

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

In the Matter of the Application of Turkey Creek)
Solar, LLC, for a Construction Certificate to Construct) Case No. 2020-00040
a Merchant Electric Generating Facility)

**RESPONSES TO SITING BOARD STAFF'S
FIRST REQUEST FOR INFORMATION ON REHEARING**

Turkey Creek Solar, LLC (“Turkey Creek”), by counsel, respectfully submits the following responses to the Siting Board Staff’s First Request for Information on Rehearing.

Respectfully submitted,



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ATTORNEYS FOR TURKEY CREEK SOLAR, LLC

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CERTIFICATION OF RESPONSES TO INFORMATION REQUESTS

This is to certify that I have supervised the preparation of Turkey Creek Solar, LLC's responses to the Siting Board Staff's First Request for Information of Rehearing and that the responses are true and accurate to the best of my knowledge, information, and belief after reasonable inquiry.



Date: 1/19/2021

Stefan Eckmann

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1. Refer to Turkey Creek's Petition for Reconsideration and Clarification (Petition) at pages 2–3 regarding the need to minimize conditions and uncertainty in order to obtain a comprehensive construction bid package. Explain in more detail and with supporting information how the mitigation measures identified in the Petition would create barriers for merchant solar development in Kentucky, including the Turkey Creek solar project.

Response:

Turkey Creek Solar, LLC (“Turkey Creek”), believes certain mitigation measures identified in the Petition would create barriers for merchant solar development due to the ambiguous nature of some of the conditions, resulting in limits to design flexibility and optimization, unintended impacts to project financing, and the addition of time and costs through requirements that exceed typical industry practice.

A principal concern is that mitigation measures that are ambiguous or too generic create uncertainty in the construction and financing process. Turkey Creek, having been cleared of major interconnection, permitting and other risks, is within weeks of soliciting bids from contractors to design and construct its solar electricity generation facility (the “Project”). In this process, Turkey Creek will engage with third-party contractors seeking an engineering, procurement, and construction (EPC) contract for the construction of the solar photovoltaic plant. EPC contractors will submit bid packages to build the Project through a request for proposal (RFP) process. In order to submit bids, contractors must know the Project's specifications and minimum requirements to meet the Siting Board's conditions. Several mitigation measures in the Siting Board's order do not provide specific guidance for how Turkey Creek could determine it

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has met the condition, which creates the possibility that Turkey Creek could act in good faith, believing it has met the condition, only to have the Siting Board later take an opposing view. For example, the second mitigation measure requires a vegetative buffer where there could be potential visual or noise impacts, but the inclusion of "potential" begs the question of whether a buffer is required around the entire Project because there is a "potential" to see the Project from anywhere on the perimeter.

Additionally, lenders and financing partners require certainty and a comprehensive assessment of all the risks associated with the Project in order to underwrite its construction and permanent financing. If there are Siting Board mitigation measures that are ambiguous or require potential future re-review and approval by the Siting Board, financing partners may be unable to assess the risk of the investment, adversely affecting the financing and construction of the Project.

The Siting Board's second and fourth mitigation measures require Turkey Creek's submission of final site plan and summary of "material changes" from the preliminary plan presented to the Siting Board, including alterations in Project equipment location and suppliers, which final plan is subject to the imposition of further conditions if the Siting Board determines the changes create a "materially different pattern or magnitude of impacts." These mitigation measures have the potential to limit optimization and design changes within the approved solar footprint. The location of equipment is likely to change multiple times throughout the design and construction process, which is illustrated in the preliminary construction schedule included as Appendix A, as new information becomes available. Though the preliminary schedule is likely to change, it can be used to demonstrate how tasks are interconnected and to provide examples of

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inflection points in the design process. As part of the EPC RFP, various contractors will use available information on the Project site to submit an initial design and construction proposal in March 2021. Turkey Creek will award a contract by June 2021, following which the contractor will further refine its design from June through December 2021. Following construction notice to proceed in December 2021, the contractor will likely continue to make design changes based on new information, such as potential issues with the terrain, uncovered during the grading and cut and fill process. Turkey Creek's inability to make these design adjustments within the approved footprint without further Siting Board involvement, would likely lead to an inferior project design and cost increases.

Consequently, Turkey Creek requests that relocation of equipment within the Project boundary not be deemed a material change and that changes only be deemed material deviations if they result in any of the following: an increase in the Project footprint, a decrease in setback distances, a change in location of vegetative buffers, noise levels at the Project boundary in excess of 120 dB (considered unduly high per BBC Consulting's report), an increase in height of infrastructure that would be noticeable from neighboring properties, or an alteration in the type of equipment used at the facility that would result in any of the foregoing.

The Siting Board's seventh, eighth, and eleventh mitigation measures on vegetative buffers, tamping, and working hours, respectively, would also threaten the viability of solar development projects in Kentucky by adding unnecessary costs and delays to such projects. First, as noted above, language regarding "potential visual or noise impacts" creates uncertainty as to the location where vegetative buffers should be planted. Second, requiring Turkey Creek to include temporary buffers in addition to 3-foot-tall evergreen shrubs will place unnecessary

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economic strain on the Project by adding to projects costs with little benefit to neighbors. In particular, the difference in elevation between the neighborhood and the Project will act as a natural visual buffer, as noted at the Siting Board's site visit on June 11, 2020. The change in elevation between the nearest residence east of the vegetative buffer and the Project is approximately 40 feet. This natural buffer will be further enhanced by 3-foot-tall shrubs. Vegetative buffers are not an industry standard and their use depends on project location and surroundings.

With respect to the mitigation measure concerning tamping, tamping is a process that involves significant planning, labor, and costs. Placing restrictions on tamping hours and schedule would cause the Project undue hardship and cost with arguably few, if any, benefits to local communities, given that a delay in installation of piles near homes does not spare neighbors from the tamping noise or decrease its volume; it only changes the timing of the noise. Moreover, as discussed further in Turkey Creek's Petition for Reconsideration and below, setbacks from the Project boundary reduce noise impacts to neighbors.

Lastly, restricting construction hours from 8 a.m. to 6 p.m. Monday through Saturday would significantly limit a contractor's ability to work around weather conditions, force majeure events, unexpected equipment or labor issues, and other common causes of construction delay, leading to cost and schedule overruns. These restrictions on hours would actually lengthen the Project construction and thus increase inconvenience to neighbors during construction. Turkey Creek notes that BBC Consulting's report to the Siting Board recommended limiting working hours to between 7 a.m. and 9 p.m., which falls within even Garrard County's permissible hours under its noise ordinance, a copy of which is attached as Appendix B (the "Garrard County

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Noise Ordinance”) and included no restriction on working days. For reasons discussed further in response to Question 6(a), Turkey Creek respectfully requests the Siting Board adopt working hours of 6 a.m. until 9 p.m. with no restriction on working days. These proposed working hours also fall within Garrard County’s permissible hours under its noise ordinance.

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2. Refer to the Petition at page 4 regarding Turkey Creek's opinion that a change in the location of solar panels, inverters, and related infrastructure within the anticipated footprint of the solar project would not negatively impact the nearby surroundings. Provide further detailed explanation supporting this statement.

