

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE APPLICATION OF  
CROWNED RIDGE, LLC FOR A FACILITIES PERMIT TO  
CONSTRUCT A 300 MEGAWATT WIND FACILITY**

**Docket No. EL19-003**

**REBUTTAL TESTIMONY  
OF MARK THOMPSON**

**May 24, 2019**

**INTRODUCTION**

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

A. Mark Thompson, 700 Universe Blvd., Juno Beach FL 33408.

**Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

A. I am the Manager of Wind Engineering within the Engineering & Construction organization at NextEra Energy Resources, LLC.

**Q. WHAT ARE YOUR RESPONSIBILITIES?**

A. As the Manager of Wind Engineering, one of my primary roles is to coordinate or provide support for the development of new wind sites, such as Crowned Ridge Wind ("CRW").

**Q. ARE YOU THE SAME MARK THOMPSON WHO SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING ON JANUARY 30, 2019 AND SUPPLEMENTAL TESTIMONY ON APRIL 1, 2019?**

A. Yes.

**Q. HAS THIS TESTIMONY BEEN PREPARED BY YOU OR UNDER YOUR DIRECT SUPERVISION?**

A. Yes

**TESTIMONY**

**Q. PLEASE DESCRIBE THE PURPOSE OF YOUR REBUTTAL TESTIMONY.**

A. The purpose of my supplemental testimony is to respond to the Direct Testimony of Staff witness Darren Kearney, the Direct Testimony of Intervenor witness Allen Robish, and Intervenor's proposed conditions as set forth in Staff witness Darren Kearney's Direct Testimony, Exhibit DK-8,

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GE Manual

**Q. STAFF WITNESS KEARNEY’S TESTIMONY AT PAGE 18 REQUESTS THAT CROWNED RIDGE WIND PROVIDE THE GE SAFETY MANUAL. DO YOU AGREE WITH THIS REQUEST?**

A. Yes, I have attached it as Confidential Exhibit MT-R-1, and I provided it in response to Staff Data Request 5-1 on May 22, 2019.

Wind Turbines and Ice

**Q. INTERVENOR WITNESS ROBISH ASSERTS THAT HE VIEWED AN EVENT WHEN A WIND TURBINE THREW ICE ONTO A HIGHWAY. WHAT MEASURES IS CRW IMPLEMENTING TO ADDRESS ICING ON TURBINE BLADES?**

A. The CRW will apply the most current set back recommended by the turbine manufacturer GE. The setback is based on recent studies conducted in February 2017. The result of the study states that larger turbines have a lower probability of longer throwing distance. It was discovered that prevailing wind interacting with a taller turbines would cause ice to lump and fall on the windward side on the turbine. The study resulted in adjustments in setback distances of 1.1\*(tip height) from highways.

Further, as set forth in response to Staff’s Data Request 5-2 (attached as Exhibit MT-R-2), CRW has committed to use an ice detector and ice detection system on all CRW turbines, which will shut down the wind turbine if the ice buildup is at a level that causes the turbine output to be outside expected limits set by GE.

**Intervenors' Proposed Conditions**

**Q. THE INTERVENORS' CONDITION 3 (KEARNEY EXHIBIT DK-8) REQUIRES AN INCREASED SETBACK FROM ALL PUBLIC RIGHT-OF-WAYS TO A DISTANCE GREATER THAN:  $1.5 * (\text{THE DIAMETER OF THE BLADES PLUS THE HEIGHT OF THE TURBINE})$ . THIS IS THE DISTANCE OUTLINED IN THE GENERAL ELECTRIC ("GE") TECHNICAL DOCUMENT NUMBER GER4262, TITLED "ICE SHEDDING AND ICE THROW-RISK AND MITIGATION". DO YOU AGREE WITH THIS CONDITION?**

**A.** No, the guidelines in GER 4262 cited by Intervenors are dated 2006. These guidelines are based on older studies of smaller wind turbines. GE updated their recommendations in "Setback Consideration Generic xxHz\_EN\_r04." See Exhibit MT-R-3. GE's current set back recommendation is based on more recent studies on ice throw from larger utility scale wind turbines and based on these studies GE requires a  $1.1 * (\text{tip height})$  set back. CRW will comply with the most current GE set back.

