

October 14, 2022

Ms. Tanowa Troupe, Secretary
Ohio Power Siting Board
Docketing Division
180 East Broad Street, 11th Floor
Columbus, Ohio 43215-3797

Re: Case Nos. 19-1881-EL-BGN and 21-508-EL-BGA - In the Matter of the Application of Madison Fields Solar Project, LLC for a Certificate of Environmental Compatibility and Public Need to Construct a Solar-Powered Electric Generation Facility in Madison County, Ohio.

Certificate Compliance Condition 1 and Amendment Condition 1 – Final Glint and Glare Analysis

Dear Ms. Troupe:

Madison Fields Solar Project, LLC's ("Applicant") is certified to construct a solar-powered electric generation facility in Madison County, Ohio, in accordance with the orders issued by the Ohio Power Siting Board ("OPSB") in Case Nos. 19-1881-EL-BGN and 21-508-EL-BGA on January 21, 2021, and October 21, 2021, respectively.

At this time, the Applicant is filing the attached final Glint and Glare Analysis in compliance with Condition 1 of the Joint Stipulation and Recommendation approved by the OPSB's January 21, 2021 order in Case No. 19-1881-EL-BGN (Response to Second Data Request – Question 5 in Case No. 21-508-EL-BGA) and Amendment Condition 1 approved by the OPSB's October 21, 2021 order in Case No. 21-508-EL-BGA. This report was provided to the Staff of the OPSB on October 14, 2022.

We are available, at your convenience, to answer any questions you may have.

Respectfully submitted,

/s/ Christine M.T. Pirik

Christine M.T. Pirik (0029759)
Matthew C. McDonnell (0090164)
Dickinson Wright PLLC
180 East Broad Street, Suite 3400
Columbus, Ohio 43215
(614) 591-5461

cpirik@dickinsonwright.com
mmcdonnell@dickinsonwright.com

Attorneys for Madison Fields Solar Project, LLC

Cc: Matt Butler

Madison Fields Solar Project, LLC

Savion, LLC

Madison County, Ohio

Glint & Glare Analysis

August 24, 2022



Capitol Airspace Group

capitolairspace.com

(703) 256 - 2485



Summary

Savion, LLC is proposing to construct solar arrays near the village of Mechanicsburg, Ohio (**Figure 1**). On behalf of Savion, LLC, Capitol Airspace performed a glint and glare analysis utilizing the Solar Glare Hazard Analysis Tool (SGHAT) to identify the potential for glare impacts. Specifically, this analysis considered the potential for glare impacts on nearby residences at first and second story viewing heights, as well as roadways at car and truck viewing heights.

The results of the analysis indicate that there are no predicted glare occurrences for nearby residences, or roadways as a result of the proposed single-axis tracking solar arrays. These results are based on the application of Federal Aviation Administration (FAA) glint and glare standards in the absence of non-aviation regulatory guidelines.

