

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

**IN THE MATTER OF THE APPLICATION OF
CROWNED RIDGE II, LLC FOR A FACILITIES PERMIT TO
CONSTRUCTION 300.6 MEGAWATT WIND FACILITY**

Docket No. EL19-027

**SUPPLEMENT TESTIMONY AND EXHIBITS
OF JAY HALEY**

September 20, 2019

INTRODUCTION

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Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Jay Haley. My business address is 3100 DeMers Ave., Grand Forks, ND, 58201.

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

A. I am a Partner in EAPC Wind Energy and work as a Wind Engineer.

Q. WHAT ARE YOUR RESPONSIBILITIES?

A. My responsibility was to conduct the sound and shadow/flicker studies for Crowned Ridge Wind, LLC (“CRW”).

Q. ARE YOU THE SAME JAY HALEY WHO SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING ON JULY 9, 2019?

A. Yes.

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

A. Yes.

PURPOSE OF TESTIMONY

Q. PLEASE DESCRIBE THE PURPOSE OF YOUR SUPPLEMENTAL TESTIMONY.

A. The purpose of my supplemental testimony is to provide: (1) an updated sound and shadow flicker report based on the inclusion of five additional turbine locations and the

1 use of Low Noise Trailing Edge (“LNTE”) blades on all wind turbines; (2) the sound and
2 shadow/flicker results if 100 megawatts (“MW”) of the Crowned Ridge Wind II, LLC
3 (“CRW II”) Project is deferred and constructed at a later date; and (3) the impacts of
4 sound and shadow/flicker on Intervenors.

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6 **SOUND AND SHADOW FLICKER**

7 **Q. ARE THERE ANY UPDATES TO THE SOUND AND SHADOW FLICKER**
8 **REPORTS YOU SUBMITTED WITH YOUR JULY 9, 2019 DIRECT**
9 **TESTIMONY?**

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11 **A.** Yes. It is my understanding that CRW II will: (1) now use LNTE blades on all of the
12 turbines, instead only the 34 turbines indicated in the application; (2) add five of the eight
13 alternative locations that were identified as under consideration in the application at page
14 20; (3) move CRII-133 fifty feet to ensure compliance with sound on CRW I; and (4) add
15 back in CRII-126, due to the landowner signing an easement option for that turbine. The
16 results of the sound using these assumptions for the entire 300 MW array are set forth in
17 Exhibit JH-S-1, and the results for shadow flicker for the entire 300 MW array are set
18 forth in Exhibit JH-S-2.

19 With respect to shadow flicker for the entire 300 MW, there is one exceedance of
20 the 30-hour annual limit. The exceedance is for receptor CR2-C98-NP which would
21 experience 32 hours and 22 minutes per year. In this case, it is my understanding from
22 discussions with witnesses Wilhelm and Hart that turbine no. CRII-77 will be curtailed to
23 limit the flicker impacts to less than 30 hours per year.

1 In addition, I have run cumulative impacts of the 300 MW array on Crowned Ridge Wind
2 I, and that shows that if turbine no. CRII-Alt3, is constructed, would need to be curtailed
3 a total of 8.32 hours annually because of its impact on CR1-C10-P. Again, based on my
4 discussions with witness Wilhelm and Hart turbine no. CRII-Alt3 will be curtailed to
5 limit the flicker impacts to less than 30 hours per year at CR1-C10-P.

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8 **Q. THE SUPPLEMENTAL TESTIMONY OF DARYL HART EXPLAINS THAT 100**
9 **MWS OF CRW II MAY BE DEFERRED. IF THE 100 MWS IS DEFERRED,**
10 **PLEASE EXPLAIN HOW THE DEFERRAL IMPACTS THE SOUND RESULTS.**

11 A. If 100 MWs are deferred as shown in witness Hart's testimony and exhibits, during the
12 period of time in which there are only 200 MWs operational the results of the sound
13 study show that all receptors will be in compliance with the noise limits for all three
14 counties. In addition, the non-participating occupied structures in Codington and Deuel
15 Counties are all at or under 45 dBA, and all participating occupied structures are under 50
16 dBA at a distance of 25 feet from the perimeter of the structure, which meets the
17 requirements of Grant County. The sound results for a 200 MW array are provided as
18 Exhibit JH-S-3.

