

# Memorandum

To: Commissioners Fedorchak, Christmann, and Haugen-Hoffart

From: Adam Renfandt

Date: May 19, 2022

Subject: Basin Electric Power Cooperative, Minot Wind & PrairieWinds ND1, Decommissioning Plan & Cost (Case No. PU-10-078)

On March 3, 2022, the Commission received notice from Basin Electric Power Cooperative (Basin) that they were planning to decommission two wind facilities for the Minot Wind project. Basin indicated that they were having difficulty sourcing parts to repair and maintain the turbines, each of which are 1.3 MW Nordex turbines.

On March 18, 2022, Commission Staff visited the two facilities subject to decommissioning. Each site was decommissioned using a “felling” approach, whereby the base of the hub is partially cut (pictures 1 and 2), and the turbine is pulled to the ground with a machine initially designed to raise blades to the nacelle (picture 3). Such felling process eliminates the need for cranes to lower the turbine to the ground.

Basin’s contractor felled one site with the structure hitting the ground blades down (Site 1) and the second site with the structure hitting the ground blades up (Site 2).

Site 1 (picture 4) had completed decommissioning the entire turbine with only the foundation and underground cables remaining. The site was disturbed by heavy equipment traversing the area and disturbing the soil (picture 5). This was because in the middle of decommissioning, the area experienced its first warm days of the season, and according to the contractor, the frost came down approximately four inches. The mud made it difficult to determine the amount of fiberglass which remained to be cleaned up. A few locations had pieces of fiberglass that remained lodged in the mud (picture 6). Overall, the site appeared relatively clean from fiberglass debris based on visual inspection (pictures 7 and 8).

The only visual sign of soil impactation was an area approximately 8 feet in diameter (pictures 9 and 10) where the housing of the turbine made impact. Although the depth of the area was difficult to determine because of the water, Staff subsequently had discussions with the contractor who estimated the impact depth to be 3 feet.

Site 2 (picture 11) was in the process of decommissioning, and some components remained to be cleaned up. The site was on a bluff, and the contractor felled the turbine with the blades up, because they were unable to yaw it such that the turbine would fall blades down. This site did not have the muddy conditions present at Site 1, and

although the contractor was in the cleanup process, the site was relatively free of small fiberglass pieces based on where they were in the cleanup process. The blades did not appear to fracture into several shards, likely the result of the resin cementing the fiberglass together throughout the blade (pictures 12-14).

Site 2 had one visual sign of soil impaction (picture 15). Although it's not clear from the picture, the generator for this unit was still in the ground, and the contractor subsequently estimated the impact depth to be six feet.

The contractor also indicated to Staff that the preferred method of felling is to fell the turbine blades down. The reason offered was that when the turbine falls blades up, the landing is unstable upon impact. Once the generator impacts the ground, only one or two blades make impact, and this causes the generator to break off and swing the remaining portion of components farther away from the impact area where the nacelle strikes the surface. For instance, picture 13 depicts a portion of the remaining blade structure attached to the rotor and driveshaft that is a good distance away from the area where the nacelle made impact.

Overall, the soil impaction seemed limited to the areas described, and the fiberglass blades appeared not to pulverize into dust or debris in such a way that would render cleanup infeasible. Both sites required additional cleanup and reclamation at the time of Staff's visit.

Picture 1:



Picture 2:



Picture 3:



Picture 4:



Picture 5:



Picture 6:



Picture 7:



Picture 8:



Picture 9:



Picture 10:



Picture 11:



Picture 12:



Picture 13:



Picture 14:



Picture 15:



Picture 16:

