

**Dickinson Transmission Line
Dickinson Wind, LLC
Stark County, North Dakota**

**Consolidated Application to the North Dakota Public Service
Commission for a Certificate of Corridor Compatibility and
Transmission Facility Route Permit**



APRIL 2015

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1.0 INTRODUCTION

Dickinson Wind, LLC (Dickinson Wind), a wholly-owned indirect subsidiary of NextEra Energy Resources, LLC (NEER), is submitting this application for a Certificate of Corridor Compatibility and Transmission Facility Route Permit to construct the Dickinson Transmission Line (Project). The Project consists of 33 miles of a new 230-kilovolt (kV) overhead transmission line on leased private property in Stark County, North Dakota, as shown in **Figure 1**. The Project would connect the proposed Dickinson Wind Energy Center to the Belfield to Rhame 230-kV transmission line in the southwest corner of the southeast quarter of Section 20 of Township 139 North, Range 98 West. The Dickinson Wind Energy Center is a proposed wind farm consisting of 87 GE wind turbine generators to be located in Stark County, North Dakota. The wind energy facility must be permitted separately, and Dickinson Wind submitted a separate application for a Certificate of Site Compatibility on March 9, 2015. The Project also includes a 10-acre switchyard at the western terminus of the transmission line and an approximately 15-acre temporary construction laydown area (location to be decided).

Dickinson Wind is a wholly-owned, indirect subsidiary of NEER. NEER develops renewable energy projects and transmission lines throughout the United States. NEER designs, constructs, and operates its facilities in an environmentally sound and responsible manner and responds immediately and effectively to any known environmental hazards or noncompliance situations. Attached as Appendix A please find the section from NextEra Energy, Inc.'s 2014 Corporate Responsibility Report that describes NextEra's environmental accountability, management, and stewardship policies.

Dickinson Wind (hereafter, the Applicant) submits this Application for a Corridor Certificate and Route Permit for the purposes of siting and constructing the Project. Section 2 of this application is a request for waiver of procedures and time schedules. Sections 3 – 8 of this application includes the analysis of the Project.

1.1 Compliance with the Energy Conversion and Transmission Facility Siting Act

The North Dakota Energy Conversion and Transmission Facility Siting Act (Siting Act) requires applications for a Corridor Certificate and Route Permit to meet the criteria set forth in North Dakota Century Code (NDCC) Chapter 49-22 and North Dakota Administrative Code (NDAC) Article 69-06. Consistent with these requirements, the Applicant has located and designed the Project to minimize potential environmental impacts and utilize existing corridors, section lines, and gaps between crop fields to the extent practicable in siting the Project.

The Application presents information required by the Siting Act, including the consideration of the exclusion areas, avoidance areas, selection criteria, and policy criteria set forth in NDAC § 69-06-08-02 to be used when selecting a transmission line corridor and route. In addition, transmission line design and technical information have been provided to allow a thorough evaluation of the proposed Project.

1.1.1 Application Format

This application generally follows the format set forth in the North Dakota Public Service Commission (Commission) Application Guidelines for a Certificate of Corridor Compatibility

(Guidelines), promulgated pursuant to the North Dakota Energy Conversion and Transmission Facility Siting Act, NDCC Chapter 49-22. **Table 1** outlines the information to fulfill the requirements for an Application for a Certificate of Corridor Compatibility and Application for a Route Permit based on the Siting Act (NDCC Chapter 49-22) and NDAC Chapter 69-06, and identifies where these requirements are addressed in this document.

Table 1. Certificate of Corridor Compatibility and Route Permit Checklist

	Description	Application Section
	Section A. Description of the Facility	
NDCC § 49-22-08(a) NDCC § 49-22-08.1(a) NDAC §§ 69-06-05-01(2)(a)(1)-(3)	Type, of facility proposed, purpose of the facility, and technology to be deployed	1.0, 3.2
NDAC §§ 69-06-05-01(2)(a)(4)-(6)	Type, source, and final destination of the product to be transmitted by the proposed facility.	3.1, 3.2
NDCC § 49-22-08(a) NDCC § 49-22-08.1(a) NDAC § 69-06-05-01(2)(a)(7)	The proposed size and design and any alternate size or design that was considered, including: (a) The width of right of way; (b) The approximate length of facility; (c) The estimated span length for electric facilities; (d) The anticipated type of structure for electric facilities; (e) The voltage for electric facilities; and (f) The requirement for and general location of any new associated facilities.	3.1, 3.2, 3.3, 3.4
NDAC § 69-06-05-01(2)(b)	The anticipated time schedule for accomplishing major events, including: (1) Obtaining the certification of corridor compatibility; (2) Obtaining the route permit; (3) Completing right-of-way acquisition; (4) Starting construction; (5) Completing construction; (6) Testing operations; and (7) Commencing operations.	3.5, Table 3
NDCC § 49-22-08(b) NDAC § 69-06-05-01(2)(c)	Section B. Studies - A copy of each evaluative study or assessment of the environmental impact of the proposed facility submitted to the agencies listed in section 69-06-01-05 and each response received.	Appendix B, Appendix C
NDCC § 49-22-08(c)	Section C. Need For Facility	4.0
NDAC § 69-06-05-01(2)(d)	An analysis of the need for the proposed facility based on present and projected demand for the product transmitted by the facility, including the most recent system studies supporting the analysis of the need.	4.1
NDAC § 69-06-05-01(2)(e)	A description of any feasible alternative methods of serving the need.	4.3
NDCC § 49-22-08(e) NDCC § 49-22-08.1(b)	Section D. Location	3.1, Table 2

