STATE OF VERMONT
PUBLIC SERVICE BOARD

Docket No. 8585

Investigation into Meteorological Tower at 700)
Kidder Hill Road in Irasburg, Vermont)

(1)

PREFILED TESTIMONY AND EXHIBITS OF DAVID BLITTERSDORF

Mr. Blittersdorf provides the details and circumstances surrounding the installation of a meteorological mast on property he owns in Irasburg, Vermont.

Q1. Please state your name, occupation and business address.

A1. My name is David Blittersdorf. I am founder and CEO of AllEarth Renewables, Inc., a solar tracker manufacturing company located at 94 Harvest Lane in Williston, Vermont.

Q2. Please describe your educational background and professional experience.

A2. I have degrees in Mechanical Engineering from the Wentworth Institute of Technology (ASME 1977) and University of Vermont (BSME 1981). I am an inventor of wind assessment technology with 2 patents, and founder of NRG Systems, Inc. and AllEarth Renewables, Inc., formerly known as Earth Turbines. In December 2011, I became managing member of Georgia Mountain Community Wind, LLC and I am majority owner of the Georgia Mountain Wind Project. Please refer to Exhibit DB-1 for more information about my background and experience.

Q3. What is the purpose of your testimony?

A3. My testimony provides details surrounding the installation of a meteorological mast on my property in Irasburg, Vermont.

Q4. Why do you refer to the meteorological tower as a "mast?"

A4. The structure we are dealing with here is a 10/8-inch diameter pole (10 inches at the bottom, 8 at the top) that I personally designed in 1982. It's not a "tower;" the term "tower" is generally used for structures that are much more substantial

than a mast held up by guy wires. I know the term "met tower" is more commonly used, but "met mast" is a more accurate term in my view.

Q5. When did you purchase your property in Irasburg on which the met mast is located?

A5. I bought the land in October 2010, with the intention of building a log cabin—a life-long dream of mine. I grew up in Pittsford, Vermont, in the valley. Since I was a kid, I've imagined having a beautiful log cabin on top of a hill. I purchased the property so I could make my dream a reality.

Q6. How did you plan to power the cabin?

A6. It is no secret that I am a strong proponent for more in-state renewable energy facilities to secure Vermont's energy independence, so I wanted the cabin to be 100% renewable, like my primary residence in Charlotte. At the time of my purchase in 2010, I envisioned powering the cabin completely with one or more small wind turbines.

Q7. When did you install the met mast on your property?

A7. In November and December of 2010. On November 19, 2010, I used a Bobcat to transport components of the 60-meter tall, 10/8-inch diameter mast to the field on the high point of my property. On December 29, 2010, the mast was raised and installation completed. The ground was frozen and covered with snow, as you can see from the photos included in Exhibit DB-2.

Q8. What do the photos in Exhibit DB-2 depict?

A8. There are five photos, all of which I took. The first, labelled Photo 1, is from my September 2010 visit to the property, before I purchased it the following month. Photo 2 was taken on November 19, 2010, and shows the Bobcat that I used to bring the met mast components to the site that day. Photo 3 is a close-up of the measurement equipment attached to the mast before it was raised on December 29th. Photo 4 in the series shows the gin pole and met mast right before the mast was raised. The last photo, Photo 5, shows the mast after installation with a close-up of the data logger below the solar panel that powers the measurement equipment and logger.

Q9. Please describe installation of the met mast.

A9. Installation is a straightforward process. It starts with securing a metal plate with rods pounded into the ground. This plate serves as a sort of "foundation" for the mast. You can see the plate in Photo 5 of Exhibit DB-2. The mast is raised using a gin pole and a 12-volt electric winch. Once raised, the mast is stabilized by guy wires and anchors, with three anchors per guy point.

Q10. Was any concrete used to secure the mast?

A10. No. When I designed the met mast in 1982, I wanted to avoid the use of concrete. It takes too long to cure and adds significant costs. As a result, the masts I designed have very little land impact.

Q11. Please describe the equipment on the met mast.

