Exhibit 4

Supplemental Information on Sound

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Exhibit 4 - Supplemental Information on Sound
(PSC Dkt# 25)

Homestead Wind, LLC

EXHIBIT 4

Paxwood Acoustics

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To: Brie Anderson, Apex Clean Energy

From: Eddie Duncan, INCE Bd. Cert.

Date: September 10, 2026

Subject: Homestead Wind – Supplemental Information on Sound Requested by PSC Staff

Paxwood Acoustics issued a Sound Level Modeling Report for Homestead Wind on February 13, 2026 ("Sound Report"), which has been filed with the North Dakota Public Service Commission ("PSC") as part of the application for Homestead Wind (PU-26-86). This memorandum provides additional information in response to a request by PSC staff. The two requests are:

- Model results using a ground factor of G=0.
- Model results at receptors out to two decimal places.

A table of model results is provided at the end of this memorandum. In the two sections below, additional context about ground factor and decimal places is also provided.

Ground Factor Settings in Sound Propagation Modeling

The model presented in the Sound Report follows the ANSI/ACP wind turbine sound modeling standard[1]. That standard identifies two sets of modeling parameters that produce nearly identical model results:

- Option 1: Ground factor of G=0 with a receptor height of 1.5 meters and no adjustments to the turbine sound power level.
- Option 2: Ground factor of G=0.5 with a receptor height of 4 meters and a +2 dB adjustment factor to the turbine sound power level.

The Sound Report utilized Option 2, and PSC staff have requested Option 1 using G=0. One of the primary reasons Option 2 was used in the Sound Report is that a ground factor

[1] ANSI/ACP Standard 111-1, *Wind Turbine Sound Modeling*, American National Standards Institute, 2022.

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of G=0 is not an appropriate ground factor for predicting sound levels from substations in a rural area based on ISO 9613-2[2], the internsational standard on which the modeling is based. For a ground-based source, such as substations (wind turbines would be considered an elevated source), selection of an appropriate ground factor according to the international modeling standard is important to obtain accurate model results. ISO 9613-2 describes a ground factor of G=1 as porous ground, "suitable for the growth of vegetation, such as farm land." A ground factor of G=0.5 is descibed as mixed ground that "consists of both hard and porous ground." For a ground-based source in a rural area that is primarily porous ground:

- G=1 will yield accurate model results,
- G=0.5 will yield accurate, but conservatively higher model results,
- G=0 will yield unrealistically high model results.

This is can be seen in Table 1 at the end of this memorandum. Table 1 compares the model results from the Sound Report (G=0.5 & +2 dB wind turbine factor) with the model results requested by PSC staff (G=0 & no additional factor). As shown in Table 1, the model results are nearly identical within a couple of tenths of a decibel, for all receptors where the primary sources of Project-related sound are the wind turbines. But there are also a few receptors where the results using G=0 are 1 to 2 dB higher. Those receptors are all near the substation where using G=0 would result in an overprediction of sound levels from the transformers. It is for this reason that using Option 2 (G=0.5) from the ANSI/ACP wind turbine sound modeling standard is most appropriate for modeling sound levels from a wind project with a substation in a rural area.

In accordance with the request received from PSC staff, Table 1 includes a column that provides sound modeling results utilizing a Ground Factor of 0.

Decimal Places

The model results presented in Table 1 are provided to a single decimal place[3]. The output from CadnaA does not go out to two decimal places. As shown in Table 1, even when considering the model results to tenths of a decibel, all receptors are 45 dBA or less using both modeling methodologies.

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[2] ISO 9613-2:2024, *Acoustics – Attenuation of sound during propagation outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoors.*

[3] Model results to values beyond integers is not supported by standard practice in the field of environmental acoustics for several reasons, one of which includes false precision beyond what sound level meter tolerances or modeling uncertainties support. As ANSI/ACP Standard 111-1[1] states, the two sets of appropriate modeling parameters for wind turbines (Option 1 and Option 2) "yield nearly identical results that differ by tenths of a decibel, a difference which is neither reliably measured or discernible."