	Description	Application Section
NDAC §§ 69-06-05-01(2)(f), (g)	Select a study area, which includes the proposed corridor, of sufficient width to enable the Commission to evaluate the factors addressed in Section 49-22-09, NDCC. The width of a corridor must be at least ten percent of its length, but not less than one mile [1.61 kilometers] or greater than six miles [9.66 kilometers] unless another appropriate width is determined by the Commission.	3.3, Figures 1-3
NDCC § 49-22-08(h) NDCC § 49-22-08.1(c)	An evaluation of the proposed corridor/route with regard to the applicable criteria established pursuant to section 49-22-05.1: Except for transmission lines in existence before July 1, 1983, areas within five hundred feet [152.4 meters] of an inhabited rural residence must be designated avoidance areas. The five hundred foot [152.4 meter] avoidance area criteria for an inhabited rural residence may be waived by the owner of the inhabited rural residence in writing. The criteria may also include an identification of impacts and policies or practices which may be considered in the evaluation and designation process.	5.0, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, Tables 4 and 5
NDCC § 49-22-08(h) NDCC § 49-22-08.1(c) NDAC § 69-06-05-01(2)(h)	A discussion of the factors in North Dakota Century Code section 49-22-09 to aid the commission's evaluation of the proposed route: <ol style="list-style-type: none"> 1. Available research and investigations relating to the effects of the location, construction, and operation of the proposed facility on public health and welfare, natural resources, and the environment. 2. The effects of new energy conversion and transmission technologies and systems designed to minimize adverse environmental effects. 3. The potential for beneficial uses of waste energy from a proposed energy conversion facility. 4. Adverse direct and indirect environmental effects which cannot be avoided should the proposed site or route be designated. 5. Alternatives to the proposed site, corridor, or route which are developed during the hearing process and which minimize adverse effects. 6. Irreversible and irretrievable commitments of natural resources should the proposed site, corridor, or route be designated. 7. The direct and indirect economic impacts of the proposed facility. 8. Existing plans of the state, local government, and private entities for other developments at or in the vicinity of the proposed site, corridor, or route. 9. The effect of the proposed site or route on existing scenic areas, historic sites and structures, and paleontological or archaeological sites. 10. The effect of the proposed site or route on areas which are unique because of biological wealth or because they are habitats for rare and endangered species. 11. Problems raised by federal agencies, other state agencies, and local entities. 	8.0
NDAC § 69-06-05-01(2)(i)	A discussion of the applicant's policies and commitments to limit the environmental impact of its facilities, including copies of board resolutions and management directives.	1.0
NDCC § 49-22-08(f) NDAC § 69-06-05-01(2)(j)	Identify and map the criteria that led to the proposed corridor location within the study area.	5.0, 6.1, Table 4 and 5, Figure 6

	Description	Application Section
NDAC § 69-06-08-02	The following criteria must guide and govern the preparation of the inventory of exclusion and avoidance areas, and the corridor and route suitability evaluation process: <ol style="list-style-type: none"> 1. Exclusion areas; 2. Avoidance areas; 3. Selection criteria; 4. Policy criteria. 	5.0, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, Tables 4 and 5
NDAC § 69-06-05-01(2)(k)	A discussion of the relative value of each criteria and how the applicant selected the proposed corridor location, giving consideration to all criteria and how the location, construction, and operation of the facility will affect each criteria.	5.0, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6
NDCC § 49-22-08(g) NDCC § 49-22-08.1(d) NDAC § 69-06-05-01(2)(l)	Discuss the general mitigative measures that will be taken to minimize adverse impacts which result from the location, construction, and operation of the facility.	6.1, 6.2, 6.3, 6.4, 6.5
NDCC § 49-22-08.1(e)	A description of the right-of-way preparation and construction and reclamation procedures.	3.7
NDCC § 49-22-08.1(f)	A statement setting forth the manner in which: <ol style="list-style-type: none"> (1) The utility will inform affected landowners of easement acquisition, and necessary easement conditions and restrictions. (2) The utility will compensate landowners for easements, without reference to the actual consideration to be paid. 	3.6
NDAC § 69-06-05-01(2)(m)	List the qualifications of the people in the various disciplines that contributed to the corridor location study.	9.0
NDAC §§ 69-06-05-01(2)(n), (o), (q)	Maps <ol style="list-style-type: none"> n A map identifying the criteria that led to the proposed route location within the designated corridor and the location of any new associated facilities. Several different criteria may be shown on each map depending on the map scale and the density and nature of the criteria. o. An eight and one-half-inch by eleven-inch black and white map suitable for newspaper publication depicting the site area. q. Map and GIS requirements. The applicant shall provide information that is complete, current, presented clearly and concisely, and supported by appropriate references to technical and other written material available to the commission. Data must be submitted in the ESRI shape file or geodatabase format. 	<p>Figures 2, 3, and 6</p> <p>A map for newspaper publication will be provided under separate cover.</p> <p>Shapefiles provided on CD.</p>

2.0 WAIVER OF PROCEDURES AND TIME SCHEDULES

The Applicant requests that the Commission waive and/or reduce procedures and time schedules required by the Energy Conversion and Transmission Facility Siting Act, codified in the Siting Act, or in the Commission's regulations set forth in Title 69-06 of the NDAC, to accomplish the purposes requested herein. These include, but are not limited to:

- (1) Waive, pursuant to NDCC §§ 49-22-07.2, 49-22-13, and NDAC § 69-06-01-02 and Chapter 69-06-06; provisions of NDCC §§ 49-22-08(5), 49-22-08.1(5), 49-22-13, and North Dakota Administrative Code § 69-06-01-02 which requires separate filings of such applications, separate notices of such applications, separate hearings on such applications, separate orders on such applications; and certain procedures and time schedules as set forth in said statutes and rules;
- (2) Allow combination of the certificate of corridor compatibility application and route permit application processes into one application;
- (3) Approve a corridor of 150 feet in width;
- (4) Hold one consolidated public hearing on this Application;
- (5) Find that the proposed facilities are of such design, length, location, and purpose that they will produce minimal adverse effects; and
- (6) Designate and approve the requested facilities as identified in this Application and issue the appropriate corridor certificate and route permit.

Chapter 69-06-06 of the NDAC sets forth various requirements for a request for waiver of procedures and time schedules. As set forth in this Application, each of the Applicant's requests for waivers and/or reductions of procedures and time schedules and the issuance of a corridor certificate and route permit are justified as the proposed facilities are of such design, length, location, and purpose that they will produce that they will produced minimal adverse effects. The applicable requirements of NDAC Chapter 69-06-06 are set forth in various sections of this Application.

As described below, the purpose and need for this transmission line is to deliver the wind power produced from the Dickinson Wind Energy Center to a transmission line owned by Basin Electric Power Cooperative (Basin), pursuant to a Purchase Power Agreement (PPA) between Dickinson Wind and Basin to provide 150 megawatts of wind power into Basin's system.

The total cost of constructing this transmission line and associated facilities is estimated at \$25 million.

The environmental and cultural resource studies and reports commissioned by the Applicant demonstrate that there will be minimal adverse effects by construction and operation of this transmission line project. As a result, the Applicant submits that there is substantial justification as set forth above for the requested waivers and/or reduction of time schedules and procedures.

The Applicant respectfully requests that the Commission grant the requested waivers and/or reduction of procedures and time schedules; and render an expeditious decision approving the requested certificate of corridor compatibility and route permit.

3.0 PROJECT DESCRIPTION

3.1 Project Location

The Project will connect the proposed Dickinson Wind Energy Center's collection substation in the northeast corner of the northwest quarter of Section 12, Township 139 North, Range 94 West with the existing Belfield to Rhame 230-kV transmission line owned and operated Basin in the southwest corner of the southeast quarter of Section 20, Township 139 North, Range 98 West (**Figure 2** and **Figure 3**). The Project is needed to inject energy generated by the Dickinson Wind Energy Center into the electric grid.

3.2 Project Design and Product Delivery

The approximately 33-mile, single-circuit, alternating current 230-kV transmission line will be constructed with steel monopole structures. The average height of the single-pole structures will range from 70 to 130 feet, depending on final engineering design (**Figure 4**). The span between structures will be up to 1,000 feet and will vary depending on geological or engineering constraints identified during final design. The typical right-of-way (ROW) is 150 feet wide.

