construction will result in increased traffic for workers and periodic delivery of large equipment, machinery and building supplies.” The SAR does not provide a specific projection of traffic volumes related to construction or a further assessment of the impacts of construction on the road system.

Projection of traffic volumes related to operations. The SAR indicates that ecoPower expects the plant to receive approximately 100 truck deliveries per day, primarily to provide fuel. The applicant further indicated that up to 40 full time workers will be employed at the plant. Based upon this information, the applicant estimated the potential percentage change in traffic along KY 15 and KY 28, assuming (to provide a worst case view) that all 140 vehicles would use KY 15 and that all 140 vehicles would use KY 28. The SAR concludes that traffic from operations would increase traffic by about two percent or less along KY 15 and/or less than four percent along KY 28.

ecoPower representatives indicated that the typical load for a fuel truck will be about 25 tons, considerably less than the 40 ton capacity of coal trucks using KY 15 and other roads in the region.⁵⁴ The SAR further notes that both KY 15 and KY 28 are part of the Coal Haul Extended Weight System and classified as AAA for truck weight.

Fugitive dust and road degradation. The SAR discusses fugitive dust from material handling during operations and from road operations. The document references ecoPower's air permit application and notes methods of controlling dust from material handling, including a “fog-type dust control system” and potential enclosures around material handling systems. Fly ash will be treated with water to maintain moisture content and reduce dust. In terms of dust generated by transportation, ecoPower indicates that permanent roads and parking lots will be paved and dust suppressants will be used as needed.⁵⁵

Mitigation. In Section 6.0 of the SAR (Mitigating Measures), ecoPower indicates that it will agree to pave all internal roads and driving surfaces, and that it will require all fuel delivery trucks to comply with applicable load cover rules. The applicant further states that fuel deliveries will be scheduled predominantly during daytime hours to reduce night time traffic on external roads and reduce truck noise during traditionally quiet periods.

⁵⁴ Grant Curry, ecoPower Fuel Procurement Manager. Personal communication with study team, March 3, 2010.

⁵⁵ SAR, Section 5.3.

Supplemental Investigations, Research and Analysis

After reviewing the SAR, the study team sought to verify traffic related data and calculations and to collect some additional information from the applicant and from the KTC.

Operations traffic. As the principal access to the proposed ecoPower site is directly from KY 15 via Coalfields Industrial Drive, BBC sought clarification from the applicant regarding how and why KY 28 might be used to access the site. In their response to BBC's supplemental information request, ecoPower indicated the KY 28 was mentioned in the SAR because some local workers may use KY 28 to reach KY 15. However, since KY 28 does not provide direct access to the site or a shorter route from the larger population centers in the region, the same could be said of many other roads in Perry County. Consequently, BBC focused our evaluation on KY 15.

The study team also evaluated the reasonableness of the applicant's projection of traffic from operations. The applicant indicated approximately 100 truck deliveries per day would be expected. The annual fuel volume for the plant is estimated in various places in the application, with the highest estimate of 576,000 tons provided in the air permit application.⁵⁶ Using this estimate, and the estimated average net load of a fuel truck of 25 tons, we calculate an average of 63 fuel trucks per day. The applicant has also indicated that there will be the need for approximately 2.5 tons per day of sand and a small number of truck deliveries for on-site equipment, diesel, reagent and propane. Overall, the estimate of 100 trucks per day appears to err on the high side, potentially leading to an overestimate of transportation-related impacts.

Via the KTC web-site, BBC was able to confirm the baseline traffic count data provided in the SAR. However, KTC traffic counts represent two way traffic. Consequently, the comparison of projected traffic volumes from operations in the SAR should have considered both ingress and egress of delivery trucks and employee vehicles. In other words, 100 truck deliveries and 40 employees traveling to the site on a daily basis corresponds to 280 trips. This revision effectively doubles the SAR estimates of the worst-case impact on traffic volumes along KY 15. However, the impact on KY 15 traffic remains relatively low at between at between 3.1percent (station #768) and 4.6 percent (station #251) increase.

The study team contacted the local office of the KTC (in Jackson) to request information on the current level of service and capacity of KY 15. This information is not published, or readily available. However, KTC used their capacity model to generate the information we requested. KTC modeling indicates that KY 15 in the vicinity of the proposed facility currently operates at between 37 percent and 47 percent of its capacity.⁵⁷ A 3.1% to 4.6% increase in traffic due to operations of the proposed ecoPower facility would increase traffic on KY 15 to between 38 percent and 49 percent of its capacity.⁵⁸

⁵⁶ Exhibit K, Page 4 of 9.