19
20 **Q. IF THE 100 MWS IS DEFERRED, PLEASE EXPLAIN HOW THE DEFERRAL**
21 **IMPACTS THE SHADOW AND FLICKER RESULTS.**

22 A. If 100 MWs are deferred as shown in witness Hart's testimony and exhibits, during the
23 period of time in which there are only 200 MWs operational the results of the shadow
24 flicker study show the exceedance for receptor CR2-C98-NP discussed above remains,

1 and as I also mentioned it is my understanding that Crowned Ridge Wind will curtail
2 turbine no. CR11-77 will be curtailed to limit the flicker impacts to less than 30 hours per
3 year. The shadow flicker results for a 200 MW array are provided as Exhibit JH-S-4.
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7 **IMPACT OF INTERVENORS**

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9 **Q. UNDER THE CONSTRUCTION OF ALL 300.6 MWS, WHAT ARE THE SOUND
10 AND SHADOW FLICKER IMPACT ON INTERVENORS AT THEIR
11 RESIDENCES?**

12 A. The following table provides the sound and shadow flicker results on Intervenor if all
13 300.6 MWs are constructed and operating.

	Intervenor for Crowned Ridge Wind II					Dist. To
						Nearest
		UTM NAD83 Z14		Noise	Shadow	Turbine
Receptor #	Name	Easting	Northing	(dBA)	(hr/yr)	(feet)
CR1-C29-NP	CHRISTENSON AMBER KAYE	666571.9	4988867.1	41.1	6:54	2,457
CR1-G70-NP	ROBISH ALLEN E & SHIRLEY	677464.5	4991043.1	30.1	0:00	12,651
CR1-G600-NP	MOGEN PETER & KRISTI	674300.7	5005772.8	28.8	0:00	13,186
CR2-D220-NP	EHLEBRACHT GARRY & CRYAN JODY	670260.3	4967728.0	42.1	3:14	2,211
CR2-D221-NP	GREBER STEVEN W & GREBER MARY C	670351.1	4973543.3	42.8	13:33	2,041
CR2-D222-NP	RALL RICHARD & RALL AMY	672080.5	4973212.3	40.5	13:27	2,264
CR2-D223-NP	KRANZ BRIAN & KRANZ LARETTA TRUST	670227.3	4967454.6	41.2	3:04	2,749

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15 **Q. UNDER THE CONSTRUCTION OF 200 MWs, WITH THE DEFERRAL OF
16 100MWS, WHAT ARE THE SOUND AND SHADOW FLICKER IMPACT ON**

1 **THE INTERVENORS AT THEIR RESIDENCES DURING THE PERIOD OF**
 2 **TIME IN WHICH THERE ARE ONLY 200 MWS OPERATIONAL?**

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 4 A. The following table provides the sound and shadow flicker results on Intervenor if only
 5 200 MWs are operational. I used the 200 MW array in witness Hart’s testimony to
 6 calculate these results.

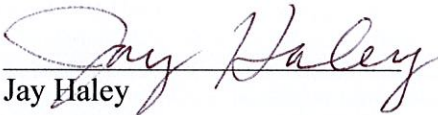
	Intervenor for Crowned Ridge Wind II					Dist. To
						Nearest
		UTM NAD83 Z14		Noise	Shadow	Turbine
Receptor #	Name	Easting	Northing	(dBA)	(hr/yr)	(feet)
CR1-C29-NP	CHRISTENSON AMBER KAYE	666571.9	4988867.1	41.0	6:54	2,457
CR1-G70-NP	ROBISH ALLEN E & SHIRLEY	677464.5	4991043.1	29.9	0:00	12,651
CR1-G600-NP	MOGEN PETER & KRISTI	674300.7	5005772.8	28.8	0:00	13,186
CR2-D220-NP	EHLEBRACHT GARRY & CRYAN JODY	670260.3	4967728.0	36.5	0:00	4,042
CR2-D221-NP	GREBER STEVEN W & GREBER MARY C	670351.1	4973543.3	42.5	11:51	2,041
CR2-D222-NP	RALL RICHARD & RALL AMY	672080.5	4973212.3	36.7	4:38	3,779
CR2-D223-NP	KRANZ BRIAN & KRANZ LARETTA TRUST	670227.3	4967454.6	35.3	0:00	4,934

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 9 **Q. DOES THIS CONCLUDE YOUR SUPPLEMENTAL TESTIMONY?**

10 A. Yes, it does.

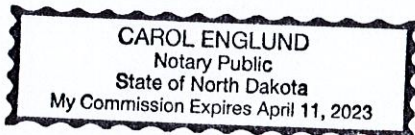
STATE OF NORTH DAKOTA)
) ss
COUNTY OF GRAND FORKS)

I, Jay Haley, being duly sworn on oath, depose and state that I am the witness identified in the foregoing prepared testimony and I am familiar with its contents, and that the facts set forth are true to the best of my knowledge, information and belief.


Jay Haley

Subscribed and sworn to before me this 19th day of
September, 2019.

SEAL




Notary Public

My Commission Expires April 11, 2023