

# As-Built Inspection Report

Aurora Wind Energy Transmission Line

Tradewind Energy, Inc.

ND PSC Case No. PU-18-351

## Prepared for:

North Dakota Public Service Commission  
Public Utilities Division  
State Capitol  
600 East Boulevard – Dept. 408  
Bismarck, ND 58505-0480



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## Executive Summary

The State of North Dakota, acting through its North Dakota Public Service Commission (Commission), Division of Public Utilities, has contracted Keitu Engineers & Consultants, Inc. (Keitu) to perform consulting services for an As-Built Siting Inspection. This report addresses the Orders established by the Commission and issues established in Case No. PU-18-351.

The Aurora Wind Project (Project) is approximately 20 miles in length, with approximately 17 miles located in Williams County and approximately 3 miles located in Mountrail County. The Project Route consisting of a 150-foot wide corridor totals 364 acres. The purpose of the As-Built Inspection was to ensure the Project was constructed in compliance with the siting laws, rules, and the applicable Commission Order for the Project. Prior to the inspection, Keitu reviewed all Project documents to verify any and all aspects requiring site verification.

The site was visually inspected on October 22, 2020 by Keitu staff. The Project was well-maintained, secured, and in good condition. During the As-Built Inspection, the areas appeared to have been properly restored. Vegetation had not be reestablished in all areas due to construction being completed in the fall and will be seeded next spring. Overall, the Project appeared to be constructed as planned with numerous efforts to minimize impacts and to stay in compliance with the siting laws, siting rules, and Commission Orders.

## Introduction

The Project was approved in May, 2019 and construction began in October, 2019. Construction for the Project was completed in the summer of 2020 and is operated by Enel Green Power. The Project is a 345-kilovolt (“kV”) transmission line and associated facilities. Aurora Wind is also constructing a Wind Project, which will have a nameplate capacity of up to 300 megawatts (“MW”). The Project will convey power from the planned Wind Project substation to the point of interconnection to the grid at the existing Basin Electric Power Cooperative Tande 345kV Substation (“Tande Substation”). Aurora Wind submitted a separate application to the Commission for a Certificate of Site Compatibility for the proposed Wind Project.

The transmission line was constructed using steel monopole structures with spans of approximately 600-900 feet. The permanent right-of-way for the transmission line will be up to 150 feet wide. The Project design includes a shield wire, which will be strung at the top of the poles to provide lightning protection. The shield wire will also contain a fiber optic core that forms part of the communication system for the transmission line, allowing for monitoring and remote control of interconnection facility components.

The Project is under the jurisdiction of the North Dakota Public Service Commission, which issued its Certificate of Corridor Compatibility No. 210 and Route Permit No. 220 for Case No. PU-18-351 on May 29, 2019.

## Purpose and Scope of Inspection

The North Dakota Energy Conversion and Transmission Facility Act (North Dakota Century Code Chapter 49-22) authorizes the Public Service Commission to determine that the location, construction, and operation of jurisdictional energy conversion and transmission facilities will produce minimal adverse effects on the environment and welfare of the citizens of North Dakota. Construction Inspections ensure the Project is constructed in compliance with siting laws, rules, and the applicable Commission Order Amending Certificate and Permit (Order).

The Commission retained Keitu Engineers & Consultants, Inc. (Keitu) to complete an As-Built Construction Inspection of the Project. The inspection process included a review of the Consolidated Application for Certificate of Corridor Compatibility and Route Permit (Application), Order, Certification Relating to Order Provisions (Certification), and other applicable documents to determine Project-specific siting and construction requirements; a site visit and inspection of facilities; documentation of compliance; and a report summarizing findings. This report includes, but is not limited to, site visit observations, documentation of compliance deficiencies, and a summary of issues that should be addressed for the Project to be considered complete and in full compliance.

## Methods

Keitu reviewed North Dakota siting laws and rules, the Application, Certification, and the Order for the Project to identify what Project-specific documentation was required for compliance. Keitu then reviewed Project documents in the PSC Online Case Search to identify those siting laws, rules, and Application and Order assertions that already had written verification, those that still required documentation, and those that required physical site verification.