Guyed structures will be required at approximately 22 turns. Depending on the angle, up to 16 guy wires may be required per turn, each up to 135 feet from the pole structure (**Figure 5**). Specialty structures and foundations may be required in certain circumstances.

The Project will allow the Dickinson Wind Energy Center to contribute approximately 150 megawatts (MW) of renewable energy to the power grid. The electric power (the "product" for purposes of this Application) will be delivered to Basin's energy grid pursuant to a PPA between Basin and Dickinson Wind.

The Project includes a switchyard and a temporary construction laydown area. The switchyard will be located on approximately 10 acres of land at the western terminus of the Project in the southwest corner of the southeast quarter of Section 20, Township 139 North, Range 98 West. All structures within the switchyard, including the control building, will be constructed in steel. The switchyard will be fenced and will have a rock surface final grade. The laydown yard will be approximately 15 acres; the location has not yet been identified. The laydown yard will be used to stage equipment, materials, and transmission line office trailers during construction of the Project.

The construction of the Project will occur within the Project Corridor identified in Section 3.3. The proposed Project Route was selected after addressing the factors identified in NDCC § 49-22-09 and evaluating the criteria in NDAC § Section 69-06-08-02.

3.3 Project Corridor

The Project Corridor will be the area surveyed for cultural resources, which is generally 150 feet in width and will be generally the same as the proposed Project ROW that will be acquired throughout the 33-mile length of the proposed Corridor.

The Applicant developed the Project Corridor based on identifying interested landowners between the proposed Dickinson Wind Energy Center collection substation and the existing Belfield to Rhame 230-kV transmission line. It was considered desirable to locate the new transmission line

near existing facilities such as roadways, section lines, and transmission line corridors with which the Project could be compatible.

The Applicant considered the exclusion and avoidance areas set forth in NDAC § 69-06-08-02 in selecting the Corridor. The Applicant sought to avoid residential areas and recreation and cultural resources (**Figure 6**). Documented archeological sites are discussed in Section 6.1.

The Project Corridor is rural and primarily composed of a mixture of cropland and grassland. It is located on privately-owned land along existing roadways and section lines to the extent feasible. All land within the Project Corridor will be obtained by easement, with the exception of the 10-acre switchyard parcel, which will be purchased, and the temporary laydown area, which will be leased. The legal land descriptions for parcels within the Project Corridor are provided in **Table 2** and represented on **Figure 2** and **Figure 3**.

Table 2. Project Corridor Land Description

Township	Range	Sections
139N	94W	12, 13, 14, 15, 16, 19, 20, 21
139N	95W	19, 20, 21, 22, 23, 24
139N	96W	19, 21, 22, 23, 24, 27, 28, 29, 30, 31
139N	97W	19, 24, 25, 26, 27, 28, 29, 30, 36
139N	98W	20, 21, 22, 23, 24, 27, 28

3.4 Project Route

The Applicant identified the route for the Project within the Project Corridor after considering the exclusion and avoidance criteria outlined in NDAC § 69-06-08-02 (Section 5.0 of this Application) and after considering public and agency input as described in Section 7.0 of this Application. Because landowner agreements are still being finalized, the route described in this Application includes three options in one segment (Options 1A, 1B, and 1C) and two options in another segment (Options 2A and 2B). All options were included in the analysis (**Figure 6**).

The Project Route was selected based on several additional considerations, including:

- Minimizing total length and construction costs;
- Minimizing impacts on residents, including (but not limited to) displacement, noise, aesthetics, recreation, agricultural production, and public services;
- Consideration of effects on public health and safety;
- Offsetting existing ROW (roadway or other utility ROW) or section lines to minimize impacts on current land use and to comply with Stark County requirements;
- Minimizing effects on archaeological and historic resources;

- Minimizing effects on wetlands and surface waters; and
- Minimizing effects on wildlife, rare or endangered species and unique natural resources.

Figure 6 identifies the proposed Project Route relative to the Project Corridor and exclusion and avoidance criteria. The legal descriptions of the route location are the same as those for the Corridor provided in **Table 3** above.

3.5 Project Schedule

The preliminary Project schedule provided below in **Table 3** is based on information known as of the date of this filing. The operation date is dependent upon permitting, equipment deliveries, and other development activities. The Applicant is targeting construction for June 2015, provided all pre-construction permits and approvals have been obtained.

Table 3. Estimated Project Schedule

Milestone	Date
Material Procurement	February – November 2015
Final Transmission Line Design	April 2015
Completion of Construction Easement Acquisition	April 2015
Certificate of Corridor Compatibility and Route Permit	June 2015
Construction Start	June 2015
Testing Operations	November 2015
In-Service Operations (Commissioning)	December 2015

3.6 Easement Acquisition

The Applicant is currently securing voluntary easements with landowners along the Project route. The Applicant will compensate landowners for easements based on the land within the construction easement and for facilities (structures and guy wires) placed in the Project route. The easement agreement describes easement conditions and restrictions. Up to 15 acres may also be leased for a temporary laydown yard. Land for the 10-acre switchyard will be purchased.

3.7 Project Construction

The proposed route passes primarily through agricultural and pasture land along existing road rights-of-way and section lines, or along the edges of crop fields, to the extent feasible. Because there are very few obstructions within the proposed route, minimal ROW preparations will be necessary. In those few areas where there is tree and shrub growth, ROW clearing will include cutting and removal. Where practicable, trees and low-growing vegetation will not be removed if future growth will not interfere with the operation or maintenance of the line. There may be limited use of herbicides to remove or control the growth of vegetation in some areas. Herbaceous and smaller woody plants will not be disturbed, except for those that will be crushed unavoidably during structure installation.

Some structure locations may require soil analysis. Soil borings will be taken for the purpose of determining the soil properties for engineering analysis. These borings will be taken by an

experienced geotechnical testing laboratory. The geotechnical drill rig will need access to the test sites.

The structures will be designed for installation at existing grades. Therefore, structure sites will not be graded or leveled, unless it is necessary to provide a reasonably level area for construction crews and equipment, such as digger/derrick trucks to auger holes for the structures, a crane for structure setting, and crew vehicles and bucket trucks for wire stringing and clipping operations.

Ground disturbance will occur during the setting of structures. These disturbances will occur during the boring of the hole used for setting the pole. Pole borings will extend into the subsurface approximately 20 feet and be approximately 5 feet in diameter. Boring equipment will be used to facilitate the installation of the transmission foundation. Soil removed during boring activities will be spread around the base of the pole.