Response: The noise levels, height of infrastructure, location of vegetative buffers, and the distance from solar infrastructure to neighboring properties are known and have been designed in a way that has minimal impact. Aside from a major shift in the location of the substation, rearrangement of equipment within the footprint does not violate the known impacts of the Project listed above. It is important for Turkey Creek and future solar developers to have the freedom to engineer and design projects within the agreed-upon bounds. The rearranging of infrastructure within the Project boundary for project optimization will not negatively impact the nearby surroundings because the assumed setbacks will minimize those impacts. Though the general types of equipment Turkey Creek uses for the Project will be consistent with the description in the Application, the project design and infrastructure placement will change as Turkey Creek works with its EPC contractor to optimize the site layout.

Regarding the location of inverters, Turkey Creek submits that the general setback limits of 200 feet from the neighboring external property boundaries and 300 feet from neighborhood structures are sufficient to address the Siting Board's noise concerns, as described in POND's Noise Addendum, included as Appendix C.

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3. Refer to the Petition at page 6.

a. Explain whether Turkey Creek received any comments or any other public response regarding either the size or location of the vegetative buffer to reduce noise levels.

Response: Turkey Creek has not received comments or public response regarding any aspect of a vegetative buffer and noise levels.

Turkey Creek does not believe vegetative buffers are an effective way to reduce noise levels because their principal purpose is to serve as a visual buffer.

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b. Explain whether the Turkey Creek developers have ever been required to plant vegetative buffers taller than three feet at the outset of a solar project to reduce visual and noise impacts.

Response: At certain of its other projects, Silicon Ranch (the sole owner of Turkey Creek) has been required to plant vegetative buffers taller than three feet to reduce visual impacts, but these buffers are implemented on a case-by-case basis, considering local zoning requirements and site conditions (including elevation, terrain, and proximity to other residential or commercial buildings), environment, and specific, identified concerns of local residents and stakeholders. None of those conditions are present with the Project.

A vegetative buffer is not an industry standard for utility scale solar development, though when buffers are implemented, they usually stand 3-feet-tall at planting in the experience of Turkey Creek and its affiliates. The primary purpose of such vegetative buffers is to screen from view the most obvious components of the solar project, such as the panels and substation, and existing vegetation is often considered adequate to meet screening requirements. Solar facilities occupy large tracts of land and can have more or less visual impact on the community depending on their proximity to neighboring structures. The projects are often located in areas where they are difficult to detect or placed further away from public rights-of-way and residential areas. Often, the terrain and its features will act as natural buffers from the view of local residents. Such is the case with Turkey Creek, where the difference in elevation between the Project (over a hill) and the neighborhood to the east acts as a natural visual barrier to the Project, which is over 300-feet from the nearest property. To the extent that a portion of the Project may be visible, Turkey Creek expects concerns of visibility will be addressed by screening with the

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proposed 3-foot-tall vegetative buffers. In this case, 3-foot-tall buffers have been deemed appropriate because of the limited views from visual receptors close to the site. In cases where there are no natural buffers to nearby residents, the solar facility is more prominent, and key elements of the scenery are altered, a 6-foot-tall vegetative buffer may be appropriate, but such factors are inapplicable to Turkey Creek's site. In addition, there are currently no zoning requirements in Garrard County relating to buffers, and Turkey Creek has engaged with neighbors and stakeholders to ensure the planned 3-foot-tall buffers address their concerns. In all public meetings and outreach to the residents of this area, none of the residents have requested a 6-foot-tall buffer.

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c. Provide an explanation as to what would be considered an industry best practice as it relates to planting vegetative buffers to mitigate against noise and visual issues.

Response: In the experience of Turkey Creek and its affiliates, there is not an “industry best practice” as it relates to planting vegetative buffers for visual impact mitigation because, as discussed above, different locations call for different solutions. Whether or not vegetative buffers or another form of visual screen is needed depends on the specifics of the site, including zoning regulations, existence of natural barriers, local concerns, and proximity to residences. Existing vegetation within a project landscape often acts as natural visual barriers, thereby eliminating the need for additional buffers. If, during the permitting and public comment process, Silicon Ranch identifies adverse visual impacts or stakeholders raise concerns about the visual impacts, these can be addressed cost-effectively in almost all cases. During the design process, Silicon Ranch works with the neighbors and stakeholders, as well as a consultant, to assess visual impact and design landscaping or other screening methods to obscure the modules from nearby receptors.

Vegetative buffers are more often used as a visual barrier than a sound buffer due to their less effective impact on reduction of sound. In order to have a noticeable impact on sound, vegetative buffers typically must be quite wide and dense.

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d. Explain whether Turkey Creek will use a competitive bid process or some other process to procure the plants used in the vegetative buffer.

Response: The EPC contractor Turkey Creek selects will ultimately use its own bid process for a local sub-contractor to procure vegetative buffer plants.

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e. Provide a cost estimate of the difference in price between a three and six foot tall vegetative buffer, assuming that the buffer is located as marked in the site plan.

Response: Based on a preliminary quote from one of Silicon Ranch's EPC contractors, the difference in price between a 3-foot-tall and 6-foot-tall vegetative buffer would likely be in the range of \$25-30 per linear foot. The 6-foot-tall buffer, at \$50-\$60 per linear foot, is approximately double the cost of the 3-foot-tall buffer, at \$25-\$30 per linear foot. Note that the provided estimate is preliminary. Additional time and site-specific review during the EPC analysis are required to provide a more accurate estimate.

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f. Assuming the vegetative buffer is located as marked in the site plan and three- and six-foot trees were alternately planted in the buffer:

(1) Provide an estimate of the potential visual and noise reduction impact.

Response: Regarding the visual impact, Turkey Creek believes 3-foot-tall shrubs would adequately screen views from visual receptors with the exception of potential glimpses between intervening vegetation. This is because the existing topography already minimizes views where the buffer has been proposed. The addition of 6-foot-tall shrubs would not materially reduce the visual impact of the solar project but would increase cost to roughly 1.5 times that of the proposed buffer.

The noise reduction impacts from the proposed vegetative buffer would be negligible, considering the noise impact is already minimal, and a 3-foot taller tree every other tree would not improve noise concerns.

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(2) State whether the alternate buffer configuration would satisfy acceptable noise and visual parameters.

Response: Assuming the vegetative buffer is located as marked in the site plan and 3- and 6-foot-tall trees were alternately planted in the buffer, the alternate buffer configuration would satisfy acceptable visual parameters; however, the current configuration also meets acceptable parameters without increasing the Project's costs. As stated above, alternating heights of shrubs would not have any impact on noise reduction in comparison to a buffer with 3-foot-tall trees.

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(3) Provide a cost estimate of the alternate buffer configuration.

Response: Assuming the vegetative buffer is located as marked in the site plan and 3- and 6-foot-tall trees were alternately planted in the buffer, a cost estimate of the alternate buffer configuration would in the range of \$38-\$45 per linear foot. Note that the provided estimate is preliminary. Additional time and site-specific review during the EPC analysis are required to provide a more accurate estimate.

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g. Confirm the planting 15-foot-wide vegetative buffer in the locations marked on the preliminary site plan filed in this matter by Turkey Creek would address all known and identified visual and noise impacts from the solar facility.

Response: Turkey Creek confirms the planting of a 15-foot-wide vegetative buffer in the locations marked on the preliminary site plan filed in this matter would address all known and identified visual impacts from the Project. Noise impacts from the Project have been addressed by the proposed setbacks from nearby properties.