Keitu Staff visited the Project area on October 22, 2020 to visually inspect the site. Digital photographs were taken showing typical Project infrastructure. The Project was in operation at the time of visit.

## Orders

The following section includes discussion of a list of components of the Project that were asserted in the Order which could be documented during the As-Built Inspection to verify compliance with siting laws, rules and the Order for the Project, via either written documentation or physical site verification. Included are detailed findings and observations from Keitu personnel involved in the As-Built Inspection for the Project.

On September 28, 2018 the Commission deemed the application complete conditioned upon receipt within 30 days of the hearing of (1) maps showing final site plan with turbines, access roads, collector lines, transmission line structures, and all residential receptor points labeled; (2) Class III cultural resource survey reports or summaries showing areas surveyed and State Historical Society of North Dakota (SHSND) cultural site numbers recommended for avoidance; and (3) wetland delineation reports; and issued a Notice of Filings and Notice of Consolidated Hearing, scheduling a public hearing for February 25, 2019, at 9:00 a.m. at Neset Consulting Service, 6844 State Highway 40, Tioga, ND 58852.

- 1. Aurora Wind shall construct and operate the facility in accordance with the Commission's Finding of Fact.**

Order #1 is complete.

- 2. Certificate of Corridor Compatibility No. 210 issued to Aurora Wind designating a corridor for the construction, operation, and maintenance of the project and associated facilities in Williams and Mountrail Counties, North Dakota, as identified in Hearing Exhibit 8.**

Certificate of Corridor Compatibility No. 210 was issued to Aurora Wind Project, LLC on May 29, 2019. Order #2 was followed.

- 3. Route Permit No. 220 is issued to Aurora Wind designating a route in Williams and Mountrail Counties, North Dakota, for the construction and operation of an approximately 20-mile 345 kV transmission line. The designated route for this purpose is as identified in Hearing Exhibit 8.**

Route Permit No. 220 was issued to Aurora Wind Project, LLC on May 29, 2019. Order #3 was followed.

4. **Inclusion of any portions of the Transmission Line right-of-way not currently under lease and/or easement in the designated route for the Project is conditioned upon Aurora Wind obtaining the requisite lease and/or easement agreements with the owners of said parcels.**

Order #4 was followed.

5. **The February 19, 2019 Certification Relating to Order Provisions-Transmission Facility Siting, with accompanying Tree and Shrub Mitigation Specifications (Hearing Exhibit No. 13) is incorporated by reference and attached to this Order. Aurora Wind is authorized to clear-cut up to 150 feet wide along the designated route in order to meet NESC requirements for safe operation of the Transmission Line.**

Order #5 was followed.

6. **To the extent, there are any conflicts or inconsistencies between Aurora Wind's Application and the Certification, the Certification provisions control.**

Order #6 was followed.

## Certification

The following section includes discussion of relevant items included in the Certification attached by reference to original Order. All certification points relevant to the As-Built Inspection Report are included.

1. **Company understands and agrees that the Certificate of Corridor Compatibility or Route Permit issued by the Commission will be subject to the conditions and criteria set forth in Chapter 49-22 of the North Dakota Century Code and Chapter 69-06-08 of the North Dakota Administrative Code, and that Company shall be responsible for compliance with this order and conditions and criteria set forth in the applicable laws and rules.**

Certification Point #1 was followed.

2. **Company agrees to comply with the rules and regulations of all other agencies having jurisdiction over any phase of the transmission facility including all city, township, and county zoning regulations.**

Certification Point #2 was followed.

3. **Company understands and agrees that it shall obtain all other necessary licenses and permits, and shall provide copies of all licenses and permits to the Commission prior to construction activity associated with the transmission facility that requires said license or permit.**

Certification Point #3 was followed.

4. **Company understands and agrees that any Certificate of Corridor Compatibility or Route Permit issued by the Commission is subject to suspension or revocation and may, in an appropriate and proper case, be suspended or revoked for failure to comply with the Commission’s order, the conditions and criteria of the certificate or subsequent modification, or failure to comply with the applicable statutes, rules, regulations, standards, and permits of other state or federal agencies.**

Certification Point #4 was followed.