The largest disturbance during installation of the transmission structures will occur during the excavation of the self-supporting dead-end foundations, if any are used (to be determined during final design). Foundations will extend into the subsurface approximately 25 to 30 feet and be approximately 7 feet in diameter. Boring equipment will be used to facilitate the installation of transmission foundations. The foundations will be constructed of reinforced concrete with pre-fabricated anchor bolt cases placed in the boreholes. Soil removed during boring activities will be sloped around the structure after installation or in adjacent upland areas.

The most noticeable impact on the site will be land disturbance in the area of transmission structure construction to allow adequate room for operation of equipment. Following the structure installation, the entire disturbed area will be groomed and seeded, including replacement of trees and herbaceous vegetation off the transmission line ROW. The anticipated area of disturbance at each structure site during construction will be a radius of up to 100 feet around each tower location.

After structures have been erected, conductors will be installed by establishing stringing setup areas within the ROW. These stringing setup areas will be located approximately every two miles along the route. Conductors will be installed between setup areas using a "controlled tension method," which ensures that the cable comes off the reel at a constant tension without backlashes. Conductor stringing operations will also require brief access to each structure to secure the conductor wires to the insulators or shield wire clamps once final line sag is established.

Stringing equipment generally consists of wire pullers, tensioners, conductor reels, shield wire reels, and stringing blocks. Stringing operations consist of pulling lightweight cables or ropes through the stringing sheaves located at every structure site. This cable or rope will be used to pull the conductors through the sheaves under sufficient tension to keep the conductor from coming into contact with the ground. Temporary guard or clearance poles will be installed over existing distribution or communication lines, streets, roads, highways, railways, or other obstructions after any necessary notifications are made and/or permits are obtained. This ensures that conductors will not obstruct traffic or come into contact with existing energized conductors or other cables, and protects the conductors from damage. Once a section of a line has been

installed, temporary structures will be removed, holes backfilled, and the area of disturbance reseeded to produce the same cover that was removed.

Debris associated with the transmission line construction may include construction materials such as packaging material, insulator crates, conductor reels, and wrapping. This debris may also include excess excavated soil and removed vegetation. Materials with salvage value, including conductor reels, unused conductor and hardware, poles, and other materials, will be removed from the site for reuse. Excess soil and vegetation will be distributed along the transmission ROW, but will not be placed in wetlands or other aquatic resources. Solid waste will be temporarily stored within the ROW or within the temporary construction easements, and then transported to appropriate disposal facilities. Debris will be disposed of in accordance with local, state and federal regulations.

Limited ground disturbance at the structure sites is anticipated during construction. A main laydown yard for secure, temporary storage of materials and equipment may be used by the construction contractor, and will include sufficient space to lay down material and assemble structures or hardware. Other staging areas will be located within the ROW, and will be limited to the structure site areas for structure laydown and framing prior to structure installation. Disturbed areas will be restored to their original condition to the maximum extent practicable.

Construction tasks will include the following:

- **Pre-Construction:** Includes activities such as environmental, geotechnical, cultural, avian, micro-siting, engineering, design, land procurement, various utility studies, and major procurement.
- **Surveying:** Initial line-survey work, consisting of aerial photography, survey control, route centerline location, profile surveys, and access surveys.
- **Pole Structures:** Vegetation will be removed from a limited area at structure locations. Once any vegetation is removed, holes will be drilled for structures using a truck-mounted auger.
- **Delivery and Assembly:** The pole structures will be transported to the erection sites on flatbed trucks and assembled. The footings of each would be backfilled with one and a half inch rock and tamped into place to prevent structure movement or settling. Final structure assembly and hardware placement will be completed using cranes and bucket trucks.
- **Conductor Installation:** Following erection of all structures, conductor and ground wires will be installed. Conductor will be pulled and tensioned from several locations (approximately every two miles) along with the transmission line route. Heavy, truck-mounted winches that also carry reels of conductor and cable will be used for pulling and tensioning work. Sections of the line within 0.5 mile of potentially suitable stopover habitat for whooping cranes will be outfitted with bird flight diverters.

Post-construction reclamation activities will generally include the following:

- Cleaning up all construction sites, including removing and properly disposing of debris;
- Removing all temporary facilities, including staging and laydown areas;
- Employing appropriate erosion control measures; and
- Reseeding disturbed areas (due to construction activities) with vegetation like that which was removed, and restoring the areas to their original condition to the extent possible.

Once construction is complete, all disturbed areas associated with transmission line construction would be restored to preconstruction condition. The Applicant will incorporate a tree replacement policy based on the Commission's Tree and Shrub Mitigation Specifications.

4.0 NEED FOR FACILITY

4.1 Need Analysis

The current layout of the Dickinson Wind Energy Center includes the collection substation approximately 33 miles from the Belfield to Rhame transmission line. The Dickinson Transmission line is required to transmit the energy to Basin's grid. As discussed in Dickinson Wind's Application for a Certificate of Site Compatibility, in December 2014, Dickinson Wind signed a 30-year PPA with Basin pursuant to which Basin will purchase all of the electrical output generated by the Dickinson Wind Energy Center for 30 years. The Dickinson Wind Energy Center will help Basin meet its member's energy needs while keeping member electricity rates low (Basin 2014). The point of interconnection was selected based on Basin's needs for load injection, and allows the energy generated by the Dickinson Wind Energy Center to directly serve Basin's load in the area. In addition, preliminary analysis indicated that interconnection into existing transmission lines in the area would have not been economically feasible.

4.2 Description of Studies Developed

Final design of the Project is dependent upon several factors, including landowner input, on-site pre-construction surveys, and agency consultation. The Applicant identified the preliminary location of the Route and Corridor based on desktop analyses, site visits, and agency consultation. Results of environmental and cultural studies are discussed in Section 6.0.

4.3 No Action and Feasible Alternative Methods

As discussed in Section 4.1, the point of interconnection was selected based on Basin's load injection needs and interconnection with existing infrastructure would not be economically feasible. Therefore, there is no feasible alternative method to serving the facility need.

4.4 Ten-Year Plan

The Applicant will file a Ten-Year Plan with the Commission and the Stark County auditor by July 1, 2015.

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5.0 TRANSMISSION FACILITY CORRIDOR AND ROUTE CRITERIA

The Applicant evaluated a study area to determine the best location for the Project. Within this study area, a Project Corridor was selected with regard to the following exclusion, avoidance, and selection criteria, as described in NDAC § 69-06-08-02. The selection criteria were intended to minimize potential land use impacts and environmental impacts, as well as to minimize impacts to the public. Policy criteria relate to the applicant's policies regarding health, safety, labor relations, and coordination with other interests. In addition, design and construction limitations present in the Project Corridor were also factored into the proposed route.

