

Exhibit A

Environmental and Regulatory Compliance Memorandum Langdon Wind Energy Center Upgrade Project Case No. PU-23-_____

Introduction

Otter Tail Power Company (Otter Tail) has retained Atwell, LLC (Atwell) to prepare this memorandum to support Otter Tail's certification of compliance with N.D.C.C. § 49-22-03(a) in connection with equipment upgrading activities for its 40.5-megawatt (MW) Langdon Wind Energy Center (Upgrade Project or Project). Otter Tail, with assistance from Atwell, analyzed the Upgrade Project with respect to environmental, cultural, and natural resources, as well as sound and shadow flicker. The following sections and referenced figures and appendices summarize the results of the analysis.

Description of the Upgrade Project

The Upgrade Project involves replacing the current General Electric (GE) 1.5 MW turbine technology with updated technology. More specifically, the Project will consist of removing and replacing the existing GE 77-meter (252.6 feet) rotor diameter (RD) blades, hub, and gearbox with a new equipment upgrade package of GE 97-meter (318.2 feet) RD blades, hub, and gearbox. In addition, the generator technology will be upgraded to accommodate the new equipment. All 27 existing 80 meter (262.5 feet) structural steel towers will be used as well as existing nacelles and, as a result, turbine locations will not change. Otter Tail plans to use the existing turbine foundations (with reinforcement, if needed), collection/communications systems, and permanent access roads. Other associated facilities will remain unchanged.

Once removed, the existing 77-meter RD blades will be cut on-site to fit into legal load transportation-size pieces. Loads will be secured and/or covered or other steps will be taken to ensure materials do not escape during transport. Otter Tail's contractor will transport the loads to an out-of-state facility that will grind the blade materials for repurposing, and no blades will be deposited in a landfill.

During installation of the equipment upgrade technology, existing access roads will be temporarily widened to accommodate delivery of components and equipment. Temporary crane paths may also be needed to facilitate equipment removal and installation. A temporary laydown yard located adjacent to the existing substation, south of the Project, will also be used during installation. Otter Tail currently plans to upgrade roads in the summer of 2023 and install the equipment upgrade technology in the summer of 2024.

Figure 1 depicts the Project Area and layout. Figure 2 depicts the proposed turbine technology.

Compliance with Exclusion and Avoidance Areas

Exclusion Areas

Per N.D.A.C. §§ 69-06-08-01(1) and (2), the geographical areas listed in Table 1 shall be excluded in the consideration of a site for an energy conversion facility. Based on the Commission’s approach in prior equipment upgrade dockets, Otter Tail confirmed the Project’s compliance with the Commission’s current exclusion area criteria. With the exception of three turbines that are within the non-participating property line exclusion area, the Project complies with all exclusion areas. Otter Tail identified the owners of the properties at issue and is pursuing waivers. Otter Tail requests that the Commission grant a variance conditioned upon submission of the waivers. If any landowner is not willing to grant a waiver, Otter Tail will not upgrade equipment at the affected turbine. Exclusion areas are mapped for the Project Area on Figure 3.

Table 1: Summary of Exclusion Areas		
General Exclusion Area	Present Within Upgrade Project Area?	Description
Designated or registered national: parks; memorial parks; historic sites and landmarks; natural landmarks; historic districts; monuments; wilderness areas; wildlife areas; wild, scenic, or recreational rivers; wildlife refuges; and grasslands.	None	United States Fish and Wildlife Service (USFWS) administered Waterfowl Production Areas (WPA) are located in the vicinity of the Project Area. A minimum 0.25-mile buffer was and continues to be maintained from each WPA.
Designated or registered state: parks; forests; forest management lands; historic sites; monuments; historical markers; archaeological sites; grasslands; wild, scenic, or recreational rivers; game refuges; game management areas; management areas; and nature preserves.	None	N/A
County parks and recreational areas; municipal parks; parks owned or administered by other governmental subdivisions; hardwood draws; and enrolled woodlands.	None	N/A
Areas critical to the life stages of threatened or endangered animal or plant species.	None	N/A
Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged.	None	N/A

