

STATE OF VERMONT  
PUBLIC UTILITY COMMISSION

Case No. 17-2571-INV

Investigation pursuant to 30 V.S.A. Sections 30 and 209 into whether Georgia Mountain Community Wind, LLC, operated its wind electric generation facility in Georgia, Vermont, during icing conditions on January 3, 2017	
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Order entered: 08/24/2017

**ORDER RE: WINTER OPERATING PROTOCOL**

**I. Introduction**

The Vermont Public Utility Commission (“PUC” or “Commission”)<sup>1</sup> opened this investigation in response to a complaint received from Scott and Melodie McLane (the “McLanes”) alleging that Georgia Mountain Community Wind, LLC (“GMCW”) operated its wind turbines during icing conditions on January 3, 2017, in violation of GMCW’s winter operating protocol.

Today, I recommend that the Commission approve proposed modifications to GMCW’s winter operating protocol, subject to condition.

**II. Procedural History**

On January 9, 2017, the Commission received a complaint from the McLanes alleging that GMCW operated its wind turbines in icing conditions in violation of its winter operating protocol.

On January 13, 2017, the Commission issued an order directing GMCW to respond to the McLanes’ complaint.

On January 27, GMCW filed its response to the McLanes’ complaint.

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<sup>1</sup> Pursuant to Section 9 of Act 53 of the 2017 legislative session, the Vermont Public Service Board’s name was changed to the Vermont Public Utility Commission, effective July 1, 2017. For clarity, activities of the Vermont Public Service Board that occurred before the name change will be referred to in Commission documents as activities of the Commission unless that would be confusing in the specific context.

On February 6, 2017, the Department of Public Service (“Department”) filed comments in response to both the complaint and GMCW’s response thereto, and recommended that the Commission open an investigation.

On March 10, 2017, the Commission issued an order opening this investigation.

On March 24, 2017, I convened a prehearing conference in this matter. During the prehearing conference, the parties expressed a willingness to exchange information in an attempt to facilitate this investigation, and agreed to file a status report on April 19, 2017.

On April 19, 2017, the Department filed a letter requesting, on behalf of all the parties, an extension of time to continue discussions and committing to file another status report by May 17, 2017.

On May 18, 2017, the Department filed a second status report noting that the parties were unable to reach a resolution of all issues in this investigation and proposed a schedule whereby GMCW would file proposed modifications intended to improve the effectiveness of its winter operating protocol, the other parties would file comments thereon, and GMCW would then respond to any such comments. After a Commission ruling on the proposed modifications, the parties are to submit scheduling proposals for the balance of this proceeding.

On May 24, 2017, GMCW filed its proposed modifications to its winter operating protocol.

On June 14, 2017, the Department filed comments that were generally supportive of the proposed modifications but also recommended the addition of an annual reporting requirement for at least the next five years, and recommended that GMCW “strongly consider” installing video monitoring equipment at each turbine to aid in the identification of icing conditions.

On June 28, 2017, GMCW responded to the Department’s comments, stating that it had no objection to the recommended reporting requirement but opposing the recommendation to install the video monitoring equipment.

### **III. Discussion**

Under the original protocol, the operating conditions of each wind turbine were analyzed by comparing its actual operations with its expected performance. These results would cause the turbines to enter pause mode only after ice formation was detected. GMCW’s revised protocol is

intended to detect the presence of conditions that are conducive to ice formation and to pause the turbines before ice forms on the turbine blades.

The amended protocol incorporates site-specific meteorological (“MET”) data from the on-site MET station and wind turbine data monitored by the System Control and Data Acquisition (SCADA) system. The MET station has sensors for measuring wind speed, wind direction, temperature, and relative humidity. When MET station temperature, relative humidity, or other meteorological conditions conducive to ice formation are received by the SCADA system, the wind turbines will be automatically placed in pause mode.<sup>2</sup>

The amended protocol will use three different tests to determine if icing conditions are present. The relative humidity test will place the turbines in pause mode when on site conditions meet or exceed identified thresholds of temperature and humidity. GMCW tested this approach in the winter of 2016-2017 using a temperature threshold of 1° C and a humidity threshold of 93%.

