



# Response to Siting Board Staff's First Data Request to ecoPower Generation, LLC



**ecoPower Generation**

Energizing America with Clean Power

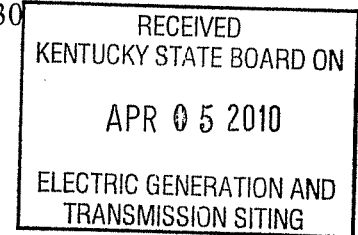
Case No. 2009-00530



COMMONWEALTH OF KENTUCKY  
BEFORE THE KENTUCKY STATE BOARD ON  
ELECTRIC GENERATION AND TRANSMISSION SITING

In the Matter of:

APPLICATION OF ECOPOWER )  
GENERATION-HAZARD, LLC FOR A )  
CERTIFICATE TO CONSTRUCT AND ) CASE NO.  
OPERATE A MERCHANT ELECTRIC ) 2009-00530  
GENERATING FACILITY AND A 69 KV )  
TRANSMISSION LINE IN PERRY COUNTY, )  
KENTUCKY )



**RESPONSE TO SITING BOARD STAFF'S FIRST DATA REQUEST**  
**TO ECOPOWER GENERATION, LLC**  
**DATED MARCH 26, 2010**

Comes the Applicant, ecoPower Generation-Hazard, LLC, ("ecoPower"), and for its Response to the Siting Board Staff's First Data Request (the "Staff's First Request"), states as follows:

**GENERAL OBJECTIONS**

1) Applicant objects to the Staff's First Request to the extent it seeks information, documents, or things not in Applicant's possession, custody, or control, or that are publicly and easily available to the Kentucky State Board on Electric Generation and Transmission Siting (the "Board").

2) Applicant objects to the Staff's First Request to the extent it seeks information which is outside the scope of the jurisdiction of the Board.

3) Applicant's Response to the Staff's First Request is hereby made without waiver and intentional preservation of:

a) All questions as to the competence, relevance, materiality, and admissibility of evidence for any purpose of the information or documents, or the subject matter thereof, in any aspect of this or any other court action, or judicial or administrative proceeding, or investigation;

b) The right to object on any grounds as to the use of any such information or documents, or the subject matter thereof, in any aspect of this or any other court action, judicial or administrative proceeding, or investigation;

c) The right to object at any time for any further response to this or any other request for information or production of documents; and

d) The right at any time to supplement this response.

7) Applicant objects to the disclosure of confidential commercial, business, or propriety information. Applicant will produce responsive documents for inspection and copying containing confidential commercial, business, or proprietary information subject to an appropriate order by the Board or court of competent jurisdiction. If such documents are in the possession of the Applicant they will be specifically noted in the attached Response.

8) Applicant reserves the right to amend, correct, or supplement any and all parts of its Response herein, and further states that the information provided to the Staff's First Request is that information reasonably known, recalled or prepared by Applicant after reasonable investigation and preparation as of the date of this Response.

9) Applicant objects to the Staff's First Request to the extent it is unreasonably vague, overly broad, unduly burdensome, or purports to require the disclosure of information beyond the scope of this proceeding.

11) Applicant objects to the Staff's First Request to the extent it is unreasonably repetitive, overlapping or duplicative.


12) By making certain general and specific objections, Applicant does not waive other objections that might be applicable or become applicable at some time in the future. Applicant expressly reserves the right to assert additional objections which may become apparent in the course of providing information or documents.

13) Applicant, by and through its President and Chief Executive Officer, Gary T. Crawford, provides its Response to the Staff's First Request. Mr. Crawford has been responsible for gathering and overseeing the preparation of responses in the attached document entitled, *Response to Siting Board's First Data Request to ecoPower Generation-Hazard, LLC dated March 26, 2010*, and has directed the compiling of responses by persons under his authority and direction. The information contained therein is true and correct to the best of his knowledge and belief, and is incorporated into this pleading as if set forth fully and completely.



## VERIFICATION

I, Gary T. Crawford, President and CEO of Applicant, ecoPower Generation-Hazard, LLC, certify that I have read the attached Response to Staff's First Data Request and the same is true and accurate based upon my best knowledge, information and belief.

  
\_\_\_\_\_,  
Gary T. Crawford  
President and CEO of ecoPower  
Generation-Hazard, LLC.

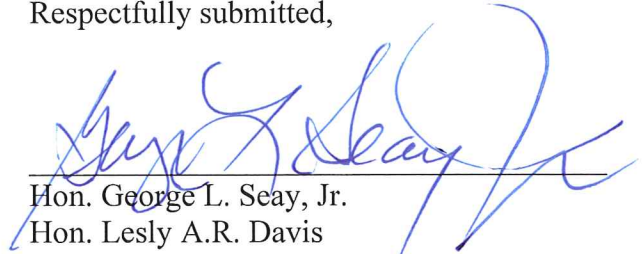
COMMONWEALTH OF KENTUCKY )  
 ) :SS  
COUNTY OF Garrard )

The foregoing instrument was acknowledged before me this 2<sup>nd</sup> day of April, 2010, by Gary T. Crawford.

My Commission expires: 12-12-11

NOTARY PUBLIC

Respectfully submitted,



Hon. George L. Seay, Jr.

Hon. Lesly A.R. Davis

WYATT, TARRANT & COMBS, LLP

250 West Main Street, Suite 1600

Lexington, KY 40507-1746

859.233.2012

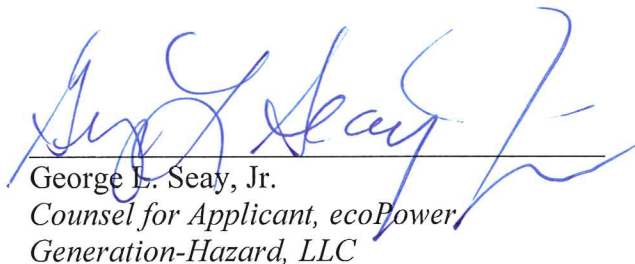
*Counsel for Applicant, ecoPower  
Generation-Hazard, LLC*

**CERTIFICATE OF SERVICE**

This is to certify that the original and six true and correct copies of the foregoing Response to Siting Board Staff's First Data Request has been served upon the following, by hand delivery, at the filing office of the Kentucky Public Service Commission, on this the 5<sup>th</sup> day of April, 2010:

Hon. Rick Bertelson  
Public Service Commission  
211 Sower Blvd  
P.O. Box 615  
Frankfort, KY 40602-0615

Mr. Jeff Derouen  
Executive Director  
Public Service Commission  
P.O. Box 615  
Frankfort, KY 40602

  
George L. Seay, Jr.  
Counsel for Applicant, *ecoPower*  
Generation-Hazard, LLC

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**RESPONSE TO SITING BOARD STAFF'S FIRST DATA REQUEST  
TO ECOPOWER GENERATION - HAZARD, LLC  
DATED MARCH 26, 2010**

1.) *The organization Sourcewatch reports on its website that the Schiller Unit 5 facility has had issues with adverse noise emissions:*

*After the wood-burning boiler began operating, neighbors in Eliot, Maine (across the Picatagua River) began complaining about noise from the plant disrupting their daily lives. A private study conducted to measure noise levels found that noise from the plant exceeded Portsmouth limits. In October 2008, PSNH installed silencers in fans located in the boiler's air ducts, but removed the one in the 'induced draft' fan because of its negative impact on operations and emissions measuring. When PSNH representatives met with seventeen Eliot, ME residents in June 2009, the residents informed PSNH that they are woken up by the plant at night and have trouble holding conversations outside. The representatives told the residents that the company would replace the 'induced draft' fan's silencer and look into other options, but neglected to commit to any dates.*

*a. Are there similarities between the generating facility proposed by ecoPower and the Public Service of New Hampshire Schiller Unit 5 facility that could result in similar noise emissions from the ecoPower facility once it is built and put into operation?*

*b. If there are such similarities between the Schiller Unit 5 and the ecoPower facilities, what mitigation measures does ecoPower propose to eliminate or reduce the noise emissions from its facility?*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

The Schiller and ecoPower facilities are similar in that both facilities have forced (FD) and induced draft (ID) fans that are potential sources of noise. There are three primary ways noise can be emitted from a fan; through the inlet, through the outlet and through the housing. In addition, fan noise can be transmitted to the adjacent ductwork from the fans and transmitted to the surroundings through the sides of the ducts. Noise from the fan inlets are a problem only on FD fans only since these are the only fans in the process where the inlets are open to atmosphere.