**Q. THE INTERVENORS' CONDITION 4 (KEARNEY EXHIBIT DK-8) PROPOSES TO "LIMIT CONSTRUCTION, INCLUDING TRAFFIC, TO THE HOURS OF 7 AM - 7 PM SO THAT DISRUPTION TO OUR HOME LIVES IS REASONABLY LIMITED." DO YOU AGREE WITH THIS CONDITION?**

**A.** No. While the majority of the site work will be done between 7:00 a.m. and 7:00 pm, work activities, such as turbine install and concrete work, would continue outside of the above specified time frame. These work activities are remote and are far removed from residential homes. Any disturbance to residents is mitigated after 7:00 p.m. because of the

1 reduction of on-site personnel and the number of vehicles. In addition, deliveries will not  
2 be scheduled outside of the 7:00 a.m. to 7:00 p.m. window.

3  
4 Also, if there are residents that have concerns with the work after 7:00 p.m., CRW will  
5 have an on-site construction manager to whom they can address their concerns, and the  
6 construction manager has the authority to address those concerns. The construction  
7 manager will be identified to the landowners as part of the pre-construction information  
8 the Commission requires CRW to send to landowners.

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10 **Q. THE INTERVENORS' CONDITION 5 (KEARNEY EXHIBIT DK-8) REQUIRES:**  
11 **"NOTIFICATION OF WORK AREAS, HEAVY ROAD USAGE, ROAD**  
12 **CLOSURES/ANTICIPATED CONGESTION, NOISE, DUST/PARTICULATE**  
13 **WARNINGS, FOR RESIDENTS POSTED ONLINE DAILY, ALSO IN LOCAL**  
14 **ELEVATORS SO THAT CITIZENS WHO LIVE AND WORK IN THE AREA**  
15 **CAN BE INFORMED ABOUT THE DISRUPTION TO THEIR LIVES AND**  
16 **TAKE ANY STEPS POSSIBLE TO MITIGATE." DO YOU AGREE WITH THIS**  
17 **CONDITION?**

18 **A.** No. In past wind facility permit cases (such as Crocker Wind, Prevailing Wind, and  
19 Dakota Range I and II), the Commission has required the following: "Applicant will  
20 provide signage that identifies road closures and disturbances resulting from the Project  
21 in accordance with the most recent editions of the Manual on Uniform Traffic Control  
22 Devices as published by the Federal Highway." CRW agrees with this condition. The  
23 Manual on Uniform Traffic Control Devices (MUTCD) as published by the Federal



1 Highway Administration requires that the minimum standards and guidelines that ensure  
2 uniformity of traffic control be adhered to across the nation. The MUTCD is the law  
3 governing all traffic control devices and non-compliance could result in federal action  
4 being taken.

5 In past cases (such as Crocker Wind, Prevailing Wind, and Dakota Range I and II), the  
6 Commission's conditions also required that the following notification:

7 At least 14 days prior to commencement of construction, Applicant shall  
8 provide each participating and non-participating landowner in the Project  
9 Area with the following information:

10 a) A copy of the Final Decision and Order Granting Permit to Construct  
11 Facilities;

12 b) Detailed safety information describing:

13 1) Reasonable safety precautions for existing activities on or near  
14 the Project;

15 2) Known activities or uses that are presently prohibited near the  
16 Project, and

17 3) Other known potential dangers or limitations near the Project;

18 c) Construction/maintenance damage compensation plans and procedures;

19 d) The Commission's address, website, and phone number;

20 e) Contact person for Applicant, including name, e-mail address, and  
21 phone number.

22  
23 CRW will not object to this condition. The Commission condition is more  
24 comprehensive than the notification proposed by landowners and directly targets  
25 participants and non-participants in the project area. Therefore, with CRW agreeing to  
26 these conditions there is no need to adopt the Intervenor's condition.