The wind speed sensor test compares wind speed readings from both heated and unheated anemometers. If the difference in speeds between the heated and unheated anemometers is “significant,” it indicates the likelihood of ice buildup on the unheated unit. Due to the relatively small mass and surface area of these sensors, ice will form on the anemometers before it does on objects with greater mass and surface area, such as wind turbine blades. Initial testing considered “significant” to be a wind speed difference greater than 2 meters per second for wind speeds at or below 8 meters per second, and a ratio of wind speeds (average heated anemometer wind speed/average unheated anemometer wind speed) greater than 1.3 for wind speeds above 8 meters per second.

The wind direction sensor (wind vane) test compares the average change in wind direction (standard deviation) against a test threshold when temperatures are at or below freezing. Like the anemometers, the formation of ice will occur on wind vanes before forming on objects with greater mass and surface area, such as wind turbine blades. In the initial testing, ice was considered likely forming on the wind vane when a wind direction standard deviation of 0 was present.

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<sup>2</sup> When the wind turbines are in pause mode, they do not produce power, although they may rotate slowly at speeds below one rotation per minute.

If the facility's SCADA system determines that on-site conditions meet or exceed any of the test thresholds,<sup>3</sup> the turbines will be placed in pause mode.

I recommend that the Commission approve the amendments to GMCW's winter operating protocol and direct GMCW to file a revised protocol incorporating the amendments. I also recommend that the Commission direct GMCW to file a report by June 1 for each of the next five years identifying any icing events and explaining any adjustments made to the thresholds used in the testing during the prior winter. Lastly, I recommend the Board require GMCW to install video monitoring equipment at the site to aid in the detection of icing in the event the turbines operate with ice on the blades in spite of the amendments to the protocol. GMCW should be required to consult with the Department regarding the installation of such equipment, should it become necessary, and file a proposal for Commission review and approval.

Dated at Montpelier, Vermont, this 26<sup>th</sup> day July, 2017.



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John J. Cotter, Esq.  
Hearing Officer

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<sup>3</sup> GMCW notes that implementing the amended protocol will be an iterative process and adjustments may be made to the various thresholds as experience is gained over time.

#### **IV. Commission Discussion**

On August 9, 2017, the Department, GMCW, and the McLanes each filed comments on the Hearing Officer's Report and Recommendation.

The Department recommends that the Commission adopt the Report and Recommendation but requests that the Commission require GMCW to install the recommended video-monitoring equipment as part of the approval of the amended winter operating protocol rather than wait to see if the new protocol is effective at preventing operation during icing conditions before imposing such a requirement. The Department contends that having video evidence regarding the presence of icing, or lack thereof, would assist the Commission in assessing any future complaints.<sup>4</sup>

GMCW asks that the Commission alter the Report and Recommendation by changing the annual reporting deadline from June 1 to July 1. GMCW also opposes the Department's request to install video-monitoring equipment as part of the approval of the amended protocol, contending that such a requirement is not necessary at this time and should only be imposed if the new protocol is not successful. GMCW asserts that the number of complaints related to turbine operation during icing is too low to justify imposing this new regulatory burden at this time.<sup>5</sup>

The McLanes ask that the Commission impose the requirement to install video-monitoring equipment immediately, rather than wait to see how effective the amended protocol is at preventing operation during icing conditions. The McLanes assert that having video monitoring of the turbines will help remove them from the role of enforcer for violations committed by GMCW. The McLanes also ask the Commission to require a phone number for neighbors to call to report icing, and that any such calls be responded to in a timely manner. Lastly, the McLanes request that GMCW be required to perform continuous sound monitoring for the life of the project.<sup>6</sup>

After careful consideration of the Report and Recommendation and the comments filed by the Department, GMCW, and the McLanes, we adopt the Report and Recommendation and

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<sup>4</sup> Department comments at 1-2.

<sup>5</sup> GMCW comments at 1-2.

<sup>6</sup> McLane comments at 1-3.

grant GMCW's request to change the annual reporting deadline from June 1 to July 1 to allow it adequate time to prepare the report.

