BEFORE THE

PUBLIC SERVICE COMMISSION OF WISCONSIN

Application for a Certificate of Public Convenience and Necessity of Wood County Solar Project, LLC, to Construct a Solar Electric Generation Facility in the Town of Saratoga, Wood County, Wisconsin	Docket No. 9803-CE-100

REBUTTAL TESTIMONY OF MICHAEL J. VICKERMAN

ON BEHALF OF RENEW WISCONSIN

Q. Please state your name and business address

A. My name is Michael J. Vickerman, and my business address is 214 N. Hamilton St. Madison, WI 53703.

Q. By whom are you employed, and in what capacity?

A. I am Policy Director for RENEW Wisconsin (RENEW).

Q. On whose behalf are you testifying?

A. I am testifying on behalf of RENEW.

Q. Please describe your educational background.

A. I have a Bachelors of Arts degree in History and Art History from the University of Wisconsin.

Q. **Please describe your work experience.**

A. I began working for RENEW Wisconsin in October 1991 as its Advance Plan 6 intervention manager. I became RENEW's Executive Director in 1994, and served in that capacity until 2012. Since then, I have been RENEW's Policy Director. My work with RENEW today focuses on renewable energy policy development at the regulatory, legislative, and municipal level. My professional qualifications are further summarized in Ex.-RENEW-Vickerman-1.

Q. Please describe RENEW.

A. RENEW is a domestic, nonprofit corporation headquartered in Madison that works to advance the renewable energy goals adopted by the State of Wisconsin over the years. Since its founding in 1991, RENEW has worked to increase access to and development of renewable energy sources in Wisconsin to power homes, businesses, and vehicles. To that end, RENEW formulates and advocates for policies and programs to create and expand the use of solar power, wind power, biogas, local hydropower, geothermal energy, and electric vehicles.

Q. Have you testified in a construction case proceeding before the Public Service Commission involving a solar generation facility?

A. Yes. I submitted rebuttal testimony in the Two Creeks Solar Farm proceeding (9696-CE-100) and direct testimony in the Point Beach Solar Farm proceeding (9802-CE-100).

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my rebuttal testimony is to respond to the direct testimony submitted by PSC witness Andrew Craft. Specifically, I will discuss Witness Craft's suggestion on page 6 that the Commission could "include an order condition requiring Applicant to

conduct a 3rd-party analysis of the heat island effect" for the proposed Wood County Solar project.

Q. What is your view of Mr. Craft's suggestion?

A. The body of research performed to date addressing the hypothesized heat island effects from solar farms is notably thin, and does not provide a sufficient foundation from which to draw any conclusions that could be applied to the proposed project. As Mr. Craft notes, there have been no studies of heat island effects performed on solar farms in the Upper Midwest. With that in mind, I believe the Commission should consider having this research performed at an existing solar farm, and paid for through ratepayer dollars as opposed to the applicant. There are nearly three dozen small solar farms operating in Wisconsin today, and many of them could serve as a focal point of the type of research that Mr. Craft proposes (see Table 1). The newest solar farm to be placed in service, the Morey Field Solar project owned by Madison Gas and Electric, may be an ideal candidate for such a study, because it is located on municipal airport property owned by the City of Middleton. Airports already have meteorological instrumentation onsite to provide points of comparison with monitoring equipment placed closer to the array. Morey Field will also have historical temperature data that can be cross-referenced with neighboring observation sites for temperature anomalies. Also, given its proximity to the University of Wisconsin-Madison, it might be possible to engage faculty and students there to organize and perform a study on heat island effects of a solar farm. However, it may be more appropriate to conduct such an analysis at an older solar farm that is fully revegetated with pollinator-supporting plant species.