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4. Refer to the Petition at page 7 regarding the temporary buffers suggested by Turkey Creek. Provide additional information on the green slats and temporary canvas, such as a detailed description of each option, how each option would function, and the associated cost of installation and removal of each temporary option.

Response: The slatted fence typically consists of flattened inserts that intertwine with chain link, resulting in additional coverage of the gaps in the fence. An example photo is attached as Appendix D. While it may be possible to remove the slats at a later time, usually they remain in the fence and so are generally considered a more permanent fixture. Fence slats provide enhanced visual buffering to a chain link fence and are an alternative solution to the visual impacts of a solar project in lieu of a vegetative buffer. Based on a preliminary quote from one of Silicon Ranch's EPC contractors, green slats generally add about \$10 per linear foot to the cost of a 6-foot fence, which would cost about \$20 per linear foot.

The temporary canvas consists of screening attached to an installed fence using, typically, cable ties or other ligatures, resulting in coverage of the gaps in the fence. An example photo is attached in Appendix D. The simple attachment to the fence with bindings makes removal relatively uncomplicated. However, adding a canvas screen to a fence creates the potential for additional load on the fence as the canvas traps wind (similar to a sail), requiring contractors to design and build canvas-covered fences in a manner that includes additional fortification and, consequently, additional costs. Based on a preliminary quote from one of Silicon Ranch's EPC contractors, a temporary canvas generally adds about \$6 per linear foot to the cost of a 6-foot fence.

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5. Refer to Turkey Creek's Petition at page 9.

a. Provide additional information and support for the statement that “[s]cheduling all of the tamping near residences within 1,500 feet at the end of the tamping process will be inefficient and likely to cause increased costs, delays, or other unintended consequences during construction with uncertain benefit to the community.”

Response: Pile installation and tamping is a labor and time intensive activity that requires significant planning and precision. Typical pile installation begins with a survey to mark tracker end pile points on the property. Markers are placed to indicate where the piles should be installed and a crew distributes the materials required for installation before arranging the piles at the right locations. During pile installation, the machine operator operates the pile driver and records data while another crew member moves the pile, ensures proper position and installs the pile. This exercise is prone to issues with accuracy and often requires rework. Turkey Creek will require installation of a significant number of piles over several weeks. Optimizing the tamping process will be a significant mover of cost, labor, and time. The order of post installation would also be determined by conditions of the property in particular sections. Requiring tamping near residences to be scheduled last would limit flexibility of installation and cause potential delays and excess costs by forcing the EPC contractor to work in a less-than-optimal manner. Further, Turkey Creek does not know of benefits that would come from scheduling the tamping near residences at the end of the construction. It will not lessen the length of time that each home is exposed to the tamping noise but likely will increase the overall length of construction.

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b. Explain whether Turkey Creek has investigated what time during the working day would be optimal for the tamping process to occur in order to mitigate as much noise impact as possible to nearby property owners.

Response: Turkey Creek has not investigated what time during the working day would be optimal for the tamping process to occur in order to mitigate noise impacts, but it has considered the issue and understands neighbors do not want unreasonably loud construction nearby, particularly during early morning and evening hours. Fortunately, noise levels at the Project's external property boundary will be below 120 dB, which is the threshold that the Siting Board's Order considers unduly high or annoying. Turkey Creek would limit the tamping process to working hours, and traditionally, daylight hours specifically. There may be circumstances, such as recovering from a delay, that requires tamping during the evening hours (but still within the permissible working hours window) when daylight is still available, but Turkey Creek believes that this will be a minor part of the tamping process and not disruptive to neighbors. All construction personnel on the Project site will receive strict guidance on noise expectations. Additionally, as required by the Siting Board's Order, Turkey Creek plans to remain in contact with nearby residents to confirm noise from the Project is not unduly high or annoying and will take steps to mitigate the noise impact if it exceeds 120 dB at the Project's external property boundaries.

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6. Refer to Turkey Creek's Petition at page 10.

a. Provide additional information and support for the claim that limiting the construction activity, process, and deliveries to the hours of 8 a.m. to 6 p.m. Monday through Saturday would place substantial restriction on Turkey Creek's ability to meet operational and construction deadlines.

Response: In its Petition for Reconsideration, Turkey Creek proposed that the Siting Board adopt BBC Consulting's recommendation to limit construction and delivery activities to the hours of 7 a.m. until 9 p.m. without restriction on working days. However, Turkey Creek has since engaged in early-stage project discussions with EPC contractors and based on initial feedback from contractors regarding preferred working hours and days, Turkey Creek respectfully revises its request and proposes that the Siting Board adopt limited working hours of 6 a.m. until 9 p.m. without restriction on working days. In particular, certain EPC contractors expressed concern that delayed starting hours would negatively impact the Project by (1) potentially creating traffic issues as deliveries wait for site access during morning commuting hours and (2) further extending the overall construction time by removing from the workday up to an hour of daylight working time, particularly in the summer when sunrise may occur before even 6 a.m.

In general, restriction of working hours and working days limits a contractor's ability to respond to delays caused by weather conditions, force majeure events, unexpected equipment or labor issues, and other common causes of construction interruption. Like other types of infrastructure projects, solar projects are subject to deadlines set by third parties, including the interconnecting utility, power offtaker, and financing partners, and delays that result in missed deadlines can result in significant penalties (up to and including termination of key contracts).

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For that reason, solar developers require flexibility to make up lost time as quickly and efficiently as possible in order to meet deadlines and curtailing the window in which a developer can make up this time puts stress on a project's budget and schedule.

To provide further background, in order for a solar project to interconnect into the grid, it must meet certain development deadlines set forth by the utility transmission owner and transmission operator in their interconnection studies, which deadlines are meant to accommodate the project's proposed commercial operation date. The utilities will have to build their own infrastructure in order to accommodate a new generation resource, and often their milestones and schedule depend on a project's progress with construction of its interconnection facilities. With respect to offtakers, power purchase agreements include deadlines for construction completion and commercial operation, which is the date by which the project must start delivering power and renewable energy credits; not meeting these deadlines can result in significant financial penalties and deteriorated relations. Finally, financing partners, particularly tax equity partners seeking to use the federal Investment Tax Credit (ITC) available on solar, will closely follow construction progress to ensure a solar project is timely completed and placed in service by the end of a particular year; delays that push placement in service into another year can result in a loss of a percentage of the ITC, reducing the benefit to the tax equity partner and increasing project costs.

Limiting construction hours and days limits Turkey Creek's ability to meet these deadlines in the case of unforeseen delays and risks extending the overall duration of the Project's construction. In our experience, neighbors prefer the construction timeline to be as condensed as possible in order to minimize the duration of construction impacts and limiting the

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hours from 8 a.m. to 6 p.m., Monday through Saturday, will only lengthen the construction schedule.

b. Based upon the Turkey Creek developer's experience with similar projects, explain the nature of the activity that will take place between the hours of 6 p.m. and 9 p.m.