The project specifications require that steam generator equipment noise levels be guaranteed to not exceed 85 dB(A) at one meter. The steam generator supplier is required to guarantee that the equipment provided will meet this noise level.

SMG has evaluated the fan noise emissions at 85 dB(A) from this equipment and has concluded that there does not appear to be a significant impact from the project noise sources to adjacent properties. (refer to page 10 of appendix J of the application.)

Tests will be conducted after the unit has been placed in service to determine compliance with

the 85 dB(A) specification requirement. If the equipment does not meet the required noise level, the equipment supplier will be required to implement additional mitigation measures.

Bids are currently being solicited by ecoPower for steam generator equipment. The noise mitigation measures that will probably be employed by the suppliers are silencers on the FD fan inlets and insulation and lagging on the FD and ID casing and adjacent ducts. Note that the specifications require that FD fan inlets be equipped with silencers. It is expected that insulation and lagging will be sufficient to control fan casing and ductwork generated noise to the 85 dB(A) level. ecoPower will assure that there is sufficient room is available in the ID fan discharge ductwork to add silencers if necessary.

2.) *Refer to Section C, page 6 of the Review and Evaluation of ecoPower Generation, LLC Site Assessment Report, filed by BBC Research & Consulting ("BBC") in this matter on March 22, 2010. According to the BBC report, ecoPower has contracted with the city of Hazard to purchase up to a monthly average of 100,000 gallons of water per day. At Section C, page 14 of its report, BBC recommends that ecoPower "continue to evaluate water supply alternatives" to supply its process water requirements.*

*a. State whether ecoPower agrees with BBC's recommendation to continue to evaluate water supply alternatives. Explain.*

*b. Describe all actions that ecoPower is currently taking or plans to undertake to ensure an adequate water supply prior to the start of operations.*

*c. State the capacity of the city of Hazard's existing water treatment facilities.*

*d. State the average-day demand and maximum-day demand of the city of Hazard's water treatment facilities. State when the maximum-day demand occurred.*

*e. (1) State whether the city of Hazard must increase its water treatment plant capacity to meet ecoPower's water supply requirements.*

*(2) If the city of Hazard must increase its water treatment plant capacity:*

*(a) Describe the city of Hazard's present plans for adding capacity;*

*(b) Describe how the city of Hazard intends to fund such capacity additions; and*

*(c) Describe all agreements and arrangements between the city of Hazard and ecoPower regarding the funding of such capacity additions.*

*f. Provide a copy of the water supply agreement between the city of Hazard and ecoPower.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

ecoPower agrees with the BBC recommendation to continue to evaluate water supply alternatives. The City of Hazard water supply system has adequate capacity to supply the

project. However, due to a recent history of outages and supply difficulties, it is imperative to identify secondary sources of water adequate to supply the facility during operation.

ecoPower is currently investigating a reported supply of groundwater identified in the overburden on site through a preliminary geotechnical investigation. Wells will be advanced into the reclaimed area in several locations, selected to reflect areas where water is most likely to be encountered. Through a phased monitoring and measurement approach, ecoPower will develop data as to the quality and quantity of water available in the subsurface on the project site. In addition, ecoPower has already determined that the adjacent Hollybush impoundment will supply adequate water, if needed. EcoPower is now determining the best way to access the impoundment, both physically and legally.

ecoPower interviewed Carlos Combs, City Manager, and Kenneth Couch, Superintendent at the Water Plant. Based on these interviews, it was determined that the city of Hazard water treatment facility has a capacity of 5 million gallons per day (MGD).

The average daily production is 4.218 MGD, leaving excess capacity of 782,000 gallons per day. The demand has ranged from a low of 3.6 MGD to a high of 4.4 MGD, which would be the maximum day demand. The city of Hazard does not track when maximum demand has occurred and Mr. Combs stated that he would be unable to determine that information.

The city of Hazard will not have to increase its water treatment plant capacity to meet ecoPower's water supply demands. The proposed project is expected to use a maximum of 50,000 gallons per day. The Hazard treatment plant averages 782,000 gallons per day excess capacity with a minimum of 600,000 gallons per day in excess capacity. Therefore, the Water Plant has adequate capacity to service the ecoPower facility.

The water supply agreement was provided as **Exhibit A4** in the original Application.

3) *Refer to Exhibit J, Site Assessment Report (SAR). Have ecoPower, or any of its principals, engineers or management been involved in the development of similar biomass fired power plants in other locations? If not, explain whether there are any other plants that are of similar scale and use similar technology and fuel sources?*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

Neither ecoPower nor any of its principals or management have been involved in the development of similar biomass fired power plants in other locations. ecoPower management has been involved in power generation and development and in sustainable forestry and wood products. Additionally, Gary Crawford, ecoPower CEO has participated in studies relating to the use of biomass co-fired with coal as a means of generating electricity. ecoPower's consulting engineering firm, Sargent & Lundy (S&L) has extensive experience with all primary power generation technologies. S&L has served the global electric power industry since 1891 and has developed, designed, managed procurement and construction of numerous power plants of all types. This experience is relevant to most aspects of the ecoPower Biomass Project.

S&L has participated in 26 projects and studies that involve Biomass fuel. Seven of these projects, including the ecoPower project, are currently on-going at S&L.

ecoPower has surveyed wood-fired biomass generating facilities in numerous jurisdictions and is aware of several plants of similar scale, technology and fuel source. ecoPower has used information generated by and about these plants in the development of its design and permitting. The unit that was used as the primary reference plant for the permit work was: Public Service of New Hampshire Schiller Unit 5, which is a 50 MW biomass fired unit located near Portsmouth, NH. The unit was converted from coal to biomass firing in 2006 and uses fluidized bed combustion technology and SNCR for NOx control.

4) *Refer to Exhibit J. Have all technical reports and analyses supporting the SAR been included as sections, exhibits or figures in your application? If not, provide that information.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

Yes. All technical reports and analysis supporting the application have been included in the application.

5) *Refer to Exhibit J, Figure J2 – Line of Sight Profile and Location Map. Provide labels for additional features on Figure J2 showing the site boundary, Highway 15, and existing development (homes and businesses).*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

The location of Highway 15 is labeled on the profile on Figure J2. We have added the location of the property boundary and a revised Figure J2 is submitted with this information (refer to **Tab A**). The only development is along Highway 15 and generally consists of small, 1-2 story residential structures located at the toe of the slope. We have not measured heights of any buildings along Highway 15 but we can provide photographs depicting these structures. The slope of the hill prevents any view of the project site or proposed structures.

6) *Refer to Exhibit J, Figure J2 - Line of Sight Profile and Location Map. Figure J2 shows approximate line of site in an east-northeasterly direction. Explain whether a similar evaluation was conducted in the south direction (or any other direction from the site)?*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

The line of sight plan and profile on Figure J2 is the only location where current topographic mapping created by the recent aerial survey can be integrated with topographic data from the USGS mapping, due to mining along the higher elevations. This is discussed in the Site Assessment Report – Exhibit J, at page 12, as follows:

*The majority of residential structures located within 2 miles of the Project will be unable to see the structures associated with the plant. These residences are generally located along Highways 15 and 28 and along Tenmile Creek. These roads are located at the base of the hill and the steep incline up to the Industrial Park eliminates any possible views of structures in the Park. A Line of Sight Profile has been prepared to illustrate the extent to which residents along Highway 15 may be able to see the Project structures (refer to Figure J2 Line of Sight Profile and Location Map). Residences along Tenmile Creek will similarly have no view of the Project.*

*Due to previous mining of surrounding areas, accurate topographic data is not available for the surrounding hilltops, limiting the use of profiles to illustrate line of sight potential.*

In lieu of creating what would be inaccurate plan and profile visual impact drawings, we chose to describe and depict the areas where potential visual impact may be realized.

7) *Refer to Exhibit J, Section 1.2 – Surrounding Land Uses. This section indicates that the nearest resident’s property is 3,000 feet from the project. Explain whether this represents the distance from the location of the stack, from the site boundary or from some other reference point?*

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GARY T. CRAWFORD**

The distance of 3,000-feet to the nearest residence was scaled from the proposed stack location in an effort to be consistent with other distance measurements.

8) *Explain whether ecoPower held any discussions to date with the management or owners of the Wendell H. Ford airport and whether airport officials indicated any concerns regarding the proposed project?*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

ecoPower has met and discussed the project with Mr. Jeffrey Hylton, Manager of the Wendell Ford Airport. Mr. Hylton has not expressed any reservations about the project.