Table 1: Summary of Exclusion Areas

General Exclusion Area	Present Within Upgrade Project Area?	Description
Areas within 1,200 feet of the geographic center of an intercontinental ballistic missile (ICBM) launch or launch control facility.	None	N/A
Areas within thirty feet [9.14 meters] on either side of a direct line between an intercontinental ballistic missile (ICBM) launch facility and a missile alert or launch control facilities to avoid microwave interference. This restriction only applies to aboveground structures, not to surface features, such as roads, or belowground infrastructure.	None	N/A
Additional Exclusion Areas for Wind Energy Conversion Facilities – Areas within:		
1.1x the turbine height from the nearest edge of an interstate or state roadway right-of-way (ROW).	Present	No turbines will be located within these exclusion areas.
1.1x the turbine height plus 75 feet from the centerline of any county or maintained township roadway.	Present	No turbines will be located within these exclusion areas.
1.1x the turbine height from the nearest edge of railroad ROW.	Present	No turbines will be located within these exclusion areas. Note that only abandoned railroad ROW is present in Project Area.
1.1x the turbine height from the neared edge of a 115 kV or higher transmission line ROW.	None	N/A

Table 1: Summary of Exclusion Areas		
General Exclusion Area	Present Within Upgrade Project Area?	Description
1.1x the turbine height from the property line of a non-participating landowner and 3x the height of the turbine from an inhabited rural residence of a non-participating landowner, unless a variance is granted. A variance may be granted if an authorized representative or agent of the permittee, the nonparticipating landowner, and affected parties with associated wind rights file a written agreement expressing all parties' support for a variance to reduce the setback requirement in this subsection. A nonparticipating landowner is a landowner that has not signed a wind option or an easement agreement with the permittee of the wind energy conversion facility as defined in NDCC Chapter 17-04.	Present	Three turbines would be located within the non-participating property line exclusion area with the equipment upgrade technology. Otter Tail is in the process of obtaining waivers from the landowners to support issuance of variances. No turbines will be located within 3x the height of the upgraded turbines from a non-participating inhabited residence.

Avoidance Areas

Per N.D.A.C. §§ 69-06-08-01(3) and (4), the geographical areas listed in Table 2 may not be approved as a site for an energy conversion facility unless the applicant shows that under the circumstances there is no reasonable alternative or (in the case of the sound limit) a waiver has been obtained. Based on the Commission's approach in prior equipment upgrade dockets, Otter Tail confirmed the Project's compliance with the Commission's current avoidance area criteria.

Table 2: Summary of Avoidance Areas		
Avoidance Area	Present Within Project Area?	Description
Historical resources which are not designated as exclusion areas.	Present	No impacts to historical resources are anticipated. An Unanticipated Discoveries Plan has been prepared for the Project. A copy of that plan is provided as Appendix F.
Areas within the city limits of a city or the boundaries of a military installation.	None	N/A
Areas within known floodplains as defined by the geographical boundaries of the hundred-year flood.	None	N/A

Avoidance Area	Present Within Project Area?	Description
Areas that are geologically unstable.	None	N/A
Woodlands and wetlands.	Present	No wetlands or woodlands will be impacted by the Project.
Areas of recreational significance which are not designated as exclusion areas.	None	N/A
A geographic area where, due to the operation of the facility, the sound levels within one hundred feet on an inhabited residence or community building will exceed forty-five dBA. The sound level avoidance area criteria may be waived in writing by the owner of the occupied residence or the community building.	Present	Six residences have modeled sound levels in excess of the Commission's sound standard. Otter Tail will comply with the sound standard by obtaining sound waivers or installing noise-reduction technology.

Setback Compliance

In addition to compliance with the setbacks set forth above, the Project continues to comply with the setback commitments listed in Table 3, which were made at the time a Certificate of Site Compatibility was issued for the Langdon Wind Project.

Setback Type	Distance
Occupied Residence	1,400 feet
Transmission and Distribution Line	420 feet
USFWS WPA	0.25 miles

Socioeconomics

The Project will have positive impacts on socioeconomics by extending the life of the wind energy facility, which, in turn, extends the time period for which landowners will receive easement payments. In addition, the Project will create temporary construction jobs, with associated opportunities for increased local spending.