Response: Typically, nighttime activity is either reserved to make up for delays or limited to electrical work once the Project is energized after reaching mechanical completion. This work is technical in nature, not loud, and may be completed during these hours to ensure grid interconnection goes smoothly when nearing commercial operation. Although work in the evenings is typically limited to the aforementioned activities, Turkey Creek is proposing no restrictions to the work that is performed during these times. Restricting activities during these hours will significantly limit a contractor's ability to work around delays as more specifically described in response to 6(a).

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7. Refer to the Petition at page 13 regarding these statements: “If the standard is based on noise measured at the noise generator, it could severely impact the viability of solar projects in Kentucky. It is more appropriate to have a standard based on the noise receptor and not the noise generator.” Provide additional information and support for these two statements.

Response: The purpose of the Siting Board Application and associated noise study is to evaluate and quantify impacts caused by the Project. Noise produced at the generator is not relevant to this argument because of the key role distance plays in the magnitude of sound. Rather, it is the noise level at the receptor (i.e., the person hearing the noise) that requires focus because that is the location of the potential impact. Therefore, noise should not be studied at the generator when sufficient distance has been placed between the generator and receptor in an effort to dissipate noise.

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Appendix A

Preliminary Schedule - Turkey Creek Solar Project (70 MWdc)

ID	Task Name	Duration	Start	Finish	Half 1, 2021			Half 2, 2021			Half 1, 2022			Half 2, 2022			Half 1, 2023	
					J	M	M	J	S	N	J	M	M	J	S	N	J	
1	EPC Kickoff	0 days	Thu 1/28/21	Thu 1/28/21	◆ 1/28													
2	Plant RFP	347 days	Mon 2/1/21	Tue 5/31/22	[Gantt bar from Mon 2/1/21 to Tue 5/31/22]													
3	EPC Bids Due	21 days	Mon 2/1/21	Mon 3/1/21	[Teal bar from Mon 2/1/21 to Mon 3/1/21]													
4	Award Contract	283 days	Sat 5/1/21	Tue 5/31/22	[Teal bar from Sat 5/1/21 to Tue 5/31/22]													
5	Substation RFP	347 days	Mon 2/1/21	Tue 5/31/22	[Gantt bar from Mon 2/1/21 to Tue 5/31/22]													
6	EPC Bids Due	21 days	Mon 2/1/21	Mon 3/1/21	[Teal bar from Mon 2/1/21 to Mon 3/1/21]													
7	Award Contract	283 days	Sat 5/1/21	Tue 5/31/22	[Teal bar from Sat 5/1/21 to Tue 5/31/22]													
8	Land Closing; Site Available for Mobilization	0 days	Thu 4/1/21	Thu 4/1/21	◆ 4/1													
9	Preliminary Design	262 days	Tue 6/1/21	Wed 6/1/22	[Gantt bar from Tue 6/1/21 to Wed 6/1/22]													
10	30% Design Complete	45 days	Tue 6/1/21	Sun 8/1/21	[Teal bar from Tue 6/1/21 to Sun 8/1/21]													
11	60% Design Complete	46 days	Sun 8/1/21	Fri 10/1/21	[Teal bar from Sun 8/1/21 to Fri 10/1/21]													
12	90% - 100% Design Complete	44 days	Fri 10/1/21	Wed 12/1/21	[Teal bar from Fri 10/1/21 to Wed 12/1/21]													
13	Procure Inverters, AC/DC Cable, Transformer, Racking, Piles etc	240 days	Thu 7/1/21	Wed 6/1/22	[Teal bar from Thu 7/1/21 to Wed 6/1/22]													
14	Construction	240 days	Mon 11/1/21	Fri 9/30/22	[Gantt bar from Mon 11/1/21 to Fri 9/30/22]													
15	EPC Mobilization	23 days	Mon 11/1/21	Wed 12/1/21	[Teal bar from Mon 11/1/21 to Wed 12/1/21]													
16	Grading/Cut/Fill/Fencing/Buffers	88 days	Wed 12/15/21	Fri 4/15/22	[Teal bar from Wed 12/15/21 to Fri 4/15/22]													
17	Low Voltage Wiring /Cable Install	44 days	Tue 2/1/22	Fri 4/1/22	[Teal bar from Tue 2/1/22 to Fri 4/1/22]													
18	Inverters Installation	14 days	Sun 5/1/22	Wed 5/18/22	[Teal bar from Sun 5/1/22 to Wed 5/18/22]													
19	Pile Install	105 days	Tue 3/15/22	Sun 8/7/22	[Teal bar from Tue 3/15/22 to Sun 8/7/22]													
20	Racking Installation	96 days	Fri 4/29/22	Fri 9/9/22	[Teal bar from Fri 4/29/22 to Fri 9/9/22]													
21	Modules Installation	68 days	Wed 6/29/22	Fri 9/30/22	[Teal bar from Wed 6/29/22 to Fri 9/30/22]													
22	Project Commissioning	71 days	Sat 7/30/22	Fri 11/4/22	[Gantt bar from Sat 7/30/22 to Fri 11/4/22]													
23	COD	0 days	Fri 11/4/22	Fri 11/4/22	◆ 11/4													
24	Substantial Completion	0 days	Wed 11/30/22	Wed 11/30/22	◆ 11/30													

CASE No. 2020-00040
TURKEY CREEK SOLAR, LLC
RESPONSES TO SITING BOARD'S FIRST REQUEST FOR INFORMATION
ON REHEARING TO TURKEY CREEK SOLAR, LLC

Appendix B

GARRARD CO.

NOISE CONTROL ORDINANCE

O-07-08-31-1

ARTICLE I. The following ordinance shall be titled :

Noise Control Ordinance of Garrard County.

ARTICLE II. DECLARATION OF FINDINGS AND POLICY:

SCOPE 2.1 Declaration of Findings and Policy

WHEREAS excessive sound constitutes a menace to the public health and welfare and the quality of life; and,

WHEREAS a substantial body of science and technology exists by which excessive sound may be substantially abated; and,

WHEREAS Kentucky Revised Statutes 224.710-224.800 establishes the right of the people to an environment free from excessive and unnecessary sound; and

WHEREAS excessive and unnecessary sound that may jeopardize human health or welfare or may substantially degrade the quality of life.

WHEREAS it is the desire of the Garrard County Fiscal Court to eliminate non-commercial excessive and unnecessary sound; and it being within the purview of this governing bodies police powers to do so.

NOW, THEREFORE, it is the policy of the County of Garrard to prevent, prohibit and provide for the abatement of excessive and unnecessary noise which may injure the health or welfare of its citizens or degrade the quality of life.

2.2 Scope

This ordinance shall apply to the control of all sound originating within the limits of this jurisdiction.

ARTICLE III DEFINITIONS AND STANDARDS

3.1 Terminology Standards

All terminology used in this ordinance not defined below shall be in conformance with applicable American National Standards Institute Publications, Including but not limited to S1. 1-1960, R 1971, or those from its successor publications or bodies. For the purpose of this ordinance, certain words and phrases used herein are defined as follows:

3.2.1. Agricultural Property

A parcel of real property of not less than 10 contiguous acres in size which is undeveloped for any use other than agricultural purposes.

3.2.11 Farm

A tract of land devoted to agricultural purposes.

3.2.12 Farm Livestock

Animals on a farm kept or raised for use and profit.

3.2.2 Commercial Area

A parcel of real property on which a commercial business is located.

3.2.3 Commerical Business

Any business paying occupational license fee taxes.