In accordance with the request received from PSC Staff, Table 1 includes results to decimal places to the extent available from the sound propagation model.

Conclusion

Given the information presented in this memorandum, the conclusion of the Sound Report still holds: Homestead Wind is expected to produce sound levels that meet the sound level requirements of ND Administrative Code 69-06-08.

Table 1: Model Results (dBA)[4]

Receptor	GE 154			V163			Participation Status
	Option 2 (G=0.5, +2 dB)	Option 1 (G=0)	Difference (Option 2-Option 1)	Option 2 (G=0.5, +2 dB)	Option 1 (G=0)	Difference (Option 2-Option 1)	
RE00001	**38.3**	**38.2**	**0.1**	**35.2**	**35.2**	**0.0**	**nonparticipant**
RE00002	40.0	39.9	0.1	36.8	36.8	0.0	nonparticipant
RE00003	**38.3**	**38.3**	**0.0**	**34.9**	**35.1**	**-0.2**	**nonparticipant**
RE00004	40.1	40.3	-0.2	37.2	37.8	-0.6	nonparticipant
RE00005	**37.6**	**37.7**	**-0.1**	**34.0**	**34.3**	**-0.3**	**nonparticipant**
RE00006	43.5	43.5	0.0	40.6	40.8	-0.2	participant
RE00007	**44.1**	**43.9**	**0.2**	**41.0**	**41.0**	**0.0**	**nonparticipant**
RE00008	38.4	38.4	0.0	34.9	35.1	-0.2	nonparticipant
RE00009	**40.7**	**42.9**	**-2.2**	**39.7**	**42.4**	**-2.7**	**nonparticipant**
RE00010	43.3	43.2	0.1	40.2	40.2	0.0	participant
RE00011	**43.1**	**42.9**	**0.2**	**40.2**	**40.1**	**0.1**	**nonparticipant**
RE00012	43.1	43.0	0.1	40.2	40.1	0.1	nonparticipant
RE00013	**44.5**	**44.3**	**0.2**	**41.4**	**41.4**	**0.0**	**participant**
RE00014	36.1	37.2	-1.1	33.6	35.6	-2.0	nonparticipant
RE00015	**35.8**	**36.8**	**-1.0**	**33.1**	**34.9**	**-1.8**	**nonparticipant**
RE00016	37.6	38.2	-0.6	34.7	35.9	-1.2	nonparticipant
RE00017	**44.8**	**44.7**	**0.1**	**41.8**	**41.7**	**0.1**	**participant**
RE00018	39.8	39.9	-0.1	36.6	37.0	-0.4	participant
RE00019	**43.1**	**43.0**	**0.1**	**40.0**	**40.0**	**0.0**	**nonparticipant**
RE00020	44.4	44.2	0.2	41.3	41.3	0.0	participant
RE00021	**44.2**	**44.0**	**0.2**	**41.3**	**41.2**	**0.1**	**participant**
RE00022	44.5	44.3	0.2	41.4	41.4	0.0	participant
RE00023	**44.1**	**44.0**	**0.1**	**41.1**	**41.0**	**0.1**	**nonparticipant**
RE00024	44.8	44.6	0.2	41.8	41.7	0.1	participant
RE00025	**44.6**	**44.4**	**0.2**	**41.6**	**41.5**	**0.1**	**nonparticipant**
RE00026	35.7	35.8	-0.1	32.0	32.3	-0.3	nonparticipant
RE00027	**38.7**	**38.7**	**0.0**	**35.2**	**35.4**	**-0.2**	**nonparticipant**
RE00028	43.8	43.6	0.2	40.9	40.7	0.2	participant
RE00029	**38.0**	**38.0**	**0.0**	**34.6**	**34.7**	**-0.1**	**nonparticipant**

[4] The larger differences in model results for RE00004, RE00009, RE00014, RE00015, RE00016, and RE00018 are due to their proximity to the Project substation and the issues identified in this memorandum with modeling substations using a ground factor of G=0.