BEFORE THE OHIO POWER SITING BOARD

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In the Matter of the Application of Angelina Solar I, LLC for a Certificate of Environmental Compatibility and Public Need

Case No. 18-1579-EL-BGN

SUPPLEMENTAL TESTIMONY OF DAVID HESSLER

1	Q.1.	Please state your name and business address.
2		A.1. My name is David M. Hessler and I am the vice president of Hessler Associates,
3		Inc. The address of my company's administrative offices is 38329 Old Mill Way, Ocean
4		View, Delaware 19970, and my personal office is located at 5096 N. Silver Cloud Dr., St.
5		George, Utah 84770.
6	Q.2.	Did you previously provide testimony in this proceeding?
7		A.2. Yes. I previously provided testimony on August 1, 2019 and September 10, 2019
8		in this proceeding.
9	Q.3.	On whose behalf are you offering testimony?
10		A.3. I am providing supplemental testimony on behalf of the Applicant, Angelina Solar
11		I, LLC ("Applicant").
12	Q.4.	What is the purpose of your supplemental testimony?
13		A.4. To address Condition 3 of the Amended and Restated Joint Stipulation and
14		Recommendation filed on July 29, 2020 ("Amended Joint Stipulation") as it relates to
15		operational sound emanating from the Project's inverters.
16	Q.5	Have you reviewed the Amended Joint Stipulation?

17 **A.5.** Yes.

Q.6. Can you please describe the revisions to Condition 3 in the Amended Joint Stipulation?

A.6. Condition 3 generally relates to the Project's layout and setbacks. With respect to sound, the Amended Joint Stipulation now includes a minimum setback of "500 feet between any central inverter and any residence on a non-participating parcel."

Q.7. Have you conducted an analysis of the operational sound levels expected as a result
of the 500 foot setback from the inverters?

8 **A.7.** Yes.

9 **Q.8** Can you please describe that analysis?

10 A.8. We developed a computer noise model of the Project, using conventional Cadna/A[®] software, that includes not only the substation but also all of the inverters 11 12 using the preliminary layout attached to Mr. Herling's testimony. In general, acoustical 13 performance information on inverters for solar facilities is not readily available: however, 14 Open Road Renewables was able to obtain a highly detailed sound test report from the 15 manufacturer of a common inverter model, the SMA SC4600-UP, that is, or is 16 representative of, the type of inverter likely to be used for this Project. In contrast to the 17 limited information typically provided by inverter suppliers, SMA carried out a shop test 18 at its manufacturing facility in Germany in accordance with DIN EN ISO 9614-2 19 "Determination of sound power levels of noise sources using sound intensity", Part 2: 20 "Measurement by permanent scanning", which determined the sound power level 21 spectrum of the unit in 1/3 octave band resolution. This result gives not only the precise 22 overall sound power level but also quantifies any hums or tones present in the frequency spectrum. The model results are summarized graphically in Exhibit DMH-S1 to my 23

testimony, which shows the sound contours from the Project during normal operation on
a sunny day projected out to an extremely quiet sound level of 35 dBA. This figure
shows that all non-participating residences are either close to or, in the vast majority of
cases, outside the 35 dBA contour.

Q.9. Based on your experience, would an operational sound level of 35 dBA at a nearby
 residence lead to noise complaints?

A.9. No. Such a sound level is so low in absolute terms that it is generally considered
inconsequential even in rural environments where the background sound level is
essentially negligible.

Q.10. You mentioned that the SMA sound test report contained information on the
 frequency content of this inverter model. Does this allow you draw any conclusions
 about the audibility and potential impact of tones at the nearest non-participants?

13 A.10. Yes. The 1/3 octave band sound power level spectrum of the unit is smooth and 14 a-tonal for the most part, but there are peaks in the 3150 and 6300 Hz 1/3 octave bands 15 that are about 11 dB above the neighboring bands. While this indicates that the unit 16 emits prominent tones, it is very important to understand that in a sound intensity test the 17 measurements are taken with a special probe inches from the surface of the test subject 18 and the spectrum shape does not remain the same with increasing distance. In fact, the 19 higher frequencies, where the two peaks are, diminish very rapidly with distance and at 20 the minimum 500 foot setback distance would lose their prominence relative to adjoining 21 frequencies and would have values in the 20's dB. Such low levels would be buried in 22 the background sound level and can essentially be regarded as negligible and inaudible.

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Q.11. Are any non-participating residences actually located 500 feet from an inverter in the preliminary layout?

A.11. No. The nearest non-participating residence as things currently stand is approximately 720 feet from an inverter while the next nearest homes are generally more than 950 feet away. Even if this distance decreased to the minimum 500 ft. setback, the Project sound level would remain low at about 38 dBA. Such a level, were it to occur, would still be negligible, if not totally inaudible, even in this quiet environment. Moreover, it is important to add, this sound only exists during day.

9 Q.12. Are there any other changes to the Amended Joint Stipulation that relates to noise?

A.12. Yes. Condition 3 has also been revised to state that "The Applicant shall
 promptly retrofit any inverter as necessary to effectively mitigate any off-site noise issue
 identified during operation of the facility."

Q.13. Do you believe the inverters could be retrofitted in a practical manner to reduce noise?

A.13. Yes. The mid-frequency sound audible at moderate distances generally comes from the cooling air intakes and discharges, which could be fitted with acoustical hoods, louvers or silencers, in the unlikely event mitigation is necessary. As indicated above, I don't believe the sound emissions from the inverters in this Project are likely to result in any kind of community disturbance, but this proviso effectively serves as a backup to ensure that noise will not be a problem.

Q.14. Given the results of your modeling, is there flexibility to make changes in the preliminary layout as a result of final project engineering and avoid adverse noise impacts at non-participating residences?

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A.14. Yes. With an inverter setback of 500 feet or more from any non-participating
 residences their exact location is immaterial from a noise impact perspective.

3 Q.15. Does this conclude your supplemental testimony?

4 **A.15.** Yes, it does.

CERTIFICATE OF SERVICE

The Ohio Power Siting Board's e-filing system will electronically serve notice of the filing of this document on the parties referenced in the service list of the docket card who have electronically subscribed to this case. In addition, the undersigned certifies that a courtesy copy of the foregoing document is also being served upon the persons below via electronic mail this 13th day of October 2020.

/s/ Michael J. Settineri

Jodi Bair Jodi.bair@ohioattorneygeneral.gov

Dylan Borchers dborchers@bricker.com

Kathryn West kwest@prebco.org

W. Joseph Scholler jscholler@fbtlaw.com

Thaddeus Boggs tboggs@fbtlaw.com

Chad Endsley cendsley@ofbf.org

Leah Curtis lcurtis@ofbf.org

Amy Milam amilam@ofbf.org

Jack Van Kley jvankley@vankleywalker.com

<u>Chris Walker</u> <u>cwalker@vankleywalker.com</u>



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Summary: Testimony Supplemental Testimony of David Hessler electronically filed by Mr. Michael J. Settineri on behalf of Angelina Solar I, LLC