5. **Company agrees to maintain records that will demonstrate that is has complied with the requirements of the Commission’s order issuing a Certificate of Corridor Compatibility or Route Permit, and that it will preserve these records for Commission inspection at any reasonable time upon reasonable notice.**

Certification Point #5 was followed.

6. **Company understands and agrees that the authorizations granted by any Certificate of Corridor Compatibility or Route Permit issued by the Commission for the transmission facility are subject to modification by order of the Commission if deemed necessary to protect further the public or the environment.**

Certification Point #6 as followed.

7. **Company agrees to hold a preconstruction conference prior to commencement of any construction, which must include a Company representative, its construction supervisor, and a representative of Commission Staff, to ensure that Company fully understands the conditions set forth in the Commission’s order.**

Aurora Wind Project LLC held a preconstruction conference on August 23, 2019 at 9:30 am. Certification Point #7 was followed.

8. **Company understands and agrees that all cultural resource mitigation plans must be submitted to the North Dakota State Historic Preservation Office and approved prior to the start of any fieldwork and construction activity in the affected area.**

Based on available information, Keitu's opinion is that Certification Point #8 was followed.

- 9. Company understands and agrees that topsoil removal will begin when the Commission's third-party construction inspector is present at the Project site to observe that topsoil is properly removed and kept segregated from subsoil until replacement occurs. Company shall establish the date and time for the Commission's third-party construction inspector's topsoil removal oversight in the preconstruction conference.**

Keitu was present on-site for topsoil removal on October 21, 2019 and determined that the topsoil was properly removed and segregated from subsoil. Certification Point #9 was followed.

- 10. Company agrees to inform the Commission and the Commission's third-party construction inspector of its intent to start construction on the transmission facility prior to the commencement of construction. Once construction has started, Company shall keep the Commission and the Commission's third-party construction inspector updated on construction activities on a monthly basis.**

Aurora Wind Project LLC notified the Commission and Keitu, the Commission's third-party construction inspector of their intent to start construction on the transmission facility during the preconstruction conference held on August 23, 2019. Certification Point #10 was followed.

- 11. Company understands and agrees that all topsoil, up to 12 inches, or topsoil to the depth of cultivation, whichever is greater, over and along trench areas where cuts will be made, must be carefully stripped and segregated from the subsoil. Any area on which excavated subsoil will be placed must also be stripped of topsoil. The stripped topsoil must not be stockpiled in natural drainages and must be protected from water erosion. Care must be taken to protect topsoil from unnecessary compaction by heavy machinery. Unless otherwise approved by the Commission, topsoil must be removed before topsoil freezes in the late fall/early winter to the point that frost inhibits proper soil segregation after backfilling with subsoil is completed, any excess subsoil must be placed over the excavation area, blending the grade into existing topography. Topsoil must be replaced over areas from which it was stripped only after the subsoil is replaced.**

Keitu conducted a topsoil inspection when construction activities commenced for the project and observed topsoil removal during the construction inspection on June 10, 2020 and found topsoil removal activities to be in compliance with the Commission's Order. Certification Point #11 was followed.

- 12. Company understands and agrees that all buried facility crossings of graded roads must be bored unless the responsible governing agency specifically permits Company to open cut the road.**

Based on available information, Keitu’s opinion is that Certification Point #12 was followed.

- 13. Company understands and agrees that staging areas or equipment shall not be located on land owned by a person other than Company unless otherwise negotiated with landowners.**

Certification Point #13 was followed.

- 14. Company understands and agrees that if any cultural resource, paleontological site, archeological site, historical site, or grave site is discovered during construction, it must be marked, preserved and protected from further disturbances until a professional examination can be made and a report of such examination is filed with the Commission and the State Historical Society.**

Based on available information, Keitu’s opinion is that Certification Point #14 was followed.

- 15. Company understands and agrees that construction must be suspended when weather conditions are such that construction activities will cause irreparable damage to roads or land, unless adequate protection measures approved by the Commission are taken.**

Certification Point #15 was followed.

- 16. Company understands and agrees that the Commission’s third-party construction inspector will be allowed to stop Project construction activities to prevent an imminent hazard from occurring before the Commission could take formal action with respect to said activities. For purposes of this provision, “imminent hazard” means a condition that presents a substantial endangerment to health, property, or the environment. Other Project construction activities would be allowed to continue.**

Certification Point 16 was followed.

