☐ **Not Public Document – Not For Public Disclosure**
☐ **Public Document – Not Public Data Has Been Excised**
☒ **Public Document**

Xcel Energy		Data Request No.	2-1
Case No.:	PU-17-284		
Response To:	North Dakota Public Service Commission		
Requestor:	Victor Schock		
Date Received:	May 10, 2022		

Question:
Please provide separate answers for each of the facilities.

I understand this data has been provided for some of the wind facilities in prior years, however we would like to receive more recent data for those systems now that they have been in operation for an additional 1-2 years.

This is a list of the facilities I would expect responses for:

Case No	Name
PU-17-284	Foxtail Wind

1. Who is the manufacturer of your ADLS system?
2. What systems are in place to collect operational data for the ADLS system?
3. Can the system determine if an aircraft caused the mitigation of the ADLS system or if it was caused by something else?
4. Provide in percentages what is triggering the ADLS system.
5. What percentage of the lights are required to be in continuous operation?
6. What are the reasons for the continuous operation?
7. How often are the lights mitigated by the ADLS system?
8. What percentage of time are the lights mitigated by the ADLS system?
9. What are the impediments to more frequent light mitigation?
10. What other data can you provide based upon your company's experience with ADLS?

Response:

1. Terma.

157 PU-17-284 Filed 05/25/2022 Pages: 3
Data Request NDPSC-2-001
Foxtail Wind, LLC

2. Foxtail Wind employs a proprietary data logger from Terma that is used to generate daily, weekly, and monthly reports based on the operational data of the equipment.

3. Terma's software uses sophisticated algorithms to analyze the size, shape, speed, and altitude of each aerial object to make a determination as to whether the tracked object is an aircraft. Because the process is not 100 percent fail safe, the system is designed to default to "lights on" mode if there is an inability to positively identify a target or uncertainty about the nature of the aerial object.

4. Xcel Energy currently receives daily, weekly, and monthly data reports from Terma that provide information regarding the performance of the system and a breakdown of the reasons for activation of the ADLS system. In April 2022, the breakdown was: Track-Loss Event (where the aerial object was last identified inside the radar zone) – 66 percent; Aircraft ("Normal Event") – 30 percent; weather – 0 percent; Fail-Safe Event – 4 percent.

5. There are no turbine lights at Foxtail that are required to be illuminated at all times. If an individual light, or a few lights, are activated while the rest of the lights are off it is likely related to a hardware, software, or communication network issue at the specific tower(s).

6. See answer to #5. Any issues with the ADLS radar tower such as the loss of both primary and back-up power or a radar component failure will put all lights in the default "lights on" state and they will stay on through the night.

7. Below are the approximate average percentages of time that the lights are off each evening in 2022. The date was derived from the weekly and monthly reports from Terma.

   January: 94 percent
   February: 97 percent
   March: 79 percent
   April: 98 percent
   May (to date): 98 percent

   In March the ADLS was impacted by the activity of migratory flocks coming through the area.

8. See the response to #7.

9. Bird migration can play a role in "fail-safe" activations of the system based on their flight patterns, speed, and flock size and shape, as these large migratory flocks can mimic low-speed aircraft. Fail-safe activations occur when the ADLS is unable to determine with certainty whether the aerial target is an aircraft or not, so the system defaults to the "lights on" mode. Issues with hardware, software, and network communication equipment can also cause individual light activations at towers. Should the ADLS radar experience power loss or an equipment issue then it will cause all lights in the wind facility to activate until the issue is resolved. This mode, which causes the lights to behave as they would if they weren't connected to an ADLS system, is compliant with FAA regulations.

   Improved target identification is one of the expected outcomes of the software upgrades being installed at the Foxtail Wind this June. The system at Foxtail also uses artificial intelligence to continuously learn over time, which also works to continually reduce fail-safe events.

10. None at this time.

Preparer:	Christopher Chafy
Title:	Manager Operations
Department:	Renewable Operations
Telephone:	612-215-4620
Date:	May 24, 2022