27 **Q. THE INTERVENORS' CONDITION 11 (KEARNEY EXHIBIT DK-8)**  
28 **REQUIRES: "ALL OIL OR HAZARDOUS MATERIAL SPILLS DURING PRE-**

1       **CONSTRUCTION, CONSTRUCTION, MAINTENANCE, OPERATION AND**  
2       **DECOMMISSIONING SHALL BE REPORTED TO THE PUC WITHIN 20 DAYS**  
3       **IN ADDITION TO ANY REQUIRED REPORTING TO THE DENR.” DO YOU**  
4       **AGREE WITH THIS CONDITION?**

5     A.     CWR will be in full compliance with its Spill, Prevention, Control and Countermeasure  
6            (“SPCC”) plan. The plan provides clear instruction on how internal and external  
7            reporting should proceed. The plan stipulates that all spills should be reported  
8            immediately to the NextEra Fleet Performance & Diagnostic Center and the Power  
9            Delivery Diagnostic Group. After consultation with the NextEra Environmental Group,  
10           all applicable governmental agencies will be notified. If this Commission desires to be  
11           added to the list of applicable governmental agencies, CRW is agreeable to add the  
12           Commission and notified it within 20 days a spill. The contact telephone numbers for the  
13           relevant agencies will be included in the site specific SPCC Plan.

14    **Q.     THE INTERVENORS’ CONDITION 12 (KEARNEY EXHIBIT DK-8) PROPOSES**  
15           **TO “REQUIRE A CONTAINMENT BASIN WITH A PERIMETER AT LEAST 2**  
16           **FEET AWAY FROM THE BASE OF THE TURBINE. THE BASIN SHALL BE**  
17           **NO LESS THAN 3 FEET IN DEPTH, WITH A ¼” OR LESS METAL MESH**  
18           **COVER.” DO YOU AGREE WITH THIS CONDITION?**

19    A.     No, I do not. A catastrophic failure of a turbine gearbox, which contains the majority of  
20            the oil, is an infrequent and rear occurrence. If a gearbox does fail, large spills would be  
21            contained inside the tower. Drips and leaks would be contained in the “oil catchment  
22            basin” located in the nacelle. In the event of a spill that reaches the ground, the SPCC

cleanup procedures is activated. Therefore, the Intervenor's proposed condition 11 is not needed and is not appropriate.

**Q. THE INTERVENORS' CONDITION 13 (KEARNEY EXHIBIT DK-8) REQUIRES:**

**ALL INCIDENTS OF BLADE THROW, SHED, DEFRAGMENTATION, DELAMINATION SHALL BE REPORTED TO THE PUC WITHIN 20 DAYS OF THE INCIDENT.**

- **REPORT TO PUC HOW EACH OF THE ABOVE ISSUES WILL BE RECTIFIED/MITIGATED AND THE ANTICIPATED TIME FRAME.**
- **SUBMIT A FOLLOW UP REPORT TO THE PUC OUTLINING HOW THE ABOVE ISSUES WERE ACTUALLY RECTIFIED/MITIGATED AND IF THE ANTICIPATED TIME FRAME WAS MET."**

**DO YOU AGREE WITH THIS CONDITION?**

A. In part, yes. We agree to report incidents of blade throw, blade defragmentation, blade shed and blade delamination to the Commission within 20 days of its occurrence, with the understanding that some of the report may contain confidential information and may not be disclosed to the public. We would object to the Intervenor's first and second bulleted requirements as part of the reporting condition. However, after our initial report is filed, if further information was requested by the Commission Staff or the Commission we would submit it to the Staff and the Commission.

**Q. THE INTERVENORS' CONDITION 14 (KEARNEY EXHIBIT DK-8) REQUIRES: "ALL INCIDENTS OF BODILY INJURY OCCURRING TO ANYONE RELATED TO THE PROJECT, THROUGH THE CONSTRUCTION, OPERATION AND DECOMMISSIONING OF THE PROJECT, INCLUDING VEHICULAR ACCIDENTS SHALL BE REPORTED TO THE PUC WITHIN 20**



1        **DAYS OF THE INCIDENT. THIS REPORT SHALL BE AVAILABLE TO THE**  
2        **PUBLIC.” DO YOU AGREE WITH THIS CONDITION?**

3        A.    No. The condition is not needed because CRW will adhere to the Occupational Safety  
4        and Health Administration’s (“OSHA”) official recording and reporting guidelines.  
5        Significant events involving bodily injury are reported to OSHA through telephone or  
6        electronic submission. Information related to these reports will become available on  
7        OSHA’s public web site at *www.osha.gov*.