9) *Refer to Exhibit J, Section 1.4 – Proposed Access Control. Please describe planned access control and security at the site during construction to handle the large volume of temporary workers and materials shipments.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**



ecoPower intends to utilize industry standards for site safety and security during construction, as well as during operations. EcoPower will confirm that its approach to safety and security is reflected in its contract with the general contractor employed to construct the project, as well as any subcontractors or other providers of services on the construction project. These contractual provisions will require compliance with all applicable OSHA laws and standards related to construction safety. Specifically, we anticipate use of the following aspects of site safety and security. This list is not exhaustive and will be amended as circumstances require:

- 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.

10) *Refer to Exhibit J, Section 1.4 – Proposed Access Control. Provide a clarification of the basis or rationale for the proposed methods for controlling access to the site. For example, do these reflect ecoPower’s standard corporate policy, or a security assessment that the company may have conducted?*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

ecoPower’s standard corporate policy is to utilize industry standards in establishing and maintaining site safety and security. This means we require our employees and all contracted companies and individuals to comply with all applicable OSHA standards and programs. Details of site security will include, without limitation, the following aspects.

- 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 in 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 in 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.

11) *Refer to Exhibit J, Section 1.7 – Existing or Proposed Utilities. Supplement the description of utility service to the site by indicating whether ecoPower has reached an agreement (or a preliminary agreement) with American Electric Power to provide power to the site and purchase generation from the facility.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

ecoPower has had numerous meetings and discussions with representatives of American Electric Power (AEP). No agreements have been entered into at this time. AEP will be obligated to supply electric power to ecoPower. Discussions regarding supply of generated power to AEP are underway but no agreement has been reached.

12.) *Please describe plans for utility services during construction including water, sewer and electricity.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

Water, sewer and electrical power will be needed during construction. All three utilities are currently located at the intersection of Sykes Boulevard and Coalfields Industrial Drive, south of the proposed ecoPower site. It is anticipated that all three utilities will be brought to the site, to the extent needed, using the right of way depicted as Sykes Boulevard on Figure 3. ecoPower will enter discussions soon with Kentucky Power to establish the temporary access to power from the existing distribution lines located at this location. ecoPower will coordinate with the city of Hazard for access to water and sewer to the extent needed during construction, prior to final operational access.

13) *Refer to Exhibit J, Sections 1.9 – Evaluation of Noise Levels, and 4.0 Anticipated Noise Levels at Property Boundary. Provide an explanation of the rationale behind the locations selected for noise measurement and the propagated noise level locations.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

The rationale for selection of the locations for existing ambient noise measurements and the locations of the sites for noise propagation is described in the Environmental Noise Impact Study which is attached to the Application as Exhibit J-2. This explanation includes the following information.

The two sampling locations were located along the southern boundary of the project site. Location #1 was located at the southwest corner of the property and Location #2 was located at the southeast corner of the property. Location #2 is positioned close to the nearest sound receptor. Location #1 was selected due to the proximity of the planned equipment anticipated to produce the highest levels of noise. Locations along other boundaries were not selected due to the lack of any potential receptors. The southern boundary of the site is adjacent to lots within the industrial park. As such, this area is more likely to be developed than the large tracts of previously mined and vacant property located adjacent to the remaining boundaries.

Propagated locations were selected to reflect expected noise levels at the northern and eastern boundaries of the site as well as at a point located closer to Highway 15.

The lack of nearby noise receptors, and the vast expanse of undeveloped property surrounding the site informed the choice of ambient monitoring and propagated locations.

*14) Refer to Exhibit J, Sections 1.9 – Evaluation of Noise Levels, and 4.0 Anticipated Noise Levels at Property Boundary. Provide an explanation of whether steam blows during start-up of the plant or other noises may arise outside of normal operations.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

It is expected that steam blows would occur only during start up of the plant. The impact of that event has been evaluated and the attached Addendum to Exhibit J2 has been prepared (Refer to **Tab B**).

*15) Please provide a schedule indicating the projected construction workforce, by month, during project construction.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

An exhibit showing the work force by month based on the current project cost estimate is included at **Tab C**. Construction labor costs were extracted from the estimate and distributed over the construction period using a typical distribution curve for this type project. This analysis shows that the craft labor force will peak at approximately 264 workers.

The current estimate is based on the labor force working 10 hour days, 5 days of the week as an incentive to attract labor to the project. If this incentive is not necessary and a working schedule of 8 hours per day, 5 days a week is used, the labor manpower peak is calculated at 330 workers per day.

In addition, construction management and commissioning personnel will overlap the labor force at the site. S&L estimates that the construction management personnel will peak at 10 people and commissioning personnel will peak at 8 people during the project. There is some overlap of these activities, but to be conservative, a peak of 18 people can be assumed for these activities.

Allowing for these variations, the total work force at site can range from approximately 280 to 350 people.

We have also provided an exhibit that breaks down the labor man-hours and labor percentages by craft, included at **Tab D**.

16) *Refer to Exhibit J, Section 3.0 – Potential Changes in Adjacent Property Values. Provide an explanation of whether residential properties were reviewed as part of the Property Value Assessment.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

Adjacent properties to the project site were evaluated in accordance with KRS 278.708 (3) (c). There are no residences adjacent to the property site.

17) *Refer to Exhibit J, Section 5.0 – Road, Rail and Fugitive Dust. Clarify the following statement from Section 5.0 of the SAR: “Access to the project will be by highway, predominantly Highway 15 and to a lesser extent, Highway 28.” Provide an explanation of how or why Highway 28 would be used to access the site.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

Access to the Industrial Park is from Highway 15. Two roadways enter the industrial park from Highway 15. The primary entrance is Gambill Drive which becomes Coalfields Industrial Drive. A small road identified as Truss Joist Lane on new Figure 9 connects to Highway 15, north of the primary entrance to the Industrial Park. All traffic to the site will enter by the main access from Highway 15. Traffic will proceed to the site using Coalfields Industrial Drive within the park.

The statement included in Section 5.0 of the SAR referred to the public roads by which workers and, potentially, supplies or materials would reach the access to the Industrial Park. Highway 15 travels north and south through Perry County. Traffic traveling to the site from the Mountain Parkway will travel south on Highway 15 to reach the Industrial Park and traffic from the Hal Rogers Parkway or the Hazard area will travel north on Highway 15. It is expected that some local workers will use Highway 28 to reach Highway 15, just south of the entrance to the Industrial Park, to access the site.

18) *Refer to Figure 2. The conceptual site plan appears to show a number of facilities that are not identified in the list provided in section 1.0 of the SAR (Description of Proposed Facility), such as a baghouse, ash silos, etc. Explain whether Figure 2 provides the most comprehensive list of anticipated facilities and components?*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

Yes. Figure 2 is provided to supplement the text description of the proposed facility and provides the best conceptual arrangement of site facilities available at this time.

19) *Refer to Figure 4. Based on the "Graphic Scale" in Figure 4, the yellow circle in that figure appears to be 2 miles in diameter, or a one mile radius from the stack. Provide an explanation of whether Figure 4 is correct or whether the circle actually depicts a one mile radius rather than 1 two mile radius?*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

Our review of Figure 4 and the graphic scale included on that drawing indicates that the yellow circle represents a 2 mile radius, 4 mile diameter as required by KRS 278.706 (2)(b). You are correct that the graphic scale is incorrect. We have included a revised Figure 4 with the correct graphic scale, found at **Tab E**.

20) *Refer to Figures 3 and 4. Produce a figure, starting from the aerial photograph used in Figures 2 and 4, showing the following attributes only:*

- a. *All existing and proposed site access and internal roads.*
- b. *The labeled Industrial Park access from Ky. 15 and all existing road names.*
- c. *The Industrial Park boundary and proposed ecoPower site boundary.*
- d. *The location of the proposed stack.*
- e. *The labeled properties occupied by: Sykes communication, AOD Transport, Weyerhaeuser, M.B. Lumber Company, American Woodwork and Pine Branch Coal Sales.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

A new Figure 9 has been prepared which depicts the information requested and is included at **Tab F**. Note that most of this information has already been included on Figures 3 and 4. We do not have the boundaries for Weyerhaeuser and for Pine Branch Coal Sales so those properties have been generally labeled. Also please note that we had incorrectly named American Woodmark and have corrected that on Figure 9.