Land Use

The Project will be constructed entirely within the previously-designated site, and turbine and other permanent infrastructure locations will remain the same. As a result, land use will also remain unchanged. The Project will result in temporary disturbances, including temporary widening of access roads to accommodate transportation of components and equipment, a temporary laydown yard, and temporary crane paths (as needed). Temporarily impacted areas will be restored in compliance with applicable provisions of the Commission's Findings of Fact, Conclusions of Law and Order, dated May 31, 2007 (Case No. PU-07-26) (May 2007 Order.)

Public Services

The Project will result in a temporary increase in traffic in and near the Project Area, but is not anticipated to interfere with local road use. Otter Tail will coordinate with Cavalier County and the townships, as appropriate, regarding local road use, will obtain all necessary road use permits, and will restore roads impacted by the Project in accordance with the requirements of the Commission's May 2007 Order and as required by Cavalier County and the townships.

Sound, Shadow Flicker, and Human Health and Safety

As noted above, the Project continues to maintain a turbine setback of 1,400 feet from occupied residences. A sound study was completed for the Project using GE 1.5 MW turbines with 97-meter hub height (Appendix A). Based on the initial analysis, sound levels within 100 feet of six occupied residences were modeled between 45 dBA and 49 dBA. The Project will comply with the current sound regulations by either obtaining waivers from the owner(s) of the affected residences, or by installing noise-reduction technology, such as noise-reducing operation modes (NRO) and/or low-noise trailing edge (LNTE) blades at up to 10 turbines (as needed). Copies of noise waivers obtained to-date are provided in Appendix A.

At the time the Langdon Wind Energy Center was permitted, the Commission did not specifically address shadow flicker. However, Otter Tail conducted a shadow flicker assessment for the Project utilizing realistic modeling inputs. Based on the assessment, shadow flicker levels from the Project will not exceed 30 hours per year at any occupied residences (Appendix B).

Otter Tail submitted form 7460-1 to the Federal Aviation Administration (FAA) for each turbine to confirm that the increased tip height will not impact navigable airspace or communications technology used in aviation operation. The FAA issued Determinations of No Hazard to Otter Tail on February 23, 2023 for each turbine submitted. A listing of the FAA's aeronautical study number for each turbine and status is provided in Appendix C.

Comsearch completed a microwave study for the Project. Based on the analysis, Comsearch found that none of the turbines would obstruct microwave beam paths in the area with the upgraded equipment (Appendix D).

The Project will continue to comply with all safety-related and other conditions of the Commission's May 2007 Order.

Cultural and Architectural Resources

In November of 2022, staff from Atwell conducted background research at the State Historical Society of North Dakota (SHSND) for information on previously identified archaeological sites and architectural properties within one mile (1.6 km) of the Project Area and on surveys previously conducted within the Project Area (Appendix E – Class I Literature Review).

Otter Tail coordinated with the SHSND regarding the Project. The Project construction activities will occur primarily within areas previously surveyed for cultural resources, and all construction activities will occur within areas previously disturbed by initial Langdon Wind Energy Center construction. As a result, the SHSND has determined that additional cultural resource surveys are not necessary, except to the extent crane paths are located in previously unsurveyed areas. If any crane paths are located outside of areas previously surveyed for cultural resources, Otter Tail will complete cultural resource field surveys and will avoid any resources identified that are eligible or unevaluated for listing on the National Register of Historic Places (NRHP). Additionally, Otter Tail has prepared an Unanticipated Discoveries Plan, which will be implemented during Project construction (Appendix F).

Although not recommended at the time the Langdon Wind Energy Center was originally permitted and constructed, the SHSND's current practice is to recommend completion of an architectural history survey in the vicinity of wind energy generation facilities to identify architectural resources potentially eligible for NRHP-listing and to evaluate potential impact to those resources. Otter Tail is in the process of completing the architectural history survey. Since the Upgrade Project involves technology upgrades to existing turbines, it is not anticipated that the limited modifications will adversely affect architectural history resources. However, in the event of an adverse impact, Otter Tail will coordinate with SHSND to identify appropriate mitigation. Otter Tail will submit SHSND concurrence prior to construction.