3.2.4 Construction

Any site preparation, assembly, erection, substantial repair, alteration, or similar action, for or of public or private rights-of-way, structures, utilities, or similar property.

3.2.5 Continuous Sound

Any sound which exists, essentially without interruption, for a period of 10 minutes or more.

3.2.6 Decibel (dB)

A unit for describing the loudness of sound, Zero decibels is the threshold of human hearing.

Ten decibels is ten times as loud as zero, twenty decibels is one hundred times as loud as zero, and 130 decibels is the threshold of pain. Example - Normal voice conversation occurs at 60 dB.

3.2.61 Decibel levels:

Rock Concerts -140 dB; Car/ Motorcycle - 120 dB; Woodworking machinery- 100 dB; Lawn Mower - 90 dB. Traffic Noise - 80 dB. Whisper - 20 dB. These decibal levels may be used as a reference in judging various noise levels.

3.2.6 Demolition

Any dismantling, intentional destruction or removal of structures, utilities public or private right-of-way surfaces, or similar property.

3.2.8 Device

Any mechanism which is intended to produce, or which actually produces, noise when operated or handled.

3.2.9 Dirt Bike

A lightweight motorcycle designed for use on rough surfaces, such as dirt roads or trails.

3.2.9 Domestic Animal

Any animal except a human being converted to domestic habitat.

3.2.10 Emergency

Any occurrence or set of circumstances involving actual or imminent physical trauma or property damage which demand immediate action.

3.2.11 Emergency Vehicle

An emergency vehicle used in response to a public calamity or to protect persons or property from an imminent exposure to danger.

3.2.12 Emergency Work

Any work performed for the purpose of preventing or alleviating the physical trauma or property damage threatened or caused by an emergency.

3.2.12 Four Wheeler

A four wheel vehicle which is usually mechanically propelled and designed for use on rough surfaces such as dirt roads and trails.

3.2.13 Designated Enforcement Officer

The Officers of Law Enforcement within whose jurisdiction enforcement of this Ordinance is required.

3.2.14 Impulsive Sound

Sound of short duration, usually less than one second, with an abrupt onset and rapid decay.

3.2.15 Industrial Area

A parcel of real property on which industrial activity occurs.

3.2.16 Intrusive Noise

That noise which intrudes over and above the existing ambient noise at a given location. For the purpose of this ordinance an intrusive sound is any sound which is disruptive or distracting to daily activities such as but not limited to sleeping, dining, reading, studying, or vocal conversations. The relative intrusiveness of a sound depends upon its amplitude, duration, and time of occurrence,

3.2.17 Licensed

The possession of a formal license or a permit issued by the appropriate jurisdictional authority; or, where no permits or licenses are issued, the sanctioning of the activity by the jurisdiction as noted in public record.

3.2.18 Mobile Noise Source

Any noise source other than a stationary noise source.

3.2.19 Motorcycle

Any motor driven vehicle having a seat or saddle for the use of the operator and designed to travel on not more than three (3) wheels in contact with the ground, excluding tractors, and vehicles on which the operator and passengers ride in an enclosed cab.

3.2.20 Motor Vehicle

Motor vehicle means a four or more wheeled vehicle, or machine, propelled or drawn by mechanical power and used on the public roads and highways in the transportation of passengers or property; or any combination thereof, which is required to be licensed, but does not include any vehicle, locomotive or car operated exclusively on rail car rails.

3.2.21 Muffler or Sound Dissipative Device

A device consisting of a series of chambers or baffle plates, or other mechanical design, for the purpose of receiving exhaust gas from an internal combustion engine, and effective in reducing noise.

3.2.22 Noise

Any sound which is unwanted or which causes or tends to cause an adverse psychological or physiological effect on human beings.

3.2.23 Noise Disturbance

Any sound which, as judged by the enforcement Officer, is an intrusive sound that: (a) endangers or injures the safety or health of human beings, or (b) annoys or disturbs reasonable persons of normal sensitivities, or (c) endangers or injures personal or real property, or (d) violates any factors set forth in this ordinance. The sound of a chainsaw is 110 dB. Regular exposure to 110 dB for more than one minute risks permanent hearing loss.

3.2.24 Noise Sensitive Zone

Areas within 100 yards of a nursing home, Day Care or Senior citizen facility, public libraries and schools.

3.2.24 Off Road Vehicle

Off Road Vehicle means any self-propelled or mechanically powered vehicle not used primarily

for transporting persons or property upon public roads.

3.2.24 Percentile Sound Duration Level

Tenth Percentile Level — the duration of sound level that is exceeded 10 percent of the time in any measurement period (Such as the level that is exceeded for 1 minute in a 10 minute period) and is denoted L10. Ninetieth Percentile duration Level—the duration sound pressure level that is exceeded 90 percent of the time in any measurement period (such as the level that is exceeded for 9 minutes in a 10 minute period) and is denoted L90.

3.2.26 Person

Any individual, association, partnership or corporation, and includes any officer, employee, department, agency or instrumentality of the United States, a State or any political subdivision of a State.

3.2.27 Plainly Audible Noise

Any noise for which the information content of that noise is unambiguously transferred to the listener, such as but not limited to understanding of spoken speech, comprehension of whether a voice is raised or normal, or comprehension of musical rhythms.

3.2.28 Provocation

Justification for action; As pertaining to the barking of dog(s) Section 5.2.4; shall mean the precieved threat of a person or animal trespassing on dog owner's property or reaction to sudden sounds which may alarm the dog or be painful to the dogs sense of hearing.

3.2.29 Public Right-of-Way

Any street, avenue, boulevard, highway, sidewalk, alley or similar place normally accessible to the public which is owned or controlled by a governmental entity.

3.2.30 Public Space

Any real property or structures thereon normally accessible to the public.

3.2.31 Pure Tone

Any sound which can be judged as audible as a single pitch or a set of single pitches by the Enforcement Officer. For the purposes of this ordinance, a pure tone shall be any sound that remains at a constant level similar to the hum from a refrigerator which is approximately 40 dB.

3.2.32 Real Property Line

An imaginary line along the surface, and its vertical plane extension, which separates the real property owned, rented, or leased by one person from that owned, rented or leased by another person, excluding intra-building real property division.

3.2.33 Repetitive Impulsive Noise

Any noise which is composed of impulsive noises that are repeated at sufficiently slow rates similar to a Jack Hammer or Ram Hoe.

3.2.34 Residential Area

Any residential zone or area where housing density exceeds one house per five acres.

3.2.35 Residential Dwelling (Residence)

Any house or structure used for a home or residence.

3.2.36 Sound

The manifestation in air of a longitudinal wave created by a pressure fluctuation, which evokes an auditory sensation within the human ear. The threshold of normal hearing is 0 dB.

3.2.37 Sound Amplifying Equipment

Any device for the amplification of the human voice, music or any other sound, excluding standard automobile radios when used and heard only by the occupants of the vehicle in which the radio is installed, and as used in this chapter; warning devices on authorized emergency vehicles, or horns or other warning devices on any vehicle used only for traffic safety purposes.

3.2.38 Sound Truck

Any motor vehicle, or any other vehicle, regardless of motive power, whether in motion or stationary, having mounted thereon, or attached thereto, any sound amplifying equipment.