A11. The equipment on the mast includes a lightning rod, multiple levels of wind direction vanes, wind speed anemometers and a heated anemometer, a data logger (approximately 1.5 square feet) and a 250 watt, approximately 3′ x 5′ solar panel located near the bottom of the mast. The collection and transmission of data, and heating of the anemometer, are all solar powered and self-contained. No grid connection is needed. The NRG Symphonie data logger, another one of my inventions, is programmed to call into a phone number at my office, and send an email with data in an attachment.

Q12. Were any roads put in on your property in order to install the met mast?

A12. No, no roads were needed to bring the met mast and equipment to the site or to erect the mast.

Q13. What was the purpose of the met mast installation?

A13. The installation met two primary purposes: assessing the wind on my property and prototype testing. I have been studying the wind in one way or another since I was a kid, and I've been testing wind measuring devices since I was a teenager. My Irasburg land offered me a private hilltop where I could test prototypes and protect my intellectual property.

Q14. When you installed the met mast, how long did you plan to keep it up?

A14. I assumed I'd keep it up for at least as long as it served its purposes. I didn't have any plans to take it down.

Q15. What permits, if any, did you obtain before installing the met mast?

A15. None. I verified that the Town of Irasburg did not have zoning or regulate the installation of met masts.

Q16. Why didn't you obtain a certificate of public good (CPG) from the Public Service Board?

A16. Since I installed and used the mast to measure wind for residential wind turbines and to test prototypes, I did not think that I needed to obtain a CPG from the Public Service Board.

Q17. What experience with the Public Service Board CPG process did you have at the time you installed the met mast?

A17. My only direct experience with Public Service Board permitting was for small net metering projects of my own, both small wind and solar. NRG Systems installed met masts, but permitting for their installation was always the customer's responsibility. I knew that NRG's equipment was being used in various Vermont wind projects at that time, including Lowell, Sheffield, and Searsburg, but these projects were all larger, grid-connected projects.

I was also aware that NRG's equipment was being used by the Anemometer Loan Program operated by Vermont Technical College and funded through the DPS-managed Clean Energy Development Fund (CEDF). Beginning in 2005, the Anemometer Loan Program did 27 met mast installations around Vermont for the purpose of assessing wind for potential small wind turbine installations (10 to 100 kW). According to reports provided in connection with the CEDF grant,

the Anemometer Loan Program loaned out measuring equipment for potential wind projects in Holland, Coventry, Sutton, Groton, St. Albans, North Ferrisburgh, Monkton, Cabot, Cabot Plains, Huntington, Milton, Williamstown, Charlotte, Randolph, Randolph Center, Shoreham, Colchester, Waltham, Wolcott, Washington, South Hero, Wilmington, Shelburne, Marlboro, and Westford. The Department of Public Service (DPS) highlighted the Anemometer Loan Program in the 2011 CEDF Annual Report, and to the best of my knowledge, the Program's most recent installation was the met mast erected at the Collins Perley Sports Complex in St. Albans.

The Anemometer Loan Program required participant landowners to get any necessary permits, with the expectation that those permits would be from local authorities, not from the Public Service Board. If you look at one of the grant agreements, you'll see that the Department of Public Service agreed that met mast installations like mine required local approval, not a CPG from the Public Service Board. I've attached an example of what I mean – in the "Scope of Work to Be Performed" in the 2007 grant agreement executed by the DPS Commissioner it states:

> . . . [P]ermits [for meteorological towers] are typically not difficult to obtain and ***are handled through the local governments such as the town zoning coordinator***.

See Exhibit DB-3 (emphasis added). I'm fairly certain that, like my installation, the installations done in connection with the Program did not get CPGs, and I

have since learned that the Board has no record of CPGs for at least 10 of the 27 installations. I'm not sure why the Department has taken a different position on the CPG requirement with respect to my met mast installation, and I am very much looking forward to reading the Department's prefiled testimony to understand the distinction it is making in my case.