⁵⁷ Willie Griffith Jr., Construction Branch, Kentucky Transportation Cabinet District 10. Personal communication with study team, March 17, 2010.

⁵⁸ This calculation is multiplicative, not additive. The lower end of the range is based on the following calculation: 37% *103.1% = 38.1%. The higher end of the range is based on: 47%*104.6% = 49.2%.

KTC's model indicates that KY 15 is currently operating at level of service (LOS) D.⁵⁹ LOS D is defined as "approaching unstable flow" and, in more common terminology, "is perhaps the level of service of a busy shopping corridor in the middle of a weekday, or a functional urban highway during commuting hours: speeds are somewhat reduced, motorists are hemmed in by other cars and trucks. LOS D is a common goal for urban streets during peak hours ..."⁶⁰ However, the local KTC official indicated he was surprised by this result — and it does not seem consistent with BBC's experience in traveling KY 15 at various times of the day during our site visit. Given that KTC has not done a full study of existing conditions on KY 15 and that the LOS estimate was simply a preliminary modeling result, we believe it should be interpreted with caution. No one in the study area interviewed by BBC indicated concerns about existing traffic flow or congestion on KY 15 and our experience and the local KTC official's opinion both suggest a higher LOS than indicated in the KTC modeling result.

Construction traffic. As indicated previously, the SAR does not provide a quantitative estimate of the impacts of construction of the proposed facility on traffic volumes in the area. However, this impact can be readily estimated using the information provided by ecoPower regarding the construction workforce and supplemental information provided regarding anticipated equipment and supply deliveries during construction.

The SAR indicates an expected peak construction workforce of about 400 workers and an average workforce of about 200 employees. In response to our supplemental information request, ecoPower provided more detailed information indicating that the peak workforce might actually be less, potentially ranging from 280 to 350 people.⁶¹ The response to the supplemental information request also indicated that largest volume of truck traffic during construction would occur during the concrete pour for the steam generator foundation – approximately 50 trucks in a 24 hour period. Combining this information, and considering ingress and egress, we estimate the maximum daily volume of traffic to the site during the construction period would be 900 vehicles (combined ingress and egress).

Combining this worst-case estimate with the existing traffic data for KY 15 indicated previously indicates that the maximum impact on daily traffic volume would be between 10 percent (900/8,791) at station #768 near the turnoff to the Coalfields Industrial Drive and 15 percent (900/6,032) at station #251 at the Breathitt County line. Consequently, during construction KY 15 would be projected to operate at between 41 percent and 54 percent of its capacity.⁶²

Apart from effects on the volume of traffic on the roads accessing the industrial park, construction may also impact traffic flow due to the delivery of oversize loads. ecoPower has indicated that there may be several heavy hauls during construction, including equipment for the turbine, generator and main and auxiliary transformers. Deliveries of these types of loads will require special permits and

⁵⁹ Willie Griffith Jr., Construction Branch, Kentucky Transportation Cabinet District 10. Personal communication with study team, March 17, 2010.

⁶⁰ Wikipedia entry for Level of Service, accessed March 17, 2010.

⁶¹ Response to supplemental information request, question 14. ecoPower, March 5, 2010.

⁶² This calculation is multiplicative, not additive. The lower end of the range is based on the following calculation: 37% * 110% = 40.7%. The higher end of the range is based on: 47% * 115% = 54.1%.

coordination with KTC.⁶³ However, in the study team's assessment, KY 15 is well designed to accommodate these types of oversize loads.

Road maintenance. KY 15 is maintained by the KTC. As noted previously, both roads are part of the Coal Haul Extended Weight System, designed to accommodate trucks carrying 40 ton loads of coal. As such, construction and operations of the proposed ecoPower facility should have little impact on road maintenance requirements or costs for these roads.

Coalfields Industrial Drive is maintained by the Coalfields Regional Industrial Park. The chairman of the industrial park's board of directors indicated no concerns regarding the additional traffic that would be created by the proposed ecoPower plant or its potential impact on Coalfields Industrial Drive. Both the chairman and others in the local area also referred the study team to the prior experience of the industrial park with Weyerhaeuser operations involving similar or larger volumes of truck traffic.⁶⁴

Conclusions and Recommendations

The SAR provides a description of the routes used to access the proposed site, baseline traffic data for those routes and calculations of projected impacts from traffic volume during operations. There was an error affecting the operations volume impact calculations, but the fundamental conclusion that traffic increases would not be significant remains valid. Little information was provided in the SAR regarding traffic impacts from construction, but the applicant provided supplemental information in response to our request to allow us to evaluate that issue.