3.2.39 Stationary Noise Source

A stationary device which creates sounds while fixed or motionless, including but not limited to, residential, industrial, and commercial machinery and equipment, pumps, fans, compressors, air conditioners, and refrigeration equipment.

3.2.40 Steady Noise

A sound pressure level which remains essentially constant during the period of observation, i.e., does not vary in intensity or volume.

3.2.41 Weekday

Any day Monday through Friday which is not a legal holiday.

ARTICLE IV. POWERS AND DUTIES OF THE ENFORCEMENT OFFICER

4.1 Agency(Lead Agency/Official)

The enforcement of noise control established by this ordinance shall be administered by The Kentucky State Police; the Garrard County Sheriff Department; The Lancaster Police Department; or any duly elected constitutional peace officer of Garrard County. Nothing herein shall be construed as to prevent a private citizen from initiating a complaint at the County Attorney's Office for an alleged violation of this ordinance.

4.1.2 Enforcement Officer (EO)

The Officers of the Agency within whose jurisdiction enforcement of this Ordinance is required.

4.2 Powers of the Designated Enforcement Officer/Peace Officer

In order to implement and enforce this ordinance and for the general purpose of noise abatement and control, the Designated Enforcement Officer/ Peace Officer shall have in addition to any other authority vested in it the power to:

4.2.1 Inspections

Upon presentation of proper credentials, enter and/or inspect any private property, place, report or records at any time when granted permission by the owner. When permission is refused or cannot be obtained, a search warrant may be obtained from a court of competent jurisdiction

upon showing of probable cause to believe that a violation of this ordinance may exist.

4.2.2 Public and Private Projects

Require usage of adequate measures to avoid violation of any provision of this ordinance.

4.3 Duties of Designated Enforcement Officer/ Peace Officer

In order to effectively implement and enforce this ordinance, the Designated Enforcement Officer/ Peace Officer shall:

4.3.1 Investigate and Pursue Violations

Under procedures set forth in section 4.2.1, Article VIII, and other provisions of this ordinance investigate and pursue possible violations of this ordinance.

4.3.2 Abatement Order /Uniform Citations

If the Designated Enforcement Officer and / or Peace Officer finds a violation has occurred, a warning, an abatement order or uniform citation shall be issued as provided under Article VIII of this ordinance.

ARTICLE V. PROHIBITED ACTS

5.1 General Prohibitions

In addition to the specific prohibitions outlined in section 5.2 of this ordinance, it shall be unlawful for any person to make, continue, or cause to be made any unreasonably loud noise which is substantially incompatible with the time and location where created to the extent that it creates an actual or imminent interference with peace or good order. Included shall be any disturbing noise which is perceived by the Designated Enforcement Officer and / or Peace Officer or any person of ordinary sensibilities as interrupting the normal peace and calm of the area. Nothing in this ordinance shall prohibit any of these activities for emergency purposes.

5.2 Specific Prohibitions

The following acts or the causing or permitting thereof, are declared to be in violation of this ordinance:

5.2.1 Radios, Television Sets, Musical Instruments, and Similar Devices

Operating, playing or permitting the operation or playing of any radio, television, phonograph, drum, musical instrument, or similar device which produces or reproduces sound:

- (a) Between the hours of 11 p.m. and 8 a.m. the following day in such a manner as to create a noise disturbance across a residential or commercial real property line or at any time to violate the provisions of Article VIII or Section 6.2.14, except for activities for which a variance has been issued by (appropriate authority).
- (b) In such a manner as to exceed the levels set forth for public space in Article VIII, measured at a distance of at least 100 feet (30 meters) from such device operating on a public right-of-way or public space.

5.2.2 Loudspeakers

Using or operating for any purpose any loudspeaker, loudspeaker system, or similar device between the hours of 11 p.m. and 6 a.m. the following day, such that the sound there from creates a noise disturbance across a residential real property line except for any noncommercial public speaking, public assembly or other activity for which a variance has been issued by the Garrard County Sheriff Department; The Lancaster Police Department shall be a violation of this ordinance. The Garrard County Fair, Public School sporting events, the Tobacco Festival and any other similar music activity shall be exempt from this ordinance.

5.2.4 Animals

Any person owning, possessing or harboring any domestic animal or bird which without provocation makes an intrusive sound by howling, barking, whining, meows, squawks, or other means which exceeds a sound duration level of L₅₀ over a 15 minute time span, or which creates a noise disturbance that can be heard within 10 feet of the walls of an adjacent residential dwelling shall be in violation of this ordinance.. This provision shall not apply to farm livestock, public animal shelters or animals used during licensed game-hunting activities on property where such activities are authorized.

5.2.5 Loading and Unloading

Loading, unloading, opening, closing or other handling of boxes, crates, containers, building

materials, garbage cans, or similar objects between the hours of 11 p.m. and 6 a.m. the following day in such a manner as to cause a noise disturbance that exceeds a sound duration level of L50 for a 15 minute time span or one that can heard within 10 feet of the walls of an adjacent residential dwelling shall be a violation of this ordinance.

5.2.7 Vehicle, Motorboat or Aircraft Repairs and Testing

(a) Repairing, rebuilding, modifying, or testing any motorcycle or other motor vehicle, motorboat, or aircraft between the hours of 11 p.m. and 6 a.m. the following day in such a manner as to cause a noise disturbance that exceeds a sound duration level of L50 for a 15 minute time span or one that can heard within 10 feet of the walls of an adjacent residential dwelling shall be a violation of this ordinance.

(b) Nothing in this Section shall be construed to prohibit, restrict, penalize, enjoin or in any manner regulate the movement of aircraft which are in all respects conducted in accordance with, or pursuant to applicable Federal laws or regulations.

5.2.8 Horns and Signaling Devices

Sounding of any horn or signaling device on any truck, automobile, motorcycle, emergency vehicle or other vehicle on any street or public place within the county or any city therein except as a danger warning signal as provided in the Kentucky Revised Statutes, or the sounding of any such signaling device for an unnecessary and unreasonable period of time shall be a violation of this ordinance.

5.2.9 Explosives, Firearms, and Similar Devices

- (a) Using or firing explosives, firearms, or similar devices between the hours of 11 p.m. and 6 a.m. the following day which creates a noise disturbance across a real property line, public space or public right-of-way, without first obtaining a variance issued by the Garrard County Sheriff Department or The Lancaster Police Department shall be a violation of this ordinance. Such a variance need not be obtained for licensed game-hunting activities on property where such activities are authorized.
- (b) Discharging of fireworks by private individuals between the hours of 11pm and 6am

except on National Holidays and any public sponsored displays.

5.2.10 Emergency Signaling Devices

- (a) The intentional sounding or permitting the sounding outdoors of any fire, burglar, or civil defense alarm, siren, whistle, or similar stationary emergency signaling device, except for emergency purposes or for testing shall be a violation of this ordinance.
- (b) Sounding or permitting the sounding of any exterior burglar or fire alarm or any motor vehicle burglar alarm unless such alarm is automatically terminated within 20 minutes of activation.

5.2.11 Operation of off road vehicle, dirt bike or four wheeler

Repairing, operating, or testing any motorcycle, off road vehicle, dirt bike, or four wheeler in such a manner as to cause a noise disturbance between the hours of 11 p.m and 6 a.m. the following day in such a manner as to cause a noise disturbance that exceeds a sound duration level of L50 for a 15 minute time span or one that can heard within 10 feet of the walls of an adjacent residential dwelling for a 15 minute time span shall be a violation of this ordinance.