21.) *Refer to Figure 5. Produce a figure, starting from the aerial photograph used in Figure 5, showing the following attributes only:*

- a. All existing and proposed site access and internal roads. Include the intersection of State Route 28 with State Route 15 and local roads between those state routes and the Industrial Park, using the same area as Figure 5.*
- b. The labeled Industrial Park access from KY 15 and all existing road names.*
- c. The Industrial Park boundary and proposed ecoPower site boundary.*
- d. The location of the proposed stack.*
- e. The labeled properties occupied by: Sykes Communication, AOD Transport, Weyerhaeuser, M.B. Lumber Company, American Woodwork, and Pine Branch Coal Sales.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

Data Request # 21 requires identical information as Data Request #20, with the exception of including the intersection of State Routes 15 and 28. Therefore Figure 9 has been prepared to depict all the information requested and is included at **Tab F**. Note that most of this information has already been included on Figure 5. We do not have the boundaries for Weyerhaeuser and for Pine Branch Coal Sales so those properties have been generally labeled. Also please note that we had incorrectly named American Woodmark and have corrected that on Figure 9.

*22.) The commission has encouraged its jurisdictional utilities that have "green power" programs to prioritize Kentucky-generated renewable energy credits when economically feasible. Provide the names of all utilities in Kentucky that have discussed the possible purchase of power generated or energy credits created using renewable energy resources.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

ecoPower Generation has contacted Kentucky Power Company and its parent, American Electric Power, regarding a potential interest in the renewable power and energy credits. In addition, very limited discussion has been held with East Kentucky Power Cooperative.

*23.) Explain how the proposed plant is to be financed and whether firm financial commitments for financing have been received.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

The plant is to be financed from private equity and debt. ecoPower has engaged Greentech Capital Advisors to place both the additional private equity and the debt necessary to fund the project. In addition, ecoPower will apply for a U.S. Treasury Grant under the American Reinvestment and Recovery Act, commonly referred to as a "Section 1603 Grant".

No firm financial commitments are presently in place other than the equity provided by the project development capital sources.

24.) *Refer to page 25 of the Application, Section 10, "Local Economic Impact", which contains a discussion of the economic impact of the proposed facility to property tax receipts.*

*a. Does ecoPower's discussion take into account approval from the Kentucky Economic Development Finance Authority ("KEFDA") for up to \$15 million in tax incentives for ecoPower Generation?*

*b. If the discussion does not take into account the KEFDA tax incentives, describe any changes that should be made to pages 25-26 of the Application under the subheading "Economic Impact to Property Tax receipts" to more accurately reflect the impact of the KEFDA tax incentives on the project and its impact on the local economy.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

The discussion of the economic impact of the proposed facility to property tax receipts is neutral with regard to the impact of the approval from KEDFA for up to \$15 million in tax incentives. The tax incentives are made up from three distinct pools of tax revenue. First, there is a tax credit against employment taxes on Kentucky jobs created by the project. The second tax credit is applied against sales and use taxes and the third is applied against corporate income tax. The incentives do not impact property tax. Therefore the discussion included on pages 25-26 of the Application, Section 10, "Local Economic Impact" does not require any change.

25.) *The possibility of competition for wood waste by-products due to use as a biofuel, use in compressed wood raw materials, and for other reasons, has recently been the subject of discussion in the news. Explain whether the possibility of competition for the wood waste was considered in the siting decision for the proposed facility.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

The possibility of competition for wood residue and waste by-products was analyzed in the siting decision which resulted in the selection of the Coal Fields Industrial Park for the ecoPower Generation facility. A primary reason for selecting the Perry County, Kentucky site was the availability of abundant, underutilized, low quality wood resources. As noted in the response below to Data Request # 26, there is an abundant and growing supply of low-quality logs within the "wood basket" identified for this proposed project. In addition, there is an abundance of wood residue available in the area from mills and other wood products manufacturing facilities, even within the boundaries of the industrial park.

Currently, major (>100,000 tons annually) users of such wood resources and their distance from the ecoPower site are:

- Ohio Valley Chipping, Greenup, KY (140 miles)
- Mountain Forest Products, Clintwood, VA (70 miles)
- Domtar Paper Co., Kingsport, TN (123 miles)
- Patterson Chip, Bimble, KY (75 miles)

- Patterson Chip, Lily, KY (72 miles)
- Curry Timber Products, East Bernstadt, KY(73 miles)
- Domtar Paper Co., Hawesville, KY (259 miles)

These comparatively long haul distances will ensure that ecoPower will have competitive advantage in accessing low quality wood resources within a 55 miles driving radius of the ecoPower site.

ecoPower has considered the potential for the reopening of the Weyerhaeuser plant or the establishment of a similar facility as a potential competitor for the woody residue required for the generating plant. However, the Weyerhaeuser plant can only use a limited number of the hardwood species represented in the surrounding forest resource, whereas ecoPower has the ability to use all species of hardwoods available.

ecoPower's aggressive siting and construction schedule, the existing network of its sister company, Pine Mountain Lumber's log yards and in-house trucking capabilities will ensure that it has significant 'first-in' and strategic infrastructure advantages compared to other low quality wood resource users that may consider developing low quality wood-using facilities in central eastern Kentucky.

ecoPower's energy production process will convert low quality wood directly into heat and electricity which will be transported to market through an existing power transmission system. Direct conversion to electricity and transport without freight costs will increase ecoPower's production cost competitiveness compared to other low quality wood resource use.

*26.) If, in the long term, ecoPower cannot obtain enough wood fuel or other biomass fuel, such as switchgrass, to effectively power the generating facility, will ecoPower seek to revise its air quality permit to allow the facility to burn traditional fossil fuels such as coal, oil, natural gas, or a combination of biomass and fossil fuel? Explain the answer in detail.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

No.

ecoPower's Hazard plant will be a long-term and sustainable supplier of renewable fuel power. Our certainty is predicated upon the long-term availability of low cost biomass.

ecoPower will annually use between 0.2 to 0.4 million green tons of low grade logs. US Forest Service's Forest Inventory and Analysis (FIA) data indicate that within 55 driving miles of the ecoPower site there are approximately 68 million green tons of trees that due to defects (too crooked or hollow due to past fire damage) will not be suitable for use by the eastern Kentucky sawmill industry. This resource is increasing at approximately 1 million tons each year. FIA data also show that even if ecoPower used the full 0.4 million tons upper limit and added that volume to the volume of low quality logs that is currently being harvested, the total would not equal the annual in-growth of 1 million tons per year that is being added to the low quality log resource.



In addition to the abundance of low quality wood available to ecoPower from eastern Kentucky forests, ecoPower will also aggressively promote the reforestation of nearby reclaimed surface mines with native, high Btu tree species such as black locust.

If the facility were to determine to change to fossil fuels, the change would require a virtual rebuild and re-permitting of the project, equivalent to starting over. Due to increased production costs and increasing difficulty in permitting, per Btu costs of fossil fuels are projected to increase faster than biomass fuel costs, thus providing ecoPower with the continuing cost incentive to operate as a biomass-only facility.

27.) *Exhibit G2, S&L Transmission Feasibility Study for Engle Substation, prepared by Sargent & Lundy, LLC, reviews the feasibility of injecting 50 MW of electricity at American Electric Power's Engle 69kV substation. Page 1 describes some of the basic assumptions made in running the model. Explain the reasoning behind running the model utilizing a 2012 summer base case.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

PJM base cases included a 2012 model which was selected for this analysis. Commercial operations are planned for 2013. There would be a negligible change between the 2012 and 2013 cases, resulting in about a 1% increase in load in the 2013 case. The project proposes to locate generation close to load, thereby benefiting the system. The region around the project contains no generation, yet there are significant loads throughout the region. For example, there is a significant load located close to the Engle substation. Adding generation at the project location relieves the load in the area, supporting the stability of the transmission system.

28.) *Kentucky Power is a winter-peaking utility. Would you expect significantly different outcomes to the transmission feasibility study if a winter base case was used?*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

The winter case would not impact results. During winter months, there is an increased demand in the region, resulting in increased power flowing into the region's grid. Adding generation at Engle reduces loading on area transmission lines by locating generation near the load. A significant load was identified near the project. Instead of feeding that load through the Hazard substation, it will be able to be addressed through the plant, reducing the load on the Hazard line. Therefore, regardless of the season, the project generation will have no impact beyond one or two substations. Generation in the area is nonexistent at the present time. Adding generation into the Engle substation will support and help stabilize the system.

29.) *An assumption on page 1 of the transmission feasibility study states that the 50MW block is transferred evenly in four directions to the neighboring control areas. If the block is transferred wholly to one control area, how would that affect Kentucky Power's system?*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

Transferring power in one direction instead of four directions will have no impact on the power flow results. Adding generation at the Engle substation reduces area loading. In the base case used, one line coming out of the Hazard substation was greater than 90% capacity. Adding generation at the Engle substation helps bring that load down.

