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**BEFORE THE
PUBLIC SERVICE COMMISSION OF WISCONSIN**

Application for Grant County Solar, LLC to Construct a New
Solar Electric Generation Facility located near Potosi and Harrison Townships, in Grant County, Wisconsin

Docket No. 9804-CE-100

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REBUTTAL TESTIMONY OF JOANNE BLANK

Q. Are you the same JoAnne Blank who filed direct testimony in this case?

A. Yes.

Q. What is the purpose of your rebuttal testimony?

A. I am responding to certain portions of direct testimony filed by Grant County Intervenors (“GCI”) witnesses Brianna Eisentrout-Frear and Henry Frear with respect to potential glare hazards and Electric Magnetic Field (“EMF”) impacts of the Project.

Glare Hazard Analysis

Q. GCI witnesses Brianna Eisentrout-Frear and Henry Frear express concern about potential glare associated with the Project including potential impacts on the Lancaster Airport and Highway 61. (Direct-GCI-Frear at 10-11). Was a Glare Hazard Analysis conducted for the Project?

A. Yes. As discussed in my Direct Testimony, Stantec performed a Glare Hazard Analysis for both the Project’s Proposed Arrays and the Alternative Arrays. The Glare Hazard Analysis was completed utilizing the glare modeling software ForgeSolar. ForgeSolar is a commercial version of Solar Glare Hazard Analysis Tool, originally developed by Sandia Laboratories. The model follows the glare analysis requirements of the Federal Aviation

1 Administration (“FAA”). The analysis was completed on April 30, 2020, and is provided
2 in Appendix T of the Application (PSC REF#: 389012).

3 The Glare Hazard Analysis analyzed potential glare impacts on airplanes landing
4 in both northward and southward directions at the Lancaster Municipal Airport, located
5 approximately 0.6 mile north of the Project. Helicopters landing at the Grant Regional
6 Health Center Heliport in Lancaster and airplanes landing at a potential private airstrip in
7 the Town of Ellenboro (both greater than five miles from the Project), were also analyzed.
8 In addition, potential glare at 128 houses and a church within a one-mile radius of the
9 Project site were analyzed. Potential glare was also analyzed for drivers on nine roads
10 adjacent to the array blocks, including Highway 61. Driver viewing heights of five feet for
11 cars and nine feet for large trucks were used for the analysis.

12 **Q. Will pilots training at the Lancaster Airport expected to be adversely impacted by**
13 **glare from the Project?**

14 A. No. The Project has been designed to avoid glare impacts during routing flight activities
15 at the Lancaster airport. As such pilots training at the Lancaster Airport are not expected
16 to be adversely impacted by glare from the Project.

17 As discussed more fully in Grant County Solar’s Response to Data Request GCI-
18 21, the Glare Hazard Analysis was conducted in accordance with FAA guidelines
19 established for solar projects located on federally funded airports. The current FAA policy
20 standards include two scenarios that require evaluation of ocular impact (*i.e.*, glare): (1)
21 aircraft on final approach within two statute miles of the runway threshold; and/or (2) air
22 traffic control personnel working in the air traffic control tower.¹ These two scenarios

¹ Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports, 78 Fed. Reg. 63,276 (October 23, 2013).

1 present the greatest potential likelihood of adverse effects from glint or glare. Other traffic
2 pattern segments exclusive of the final approach corridor have not been considered by the
3 FAA to be at risk for glint and glare.

4 **Q. In your opinion, will the Project result in adverse glare to aircraft, traffic, or nearby
5 residents?**

6 A. No. The solar panels have an anti-reflective coating to absorb the sun's energy and
7 minimize glare. The Glare Hazard Analysis conducted for the Project demonstrates that
8 neither the Proposed Arrays nor the Alternative Arrays are predicted to result in adverse
9 glare to aircraft, traffic, or nearby residents, and therefore the Project does not create an
10 adverse impact on public health and welfare as a result of glare. *See Wis. Stat.*
11 *§ 196.491(3)(d)4.*

12 **Electric and Magnetic Fields**

13 **Q. GCI witnesses Brianna Eisentrout-Frear and Henry Frear express concern regarding
14 the potential impact of EMF. (GCI-Direct-Frear-10). Was an EMF study performed
15 for the Project?**

16 A. Yes. As stated in my Direct Testimony, an EMF Study for the Project's collection system
17 ("EMF Study") was completed on March 11, 2020, and is provided in Appendix G of the
18 Application (PSC REF#: 388990). The EMF Study assessed the potential maximum
19 electromagnetic field strengths in the vicinity of the Project's underground electrical cables
20 to determine if the levels are a risk to human health and the surrounding environment.

21 **Q. What did the EMF Study of the collection system conclude?**

22 A. The EMF Study considered five collection line scenarios based on the number of parallel
23 feeders within the underground trenches.

1 The EMF Study concluded that the maximum electromagnetic field expected at the
2 approximate centerline of the trench configurations for the collection lines ranged from
3 10.61 to 11.40 milli-Gauss (mG) one meter (3.28 feet) above the ground surface. In each
4 scenario, at 50 feet from the centerline, the magnetic field was below 2.0 mG.

5 **Q. Was an EMF analysis performed for the Gen-Tie line located between the Project**
6 **Substation and the Project Switchyard?**

7 A. Yes. An EMF analysis of the Gen-Tie line was completed and was provided as Ex.-PSC-
8 Data Request: response 4.01. An electrical distribution line located on the east side of
9 Stage Road, approximately 100 feet from the proposed Gen-Tie, was included in the
10 analysis.

11 **Q. What did the EMF analysis of the Gen-Tie line conclude?**

12 A. The EMF study considered several scenarios for an approximately 200-foot-long
13 transmission line originating at the Project Substation and terminating at the Project
14 Switchyard. A minimum ground clearance for the 138 kV Project Gen-Tie line was
15 considered consistent with the National Electrical Safety Code. Additional ground
16 clearances of 30 and 40 feet were assessed. The results of the study concluded that the
17 maximum level of EMF that are expected one meter (3.28 feet) above the ground varies by
18 configuration from 0.818 to 3.969 kV/m (maximum electric field) and 149.29 to 594.88
19 mG (magnetic field at 100% loading). Note, that in the Scenario S3 of a 150-ft separation
20 and 40-foot vertical clearance, a higher maximum (~149 mG) occurs underneath the
21 existing 13.8 kV line rather than under the proposed Gen-Tie line. Both numbers have been
22 highlighted within the tables in Ex.-PSC-Data Request: Response 4.01. Within 200 feet of

1 the Gen-Tie line, the magnetic field at 100% of peak load diminishes to a range of 5.29 to
2 13.98 mG.

3 By way of comparison, a typical electric blanket gives off 0.25 kV/m and the EMF
4 for a typical microwave is 60 mG.

5 **Q. In your professional opinion will the potential EMF impact of the Project create an**
6 **undue impact on the public health and welfare.**

7 A. No. As stated in my Direct Testimony, the Project is in the public interest considering
8 safety and environmental factors, see Wis. Stat. §§ 196.491(3)(d)3, and will not create
9 undue adverse impacts on environmental values including the public health and welfare as
10 a result of EMF. See Wis. Stat. §§ 196.491(3)(d)4.

11 **Q. Does this conclude your prefiled rebuttal testimony?**

12 A. Yes it does.