

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

In the Matter of:

*Electronic* Application of Caldwell Solar, LLC )  
for Certificate of Construction for an up to 200 )  
Megawatt Merchant Electric Solar Generating )  
Facility in Caldwell County, Kentucky )

Case No.  
2020-00244

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**Third Supplement to Response  
to Siting Board Staff's First Request for Information**

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Applicant Caldwell Solar, LLC ("Applicant") herewith supplements its Response to the Siting Board Staff's First Request for Information, which was filed in this case on December 3, 2021. Specifically, Applicant supplements its responses to 1 ESB 05, 1 ESB 09 and 1 ESB 31.

Respectfully submitted,

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### **Request**

5. Provide a description of any construction method that will suppress the noise generated during the pile driving process that Caldwell Solar plans to employ and the associated reduction in noise that each method produces.
    - a. Provide Caldwell Solar's planned level of construction using methods that suppress noise during the pile driving process.
    - b. Provide the estimated additional cost the use of noise suppression methods Caldwell Solar projects it will incur.
    - c. Provide a description of any additional construction noise mitigation measures Caldwell Solar considered implementing for the project; include the reason why it chose not to implement the additional noise mitigation measure.
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### **Response**

- a. Caldwell Solar is not aware of any proven and practical noise suppression options for this type of equipment or this driving process. Pile driving noise impacts are temporary in nature. A small, special purpose pile driver is used to install mounting posts for solar panels. As opposed to much larger pile drivers, this type of driver does not produce individual impact noises separated by a momentary silence, but rather drives each post with a rapid, nearly continuous series of strikes that puts the post down in a matter of seconds. The time spent at any single installation location is around one minute.  
  
Caldwell Solar will limit the pile driving hours to 7am to 7pm to mitigate noise impacts to nearby landowners.
- b. Caldwell Solar is not aware of any proven and practical noise suppression options for this type of equipment or this driving process.
- c. Caldwell Solar has reviewed the discussion in other Siting Board cases regarding utilization of fence sound blankets or covered trailers to suppress pile driving noise, but the Project does not find these to be proven or practical noise suppression methods.

*Caldwell would like to supplement its initial response to subpart (c) with the following:*

c. The noise mitigation approaches proposed by the Harvey Economics team review of the Application for the Caldwell Solar Farm (Pg V-32, Bullet 3) have not been proven to be effective in field applications and are not expected to substantially reduce noise levels at surrounding residences during construction.

The proposed mitigation measure of placing a tractor trailer truck and canvas between the pile driving and the sensitive receptor would not provide efficient noise containment.

Since the flanking noise would travel, over and around the trailer to such an extent that it is unlikely that a residence on the opposite side of the truck would discern any difference in the sound level from the pilings. To Caldwell Solar's knowledge, this type of mitigation measure has not been tested in any situation similar to the proposed arrangement. The proposed mitigation measure also assumes that the potentially sensitive noise receptor is a single residence and that there are no other sensitive receptors in other directions that would not be obstructed by the trailer. Based on the non-uniform distribution of houses near the Project, this assumption is not likely valid.

In some locations, multiple trailers would likely be required to attempt to block all residences from noise from a single pile driving machine. Positioning the truck in between residences and the proposed pile driving activity would also be a challenge because the fields would be active construction sites without improved roads.

Maneuvering a large trailer and cab across a soft dirt field would be difficult and require regular repositioning to keep the trailer close to the regularly moving pile driving activity.