*30.) Provide a copy of the initial phase of PJM's January 31, 2010 feasibility study.*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

A copy of the study, entitled "PJM Generator Interconnection Request Queue #V3-055 Engle 69kV Feasibility Study", dated January 2010, is included at **Tab G**.

*31.) When does ecoPower estimate the final two stages of the PJM Feasibility Study will be completed?*

**WITNESS RESPONSIBLE FOR RESPONDING TO QUESTIONS RELATED TO THE INFORMATION PROVIDED:  
GARY T. CRAWFORD**

The System Impact Study is now in progress and will be completed by June 30, 2010. Based on a mutually agreed scope of work, PJM advises that an expedited Interconnection Services Agreement is possible by the end of July 2010.

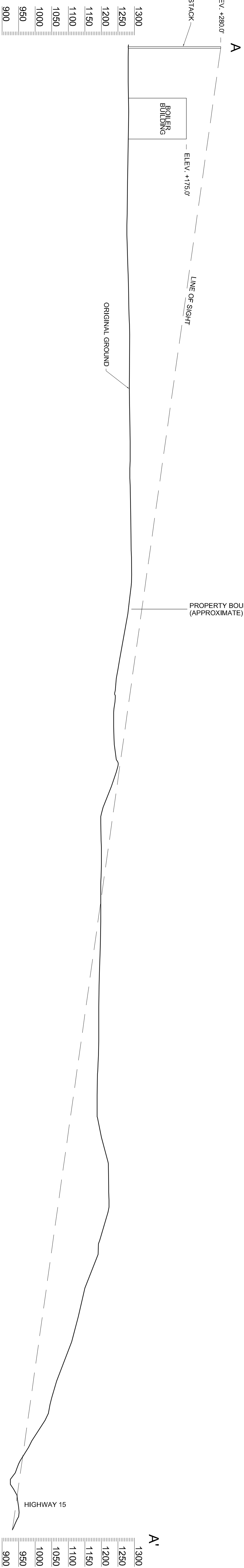
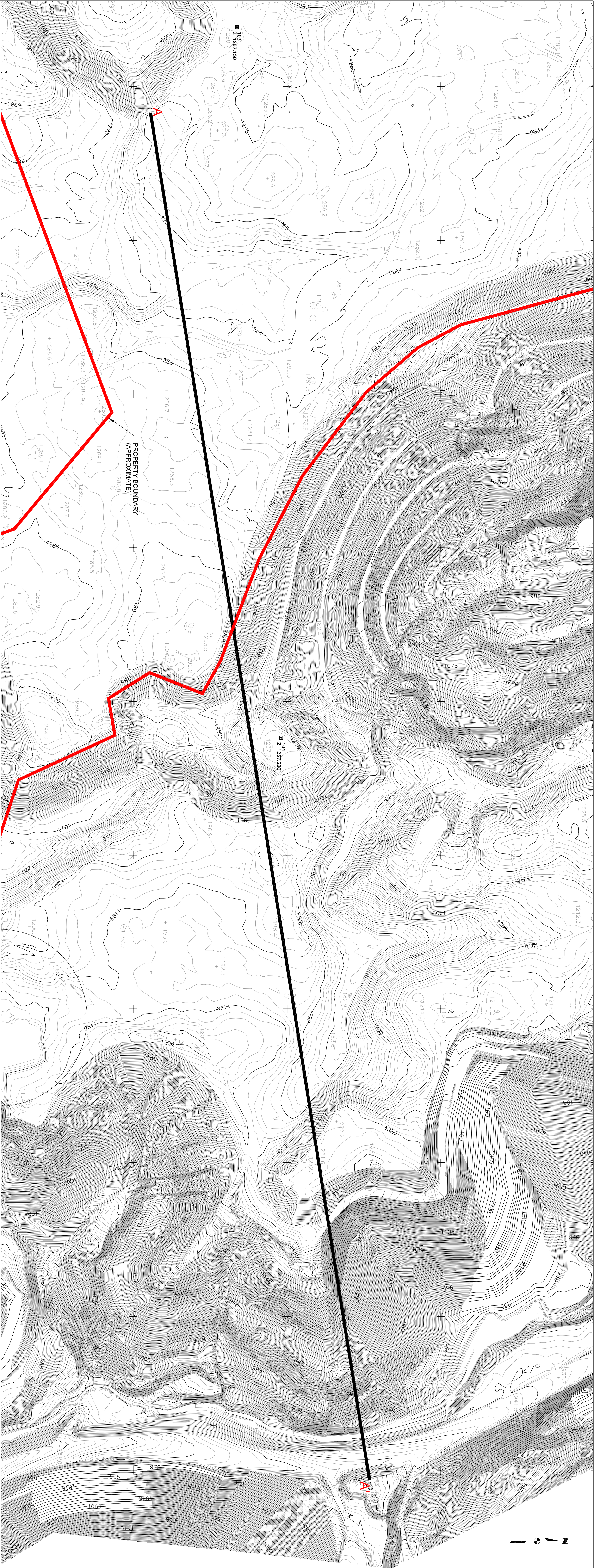
**Attachments to Response to Siting Board Staff's First Data Request  
April 5, 2010**

Tab A	Revised Figure J2 – Line of Sight Profile and Location Map
Tab B	Addendum to Exhibit J2 – Environmental Noise Impact Study
Tab C	Workforce Exhibit - Craft Men / Month
Tab D	Workforce Exhibit – Craft Manhours
Tab E	Revised Figure 4
Tab F	Figure 9
Tab G	PJM Generator Interconnection Request Queue #V3-055 Engle 69kV Feasibility Study


**REVISED FIGURE J2**

**Line of Sight Profile  
And  
Location Map**





NOTE: MAPPING PROVIDED BY GRW, INC.  
PROPERTY BOUNDARY SHOWN IS APPROXIMATE

 Smith Management Group 1405 Mercer Road Lexington, KY 40511 1860 B Williamson Court Louisville, KY 40223 www.smithmng.com		LINE OF SIGHT PROFILE AND LOCATION MAP	
ECOPower GENERATION, L.L.C. PERMIT COUNTY, KENTUCKY		SCALE: 1"=100' DATE: 3/22/10 PREPARED BY: KAF CHECKED BY: SGS	
JOB NO. 1860B		FIGURE J2	



**ADDENDUM TO EXHIBIT J2**

**Noise Impact Study**

Steam blows are a one time event to clean the steam lines of mill scale and debris from the steam line to the turbine prior to the first steam admission to the turbine. According to the project engineers, this event will occur during initial start up of the facility and the steam blow is anticipated to last about 18 seconds. ecoPower expects that steam blows will occur during daylight hours.

In order to assess the effect of the short term, one time noise intrusion, we have used an assumed level of 125 dBA at 1 meter from the blow-off opening. We have calculated the intruding noise at each of the previously identified monitoring and propagated noise locations.

Table 6 calculates what the intruding noise would be from the steam blow (Location #4 – Cooling Fans and Turbine Room) at the various points or stations. You will see that the highest intruding noise is at NML-1 and is 75.99 dBA (property border only 800' away from Location #4). This intruding noise level is well below any potentially hazardous level and is at a location with no receptors. This noise would sound to a receptor at this location something like a car horn in the distance. The receptor could hear it and probably know what it is, but the duration would be so short that it would not attract much attention. With no residences or businesses in this undeveloped area, there is no risk of adverse impact. The intruding noise from steam blow to the other monitoring or propagated stations is less than 70 dBA.

The steam blow intruding noise from Table 6 is used as part of the Ldn formula for propagated noise levels to the various points or stations from plant noise at Location #4 in Table 7. This calculation includes the Cooling Fan noise for 23 hours, 59 minutes and 42 seconds and the Steam Blow for 18 seconds. It is assumed that the steam blow would occur during morning hours not subject to EPA's 10 dB penalty (i.e. not before 7 a.m.). The table shows that the Ldn is not significantly impacted by the Steam Blow as the differences in incremental increase over background ranges only from 0.0 to 0.7 at the various monitoring or propagated locations. Note that a noise shift of less than 3 dBA is generally indistinguishable to the human ear outside a controlled, laboratory-type environment.