5.2.12 Noise Sensitive Zones

Creating or causing the creation of any noise disturbance within or adjacent to any noise sensitive zone, containing a nursing home, school, court or other designated area, so as to interfere with the functions of such activity or annoy the patients in the activity shall be a violation of this ordinance.

ARTICLE VI. VARIANCES

6.1 Special Variances

The administrative officer of the Enforcement Agency within whose jurisdiction enforcement of this Ordinance is required is authorized to grant variances for exception from any provision of this ordinance, subject to limitations as to area, noise levels, time limits, and other terms and conditions as the administrative officer determines are appropriate to protect the public health, safety, and welfare from the noise emanating there from. This Section shall in no way affect the duty to obtain any permit or license required by law for such activities.

- (a) Any person seeking a variance pursuant to this section shall file an application with the administrative officer. The application shall contain information which demonstrates that bringing the source of sound or activity for which the variance is sought into compliance with this ordinance would constitute an unreasonable hardship on the applicant, on the community, or on other persons. A separate application shall be filed for each noise source; provided, however, that several mobile sources under common ownership, or several fixed sources on a single property may be combined into one application. Notice of an application for a variance shall be published in the local paper with the greatest circulation for one week prior to the variance being issued. Any individual who claims to be adversely affected by allowance of the variance may file a statement with the administrative officer containing any information to support his claim. If at any time the administrative officer finds that a sufficient controversy exists regarding an application, a public hearing will be held.
- (b) In determining whether to grant or deny the application, the administrative officer shall balance the hardship on the applicant, the community, and other persons of not granting the variance against the adverse impact on the health, safety, and welfare of persons affected, the adverse impact on property affected, and any other adverse impacts of granting the variance. Applicants for variances and person contesting variances may be required to submit such information as the administrative officer may reasonably require. In granting or denying an application, the administrative officer shall keep on public file a copy of the decision and the reasons for denying or granting the variance.
- (c) (Variances shall be granted by notice to the applicant containing all necessary conditions, including a time limit on the permitted activity. The variance shall not become effective until all conditions are agreed to by the applicant. Noncompliance with any condition of the variance shall terminate the variance and subject the person holding it to those provisions of this ordinance for which the variance was granted.
- (d) A variance will not exceed 365 days from the date on which it was granted. Application for extension of time limits specified in variances or for modification of other substantial conditions shall be treated like applications for initial variances under subsection (b).
- (e) The administrative officer will issue guidelines pursuant to Section 4.3.1 approved by the (appropriate authority), defining the procedures to be followed in applying for a variance and the criteria to be considered in deciding whether to grant a variance.

6.2 Variances for Time to Comply

Within 90 days following the effective date of this ordinance, the owner of any commercial or industrial source of sound may apply to the administrative officer for a variance in time to comply with the provisions of this ordinance. The administrative officer shall have the authority, consistent with this section, to grant a variance (not to exceed 365 days from the effective date of this ordinance). The same procedures and consideration by the administrative officer as followed under Section 9.1 shall likewise apply.

6.4 Farm Equipment Exemption

KRS 224.780 states: Nothing in KRS 224.710 to 224.800 shall apply to farm tractors or other farm machinery, equipment, or vehicles primarily designed or used for off public highway use. This section shall be construed to exclude from the provisions of KRS 224.710 to 224.800 only such vehicles not required to be licensed for use on public highways.

6.5 Farm Exemption

Noise disturbance created by farm livestock, the operation of farm machinery or noise caused by other activities relating to an agricultural operation shall be exempt from this ordinance.

ARTICLE VII. PERMIT

Applications for a permit for relief from the noise restrictions in these ordinances on the basis of undue hardship may be made to the administrative officer of the Enforcement Agency within whose jurisdiction enforcement of this Ordinance is required. Any permit granted by the administrative officer or its authorized representative shall contain all conditions upon which said permit has been granted, including but not limited to the effective dates, any time of day, location, sound pressure level, or equipment limitation. The relief requested may be granted upon good and sufficient evidence demonstrating that:

- (a) additional time is necessary for the applicant to alter or modify this activity or operation to comply with this ordinance; or (b) the activity, operation, or noise source will be of temporary duration and cannot be done in a manner that would comply with this ordinance; and
- (c) no reasonable alternative is available to the applicant.

The administrative officer may prescribe any reasonable conditions or requirements deemed necessary to minimize adverse effects upon a community or the surrounding neighborhood.

ARTICLE VIII. ENFORCEMENT

8.1 Violation Assessment

In addition to standards set forth in this ordinance the determination of whether a noise is unreasonably loud or disturbing shall be based on the following factors incident to such noise:

1) Time of day; 2) proximity of residential structures; 3) whether the noise is recurrent, intermittent, or constant; 4) the volume of intensity; whether the noise has been enhanced in volume or range by any type of electronic or mechanical means; 5) the character of the area; 6) whether the noise is related to the normal operation of a business or other labor activity; 7) whether the noise is subject to being controlled without unreasonable effort or expense to the creator thereof.

8.2 Abatement Orders

- (a)** Except as provided in subsection (b), in lieu of issuing a uniform citation as provided for in Section 8.3, the designated enforcement officer responsible for enforcement of any provision of this ordinance may issue a warning or an order requiring abatement of a sound source alleged to be in violation, within a reasonable time period and according to guidelines which the designated enforcement officer may prescribe.
- (b)** A warning or an abatement order shall not be issued when the designated enforcement officer has reason to believe that there will not be compliance with an abatement order.

8.3 Notice of Violation

Except where a person is acting in good faith to comply with an abatement order issued pursuant to subsection 8.2 2(a), violation of any provision of this ordinance shall be cause for a uniform citation to be issued by the designated enforcement officer or other responsible enforcement official according to procedures which the designated enforcement officer may prescribe.

8.4 Other Remedies

No provision of this ordinance shall be construed to impair any common law or statutory cause of action, or legal remedy there from, of any person for injury or damage arising from any violation of this ordinance or from other law.

8.5 Citizen Suits

Provisions of this ordinance does not prevent any person from commencing an action on his own

behalf against any person who is alleged to be in violation of any provision of this ordinance.

8.6 Penalties

- (a) Any person who violates any provisions of this ordinance shall be fined for each offense a sum of not less than \$100 and not more than \$250 dollars for each offense.
- (b) Any person shown willfully or knowingly violating any provision of this ordinance shall be fined for each offense a sum of not less than \$250 dollars and not more than \$500 dollars with possible jail time.
- (c) Each day of violation of any provision of this ordinance shall constitute a separate offense.

8.7 Severability

If any provision of this ordinance is held to be unconstitutional or otherwise invalid by any court of competent jurisdiction, the remaining provisions of the ordinance shall not be invalidated.

8.8 Effective Date

This law shall take effect on _____ 2007.