In general, and relative to previous siting evaluations conducted by the study team for the Board, the proposed ecoPower site is well situated from a transportation standpoint. Close proximity to KY 15, one of the three State Primary System highways in Perry County (along with KY 80 and the Hal Rodgers Parkway)⁶⁵ provides considerable volume and load capacity to the site.

Recommended mitigation. The study team supports the mitigation measures that ecoPower has proposed. In particular,

1. All internal roads and parking lots should be paved to minimize fugitive dust and visual impacts.
2. Fuel deliveries should be scheduled during daytime hours as far as possible.
3. Fuel delivery trucks should be required to comply with applicable load cover rules.

No further traffic-related mitigation is recommended.

⁶³ Supplemental information request, question 16. ecoPower, March 5, 2010.

⁶⁴ Charles Colwell, Chairman Coal Fields Regional Industrial Authority. Personal communications, March 4 and March 16, 2010.

⁶⁵ Perry County State Primary Road System. Downloaded from KTC website, March 9, 2010.

SECTION D.
Recommendations

SECTION D.

Recommendations

In this section, the study team presents recommendations concerning the proposed ecoPower project, including recommendations for further mitigation measures. The BBC team provides specific recommendations on the elements of the SAR that the Board might consider before arriving at a decision on ecoPower's pending application for a construction certificate.

Specific Mitigation Recommendations Related to SAR Elements

Based on the analysis and conclusions described in Section C, BBC recommends the following mitigation measures be implemented by the applicant.

Description of the proposed facility/site development plan. The following mitigation measures are recommended for this aspect of the statutory requirements:

1. Prior to the outset of construction, ecoPower should review security plans and systems with the Perry County Sheriff. Throughout construction, ecoPower should have regular contact and share information about the construction workforce with the Sheriff.
2. To ensure an adequate and reliable water supply for the site, ecoPower should continue to evaluate water supply alternatives.

Compatibility with scenic surroundings. The following mitigation measures are recommended to address this potential issue:

3. To minimize visual impact, ecoPower should paint the project structures a neutral color, with the exception of markings which may be required by OSHA, the Federal Aviation Administration (FAA) and/or Kentucky Airport Zoning Commission (KAZC) or to otherwise protect the safety of employees.
4. ecoPower should also ensure that the final design of night time lighting of the facility minimizes potential visual concerns, subject to safety and security requirements.

Potential changes in property values for adjacent property owners. The following mitigation measures are recommended for this aspect of the statutory requirements:

5. Any negative effects on property values may be offset by gains due to increased economic activity resulting from the proposed facility. ecoPower should maximize local hiring to the extent feasible.

Expected noise from construction and operation. The following mitigation measures are recommended to address this potential issue:

6. ecoPower plans to include enclosures around the wood processing equipment for dust suppression which will also act as a noise migration measure.
7. If steam blows will occur on a regular, even if infrequent, basis – such as once or twice per year following routine outages for maintenance — ecoPower should install silencers to dampen the resulting noise. In that event, ecoPower should also consider developing a system to notify residents in the vicinity of the plant in advance of planned steam blows. If only one steam blow of less than a minute’s duration will occur prior to initial startup, as the applicant has indicated, no mitigation should be required.

Impacts on transportation. The following mitigation measures are recommended for this aspect of the statutory requirements:

8. All internal roads and parking lots should be paved to minimize fugitive dust and visual impacts.
9. Fuel deliveries should be scheduled during daytime hours as far as possible.
10. Fuel delivery trucks should be required to comply with applicable load cover rules.

Overall Recommendations Concerning Siting Issues Related to the Proposed ecoPower Project

After reviewing and evaluating the applicant's SAR, visiting the site and gathering additional information and conducting further analyses where necessary, the BBC team recommends the following concerning the siting aspects of the proposed ecoPower project:

- A. While we have noted a few deficiencies in the SAR, we believe these deficiencies have been largely addressed through additional information provided by the applicant and supplemental evaluations described in this report. We do not believe that additional data is likely to change the findings and conclusions or specific mitigation recommendations contained herein.
- B. Presuming the project is developed as specified in the applicant's SAR and the supplemental information provided by the applicant, and presuming that the mitigation recommendations provided herein are implemented by the applicant, we do not believe there will be significant unmitigated impacts from the development and operation of the ecoPower project within the topic areas specified for the site assessment.