- 17. Company understands and agrees that it shall, as soon practicable upon the completion of the transmission facility, restore the area affected by the activities to as near as is practicable to the condition as it existed prior to the beginning of construction.**

Some revegetation activities will occur in the spring of 2021 when the ground has thawed. Keitu’s opinion is that Certification Point #17 has been followed.

**18. Company understands and agrees that all pre-existing township and county roads and lanes used during construction must be repaired or restored to a condition that is equal to or better than the condition prior to the construction of the transmission facility and that will accommodate their previous use, and that areas used as temporary roads or working areas during construction must be restored to their original condition.**

Many of the pre-existing township and county roads used during the construction of the transmission line were still being used at the time of transmission line as-built inspection. In Keitu’s opinion, Certification Point #18 has been followed.

**19. Company understands and agrees that reclamation, fertilization, and reseeding is to be done according to the Natural Resources Conservation Service recommendations, unless otherwise specified by the landowner and approved by the Commission.**

Most reclamation, fertilization, and reseeding activities will be completed in the spring of 2021 upon completion of the associated Wind Project, Aurora Wind Project LLC plans to reclaim, fertilize, and reseed the impacted areas according to the Natural Resources Conservation Service recommendations. In Keitu’s opinion, Certification Point #19 has been followed.

**20. Company will fulfill its obligation for reclamation and maintenance of the approved transmission facility right-of-way, transmission facility, and associated facilities continuing throughout the life of the transmission facility.**

Based on available information, Keitu’s opinion is that Certification Point #20 has been followed.

**21. Company will repair all fences and gates removed or damaged during all phases of construction and operation of the transmission facility.**

Based on available information, Keitu’s opinion is that Certification Point #21 has been followed.

**22. Company will repair or replace all drainage tile broken or damaged as a result of construction and operation of the transmission facility.**

Based on available information, Keitu’s opinion is that Certification Point #22 was followed.

**23. Company agrees to comply with the Tree and Shrub Mitigation Specifications.**

Based on available information, Keitu’s opinion is that Certification Point #23 was followed.

**24. Company understands and agrees that it shall work with landowners and residents to mitigate any increase in television and residential radio interference that results from the construction of the energy conversion facility.**

Based on available information, Keitu’s opinion is that Certification Point #24 was followed.

- 25. Company understands and agrees that it shall remove all waste that is a product of construction and operation, restoration, and maintenance of the site, and properly dispose of it on a regular basis.**

Based on available information, Keitu’s opinion is that Certification Point #25 was followed.

- 26. Company understands and agrees that it shall provide any necessary safety measures for traffic control or to restrict public access to the transmission facility.**

Based on available information, Keitu’s opinion is that Certification Point #26 was followed.

- 27. Company understands and agrees that, prior to beginning construction of the transmission facility at a location, it shall send a letter to each landowner with whom an easement was executed for that location specifying the name and phone number of the company representative who is responsible for receiving and resolving landowner issues for the life of the easement.**

Based on available information, Keitu’s opinion is that Certification Point #27 was followed.

- 28. Company understands and agrees that it will file with the commission the name and phone number of the current company representative who is responsible for receiving and resolving landowner issues for the transmission facility. The company will update this information whenever there is a change to the current company representative for the life of all easements for the transmission facility.**

A company representative responsible for resolving landowner issues for the transmission facility was not found on the PSC Project database; however, it is possible that the representative’s name has been filed with the Commission.

- 29. Upon request, Company agrees to provide the Commission with engineering design drawings of the transmission facility prior to construction.**

Based on available information, Keitu’s opinion is that Certification Point #29 was followed.

- 30. Company understands and agrees that it shall advise the Commission as soon as reasonably possible of any extraordinary events which take place at the site of the transmission facility, including injuries to any person.**

Based on available information, Keitu’s opinion is that Certification Point #30 was followed.

- 31. Company agrees to report to the Commission, as soon as reasonably possible, the presence in the permit area of any critical habitat or threatened or endangered species of which Company becomes aware and which were not previously reported to the Commission.**

Based on available information, Keitu’s opinion is that Certification Point #31 was followed.