CASE No. 2020-00040
TURKEY CREEK SOLAR, LLC
RESPONSES TO SITING BOARD'S FIRST REQUEST FOR INFORMATION
ON REHEARING TO TURKEY CREEK SOLAR, LLC

Appendix C

Noise Addendum
Turkey Creek Solar Facility
October 13, 2020

Construction Noise

In Section 2.2. of the Noise and Traffic Assessment (Assessment) for the Turkey Creek Solar Facility (dated March 19, 2020), proposed construction noise was addressed by using the typical noise levels produced by construction equipment as published by the U.S. Department of Transportation, Federal Highway Administration. To supplement the information produced within the Assessment, this addendum outlines the noise produced from the loudest equipment potentially used during the construction phase of the proposed facility (i.e., pile driver) and operational noise (i.e., inverters). Distance attenuation calculations for pile driver operational noise (assuming no obstructions, barriers, or sound dampening) is presented below.

Anticipated Noise Produced by Very Loud Construction Equipment (pile driver)	
Distance from Noise Source to Receptor (feet)	Noise Experienced at Noise Receptor (dB)
50	101.00
100	94.98
200	88.96
300	85.44
500	81.00
1,000	74.98
1,500	71.46

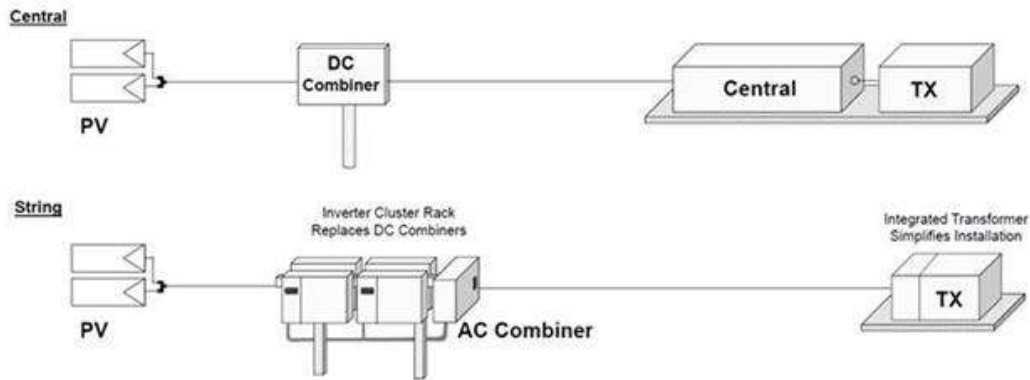
According to the calculations above, very loud construction noise (i.e., the operation of a pile driver) will be reduced to approximately the same decibel level as a hair dryer at 300 feet and further decreasing to the level of a washing machine or dishwasher by 1,000 feet. As discussed in the Assessment, construction activities and their associated noises are typical of construction activities for other development activities and are temporary by nature. Furthermore, the construction noise is within acceptable limits of the Garrard County Noise Ordinance.

Operational Noise

In Section 2.3.2. of the Assessment, the inverters proposed for use were SMA Sunny Central UP inverters, or similar. As discussed in the Section 2.3.2., the SMA Sunny Central UP inverters produce noise of 67.0 at 10 meters, which is roughly the equivalent to the hum of a household air-conditioning unit. These inverters are considered “central” inverters and typically produce more noise than “string” inverters, which is another type of inverter commonly used in solar installations in the US. String inverters transform the direct current (DC) from the photovoltaic modules into an alternating current (AC) that can be fed into the electrical grid. PV modules are arranged into groups connected by strings. Multiple strings of PV modules can be connected to a single inverter, which transforms the DC electricity produced by the PV modules into AC electricity. String inverters are located at the end of a row of solar panels, and are therefore more likely to be located

near the perimeter of a solar project, as opposed to “central” inverters, which as their name suggests, are most often located closer to the center of different areas within a solar project.

The image below compares the central and string architecture.



A typical string inverter is the SUNGROW Grid-connected PV Inverter, or similar. This unit produces a noise level of 74.4 dB at a distance of one meter. According to distance attenuation calculations, the noise produced at 10 meters by the SUNGROW inverter is 54.4 dB, which is 12.6 dB less than the central SMA inverters. See the table below for additional distance attenuation calculations, which assume no obstructions, barriers, or other sound dampening occurs.

Anticipated Noise produced by the SMA Sunny Central UP (or similar) central inverter

Distance from Noise Source to Receptor (feet)	Noise Experienced at Noise Receptor (dB)
3.28 (1 meter)	97.32
25	69.36
32.8 (10 meters)	67.00
50	63.00
100	57.32
150	53.80
200	51.30
300	47.78

Anticipated Noise produced by the SUNGROW Grid-connected PC (or similar) string inverter

Distance from Noise Source to Receptor (feet)	Noise Experienced at Noise Receptor (dB)
3.28 (1 meter)	74.40
25	56.76
32.8 (10 meters)	54.40
50	50.74
100	44.72
150	41.20
200	38.70
300	35.18

At the time of the Assessment, the noise receptor nearest to any inverter was approximately 626 feet away, according to preliminary site plans. At the time, we were not aware that there might be specific setbacks placed on inverters in the Siting Board permit. Inverters would be in line with the property setbacks imposed on the preliminary site plan, being no less than 300 feet from property boundaries.

The distance attenuation for the noise produced from the SMA and SUNGROW inverters at 300 feet is 47.78 and 35.18 dB, respectively. According to the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) and the Center for Disease Control, National Institute for Occupational Safety and Health (NIOSH), typical sound levels for a conversation is 60 dB, an urban residence is 50 dB, a whisper is around 30-40 dB, a silent study room and ticking watch is 20 dB, and normal breathing is 10 dB.

In conclusion, the central and string inverters will produce noise levels similar to an urban residence and a whisper, respectively, if located 300 feet from the nearest noise receptor. As such, neither inverter will be a significant contributor of noise to the nearest noise receptor and locating the inverters at such distance would not represent a materially different magnitude of impact.

Signature of Professionals



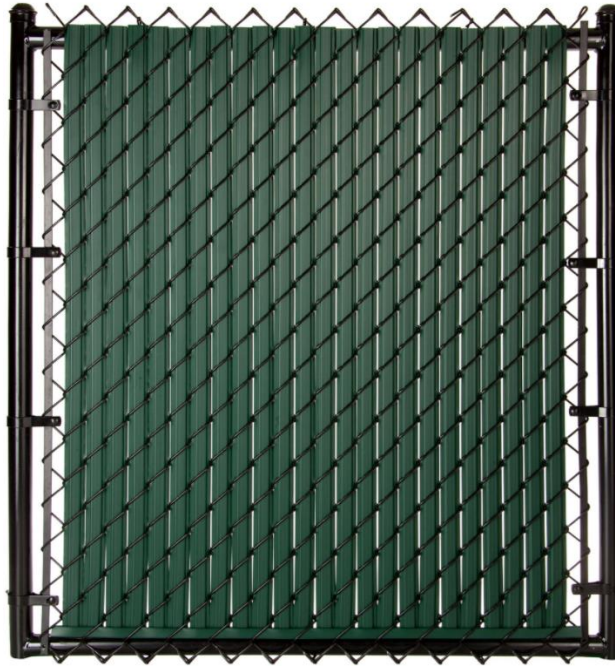
Michael Savage
Environmental Services
Project Manager



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Appendix D

Green Slats for Chain Link Fence



Source: <http://solitubeslats.com/>

Temporary Canvas



Source: <http://uline.com>