In addition, no mitigation measures for the steam blow should be required if the proposed facility intruding operational noise levels are acceptable if they do not exceed EPA's 55 dBA Ldn guideline. With the steam blow included from Location #4, the highest incremental increase over background is 2.4 dBA and the highest Ldn is only 47.3 dBA. Again, a noise shift of less than 3 dBA is generally indistinguishable to the human ear outside a controlled, laboratory-type environment.

**TABLE 6 - FACILITY PROPAGATED NOISE LEVELS - STEAM BLOW**

**Ecopower Generation, LLC  
Coal Fields Regional Industrial Park  
Hazard, Perry County, Kentucky**

Site No.	Lp 3' Source - Turbine Room - Steam Blow	Lp 3' - Given as 115 dB to 125 dB	Lp (feet)	Lp 500' - Calculated	Total Distance (feet) to Noise Monitoring Location (NML-X) near property border	Ground Atten @ 500'	Atmos Atten @ 500'	A(comb) Atten @ 500'	Ground Atten @ NML - X	Atmos Atten @ NML - X	A(comb) Atten @ NML - X	Intruding Noise at NML - X (calculated)
NML-1	Area #4	125	3	81.07	800	1	1	2	2	1	3	75.99
NML-2	Area #4	125	3	81.07	1875	1	1	2	4	3	7	64.59
NML-A	Area #4	125	3	81.07	1300	1	1	2	3	2	5	69.77
NML-B	Area #4	125	3	81.07	2100	1	1	2	4	3	7	63.61
NML-C	Area #4	125	3	81.07	3600	1	1	2	5	5	10	55.93



**TABLE 7 - FACILITY PROPAGATED NOISE LEVELS WITH STEAM BLOW INCLUDED**

**Ecopower Generation, LLC  
Coal Fields Regional Industrial Park  
Hazard, Perry County, Kentucky**

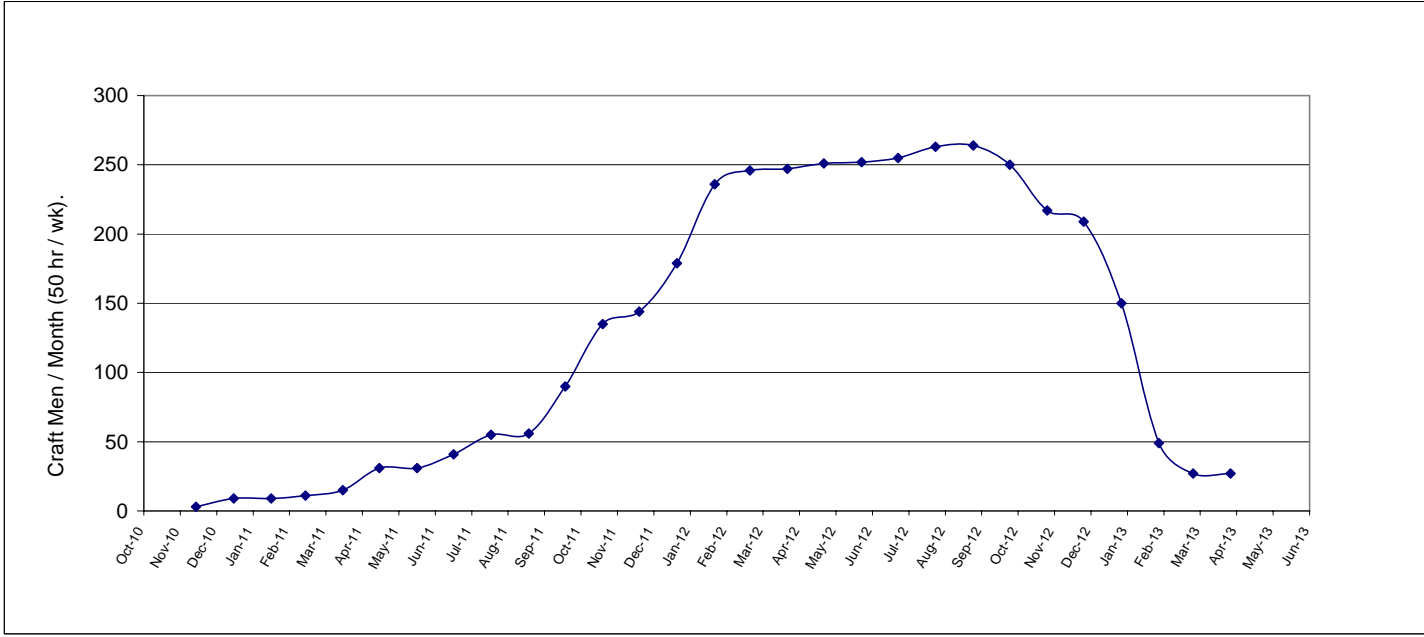
Site No.	Lp 3' Source	Lp 3' - Calculated or Given	Lp (feet)	Lp 500' - Calculated or Given	Total Distance (feet) to Noise Monitoring Location (NML-X) near property border	Ground Atten @ 500'	Atmos Atten @ 500'	A(comb) Atten @ 500'	Ground Atten @ NML - X	Atmos Atten @ NML - X	A(comb) Atten @ NML - X	Intruding Noise at NML - X (calculated)	Ldn Formula (Intruding Operational Noise)	Ldn (Intruding-operational)	Ldn Background - Measured (1- 2) or Estimated (A-C)	Log sum Calculated	Incremental increase over bg	Ldn Formula (Intruding Operational Noise with Inclusion of Steam Blow for 18 seconds)	Ldn (Intruding-operational with Steam Blow)	Ldn Background - Measured (1- 2) or Estimated (A-C)	Log sum Calculated	Incremental increase over bg	Difference in Incremental Increase over Background with Steam Blow
NML-1	#4	85	3	41.07	800	1	1	2	2	1	3	35.99	345,630	41.6	44.9	46.6	1.7	544,206	43.6	44.9	47.3	2.4	0.7
NML-2	#4	85	3	41.07	1875	1	1	2	4	3	7	24.59	25,049	30.2	43.4	43.6	0.2	39,434	32.2	43.4	43.7	0.3	0.1
NML-A	#4	85	3	41.07	1300	1	1	2	3	2	5	29.77	82,586	35.4	44.2	44.7	0.5	130,002	37.3	44.2	45.0	0.8	0.3
NML-B	#4	85	3	41.07	2100	1	1	2	4	3	7	23.61	19,969	29.2	44.2	44.3	0.1	31,448	31.2	44.2	44.4	0.2	0.1
NML-C	#4	85	3	41.07	3600	1	1	2	5	5	10	15.93	3,406	21.5	44.2	44.2	0.0	5,364	23.5	44.2	44.2	0.0	0.0

## **WORKFORCE EXHIBIT**

### **Craft Men / Month**

ECO POWER  
50 MW BIO MASS UNIT  
CRAFT MEN / MONTH

Month	Craft Men / Month (50 hr / wk).
Dec-10	3
Jan-11	9
Feb-11	9
Mar-11	11
Apr-11	15
May-11	31
Jun-11	31
Jul-11	41
Aug-11	55
Sep-11	56
Oct-11	90
Nov-11	135
Dec-11	144
Jan-12	179
Feb-12	236
Mar-12	246
Apr-12	247
May-12	251
Jun-12	252
Jul-12	255
Aug-12	263
Sep-12	264
Oct-12	250
Nov-12	217
Dec-12	209
Jan-13	150
Feb-13	49
Mar-13	27
Apr-13	27
Total	3,752

