1. Refer to Glover Creek's response to Siting Board Staff's First Request for Information on Rehearing (Staff's First Request), Item 2.c.

a. State whether there is an industry best practice standard as it relates to mitigation of noise and visual impacts at solar sites in general.

b. State whether there is an industry best practice standard as it relates to mitigation of noise associated with the tamping process during construction at solar sites.

Response: Please see the attached letter from the Mid-Atlantic Renewable Energy Coalition ("MAREC"), a non-profit organization representing the large majority of utility-scale solar developers that are active in Kentucky. Glover Creek's understanding of the U.S. solar industry's best practices is consistent with MAREC's comments contained in the letter.

Witness: Carson Harkrader

MAREC
MID-ATLANTIC RENEWABLE ENERGY COALITION

TO: Kentucky State Board on Electric Generation and Transmission Siting
FROM: Mid-Atlantic Renewable Energy Coalition
RE: Case No. 2020-00043
DATE: February 15, 2021

Industry standards and best practices related to mitigation of sound and visual impact at solar facilities.

Honorable Commissioners and Kentucky Siting Board staff,

I am writing on behalf of the Mid-Atlantic Renewable Energy Coalition (MAREC), a non-profit organization representing the large majority of utility-scale solar developers who do business in Kentucky and across the PJM grid region.

MAREC noted the Kentucky Siting Board's second request for information on rehearing to Glover Creek Solar, LLC (Case No 2020-00043). Our understanding is that the Siting Board seeks additional input on industry best practices for mitigating sound and visual impacts of solar projects. We appreciate your careful consideration of these issues and submit the following for your review concerning question 1, parts A and B, in the request for information.

1. Refer to Glover Creek's response to Siting Board Staff's First Request for Information on Rehearing (Staff's First Request), Item 2.c.

A. State whether there is an industry best practice standard as it relates to mitigation of noise and visual impacts at solar sites in general.

As it pertains to sound/noise:

To our knowledge, there is no solar-specific standard in the U.S. for sound mitigation during project construction or operation. Common practice is to treat solar projects like any other sources of sound, applying existing laws that govern noise pollution from all sources in the applicable jurisdiction.

To ensure solar development is viable in Kentucky, MAREC recommends that any sound regulations require measurement at the sound receptor (i.e., an occupied dwelling) rather than based on property lines or at the source. This is consistent with guidance from the World Health Organization for community noise, "Measurements should normally be made close to typical points of reception."[1]

During operations, solar projects generate minimal sound outside of a project's fence line. Inverters, the equipment that converts direct current (DC) electricity into alternating current

[1] World Health Organization. *Guidelines for Community Noise.* Pg. 37. https://www.who.int/docstore/peh/noise/Comnoise-2.pdf

(AC) electricity, can produce a soft sound during the daytime when a solar array is producing energy. No sound is produced at night when no power is being produced. A study of solar power facility acoustics in Massachusetts found that at 150 feet from an inverter pad, sound levels approached background levels.[2]

An appropriate setback that would mitigate sound impacts and would be workable for the solar industry is 150 feet from receptors (occupied dwellings) for any sound-producing solar facility infrastructure.

As it pertains to visual impacts:

Since the visual appeal of a solar project varies from individual to individual, the only industry best practice is to work with local communities to understand viewshed concerns and, if they exist, to address them in such a way that is economically viable for the project.

We are not aware of any typical or best practice visual buffer, as buffer requirements vary widely from county to county. In counties that do not have planning and zoning, projects are often built with no visual buffer.

A one-size-fits-all approach to visual impacts should be avoided and, if required, visual buffers should be customized for each project with consideration given to geography, existing land use, natural buffers, community needs, and project economics. If a buffer is required, a common design we have seen implemented is a single row or staggered double row of evergreen shrubs.

<u>B. State whether there is an industry best practice standard as it relates to mitigation of noise associated with the tamping process during construction at solar sites.</u>

To our knowledge, there is no solar-specific standard in the U.S. for sound mitigation during project construction or operation. Common practice is to treat solar projects like any other sources of sound, applying existing laws that govern noise pollution from all sources in the applicable jurisdiction.