My only other pre-2010 experience with met mast permitting processes was a case before the Public Service Board in 2008, two years before I bought the property in Irasburg. NRG Systems and Earth Turbines wanted to continue studying meteorological data from a previously installed climbable tower on Little Equinox Mountain in Manchester after a wind energy developer (Endless Energy Corp.) had completed its data collection for a potential grid-connected wind project. We also wanted to install an 80-foot tall wind turbine (an equipment test project that would not be connected to the grid) so we could study the performance of the turbine and wind measurement equipment in extreme weather conditions. Endless Energy, NRG and Earth Turbines petitioned to have the met mast CPG transferred to NRG and Earth Turbines so we could use the tower for our own purposes. The Board dismissed our petition because it said that it did not have jurisdiction unless we could show that the installations were directly related to a grid-connected wind energy project, which we were not planning to do at the time. See Docket 6154, Order of December 11, 2008.

Q18. What did you understand "grid-connected" to mean in that context?

A18. I understood "grid-connected" to mean an electric generator that transmits electricity to the utility distribution or transmission system for use by the utility -- basically, a generator that helps to meet the utility's load. Residential wind turbines aren't always "grid-connected." Some can be interconnected so that usage and production are metered and accounted for by the utility on the customer's electric bill. In other cases, residential wind turbines can be completely behind the meter and draw AC power from a utility connection, similar to a household appliance, without sending excess power back out onto the utility network. While at NRG, I helped develop a device that enabled this latter type of connection for residential wind turbines.

Q19. When you installed the met mast, were you considering a non-residential wind project that would serve more than your personal needs at the log cabin?

A19. No. I didn't think about anything other than a residential turbine installation to power the log cabin. At NRG Systems, I was in the business of supporting wind energy development worldwide through the products and services we offered, some of which I invented. While I was an owner of NRG, I did not even consider competing with my company's customers by pursuing non-residential wind project development. After I left NRG, I had a non-compete agreement that restricted what I could do in the wind energy space. But even if I had had the freedom at that time to develop non-residential wind, my property is on a

hilltop, so it never occurred to me that there would be enough wind for anything more than a small residential installation.

The tallest point on my land is only about 1,700 feet in elevation, compared to the approximately 2,700-2,900 feet in elevation at which the Searsburg wind project is located. Keep in mind that my first direct involvement in non-residential wind development was a year *after* I installed the met mast on my property. It wasn't until the end of 2011, when I was approached to invest in the Georgia Mountain Community Wind Project after it already had a CPG, that I began to consider investing in non-residential scale wind.

Q20. Did you in fact install residential-scale wind turbines on your land in Irasburg?

A20. Yes. In 2012, I installed two net-metered wind turbines with a combined system-rated power output of 8.55 kW (AC). (See CPG #NM-1771, dated January 5, 2012).

Q21. When was construction of the log cabin and access roads complete?

A21. The access roads were put in around February 2012 by a local logger who had approached me with a request to log my land. My log cabin was finally complete a year later, in late 2013. To the best of my knowledge, all of the wood chips from logging went to Burlington for use as fuel at the McNeil Plant. I should also mention that work on the access roads, as well as the logging operations, were done during frozen conditions to minimize impacts to the land.

Q22. When did you first consider doing a non-residential scale wind project on your land in Irasburg?

A22. I first considered a non-residential scale project on my land around late 2013/early 2014. In the fall of 2013, I used a LIDAR unit to assess the wind above my land in Irasburg. LIDAR is a remote sensing technology that uses light in the form of a laser beam to detect the speed and direction of particles and varying physical conditions in the atmosphere. Basically, a small, portable device emits (invisible) laser light into the air, and then a sensor in the device detects and measures tiny fractions of light that get scattered back from particles in the air. This information allows wind industry professionals to measure the Doppler shift (a measure of the speed of those particles), and to use that to extrapolate wind speed at a range of heights—including heights above the meteorological mast. I asked a consultant to review the meteorological data gathered from the LIDAR unit and the met mast, and in February 2014, I received a wind assessment report based on the data. It was the combination of this information, the change in market conditions, and the advancement in low-wind-speed wind turbine technology that led me in 2013/2014 to consider a non-residential installation on my Irasburg property. It was exciting to learn that a 5 MW project is now more feasible at lower elevations; it was not something I ever expected when I bought my land or installed the met mast in 2010.

Q23. Does this conclude your testimony?

A23. Yes, thank you.