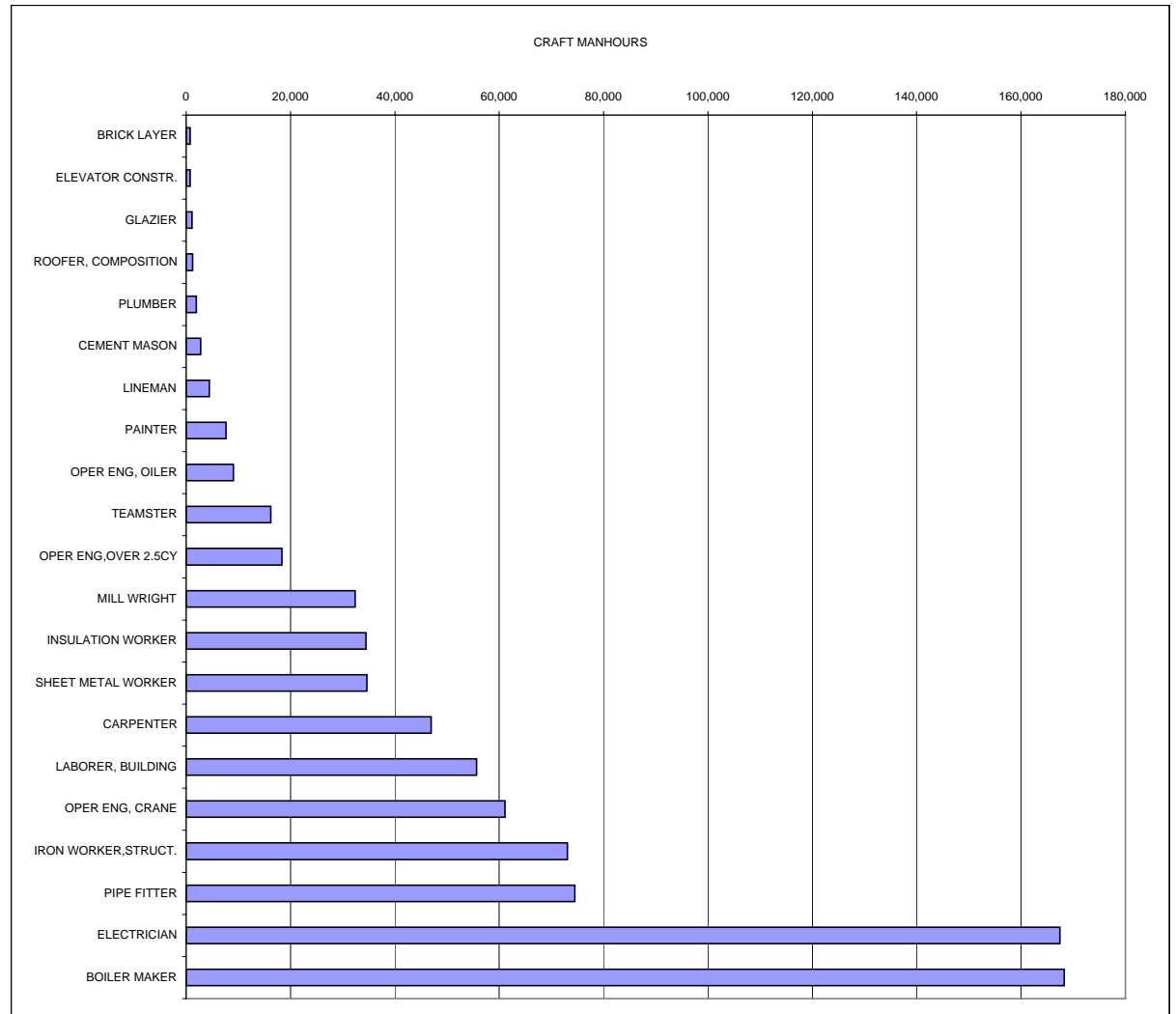


## **WORKFORCE EXHIBIT**

### **Craft Manhours**

**ECO POWER  
50 MW BIO MASS UNIT  
CRAFT MANHOURS**

CRAFT NAME	CRAFT MANHOURS	% of TOTAL
BRICK LAYER	758	0
ELEVATOR CONSTR.	770	0
GLAZIER	1,107	0
ROOFER, COMPOSITION	1,234	0
PLUMBER	1,979	0
CEMENT MASON	2,770	0
LINEMAN	4,468	1
PAINTER	7,645	1
OPER ENG, OILER	9,067	1
TEAMSTER	16,251	2
OPER ENG,OVER 2.5CY	18,339	2
MILL WRIGHT	32,371	4
INSULATION WORKER	34,443	4
SHEET METAL WORKER	34,654	4
CARPENTER	46,960	6
LABORER, BUILDING	55,629	7
OPER ENG, CRANE	61,132	8
IRON WORKER,STRUCT.	73,049	9
PIPE FITTER	74,494	9
ELECTRICIAN	167,449	21
BOILER MAKER	168,270	21
<b>TOTAL MANHOURS</b>	<b>812,840</b>	<b>100</b>



## **REVISED FIGURE 4**







**FIGURE 9**







**PJM GENERATOR INTERCONNECTION REQUEST**  
**Queue #V3-055**  
**Engle 69kV**  
**Feasibility Study**

***PJM Generator Interconnection Request  
Queue #V3-055  
Engle 69kV  
Feasibility Study***

577835

January 2010

## **Preface**

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, may also contribute to the need for the same network reinforcement. The possibility of sharing the reinforcement costs with other projects may be identified in the feasibility study, but the actual allocation will be deferred until the impact study is performed.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners,

## **V3-028 East Lima-Marysville (Hardin County) 345kV Feasibility Study**

### **Report**

#### **General**

ecoPower proposes to install PJM Project #V3-055, a 50 MW Biomass fuel generating facility connecting to American Electric Power (AEP) Engle 69 kV Station via a 1.4 mile transmission line. The proposed location for the generating facility is in Perry County, Kentucky (see Exhibit 1 for general location for proposed facility). The projected in-service date for the facility is January 1, 2013.

#### **Attachment Facilities**

Engle Station is located approximately 4.5 miles from the Hazard 69kV sub transmission loop. It is served radially from Shamrock Station, which is an unbreakered station on Hazard-Bonnyman 69 kV circuit. This configuration effectively functions as a three terminal line. AEP standards do not allow for a generation connection on a three terminal line, therefore, a reconfiguration is required. The most obvious solution to this issue would be to install circuit breakers at Shamrock Station. However, Shamrock Station is space constrained and likely cannot be expanded to accommodate the circuit breakers.

As a result, the next most logical solution would be to loop the Hazard-Bonnyman 69 kV circuit into Engle Station. To do this, it is necessary to: 1) construct a new line between Shamrock and Engle Stations, 2) reconfigure Shamrock Station, and 3) install circuit breakers at Engle Station. The new line segment will be on a different right of way as the existing Shamrock-Engle line and is necessary to avoid extended outages to the existing distribution load at Engle Station. In addition, relaying at Hazard Station will need to be upgraded. See Exhibit 2 for a diagram of the current configuration and Exhibit 3 for a diagram of the proposed configuration.

The customer owned radial line from their site to Engle station will need to be terminated by circuit breakers at both ends,

It is understood that ecoPower will be responsible for all costs associated with this construction, as well as facilities associated with connecting the 50 MW of generation to the in-line facilities. In addition, ecoPower must provide to AEP volts, amps, MW, MVAR and status of their 69kV breaker for each generator for metering and operational purposes.

AEP will complete construction and retain ownership of the proposed station facilities and the 4.5 mile of radial 69kV transmission line. Note that ecoPower station facilities were not included in the cost estimate. These are assumed to be ecoPower's responsibility.

The AEP construction scope includes:

- Build 4.5 miles of new 69kV Transmission line (built to 138kV standards) connecting Engle to Shamrock Station.

Estimated Cost (2010 Dollars): **\$4,500,000**

- Replacing relaying with AEP standard package at Hazard Station.

Estimated Cost (2010 Dollars): **\$500,000**

- Engle 69kV Station expansion to accommodate three (3) 69kV breakers, 69kV metering, SCADA & associated equipment additions. This will include a 69 kV circuit breaker at the entrance to Engle 69kV Station, one 69 kV breaker towards Bonnyman Station, one 69 kV breaker towards Hazard Station via Shamrock Station.

Estimated Cost (2010 Dollars): **\$3,000,000**

**Total Attachment Facilities Cost: \$8,000,000**

## **Local AEP Impacts**

The impact of the proposed generating facility on the AEP System was assessed for adherence with applicable reliability criteria. AEP planning criteria require that the transmission system meet contingency performance criteria in accordance with the AEP FERC Form 715. Therefore, this set of criteria was used to assess the impact of the proposed facility on the AEP System. The ecoPower 50MW biomass fuel generator project was studied as a 50 MW net energy injection consistent with the interconnection application. The results are summarized below.

### **Normal System (2013 Winter Conditions)**

- No problems identified

### **Single Contingency (2013 Winter Conditions)**

- No problems identified

### **Multiple Contingency (2013 Winter Conditions)**

- No problems identified

### **Short Circuit Analysis**

- No problems identified.

### Stability Analysis

- Stability analysis was not performed as part of this Feasibility Study. The stability assessments are part of the System Impact Study. Based upon the results of this System Impact Study, the extent of system upgrades could change and the associated costs could be significantly different.