The Applicant gathered data from several sources to identify the locations of exclusion and avoidance areas and to determine the potential impact of its proposed facility on selection criteria. A computerized geographic information system (GIS) was utilized to compile and analyze most of the data. Specific sources included:

- North Dakota Natural Heritage Program dataset on sensitive species and habitats and state parks.
- U.S. Fish and Wildlife Service's National Wetland Inventory maps, obtained in GIS format.
- Documented cultural resources were identified through a Class I cultural resources inventory.
- Residences, and homesteads within the corridor were provided by a farmstead report from onsite land surveyors and land agents.
- Structures and other constraints (including extractable resources, cemeteries, and communication towers) were derived from data obtained from the North Dakota GIS Hub, as well as aerial photo interpretation, discussion with landowners, and field verification.
- Woodlands were derived from NLCD data.

5.1 Exclusion Areas

In accordance with NDAC § 69-06-08-02(1), the geographical areas listed in **Table 4** shall be excluded in the consideration of a route for a transmission facility. Exclusion areas are mapped for the Project Area on **Figure 6**.

Table 4. Exclusion Areas

Exclusion Area	Present within Project Corridor	Adjacent to Project Route	Proposed Buffer
Designated or registered national parks memorial parks; historic sites and landmarks; natural landmarks; monuments; and wilderness areas	No	No	No buffer is proposed because no features are identified within the Project Corridor.

Exclusion Area	Present within Project Corridor	Adjacent to Project Route	Proposed Buffer
Designated or registered state parks; historic sites; monuments; historical markers; archaeological sites; and nature preserves	Yes	Yes – archaeological sites	All archeological sites will be avoided or spanned. National Register-eligible sites within the Project Corridor will be fenced during construction to avoid impacts.
County parks and recreational areas; municipal parks; and parks owned or administered by other governmental subdivisions	No	No	No buffer is proposed because no features are identified within the Project Corridor.
Areas critical to the life stage of threatened or endangered animal or plant species	No designated critical habitat.	No	No buffer is proposed because no features are identified within the Project Corridor.
Areas where animal or plant species that are unique or rare to this state would be irreversibly damaged	No	No	No buffer is proposed because no features are identified within the Project Corridor.
Areas within 1,200 feet of the geographic center of the intercontinental ballistic missile (ICBM) launch or launch control facility	No	No	No buffer is proposed because no features are identified within the Project Corridor.
Areas within thirty feet on either side of a direct line between ICBM launch or launch control facilities to avoid microwave interference	No	No	No buffer is proposed because no features are identified within the Project Corridor.

5.2 Avoidance Areas

In accordance with NDAC § 69-06-08-02(2), the geographical areas listed in **Table 5** are not considered in the routing of a transmission facility unless the applicant can support the conclusion that there are no other reasonable alternatives. In determining whether an avoidance area should be designated for a transmission facility, the Commission may consider, among other things: the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources; and alternative sites. Avoidance areas are also mapped for the Project Corridor on **Figure 6**.

A total of 10 occupied residences are within 500 feet of the Project Corridor (Table 5). There is one residence along Option 1A, three residences along Option 2A, and four residences along Option 2B. The remaining two residences are along the eastern portion of the route where there are no options.

Table 5. Avoidance Areas

Avoidance Area	Present within Project Corridors	Adjacent to Project Route	Proposed Buffer
Designated or registered national historic districts; wildlife areas; wild, scenic or recreational rivers; wildlife refuges; and grasslands	No	No	No buffer is proposed because no features are identified within the Project Corridor.
Designated or registered state wild, scenic, or recreational rivers; game refuges; game management areas; forests, forest management lands; and grasslands	No	No	No buffer is proposed because no features are identified within the Project Corridor.
Historical resources which are not specifically designated as exclusion or avoidance areas	No	No	No buffer is proposed because no features are identified within the Project Corridor.
Areas which are geologically unstable	No	No	No buffer is proposed because no features are identified within the Project Corridor.
Within 500 feet of a residence, school, or place of business	Yes – 10 occupied residences	No	Waivers have been sought from the owners.
Reservoirs and municipal water supplies	No	No	No buffer is proposed because no features are identified within the Project Corridor.
Water sources for organized rural water districts	No	No	No buffer is proposed because no features are identified within the Project Corridor.
Irrigated land	No	No	No buffer is proposed because no features are identified within the Project Corridor.

Avoidance Area	Present within Project Corridors	Adjacent to Project Route	Proposed Buffer
Areas of recreational significance which are not designated as exclusion areas	No	No	No buffer is proposed because no features are identified within the Project Corridor.

5.3 Selection Criteria

In accordance with NDAC § 69-06-08-02(3), adverse effects resulting from the location, construction, and maintenance of a transmission facility shall be minimized to the extent practicable, and shall be managed and maintained at an acceptable minimum. **Table 6** identifies the selection criteria for the Project Corridors and proposed routes.

Table 6. Selection Criteria

Selection Criteria	Potential Adverse Effects
The impact upon agriculture:	
Agricultural Production	Areas within the construction easement may be disturbed during field surveys and construction, but will be restored as practicable and landowners will be compensated through an easement payment and for loss of agricultural production.
Family farms and ranches	See above.
Land which the owner can demonstrate has soil, topography, drainage, and an available water supply that cause the land to be economically suitable for irrigation	The Project Corridor is primarily crop land and pasture land. No irrigated lands were identified within the Project corridor.
The impact upon:	
Sound-sensitive land uses	Following construction, there will be a minimal amount of sound from the transmission line as a result of corona effects. Corona effects occur when air molecules near conducting wire are ionized due to changes in the electric field intensity at the conductor surface. The noise is most noticeable when conductors are wet as a result of precipitation.
The visual effect on the adjacent area	The proposed facility will be visible to landowners and travelers along roadways adjacent to the route. Other transmission lines are present in the viewshed.
Extractive and storage resources	There is an active coal lease north of the Project Corridor; three oil/gas wells and two water wells were identified within the Project Corridor. The transmission line structures will be placed to avoid impacts to these areas.
Wetlands, woodlands, and wooded areas	A wetland reconnaissance survey is underway and will be completed in spring 2015. A wetland reconnaissance report will be submitted to the Commission upon completion. Economically important forestry resources are not found in the Project Corridor. A few small patches of trees occur between grassland and agricultural fields and serve as shelterbelts or are present in drainageways and wetlands.

Selection Criteria	Potential Adverse Effects
Radio and television reception, and other communication or electronic control facilities	Tall structures such as buildings, communication towers, transmission lines, and wind turbines can create obstructions to nearby communications systems. Television reception disruption is not anticipated.
Human health and safety	The proposed facility will be designed and constructed to meet or exceed the standards of the National Electrical Safety Code. Regular maintenance and inspections will be performed during the life of the facility to ensure its continued integrity. The Project will be no closer than 111 feet to occupied residences, where electromagnetic fields will be at background levels. Safety precautions will be taken during construction and line installation.
Animal health and safety	Construction work will be coordinated with landowners to avoid impacts to livestock.
Plant life	The Applicant will avoid existing trees and shrubs as practicable. If impacts to trees and shrubs cannot be avoided, the individual trees/shrubs will be replaced according to the Commission's tree and shrub mitigation specifications. Temporarily disturbed areas will be reseeded.