Recreational Resources

The Project will not impact any recreational resources. The Project continues to maintain a setback of at least 0.25 miles from nearby WPAs.

Land-Based Economics

The Project will not result in any additional long-term land impact; as a result, the Project will also not result in any long-term impacts to agricultural use or production. Otter Tail will compensate landowners for any temporary impacts to cropland in accordance with the terms of its wind lease agreements, as applicable.

Soils

Project construction may result in minor short-term impacts to soils within the disturbance area. During construction, short-term impacts may include soil compaction, vegetation clearing, and the potential for localized soil erosion and sedimentation. No other impacts are anticipated. Measures to control erosion will be implemented during Project construction to avoid or minimize soil erosion.

Erosion and sedimentation will be reduced by implementation of best management practices (BMPs) such as mulching, hydroseeding, wildlife-friendly erosion control blankets, silt fence installation, matting, and revegetation, as appropriate. Once construction is completed, soils will be revegetated in accordance with Natural Resources Conservation Service requirements (unless otherwise specified by the landowner and approved by the Commission). No adverse impacts to soil resources are expected as a result of the Project.

Geologic and Groundwater Resources

The Upgrade Project is not expected to disturb any geologic or groundwater resources.

Waterbodies, Wetlands, and Floodplain Resources

Previously, a wetland delineation and determination was conducted within the Langdon Wind Energy Center boundary in 2007 (TetraTech EC, INC. 2007). The wetland delineation was performed in accordance with the *1987 U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE 1987). The report did not identify any temporary or permanent impacts to wetlands within the Project Area, and no temporary or permanent impacts are anticipated as a result of the Project.

FEMA floodplains (100-year) are not mapped in Cavalier County. In addition, haul route turning radii design will be based on existing public roads. As such, impacts to floodplains are not anticipated.

Vegetation

No trees or shrubs will be removed in connection with the Project. Otter Tail will comply with the site restoration and reseeding conditions in the Commission's May 2007 Order and all other applicable permitting requirements.

Wildlife

Impacts to wildlife are expected to be minimal as the proposed construction disturbance areas were previously disturbed and are of low-quality habitat. If construction activities are planned during the springtime, ground nesting bird clearance surveys in uncultivated areas will be conducted, as applicable, prior to construction.

With respect to federally-designated threatened, endangered, and candidate species, the northern long-eared bat and the monarch butterfly have the potential to occur in Cavalier County. The existing turbines were built in open terrain outside of forested areas and riparian corridors. Additionally, Project construction activities will be confined to previously disturbed areas, and no tree removal is anticipated. As a result, no impacts to these species are anticipated.

The Project is not anticipated to have any measurable change in impact on migrating birds or bats. Impacts are expected to be similar to other operating wind projects in the area. Otter Tail will develop a Wildlife Conservation Strategy for the facility, which will outline BMPs that are to be

undertaken for the life of the facility to minimize risks to birds, bats, and other wildlife from operation of the wind farm. Coordination with USFWS regarding the Project is under way (Appendix H – Agency Correspondence).

An IPaC Resource List for Cavalier County is provided in Appendix G.

Conclusion

Table 4 below summarizes Otter Tail’s environmental and regulatory analysis of the Upgrade Project. As indicated in Table 4 and the prior sections, the Project complies with the requirements of N.D.C.C. § 49-22-03(3)(a), including the Commission’s current exclusion area and avoidance area criteria. Additionally, the Project will continue to comply with all applicable siting laws, rules, and Commission orders, including the conditions specified in the Commission’s May 2007 Order.