- 32. Company understands and agrees that it shall inform the Commission in writing of any plans to modify the transmission facility or of any plans to modify the site plan for the transmission facility.**

Based on available information, Keitu’s opinion is that Certification Point #32 was followed.

- 33. Company agrees to provide the Commission with both an electronic and a paper copy of the corridor approved by the Commission and the facility design specifications for the construction of the transmission facility showing the location of the transmission facility as built, and will provide this information within 3 months of the completion of the construction. Company also agrees to provide an electronic version of the corridor approved by the Commission and the facility design specifications for the construction of the transmission facility showing the location of the transmission facility as built that can be imported into ESRI GIS mapping software within 3 months of the completion of the construction. This electronic map data must be referenced to the North Dakota coordinate system of 1983, North and/or South zones US Survey feet (NAD 83) UTM Zone 13N or 14N feet (NAD 83), or geographic coordinate system (WGS 84) feet. The vertical data must be in the appropriate vertical datum for the coordinate system used. All submissions must specify the datum in which the data was developed.**

Certification Point #33 was followed.

- 34. Company shall notify the Commission as soon as reasonable possible if any damage, as defined by North Dakota Century Code Chapter 49-23, occurs to underground facilities during construction conducted under the certificate or permit issued in this proceeding. In the event of any damage to underground facilities, Company shall suspend construction in the vicinity of the damage until compliance One-Call Excavation Notice System requirements under North Dakota Century Code Chapter 49-23 has been determined.**

Based on available information, Keitu’s opinion is that Certification Point #34 was followed.

- 35. Company agrees to utilize the following procedures if Company seeks a route adjustment before or during construction of the transmission line.**

Certification Point #35 was followed.

- 36. Company will file the name and contact information for a key contact person for the purposes of notice and communication during the adjustment application.**

Contact information for a company contact person for the purposes of notice and communication during the adjustment application could not be found on the PSC's Project database.

- 37. ROUTE ADJUSTMENT WITHIN DESIGNATED CORRIDOR, NO AVOIDANCE AREA AFFECTED: Before conducting any construction, activities for any adjustment to the designated route within the designated corridor, the Company will file:**

- a. Certification and supporting documentation affirming that construction activities will be within the designated corridor, will not affect any known exclusion or avoidance areas within the designated corridor;
- b. Certification and supporting documentation, including a map meeting the requirements of N.D. Admin Code § 69-06-04-01 (2) (n) identifying the designated corridor, route and the route adjustment;
- c. Certification that Company will comply with the Commission's order, law and rules designating the corridor and route.

Certification Point #37 has been followed.

- 38. ROUTE ADJUSTMENT WITHIN DESIGNATED CORRIDOR, AVOIDANCE AREA AFFECTED: Before adjusting the route of an electric transmission line within the designated corridor that may affect an avoidance area, and before conducting any construction activities for any adjustment to the designated route within the designated corridor, the Company will file:**

- a. A specific description of the avoidance area expected to be impacted, including a map meeting the requirements of N.D. Admin. Code § 69-06-04-01 (2)(n) identifying:
  - i. The designated corridor, route and the route adjustment;
  - ii. All exclusion and avoidance areas within the portion of the designated corridor containing the route adjustment
- b. Certification and supporting documentation affirming:
  - i. That construction activities will be within the designated corridor
  - ii. That construction activities will not affect any known exclusion area

- c. All field studies performed on the portion of the designated corridor containing the route adjustment;
- d. Specific information about any mitigation measures Company will take within the adjustment area;
- e. Certification that each owner of real property on which the adjustment is to be located and any applicable governmental entity with an interest in the same adjustment area do not oppose the adjustment;
- f. Certification that unless the Commission previously authorized the impact to the same avoidance area, that the utility has good cause and a specific reason to impact the avoidance area and a reasonable alternative does not exist;
- g. Certification that Company will comply with the Commission’s order, law and rules designating the corridor and route.

Based on available information, Keitu’s opinion is that Certification Point #38 has been followed.