5.4 Policy Criteria

In accordance with Section 69-06-08-02(4), preference will be given to a proposed route that is established based on the following policies and practices with the intent to provide benefit to the area to the maximum extent practicable. **Table 7** summarizes the policy criteria for the Project Corridor and Route.

Table 7. Policy Criteria

Policy Criteria	Suitable Policy or Dickinson Wind Practice
Location and design	The Applicant has committed to minimizing and mitigating environmental impacts, following the National Electrical Safety Code requirements and policies, designing the system to efficiently transfer electricity, ensuring worker and public health and safety, and constructing facilities to most effectively and efficiently meet its delivery obligations.
Training and utilization of available labor in this state for the general and specialized skills required	The Applicant will use local qualified contractors to provide the labor to the extent practicable.
Economies of construction and operation	The Applicant will use experienced local contractors to the extent practicable. The Applicant has evaluated feasible alternatives and selected a route that minimizes the extent and impacts to the social, economic, and natural environment.
Use of citizen coordinating committees	No citizen coordinating committees were used for the proposed route or proposed corridor, although an open house was held on March 19, 2015 to provide information on the associated wind energy facility and collect feedback from the local community. The Applicant has worked with landowners of properties for the Project.
A commitment of a portion of the transmitted product for use in this state	The Project will transmit energy from the Dickinson Wind Energy Center in Stark County, North Dakota and injected into the Belfield to Rhame 230kV line, and will be delivered into Basin's integrated system to serve electric customers in North Dakota.
Labor relations	No labor relations will be affected by the proposed 230kV Project.

Policy Criteria	Suitable Policy or Dickinson Wind Practice
The coordination of facilities	Existing infrastructure was considered in the location of the corridor, transmission line route, and associated facilities. The use of existing infrastructure would not be economically feasible. The Applicant will avoid impacts to existing infrastructure.
Monitoring of impacts	The Applicant and the EPC contractor will employ best management practices during construction to monitor soil impacts and segregate topsoil. Storm water prevention plans will be prepared for all disturbance sites exceeding the size threshold.
Utilization of existing and proposed rights-of-way and corridors	The Applicant has routed the transmission line parallel to existing roadways and section lines to the extent practicable.
Other existing or proposed transmission facilities	The Applicant is open to utilizing or paralleling existing utility ROW when siting transmission line routes, as practicable.

5.5 Design and Construction Limitations

The Applicant selected a study area for the proposed Project of approximately 33 miles in length. The route was chosen because it follows existing road rights-of-way and section lines, where practicable. Pursuant to NDAC § 69-05-01(2)(j), the proposed location of the Project is the most direct route which also minimizes impacts on the exclusion, avoidance, selection, and policy criteria identified in Section 69-06-08.02. In the evaluation of the study area, the Applicant also considered topography, location of existing transmission facilities (lines and substations), land ownership, and economics. It was necessary to originate the Project at the proposed Dickinson Wind Energy Center collection substation in Section 12, Township 139 North, Range 94 West and connect it to the Belfield to Rhame transmission line in Section 20, Township 139 North, Range 98 West. The location of the collection substation and the connection at the Belfield to Rhame transmission line has limited the design by dictating the points of terminus for the Project.

5.6 Economic Considerations

There are several economic considerations in deciding where to route the Project. Overall, minimizing the length decreases the cost to construct the transmission line due to use of less material and ROW. Minimized length also reduces transmission line loss.

The Applicant has and will continue to take steps to minimize any economic damage that might be created by the proposed facility. Landowners will be compensated through an easement payment for any potential loss of land and agricultural production. The route was chosen in as straight a line as possible with consideration given to willing landowner participation, constructability, exclusion areas, avoidance areas, and other selected areas.

6.0 ENVIRONMENTAL ANALYSIS

In the evaluation of the study area, the Applicant considered, among other things: topography, location of existing transmission facilities (lines and substations), location of communities and airfields, location of water resources, land ownership, and economics.

Final design of the Project is dependent upon several factors, including landowner input, on-site pre-construction surveys, and agency consultation. The Applicant identified the preliminary location of the route based on several desktop analyses, site visits, and agency consultation.

This section provides a summary of the environmental studies conducted for the Project Corridor and Route. Studies that have been completed include:

- Cultural Resources Inventory
- Desktop Analysis and Wetlands/Waters of the U.S. Reconnaissance Survey
- Whooping crane Desktop Assessment (Tetra Tech 2015a)
- Bat Desktop Assessment (Tetra Tech 2015b)

Wetland and cultural resources surveys are underway; these reports will be submitted to the Commission once they are complete by May 2015.

Each study is summarized below.

6.1 Cultural Resources Inventory

Tetra Tech performed a Class I Literature Review for the direct effects area of potential effects (APE) and for a 1-mile buffer around the direct effects APE. The direct effects APE is defined as the proposed Project footprint, or the 150-foot easement around the proposed route. The literature review identified 32 cultural resources and 28 cultural resource leads within the 1-mile buffer of the direct effects APE. Of these, one archaeological site and five site leads are within the direct effects APE. The archaeological site consists of a Euro-American farmstead and the five site leads include three possible bison jumps, one Euro-American mine, and one Native American isolated find.

Tetra Tech is currently conducting a Class III Intensive Cultural Resources Inventory of the direct effects APE to confirm the presence or absence of archaeological resources. The current pedestrian survey will also investigate the status of the previously documented site and site leads in the direct effects APE.

The pedestrian survey will be completed as weather permits in spring 2015. Shovel probing may be utilized in areas where pedestrian survey cannot adequately assess the presence or absence of cultural materials. Dickinson Wind and Tetra Tech coordinated with the State Historical Society of North Dakota (SHSND) on the appropriate scope and level of survey for the Project, and field survey procedures were approved by the SHSND on March 12, 2015. Once complete, the survey report will be submitted to the SHSND for review and concurrence, and a summary will be provided to the Commission.

Avoidance buffers will be created for archaeological sites recorded during the pedestrian survey of the direct effects APE that are potential eligible for listing on the National Register. Dickinson Wind will avoid direct impacts to these sites.

An Unanticipated Discovery Plan will be prepared for the proposed Project outlining the procedure that would be followed to prepare for and address any unanticipated discoveries of cultural resources, including previously undiscovered archaeological sites and possible human remains. It will provide direction to on-site personnel and their consultants as to the proper procedure to follow in the event that unanticipated discoveries were to be made during construction of the Project. No significant impacts to cultural resources would, therefore, be anticipated from the proposed Project.

In the event that burials or cultural sites with Native American religious values are identified during construction of the proposed Project, work would immediately halt within 200 feet of the site and the site would be protected until the SHSND and the North Dakota Indian Affairs Commission (NDIAC) are consulted, in addition to any involved Tribes that express interest in the Project and identify a potential impact.