Summary Table

Table 4: Summary of Environmental Resource Impact Analysis and Avoidance/Minimization Measures		
Resource	Potential Impact of Repower Project	Avoidance and/or Minimization Measures
Socioeconomics	Positive economic and social impacts.	None proposed.
Land Use	Temporary disturbances only; will utilize previously disturbed areas.	Will restore temporarily impacted areas in compliance with applicable provisions of the Commission's May 2007 Order.
Public Services	A temporary increase in traffic due to construction will occur.	Will coordinate with Cavalier County and applicable townships regarding local road use, obtain all necessary road use permits, and restore roads impacted by the Upgrade Project in accordance with the requirements of the Commission's May 2007 Order and as required by Cavalier County and the townships.
Human Health and Safety	Turbine lighting will continue to meet FAA and Commission requirements. Shadow flicker is predicted to be 30 hours per year or less at all occupied residences.	None proposed.
Sound	Initial modeling analysis (with standard edge blades) determined that the sound may exceed 45 dBA within 100 feet of six occupied residences. Further modeling was conducted with noise-reducing operation modes (NRO) and/or low-noise trailing edge (LNTE) added to up to 10 turbines, which identified only one exceedance of the 45 dBA limit.	Otter Tail has obtained a sound waiver from the owners of the residence with sound levels in excess of the sound limit, as well as another participating landowner. For the remaining four residences, Otter Tail will either obtain sound waivers or will utilize NRO and/or LNTE blades on up to 10 turbines, as needed.

Table 4: Summary of Environmental Resource Impact Analysis and Avoidance/Minimization Measures

Resource	Potential Impact of Repower Project	Avoidance and/or Minimization Measures
Cultural/Architectural History Resources	Upgrade Project activities will occur within areas previously surveyed for cultural resources or in areas previously disturbed by initial facility construction. The Upgrade Project is not anticipated to impact cultural or architectural history resources.	Prepared an Unanticipated Discoveries Plan.
Recreational Resources	No impacts to recreational resources are anticipated.	Will continue to maintain a setback of 0.25 miles from nearby WPAs.
Land Based Economics	Minimal cropland will be temporarily impacted during construction. No additional long-term impacts to agricultural use or production are anticipated.	Will compensate landowners for any temporary impacts to cropland in accordance with the terms of its wind lease agreements, as applicable.
Soils	Temporary land disturbance may cause soil surface to become more prone to wind and water erosion.	Will implement Best Management Practices (BMPs) to minimize erosion and sedimentation and will restore temporarily impacted areas.
Geologic and Groundwater Resources	No impacts to geological and groundwater resources are anticipated.	None proposed.
Waterbodies, Wetlands, and Floodplain Resources	No impacts are anticipated.	Will implement BMPs to minimize erosion and sedimentation.
Vegetation	Will utilize previously disturbed areas; no trees or shrubs will be removed.	Will comply with the site restoration and reseeded conditions in the Commission's May 2007 Order and all other applicable requirements.

Table 4: Summary of Environmental Resource Impact Analysis and Avoidance/Minimization Measures

Resource	Potential Impact of Repower Project	Avoidance and/or Minimization Measures
Wildlife	<p>Construction impacts will be confined to previously disturbed locations and minimal impacts to wildlife anticipated.</p> <p>The Project is not anticipated to have an impact on threatened or endangered species or have any measurable change in impact on migrating birds or bats.</p>	<p>Will implement BMPs from the Project’s Wildlife Conservation Strategy to minimize risks to birds, bats, and other wildlife.</p>

References

TetraTech EC, INC. 2007. Wetland and Other Waters Delineation Report: Langdon Wind Energy Center, Langdon, North Dakota. TetraTech EC, INC.

USACE [U.S. Army Corps of Engineers]. 1987. Corps of Engineers Wetlands Delineation Manual. USACE, Environmental Laboratory Report No.: Technical Report Y-87-1 (online edition). <http://el.erdc.usace.army.mil/elpubs/pdf/wlman87.pdf>.

Attachments

Figure 1. Upgrade Project Map

Figure 2. Wind Turbine Diagram

Figure 3. Exclusion and Avoidance Area Map

Appendix A – Acoustic Assessment Results and Sound Waivers

Appendix B – Shadow Flicker Assessment Results

Appendix C – Determinations of No Hazard

Appendix D – Microwave Beam Path Analysis

Appendix E – Cultural Resource Report (Public)

Appendix F – Unanticipated Discoveries Plan

Appendix G – IPaC Resource List

Appendix H – Agency Correspondence