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May 19, 2022

Steven M. Kahl, Executive Director
North Dakota Public Service Commission
State Capitol Building, Dept. 408
600 East Boulevard
Bismarck, ND 58505-0480

Re: FOXTAIL WIND ENERGY CENTER – ADLS SOFTWARE UPGRADE
CASE NO. PU-17-284

Dear Mr. Kahl:

Northern States Power Company, doing business as Xcel Energy, wishes to inform the North Dakota Public Service Commission that the Aircraft Detection Lighting System (ADLS) at its Foxtail Wind Energy Center will be undergoing software upgrades in June. During the upgrade, which is expected to last two to three weeks, the tower lights will remain on during nighttime hours.

Commissioning engineers will start the project on or about June 21st with a goal to have the system fully back in operation by July 4th but no later than July 8th, assuming no unforeseen issues arise. Our ADLS vendor at the Foxtail facility, Terma, has already implemented the same software upgrades at other installations in the United States.

We will be sending letters to area landowners notifying them about the project and the timeline; the public will be notified through a media release to area newspapers during the first week of June.

Overview

Terma will be installing its newest versions of software that control the radar transceiver and the light control server. Both software systems are integral to the overall performance of the ADLS. The radar software controls the radar which in turn sends signals to the light control server when aerial “targets” are approaching or inside the ADLS detection zone. The light control server in turn sends “on/off” signals to the light control modules installed on each of Foxtail’s 75 turbines.

Generally speaking, the radar software upgrade will improve the radar’s ability to detect aircraft and reject false targets. The light control server software upgrade will enable the *Human-Machine Interface* (HMI) to operate with an improved SCADA web interface.¹ These

¹ The HMI is an interface program, or “dashboard” that enables the user to access the ADLS “Supervisory Control and Data Acquisition (SCADA) system. SCADA is comprised of software and hardware elements that monitor, gather, and process real-time data between the ADLS and Light Control Modules.

changes will result in improved ADLS statistical reporting.

While technicians are “up mast” on the radar tower to install the new software, they will also be conducting annual preventative maintenance of the system. This includes inspection of the system as a whole and any needed corrective maintenance.

Upgrade Process

Once the new software is installed on the tower, both the radar and light control server will return to their default states (i.e., turbine lights will illuminate under all low light/dark conditions, as if they were not controlled by an ADLS system). Terma technicians will continue to stay in the area to begin conducting the “set-up phase” of the upgrade process.² During the set-up phase, technicians will calibrate the software to align with the Foxtail Wind Energy Center’s unique turbine positions and detection zones as mandated by the Federal Aviation Administration (FAA).

After the set-up is complete, an efficiency test and site acceptance test will be conducted to ensure that the ADLS is operating properly. The timing required for this final step varies for each site due to the unique characteristics of the installation and site, the availability of fixed targets of opportunity (used as system integrity reference targets), and the availability of aircraft targets of opportunity which are used to verify the detection of aircraft.

While this upgrade to the system is not required (the Foxtail ADLS is 100 percent operational and compliant with FAA requirements for ADLS solutions) it is consistent with Xcel Energy’s and Terma’s objective to continuously improve the overall operation of this relatively new light mitigating technology. Since the ADLS was initially commissioned at Foxtail in April 2020, Terma has made various improvements in system functionality and performance reporting. And, after the upgrade, the system will generate two levels of statistical reporting; an “Executive Summary” and a more detailed report.

Please contact me if you have any questions or comments about this upgrade. Thank you.

Sincerely,



DAVID H. SEDERQUIST
SR. CONSULTANT, REGULATION/FINANCE

cc: Vic Schock

² While this computer work can be done at any location, technicians will likely do the work from their hotel rooms in the area with the option to come to the Foxtail site if needed. This approach will minimize distractions and enable the technicians to focus on getting the operations as soon as possible.