If skeletal remains are possibly human, the Stark County Sheriff's office will be contacted. The Sheriff will call the North Dakota State Forensic Examiner to determine if the remains are associated with a crime scene. If the remains are historic or prehistoric, the North Dakota Chief Archaeologist will be contacted.

6.2 Desktop Analysis and Wetlands/Waters of the U.S. Reconnaissance Survey

A desktop analysis of aerial photography, topographic mapping, National Wetlands Inventory, and National Hydrography Dataset mapping identified eight potentially jurisdictional features within the Project Corridor, including five stream courses with probable fringe wetlands and three other wetland systems that did not appear to have associated stream channels. The streams include the South Branch of the Heart River and other unnamed tributaries to the Heart River.

A wetland reconnaissance was conducted for the Project in March 2015. The reconnaissance included approximately 9 miles of the line where easements have been negotiated, and the remainder of the route will be surveyed in spring 2015, and a report will be submitted when complete.

The purpose of the field reconnaissance was to identify the presence and location of wetlands and other waters of the United States (WoUS) that may be subject to U.S. Army Corps of Engineers (USACE) jurisdiction. During the reconnaissance, a total of 16 points were evaluated, and 11 wetland/WoUS polygons were mapped. These polygons were based on field observations of topography, hydrology, and vegetation that were consistent with wetland ecosystems. The reconnaissance was not a formal wetland delineation featuring soil test pits and more detailed vegetation analysis (**Figure 6**).

No permanent impacts from the construction of the Transmission Line are anticipated. No structures will be placed within the boundaries of potential waters of the U.S. and mechanized equipment will not be allowed to enter or traverse potential waters of the U.S. Formal wetland delineations are planned for four sites where the transmission line will be required to span more

than 150 feet of wetland/stream feature. These delineations will ensure that no structures are placed within the wetland/WoUS boundaries. Once the remaining mileage of the transmission line is surveyed in spring 2015, a Wetland Survey Report will be submitted.

6.3 Whooping Crane Desktop Assessment

A whooping crane likelihood assessment was completed in February 2015 for the Dickinson Wind Energy Center, including the proposed Project (Tetra Tech 2015a). Although there is foraging and roosting habitat within the Project Area, the landscape-scale analysis concluded that the likelihood of whooping cranes occurring within the Project Area is low based on the location of the Project Area on the edge of the migration corridor. Sections of the transmission line that are within 0.5 mile of potentially suitable stopover habitat for whooping cranes will be outfitted with bird flight diverters to reduce risk of collision for whooping cranes and other birds.

6.4 Bat Likelihood of Occurrence Assessment

A bat likelihood assessment was completed in February 2015 for the Dickinson Wind Energy Center, including the proposed Project (Tetra Tech 2015b). The Project Area contains small forested riparian corridors that bats could follow or utilize as day roosting sites, although these are not significant features from a regional perspective. The limited roosting habitat within the Project Area is a major limiting factor for use of the Project Area by migrating bats. Therefore, bat migration through the Project Area is likely low in magnitude. Based on sources for the region, there are no caves or other natural rock or crevice formations in the Project Area that would be suitable hibernacula and all known caves are greater than 20 miles from the Project Area (Murphy 2007, NDGS and NDDH 2001). There are six abandoned underground mines within the Project Area and six abandoned underground mines within the Project Buffer that could provide potential roosting habitat for bats (PSC 2013); however, the suitability of these mines for roosting bats is unknown. No known hibernacula for northern long-eared bats have been documented in North Dakota, although a thorough assessment of potential hibernacula in western North Dakota has not been completed (USFWS 2013). Based upon the potential roosting habitat (trees, buildings, abandoned mines) available in the Project Area, bats may roost in the Project Area; however, these sites have not been assessed for suitability as maternity colonies or as hibernacula.

7.0 PUBLIC AGENCY COORDINATION AND IDENTIFICATION OF PERMITS AND APPROVALS

7.1 Agency Consultation

NDAC § 69-06-01-05 lists 27 state agencies or officers that are entitled to notice of the Applicant's proposed action. Letters describing the proposed Project were sent to the applicable agencies in December 2014. Copies of these letters and all responses received are included in **Appendix C**; a summary of the responses received as of March 16, 2015 are presented below in **Table 8**.

Dickinson Wind will continue to meet with county officials as the Project moves forward and Dickinson Wind seeks any necessary local permits (e.g. building permit).

Dickinson Wind also held a public open house in Taylor, ND on March 19, 2015 to provide local residents the opportunity to meet the Project staff and discuss the Project.

Table 8. Summary of Agency Responses

Agency	Response Date	Response Summary
USFWS	12/19/14	There are no USFWS lands or easements in or adjacent to the Project Area.
SHSND	01/02/15	Recommends Class I file search and Class III Intensive Cultural Resources Inventories for archaeological sites.
USACE	01/07/15	If a Section 10 and/or Section 404 permit is required, a permit application must be submitted to USACE. NWP 12 requirements and general conditions were provided.
NDSWC	01/12/15	There are floodplains in the Project Area. A surface drain permit is required for filling wetlands. The online link for well locations was provided.
NDPRD	01/21/15	No state park lands are in the Project Area. There are some Land and Water Conservation Fund lands in the Project Area. The Old Red/Old Ten Scenic Byway is in the Project Area and the least amount of visual impacts is recommended. There are several significant ecological communities documented in the Project Area.
NDGF	01/22/15	Suggests use of USFWS Land-Based Wind Energy Guidelines; recommends avoidance of wetland impacts and maintaining existing drainage patterns, and replacing wetlands that are affected. Requests burying of collection lines, marking overhead lines near streams or wetlands; recommends monitoring for avian and bat mortality, and requests GPS coordinates of turbines once Project is constructed.
ND Department of Trust Lands	01/29/15	The Project Area does not contain school trust land surface acres, but the agency holds the mineral rights to several parcels in the Project Area. The agency recommends consultation with the North Dakota Oil and Gas Commission.
ND Department of Health	01/30/15	The agency believes the environmental impacts of the Project will be minor. Fugitive dust emissions should be minimized during construction. Aggregate to be used for road construction should be tested for erionite. Impacts to streams should be avoided and disturbed areas should be revegetated. Projects disturbing one or more acres must have a permit to discharge storm water runoff.

Additionally, in February 2015, the Applicant sent voluntary consultation letters introducing the Project and the associated Dickinson Wind Energy Center to 12 Native American tribes and inviting input. No responses from tribes have been received to date.

7.2 Potential Permits/Approvals

The federal and state permits or approvals that have been identified as potentially required for the construction and operation of the Project are shown in **Table 9**. Permits dependent on the final route and structure location will be applied for in spring 2015 prior to construction.