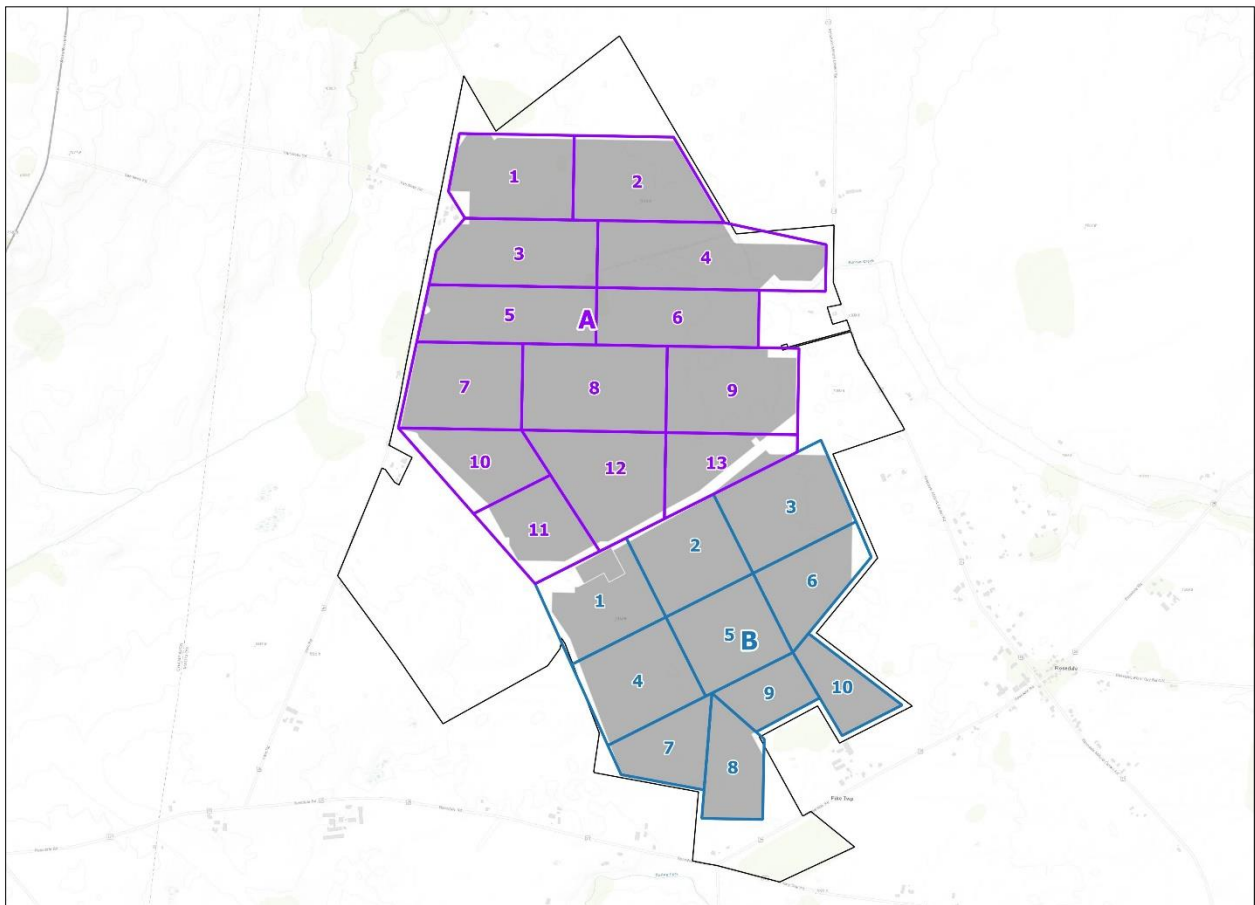


Figure 1: Location and identification of the Madison Fields Solar Project arrays, fence area (grey fill), and boundary (black line)



Methodology

In cooperation with the Department of Energy (DOE), the FAA developed and validated the Sandia National Laboratories SGHAT, now licensed through ForgeSolar. ForgeSolar has enhanced the SGHAT for glare hazard analysis beyond the aviation environment. These enhancements include a route module for analyzing roadways as well as an observation point module for analyzing residences. However, it should be noted that the SGHAT does not account for physical obstructions between reflectors and receptors.

The SGHAT analyzes the potential for glare over the entire calendar year in one-minute intervals from when the sun rises above the horizon until the sun sets below the horizon. The glare hazard determination relies on several approximations including observer eye characteristics, angle of view, and typical blink response time. This analysis utilized the FAA approved default SGHAT setting which simulates the pilot's view from the cockpit. When the SGHAT identifies glare, the associated ocular impact is classified into three categories:

- Green:** Low potential for temporary after-image
- Yellow:** Potential for temporary after-image
- Red:** Potential for permanent eye damage

The FAA policy for *Review of Solar Energy System Projects on Federally-Obligated Airports* requires that proposed solar projects will not result in ocular impacts (no glare of any category) on the airport's ATCT cab. Although not required, the FAA encourages that off-airport solar energy systems in proximity to airports with ATCTs are assessed for potential ocular impact. Currently, there are no defined standards for acceptable ocular impact on residences or roadways.

Data

Solar array specifications ([Table 1](#)) as well as location and height information were provided by Savion, LLC.

Table 1: Madison Fields Solar Project, LLC project array specifications

Parameter	Value
Unit Height	8.25 feet
Axis Tracking	Single-axis rotation
Tracking Axis Orientation	0°
Tracking Axis Panel Offset	0°
Max Tracking Angle	±60°
Resting Angle	48°
Panel Material	Lightly textured glass with anti-reflection coating
Reflectivity	Varies with sun
Slope Error	Correlates with material



Results

Residences

The SGHAT assessed the potential for glare occurrences at 91 discrete observation point receptors (black points, **Figure 2**). Each observation point was assessed at an eight-foot first story viewing height and a 16-foot second story viewing height. The SGHAT results do not predict glare occurrences for any of the 91 observation points at either viewing height as a result of single-axis tracking arrays.