We decline to impose the requirement for video-monitoring equipment at this time, but instead adopt the Hearing Officer's recommendation that it be required if the amended protocol proves to be ineffective. As we understand the amended protocol, turbine shutdown will occur automatically when specific meteorological conditions indicate that icing conditions are likely to exist at the site. We are willing to see if this approach is effective. However, should the amended protocol fail to achieve its goal and the turbines do again operate under icing conditions, we will promptly impose the requirement to install the video-monitoring equipment.

With respect to the McLanes' request regarding a phone number to report icing complaints, we direct the Hearing Officer to explore this topic during the second phase of this proceeding.<sup>7</sup> We do note our expectation that when GMCW receives a complaint that the turbines are running under icing conditions, or any other complaint, GMCW will respond promptly – particularly when, as here, the McLanes describe higher levels of sound from the turbines as a result of running with ice on the blades.

With respect to the McLanes' request that we impose a requirement for continuous sound monitoring for the life of the project, such a request is beyond the scope of this proceeding. We expect, however, that implementation of the amended protocol will prevent turbine operation under icing conditions, so the resultant increased sound levels will not occur. The Commission takes the three existing complaints seriously, and any future verified violations will be viewed in light of the outcome of the two pending investigations of those complaints.<sup>8</sup>

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<sup>7</sup> As part of this inquiry, the Hearing Officer will seek to understand whether the existing complaint resolution protocol and its associated telephone number are adequate for the prompt resolution of complaints about turbine operations during icing conditions.

<sup>8</sup> We have not combined the two proceedings. The complaints related to operations on March 11 and 14, 2016, are being investigated in Docket 8734, while the complaint regarding operations on January 3, 2017, is being separately investigated in this proceeding.

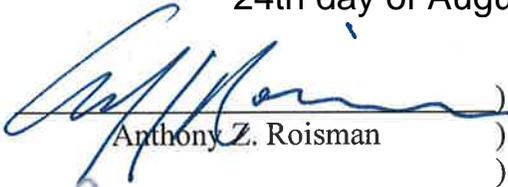
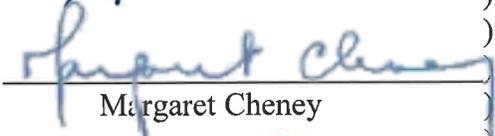
**V. Order**

IT IS HEREBY ORDERED, ADJUDGED, AND DECREED by the Public Utility Commission of the State of Vermont that:

1. The findings, conclusions, and recommendations of the Hearing Officer are adopted, except as modified herein.
2. Georgia Mountain Community Wind, LLC (“GMCW”) shall file a revised winter operating protocol incorporating its proposed amendments thereto no later than August 30, 2017.
3. GMCW shall file a report no later than July 1 each year for the next five years identifying any icing events and explaining any adjustments made to the thresholds used in the testing during the prior winter.
4. In the event GMCW’s turbines operate with ice on the blades subsequent to the implementation of the revised protocol, GMCW shall install video monitoring equipment at each turbine to aid in the detection of icing on the blades. GMCW shall consult with the Department on the installation of any such equipment and shall file an implementation proposal for Commission review and approval.
5. This matter is returned to the Hearing Officer for further proceedings. Consistent with the schedule adopted by the Hearing Officer in the May 22, 2017, order, the parties shall file further scheduling proposals no later than two weeks from the date of this Order.

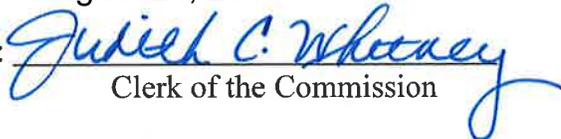
**SO ORDERED.**

Dated at Montpelier, Vermont this 24th day of August, 2017

 _____ Anthony Z. Roisman	) PUBLIC UTILITY ) ) )
 _____ Margaret Cheney	) COMMISSION ) )
 _____ Sarah Hofmann	) OF VERMONT ) )

OFFICE OF THE CLERK

Filed: August 24, 2017

Attest:   
Clerk of the Commission

*Notice to Readers: This decision is subject to revision of technical errors. Readers are requested to notify the Clerk of the Commission (by e-mail, telephone, or in writing) of any apparent errors, in order that any necessary corrections may be made. (E-mail address: puc.clerk@vermont.gov)*

PSB Case No. 17-2571-INV - SERVICE LIST

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