Moving the trailer around the site would also result in more noise production. Most tractor truck and trailers used in construction make deliveries to laydown yards at the edge of the project where panels are moved to installation locations by smaller vehicles. The proposed mitigation measure of placing sound blankets on fencing around the site perimeter (i.e. erecting a temporary noise wall) is also unlikely to be effective at mitigating noise from pile driving activity at residences. The effectiveness of a noise wall requires the barrier to either be located very close to the sound source (i.e. build a fence around each pile driving location) or close to the receiver (i.e. build a fence in the yard of the residence). Placing a sound barrier in the middle of a long propagation path generally creates minimal sound attenuation. In theory, placing a sound barrier along the fence around the project would provide some noise attenuation when pile driving occurred very close to the fence, but as the pile driving activity moved away from the fence into the center of the panel array, the noise attenuation would rapidly be minimized and become ineffective. The loss of noise attenuation would also happen more quickly if the elevation change across the field increased such that the pile driving equipment was higher than the fence as it moved away from it. The benefit of the sound barrier placed on the fence would be limited to a small fraction of the piling driving locations which are directly adjacent to the fence.

Pile driving is a common construction practice and the type of pile drivers anticipated to be used are smaller and quieter than more conventional pile drivers. Caldwell Solar is not aware of any noise suppression methods or requirements for pile driving related to solar in other jurisdictions or other types of construction in Kentucky. If effective noise

suppression methods for pile driving existed, Caldwell Solar expects these methods would have already been implemented in other construction activities in higher density population areas and well established as mitigation practices. The only known effective noise mitigation option available for this type of pile driving activity is to limit the hours of activity to daytime when other sounds are more common, and residents are typically not sleeping. Caldwell Solar is proposing to only operate pile driving equipment during the daytime.

**Request**

9. Provide a table listing each non-participating residence within 300 feet of an inverter. Include the distance to the inverter and the anticipated Sound Pressure Level dBA at the non-participating residence.
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**Response**

Based on preliminary design, there are no non-participating residences within 300 feet of an inverter. In the final design, Caldwell Solar commits to a minimum inverter setback of 200 feet from residences. At 200 feet, the anticipated daytime inverter noise level is 51 dBA, which is below the daytime 55 dBA Environmental Protection Agency (EPA) standard<sup>1</sup>.

Inverters do not operate at night.

*Caldwell would like to supplement its initial response with the following:*

Based on preliminary design, there are no non-participating residences within 390 feet of an inverter. In the final design, Caldwell Solar has increased its commitment to a minimum inverter setback of 350 feet from residences. At 350 feet, the modeled daytime inverter noise level is 46 dBA. Inverters do not operate at night.

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<sup>1</sup> U.S. Environmental Protection Agency, Office of Noise Abatement and Control, "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety," EPA/ONAC 550/9-74-004, March, 1974.

**Request**

31. Provide a detailed table listing all residential structures located within 2,000 feet of the Project boundary line. For each structure, provide:
- a. The distance to the boundary line.
  - b. The distance to the closest solar panel.
  - c. The distance to the nearest inverter skid.
  - d. The distance to the substation.
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**Response**

Table A provides a list of the 68 residential structures within 2,000 feet of the Project boundary and their distance to Project features, based on preliminary design. Final design will likely result in changes to individual setbacks; however, Caldwell Solar commits to the minimum setbacks in Table 31.1 below, unless waived by a landowner. Caldwell Solar's final design residential structure setbacks will meet the EPA's 55 dBA daytime and 45 dBA nighttime noise standards. The Project boundary line is an invisible line, so a setback from residential structures is not necessary. Note however, the fence line and the boundary line are not one in the same. The fence line will be setback a minimum of 5 feet from property lines.

Table 31.1- Minimum Setbacks from Residential Structures

Feature	Setback From Residential Structures
Solar Panel	≥ 200 feet
Inverter Skid	≥ 200 feet
Substation	≥ 1,000 feet
Overhead Collection Line	≥ 200 feet

*Caldwell would like to supplement its initial response with the following:*

Caldwell Solar has increased its minimum inverter setback from residential structures from 200 ft to 350 ft. At 350 feet, the modeled daytime inverter noise level is 46 dBA. Inverters do not operate at night.

Table 31.1- Minimum Setbacks from Residential Structures

Feature	Setback From Residential Structures
Solar Panel	$\geq 200$ feet
Inverter Skid	$\geq 350$ feet
Substation	$\geq 1,000$ feet
Overhead Collection Line	$\geq 200$ feet