8        **Q.    THE INTERVENORS’ CONDITION 15 (KEARNEY EXHIBIT DK-8)**  
9        **REQUIRES: “ALL FIRES RELATED TO THE PROJECT SHALL BE**  
10       **REPORTED TO THE PUC WITHIN 20 DAYS OF THE INCIDENT. THIS**  
11       **REPORT SHALL BE AVAILABLE TO THE PUBLIC.”**  
12       **DO YOU AGREE WITH THIS CONDITION?**

13       A.    Yes, in part. CRW agrees to report all fires to the Commission within 20 days.  
14       However, it does not agree that the report will be available to the public, as the report  
15       may include confidential information. Therefore, CRW is not willing to agree that all  
16       reports related to fires will be available to the public. Therefore, CRW proposes that the  
17       last sentence be deleted.

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19       **Q.    THE INTERVENORS’ CONDITION 22 (KEARNEY EXHIBIT DK-8)**  
20       **REQUIRES: “THE APPLICANT FOR THE LIFE OF THE PROJECT, CRADLE**  
21       **TO GRAVE, SHALL KEEP MAINTENANCE LOGS OF EVERY REPAIR OR**  
22       **REPLACEMENT. THE REPORT SHALL INCLUDE BUT NOT LIMITED TO**  
23       **THE PLACE OF REPAIR, MAINTENANCE OR REPLACEMENT, THE DATE**

1       **AND TIME, THE PART NUMBER, THE SERIAL NUMBER, IDENTIFY IF THE**  
2       **PART IS OEM AND WARRANTY INFORMATION. THIS REPORT SHALL BE**  
3       **COMPILED QUARTERLY AND SUBMITTED TO THE PUC AND AVAILABLE**  
4       **FOR PUBLIC REVIEW.” DO YOU AGREE WITH THIS CONDITION?**

5    A.    No. First, there is no need or justification provided for the information implicated by the  
6       condition to be provided to the Commission and the public. Second, the information  
7       requested in this condition would be highly confidential information that is made public  
8       would provide our competitors an advantage. For example, maintenance logs contain  
9       confidential information reflecting cost of parts and labor associated with the turbine  
10      maintenance. Also, our proprietary maintenance process and procedures, which are  
11      unique to CRW, would be of considerable value to competitors if publically disclosed. In  
12      addition, there is confidential and sensitive turbine warranty information that GE requires  
13      that we as confidential. For all of these reasons, this condition should not be adopted.

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15   Q.    **THE INTERVENORS’ CONDITION 35 (KEARNEY EXHIBIT DK-8)**  
16       **REQUIRES: “THE APPLICANT, FOR THE LIFE OF THE PROJECT, SHALL**  
17       **QUARTERLY MONITOR AND REPORT ALL STRAY VOLTAGE INCLUDING**  
18       **BUT NOT LIMITED TO STRAY VOLTAGE DISPERSED INTO THE GROUND.**  
19       **THIS REPORT SHALL BE PUBLISHED WITHIN 30 DAYS PUBLIC OPINION**  
20       **NEWSPAPER IN WATERTOWN, SD, SOUTH SHORE GAZETTE IN SOUTH**  
21       **SHORE, SD AND THE GRANT COUNTY REVIEW IN MILBANK, SD. DO YOU**  
22       **AGREE WITH THIS CONDITION?**

1 A. No, the collection and substation electrical systems are designed in accordance with IEEE  
2 and National Electrical Safety Code recommended standards, which ensures that the  
3 voltages are balanced during normal operations. Therefore, there will be no stray  
4 voltages and of such monitoring, will not be needed.

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6 **Q. THE INTERVENORS' CONDITION 2 (KEARNEY EXHIBIT DK-8) REQUIRES**  
7 **THAT THERE SHOULD BE NO TURBINES WITHIN 2 MILES OF WAVERLY**  
8 **SCHOOL TO LESSON THE EXPOSURE OF THE SCHOOL TO THE PROJECT.**  
9 **WHAT, IF ANY, CONSTRUCTION, OPERATION AND MAINTENANCE**  
10 **EXPOSURE IS THERE TO THE SCHOOL BASED ON CRW'S PROPOSED**  
11 **PLACEMENT OF TURBINES?**

12 A. The Waverly School will not have any exposure to activities associated with the  
13 placement of turbine. The wind turbines are a minimum of 1.25 miles away from the  
14 school, with haul and access roads being an additional 1.0 mile away. Construction,  
15 operations, and delivery traffic activities will be far enough away to appropriately  
16 minimize the exposure of Waverly School to the CRW project.

17 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

18 A. Yes.