Table 1

Largest Solar Generating Facilities in Wisconsin

September 2020

	Installation Owner or Host	County	Capacity	Year	Utility/ REC Customer
1	Madison Gas + Electric Shared Solar (Morey Field)	Dane	5,000 AC	2020	MGE Shared Solar + 2 RER customers
2	BluEarth Renewables	Trempealeau	7,450 DC 5,000 AC	2019	UMMEG/ Arcadia Municipal/ Organic Valley
3	BluEarth Renewables	Grant	4,110 DC 3,000 AC	2019	UMMEG/ Fennimore Utilities/ City of Madison
4	BluEarth Renewables	Juneau	3,540 DC 2,500 AC	2019	UMMEG/ New Lisbon Utilities/ City of Madison
5	BluEarth Renewables	Barron	3,390 DC 2,500 AC	2019	UMMEG/ Cumberland Municipal/City of Madison
6	ENGIE (New Auburn)	Chippewa	2,750 AC	2017	DPC/CVEC
7	BluEarth Renewables	Monroe	2,560 DC 2,000 AC	2019	UMMEG/ Cashton Municipal/ City of Madison
8	CMS Enterprises (Flambeau)	Price	2,500 AC	2017	DPC/Price
9	ENGIE (Warren)	St. Croix	2,340 DC 1,500 AC	2017	DPC/St. Croix
10	Hanwha Q CELLS USA[1]	Rock	2,280AC	2016	Alliant
11	BluEarth Renewables	Juneau	2,100 DC 1,500 AC	2019	UMMEG/ Elroy Utilitiesl/City of Madison
12	ENGIE (Medford)	Taylor	2,000 AC	2017	DPC/Taylor
13	ENGIE (Whistling Wings)	Monroe	1,700 AC	2017	DPC/Oakdale
14	ENGIE Liberty Pole)	Vernon	1,300 AC	2017	DPC/Vernon
15	ENGIE (Sand Lake)	Polk	1,250 AC	2017	DPC/Polk-Burnett
16	ENGIE(Mt. Hope)	Grant	1,250 AC	2017	DPC/Scenic Rivers
17	ENGIE (Downsville)	Dunn	1,100 AC	2017	DPC/Dunn
18	ENGIE (Arcadia)	Trempealeau	1,100 DC	2017	DPC/Riverland
19	BluEarth Renewables	Lafayette	1,100 DC 800 AC	2019	UMMEG/Argyle Municipal/City of Madison
20	ENGIE (Sauk)	Vernon	1,000 AC	2017	DPC/Vernon
21	ENGIE (Conrath)	Rusk	1,000 AC	2017	DPC/Jump River
22	ENGIE (Lafayette)	Chippewa	1,000 AC	2017	DPC/Eau Claire

23	Half Moon Ventures	Jefferson	1,000 AC	2013	Jefferson Utilities
24	Pristine Solar (Community Solar)	Eau Claire	1,000 DC 700 AC	2017	Xcel-NSPW
25	OneEnergy Renewables (Ore Dock)	Ashland	1,000 DC 700 AC	2019	Xcel-NSPW
26	OneEnergy Renewables (Endicott) (Community Solar)	Monroe	1,000 DC 700 AC	2019	Xcel-NSPW
27	Eau Claire Energy Cooperative Community Solar	Eau Claire	750 AC	2015	ECEC
28	Engie (Ash Ridge)	Richland	600 AC	2017	DPC/Richland County
29	Clean Energy Collective	Vernon	517 DC	2014	DPC
30	Madison Gas + Electric Shared Solar	Dane	500 AC	2017	MG&E
31	Clean Energy Collective	Vernon	305 DC	2014	Vernon Electric
32	Bayfield Electric Cooperative Community Solar	Iron River	300 AC	2016	Bayfield Electric
33	New Richmond Community Solar	New Richmond	250 AC	2015	New Richmond Utilities
34	River Falls Community Solar	River Falls	250 AC	2015	River Falls Municipal Utilities

We also believe that the analysis proposed for the Commission's consideration aligns well with Focus on Energy's Environmental and Economic Research and Development (EERD) program. According to the program's web site, "EERD research projects allow Wisconsin to further its efforts towards reducing energy waste, costs, and environmental impacts. EERD projects are selected through a targeted competitive request for proposals (RFP) process that occurs approximately once per year. Focus on Energy also accepts research concepts or ideas on a rolling basis." Given the fact that this project, if approved, is one of the six solar farms that Wisconsin Power and Light seeks to acquire in its pending application filed in Docket No. 6680-CE-182, it is reasonable and

appropriate that Wisconsin utility ratepayers provide the funding for this study, ideally through the Focus on Energy program.

Q. What is your position on the proposed order point requiring the Applicant to organize and underwrite a heat island effect study?

A. While RENEW believes that a study on the hypothesized heat island effect of an Upper Midwest solar farm may be useful, we do not support a requirement on the Applicant to conduct such analysis. In our view, this research could be initiated in short order at an existing solar farm with established vegetation, or a newer solar farm that is near an airport, such as Morey Field array or the array under construction at Dane County Airport. Moreover, we believe that such research should be funded through an existing, ratepayer-funded research and development program such as Focus on Energy's EERD, and should engage an academic institution in Wisconsin that can provide a research opportunity for its faculty and students.

Q. Does this complete your rebuttal testimony?

A. Yes, it does.