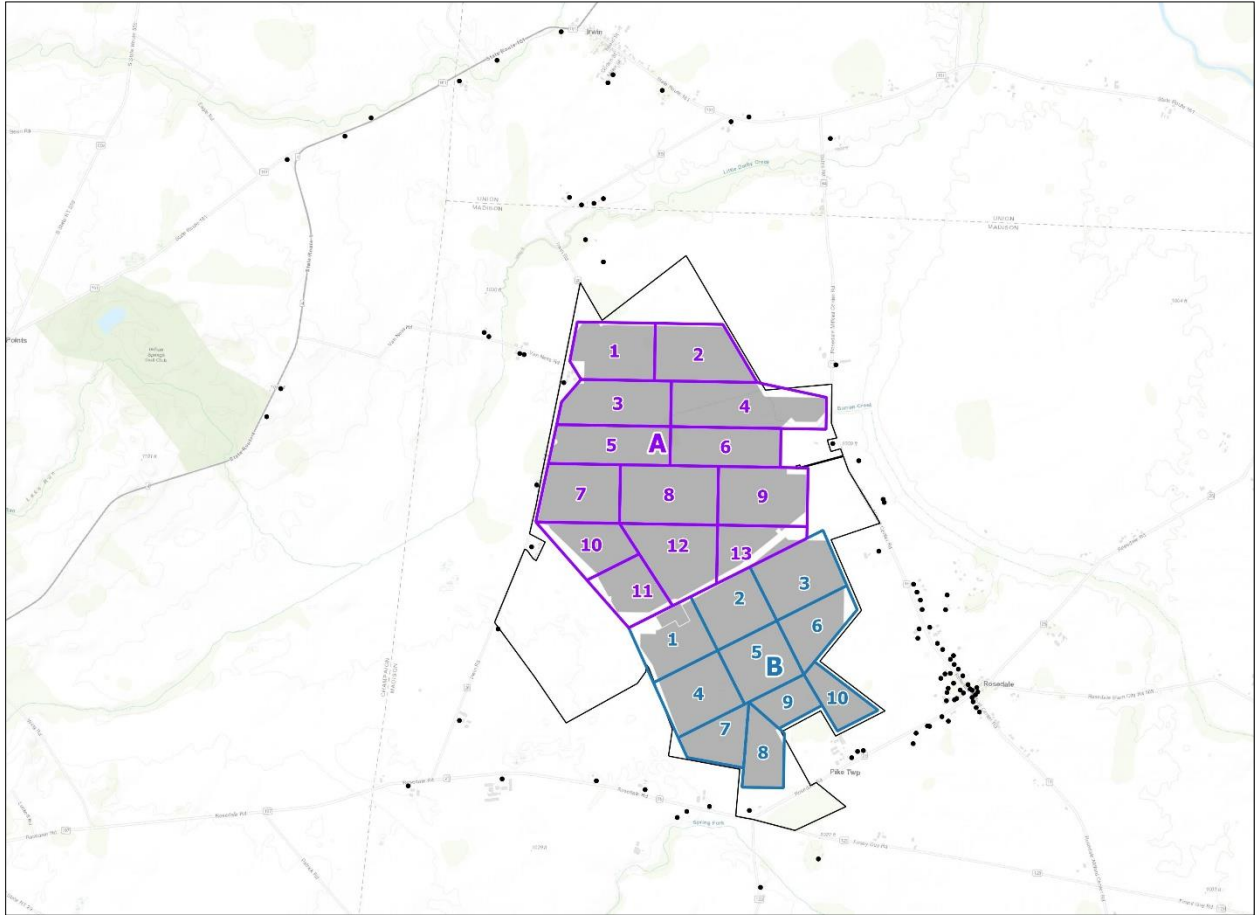


Figure 2: Discrete observation point receptors (black points) in proximity to the Madison Fields Solar Project



Routes

The SGHAT assessed the potential for glare occurrences along seven route receptors (dashed black lines, [Figure 3](#)). Each roadway was assessed at a four-foot car viewing height and an eight-foot truck viewing height. The SGHAT results do not predict glare occurrences for any of the seven roadways at either viewing height as a result of single-axis tracking arrays.