**39. ROUTE ADJUSTMENT OUTSIDE DESIGNATED CORRIDOR, NO AVOIDANCE AREA AFFECTED:** Before adjusting the route of an electric transmission line outside the designated corridor and not affecting any exclusion and avoidance area, before conducting any construction activities any adjustment to the designated route outside the designated corridor, the Company will file:

- a. Certification and supporting documentation affirming that construction activities will not affect any known exclusion or avoidance areas;
- b. Certification and supporting documents stating the length of the proposed route outside of the corridor and a map meeting the requirements of N.D. Admin. Code § 69-06-04-01 (2)(n) identifying the designated corridor, corridor adjustment, route and the route adjustment;
- c. Certification that each owner of real property on which the adjustment is to be located and any applicable governmental entity with an interest in the same adjustment area do not oppose the adjustment; and
- d. Detailed field studies indicating exclusion and avoidance areas for the proposed adjustment area; and
- e. Certification that Company will comply with the Commission’s order, law and rules designating the corridor and route.

Based on available information, Keitu’s opinion is that Certification Point #39 has been followed.

**40. ROUTE ADJUSTMENT OUTSIDE DESIGNATED CORRIDOR, AVOIDANCE AREA AFFECTED:** Before adjusting the route of an electric transmission line outside the designated corridor that may affect an avoidance area, and before conducting any

**construction activities for any adjustment to the designated route outside the designated corridor, the Company will file:**

- a. A specific description of the avoidance area expected to be impacted, including a map meeting the requirements of N.D. Admin. Code § 69-06-04-01(2)(n) identifying:
 
  - i. The designated corridor, corridor adjustment, route and the route adjustment;**
  - ii. All exclusion and avoidance areas within the adjustment area;****
- b. Certification that construction activities will not affect any known exclusion area;**
- c. Certification that the utility has good cause and a specific reason to impact the avoidance area and a reasonable alternative does not exist within the designated corridor and route;**
- d. Certification that each owner of real property on which the adjustment is to be located and any applicable governmental entity with an interest in the same adjustment area do not oppose the adjustment;**
- e. Provide specific information about any mitigation measures Company will take within the adjustment area;**
- f. Detailed field studies indicating exclusion and avoidance areas for the proposed adjustment area; and**
- g. Certification that Company will comply with the Commission’s order, law and rules designating the corridor and route.**

Based on available information, Keitu’s opinion is that Certification Point #40 has been followed.

- 41. Company acknowledges and agrees that when applicable, Company may submit the field studies from the original application for the corridor and route provided they cover the adjustment area.**

Based on available information, Keitu’s opinion is that Certification Point #41 has been followed.

- 42. Company acknowledges and agrees that written authorization from the Commission for impacting the avoidance area is necessary prior to commencement of construction activity.**

Based on available information, Keitu’s opinion is that Certification Point #42 has been followed.

## Conclusions

Contact information for a company contact person for the purposes of notice and communication during the adjustment application could not be found on the PSC’s Project database.

A company representative responsible for resolving landowner issues for the transmission facility was not found on the PSC Project database; however, it is possible that the representative’s name has been filed with the Commission.

Overall, the Project appeared to be constructed as designed with minimal impacts to the surrounding environment. The Project site was in good condition, well maintained, and appeared to be constructed in compliance with the siting laws, siting rules, and applicable Commission Orders.

Reclamation is still occurring onsite.

## Management Review

The services performed by Keitu and its staff for this project have been conducted in a manner consistent with the degree of care and technical skill appropriately exercised by professionals currently practicing in this area under similar time and budget constraints.

Recommendations and findings contained in this report represent our professional judgment and are based upon available information and technically accepted practices at the present time and location. Other than this, no warranty is implied or expressed.

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Jaimee Antognazzi, Operations Manager

**Report Photo #1: Substation**

**East Elevation**

☉ 274°W (T) ● 48°30.164'N, 103°8.145'W ±16ft ▲ 2385ft



**Report Photo #2: Transmission Line Structures**

**North West Elevation**

☉ 153°SE (T) ● 48°30.166'N, 103°8.143'W ±16ft ▲ 2390ft



**Report Photo #3: Transmission Line Structures near Wetland**

**South Elevation**

☉ 18°N (T) ☉ 48°28.462'N, 103°7.556'W ±16ft ▲ 2333ft



**Report Photo #4: Transmission Line Structures along Roadway**



**Project Map:**