### Network Upgrades

- Not Applicable for this study

## **Network Impacts**

The queue V3-055 project was studied as a 50MW capacity injection into AEP's system at the Engle 69kV substation. Project V3-055 was evaluated for compliance with reliability criteria for summer peak conditions in 2014. Potential network impacts were as follows:

### **Generator Deliverability**

*(Single or N-1 contingencies for the Capacity portion only of the interconnection)*

No problems identified

### **Multiple Facility Contingency**

*(Double Circuit Tower Line, Line with Failed Breaker and Bus Fault contingencies for the full energy output)*

No problems identified

### **Short Circuit**

*(Summary form of Cost allocation for breakers will be inserted here if any)*

No problems identified.

## **Contribution to Previously Identified Overloads**

*(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)*

None

## **New System Reinforcements**

*(Upgrades required to mitigate reliability criteria violations, i.e. Network Impacts, initially caused by the addition of this project generation)*

None

**Contribution to Previously Identified System Reinforcements**

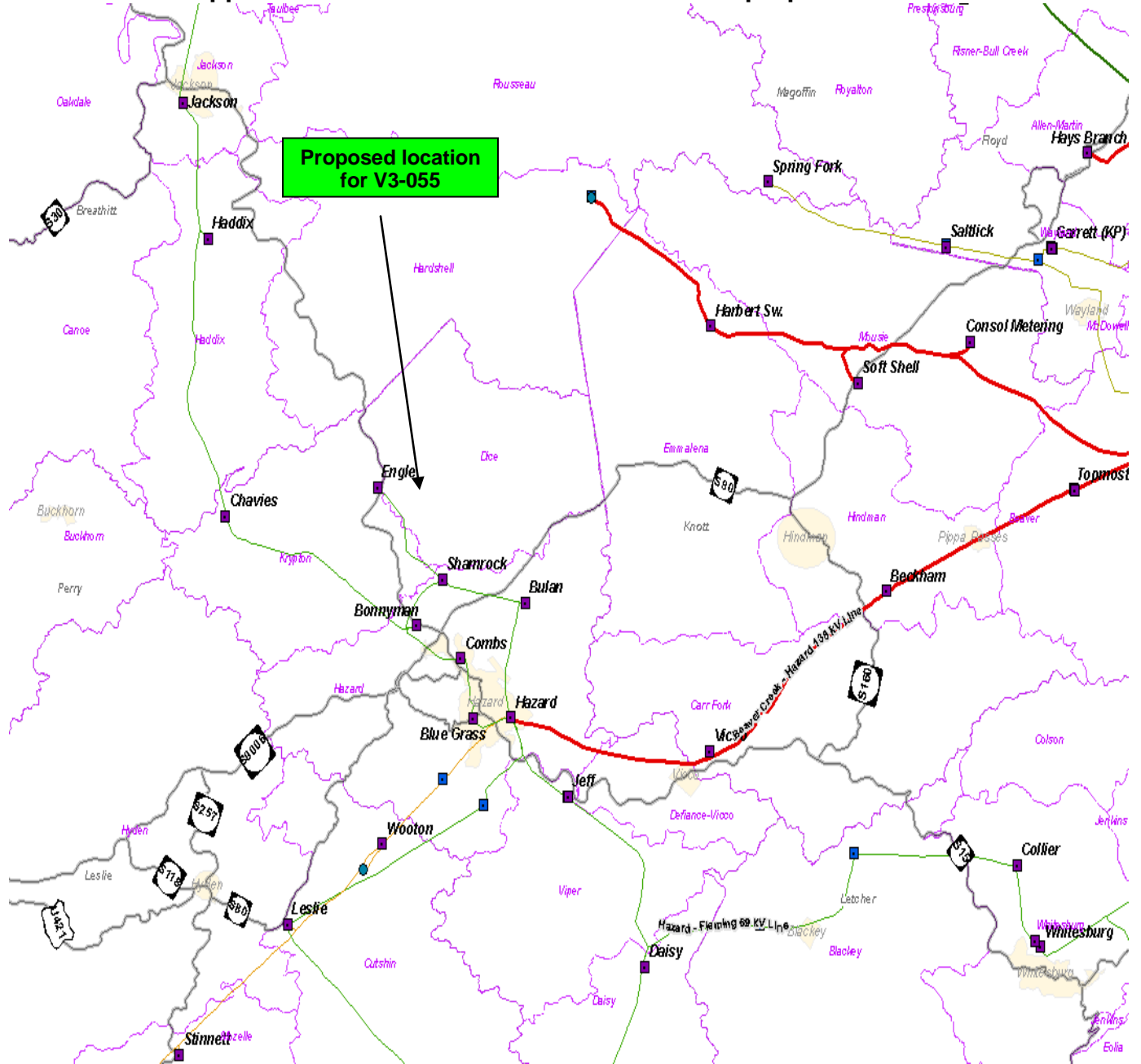
*(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)*

*(Summary form of Cost allocation for transmission lines and transformers will be inserted here if any)*

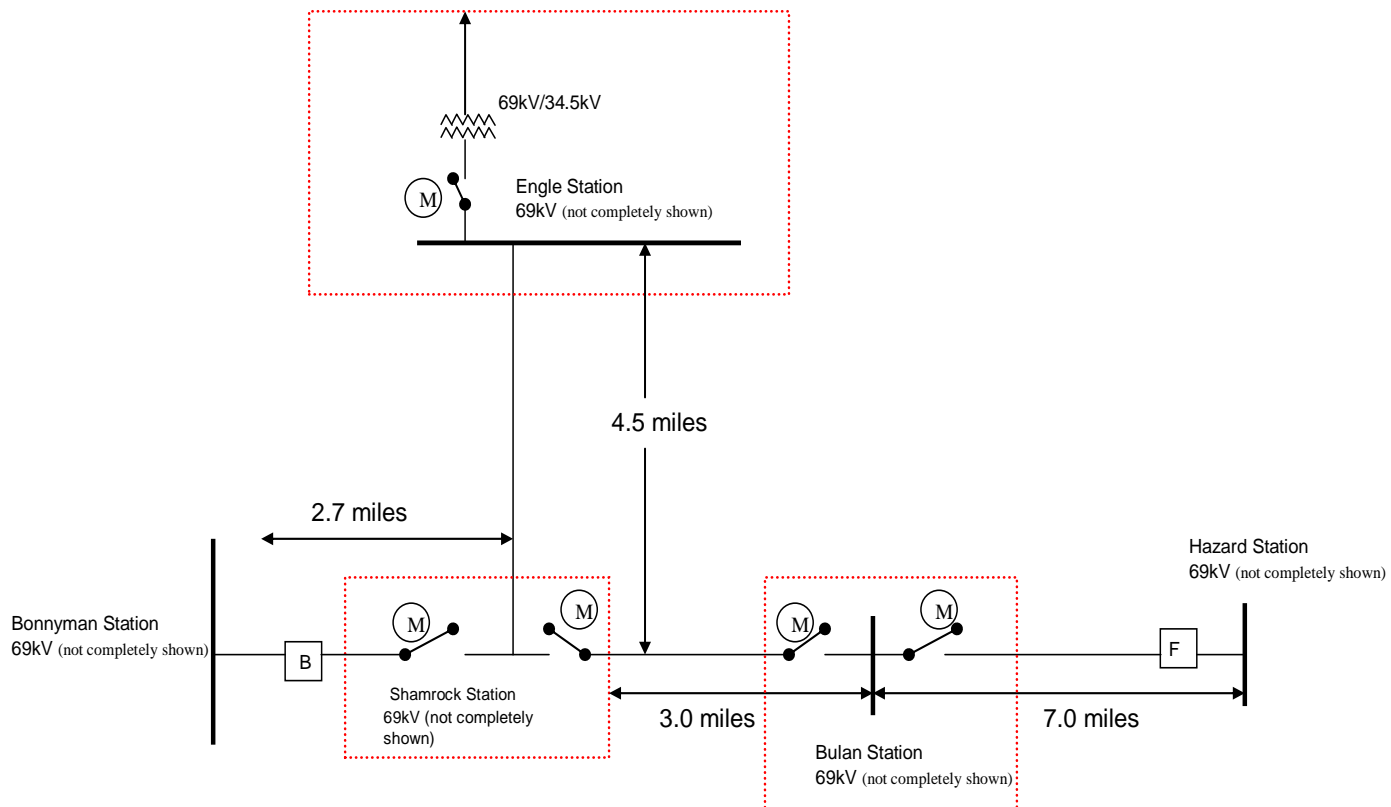
None



**Exhibit 1: Approximate interconnection location of the proposed facilities**



## Exhibit 2: AEP Engle Station Existing One-Line



### Exhibit 3: AEP Engle Station Proposed One-Line