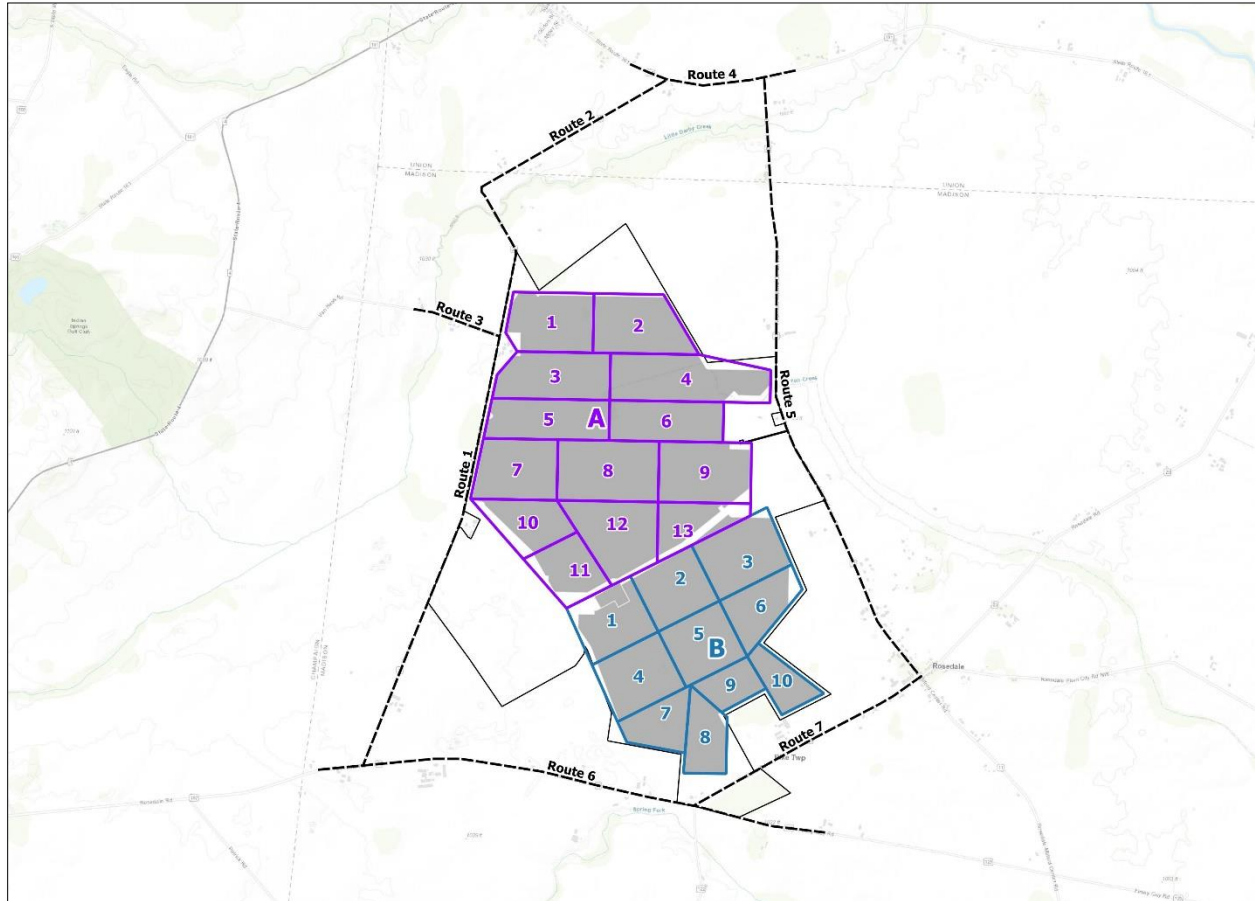


Figure 3: Roadway receptors (dashed black lines) in proximity to the Madison Fields Solar Project



Conclusion

The SGHAT does not predict any glare occurrences for nearby residences or roadways as a result of single-axis tracking arrays ([Table 2](#)). These results are based on the application of FAA glint and glare standards in the absence of non-aviation regulatory guidelines. As noted in the methodology, the glint and glare analysis does not consider vegetation, fencing, or other natural obstructions. This glint and glare analysis takes the most conservative approach in assessing the possibility of glare occurrences.

Table 2: Annual glare occurrence summary

Receptor	Green Glare (Hours:Minutes)	Yellow Glare (Hours:Minutes)	Red Glare (Hours:Minutes)
Residences (91)	0:00	0:00	0:00
Routes (7)	0:00	0:00	0:00

If you have any questions regarding the findings in this analysis, please contact [Rick Coles](#) or [Sophia Bullard](#) at (703) 256-2485.

**This foregoing document was electronically filed with the Public Utilities
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in

Case No(s). 19-1881-EL-BGN, 21-0508-EL-BGA

Summary: Notice - Certificate Compliance Condition 1 and Amendment Condition 1
– Final Glint and Glare Analysis electronically filed by Christine M.T. Pirik on behalf
of Madison Fields Solar Project, LLC