Construction, including tamping, generates more sound than operations at a solar project. However, construction sounds at a solar project (which are comparable to other common construction activities that require tamping) are rarely limited in an absolute way due to their temporary and intermittent nature.

Thank you for considering this information.

Sincerely,

Evan L. Vaughan
Deputy Director
Mid-Atlantic Renewable Energy Coalition
evaughan@marec.us

[2] Guldberg, Peter H. Tech Environmental, Inc. Prepared for the Massachusetts Clean Energy Center. *Study of Acoustic and EMF Levels from Solar Photovoltaic Projects.* December 17, 2012.

2. Refer to Glover Creek's response to Staff's First Request, Item 2.e.

a. Provide the estimated total cost of the nonmature vegetative buffers that will be implemented as indicated on the preliminary site layout plan.

b. Provide the estimated total cost of planting mature vegetative buffers if those buffers were implemented as marked on the preliminary site layout plan.

Response:

Response:

a. The two quotes Glover Creek Solar received for 3-4 foot trees are $47,859 and $62,400. These quotes include the cost of the trees, installation, and a 1-3 month warranty.

b. The two quotes Glover Creek Solar received for 6-7 foot trees are approximately double the cost of the smaller trees, at $85,171 and $121,872. These quotes include the cost of the trees, installation labor, and a 1-3 month warranty.

The quotes received were for an approximately 7,300 foot long buffer, which is the length of vegetative buffer shown on the site plan in Exhibit E of the Site Assessment Report (Volume 2 of the Application.) These costs do not include civil and grading costs to prepare the land where the buffer is to be planted, which depend upon site conditions and can be significant, or irrigation that may be required depending on weather conditions at the time of planting. The cost of replacing any trees that die off will be similar per tree to the initial installation cost, and will therefore be higher with the 6-foot trees. Replacement cost will depend on how many trees require replacement after the initial warranty period.

Witness: Carson Harkrader

3. Refer to Glover Creek's response to Staff's First Request, Item 3. Provide the estimated total cost for the green slats fencing.

Response: As described in our first response to the Staff's First Request, Carolina Solar Energy, the parent company of Horseshoe Bend, has typically used the green slats only in circumstances where there has been a residential or social use immediately adjacent to the project where the neighboring landowner has expressed concern regarding the visual impact of the solar project.

Assuming green slats are installed in the areas where a vegetative buffer is marked on the preliminary site layout plan (approximately 7,300 feet), the estimated cost of the slats [redacted]

Witness: Carson Harkrader

4. Refer to Glover Creek's response to Staff's First Request, Item 5.b. State whether construction work on Sundays is similar to construction work done that is typically done during the nighttime hours of 6 p.m. to 9 p.m., i.e., work that is reserved to make up for delays.

Response: Yes, Sundays are typically used when projects need to operate on a condensed schedule, either to make up for delays, or in order to meet tight deadlines. Availability to work on Sundays will significantly help a contractor's ability to make up for unexpected delays which will likely reduce overall construction cost, and help the solar project avoid the potential for significant penalties and negative impacts, as outlined in our response to the Siting Board Staff's First Request. Glover Creek notes that construction delays can be complex and multi-faceted depending on the type of delay (e.g., weather, transportation delays, labor shortages, etc.) and one smaller delay can cascade into a series of larger and more impactful delays if multiple challenging conditions exist at the same time or in succession.

Witness: Carson Harkrader

5. Confirm that the racking pile construction is expected to take approximately four weeks beginning February 10, 2022, through March 11, 2022, as provided in Glover Creek's response to Harvey Economics' First Request for Information, Exhibit C.

Response: Glover Creek has reviewed this question with construction companies with experience building this size project in conditions similar to Kentucky, and received a range of responses between 1 month and 3.5 months for pile installation. The length of time will depend on site conditions, weather conditions, and also on the number of pile drivers used at site. Some construction companies may elect to use fewer pile drivers and operate in a staged manner through the site, commencing installation of panels in waves after sections of the site have piles installed. Others may elect to install all the piles more quickly, using more pile drivers to complete pile installation in a shorter amount of time. We apologize for our earlier response that was too simplistic and did not account for the wider range of potential timelines.

Witness: Carson Harkrader