Table 9. Potential Permits and Approvals Required for Construction and Operation of the Project

Agency	Type of Approval	Status*	Need
Federal Approvals			
USACE	Nationwide Permit	3	A wetland survey will be completed in spring 2015.
EPA	SPCC	2	Required if more than 1,320 gallons of oil are stored onsite at switchyard; may be incorporated into Wind Energy Center SPCC.
State of North Dakota			
ND PSC (the Commission)	Certificate of Site Compatibility	1	Required for construction of generation facility over 0.5 MW in size.
	Certificate of Corridor Compatibility and Route Permit	1	Required for transmission lines over 115kV.
SHSND	Concurrence with effect recommendations	1	Class I File Search is complete and a Class III Intensive Cultural Resources Inventory for archaeology will be completed in spring 2015; the report will be submitted to SHSND for review when complete.
North Dakota Department of Health	NPDES Permit: General Construction Storm Water	2	Required for disturbance of over 1 acre of land. Must prepare a SWPPP.
Local Permits			
Stark County	Conditional Use Permit for the switchyard	2	Dickinson Wind will apply after submittal of this permit application.
Stark County	Floodplain Permit	3	Dickinson Wind will work with Stark County to determine if a floodplain permit is necessary if any poles are placed in floodplains.

* Status Explanation:

- 1 Applied and/or Decision Pending
- 2 Applying in Spring 2015
- 3 Final Design will Determine Whether Permit/Approval is Needed

8.0 FACTORS CONSIDERED

The Siting Act lists 11 factors to guide the Commission in the evaluation and designation of the corridor and route.

8.1 Public Health and Welfare, Natural Resources and the Environment

The preceding sections discuss the research and investigations relating to the effects of the proposed facility on public health and welfare, natural resources, and the environment. These effects and the proposed mitigation to minimize these effects are summarized in Section 6.0.

8.2 Technologies to Minimize Adverse Environmental Effects

The Applicant will utilize the most current technologies and construction technologies to minimize environmental impacts, including design and construction of the Project according to the Avian Power Line Interaction Committee (APLIC) recommendations (APLIC 2012). In addition, the portions of the Project that are located within 0.5 mile of suitable whooping crane stopover habitat will be outfitted with bird diverters to minimize the likelihood of large birds such as cranes colliding with the line.

8.3 Beneficial Uses of Waste Energy

This factor is not applicable to the Project.

8.4 Unavoidable Adverse Environmental Effects

The visual character of the site will be changed due to the construction of the Project; however, the existing landscape in the vicinity of the Project Corridor already includes an existing high-voltage transmission line, electrical distribution lines, and a Basin substation. The Project Route is expected to impact approximately 10.03 acres of land during operation, assuming a 10-acre switchyard and 3 square feet per pole every 400 linear feet.

8.5 Alternatives to the Proposed Route

Other alternatives were considered for the transmission route. The western terminus was Basin and the Applicant's preferred point of interconnect and the eastern terminus was determined by the location of the collection substation for the proposed Dickinson Wind Energy Center. The Applicant believes that the proposed location is the most viable alternative due to landowner preferences.

8.6 Irreversible and Irretrievable Commitment of Natural Resources

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the use of these resources have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable timeframe. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action. There are few commitments of resources associated with this Project that are irreversible and irretrievable, but these include those resources primarily related to construction. Construction of the Project will necessitate a one-time expenditure of funds, which is not retrievable.

Labor and natural resources will be used in the fabrication and preparation of construction materials. These materials are usually not retrievable. Construction resources that will be used include steel, aggregate resources, concrete, and hydrocarbon fuel. Each steel monopole structure requires the construction of a foundation approximately 5 feet wide and approximately 20 feet deep. During construction, vehicles will be traveling to and from the site, utilizing hydrocarbon fuels. These resources are not in short supply, and their use will not have an adverse effect on the availability of these resources. In addition, the anticipated economic benefits of the Project will balance the irretrievable commitment of resources resulting from the construction of the Project (see Section 8.5).

8.7 Direct and Indirect Economic Impact of the Proposed Transmission Facility

Economic impacts include impacts associated with the temporary disturbance of up to approximately 750 acres of land due to transmission structure installation and use of the laydown/construction staging areas. Permanent impacts will be lower, at approximately 10.03 acres, including the 10-acre switchyard. In general, agricultural areas surrounding each transmission line structure can still be farmed, and landowner compensation will be established by individual easement agreements. Other direct and indirect economic impacts are generally positive, and may include spending for fuel, operating supplies, and other products and services that will benefit local businesses.

8.8 Existing Development Plans in the Vicinity of the Route

No conflicts are anticipated with existing state and local government and private entities' development plans. The route was developed based on voluntary easement agreements with landowners.

8.9 Effects on Scenic and Cultural Resources

There are no designated recreational resources that would be affected by the Project. Section 6.1 describes the cultural resources inventory underway for the Project. No effects to potentially significant sites will occur.

8.10 Effects on Biological Resources

Biological resources within the Project Corridor and potential effects as a result of the Project are discussed in Sections 6.2-6.4. Effects will be avoided and minimized to the extent practicable. The transmission line will be designed and constructed following APLIC recommendations (APLIC 2006) to minimize the risk of electrocution for birds, and portions of the Project that are within 0.5 mile of suitable stopover habitat for whooping cranes will be marked per APLIC recommendations (APLIC 2012) to minimize impacts to whooping cranes and other large birds.

8.11 Problems Identified by Agencies

Agency coordination and potential permits/approvals are discussed in Section 7.1 and Section 7.2, respectively. In general, the agencies that responded concluded that the proposed Project will have minimal adverse effects. A copy of agency response letters is included in **Appendix B**.

9.0 QUALIFICATION OF CONTRIBUTORS

Name Project Role	Education and Professional Experience
MELISSA HOCHMUTH Project Manager, Development NEER	Ms. Hochmuth joined NEER in August 2008 and serves as NEER's lead developer for North Dakota. Melissa has over six years of experience in various roles with NEER. She spent five years in the environmental compliance and regulatory departments and began her role as lead developer for wind projects in North Dakota in October 2013. Melissa is responsible for managing and coordinating key functions of project development including site prospecting, meteorological tower deployment, financial analysis, land acquisition, contract negotiations including leases and obtaining all state, local, and environmental permits. Melissa holds a BA, Masters of Educational Administration and Law Degree from the University of Florida.
KIMBERLY WELLS, PH.D. Environmental Services Project Manager NEER	Dr. Wells has ten years of environmental permitting experience including experience as both a consultant and environmental manager in the renewable industry. Her primary expertise is technically challenging and interdisciplinary projects on private and public land, with a focus on large environmental impact assessment and permitting projects with the National Environmental Policy Act (NEPA) and state equivalents; the ESA, the Clean Water Act, and associated natural resource laws. She is a certified wildlife biologist and obtained her BS in Natural Resource Management from the University of Arizona, her MS in Fisheries and Wildlife Ecology from Oklahoma State, and her PhD in Fisheries and Wildlife Sciences from the University of Missouri – Columbia.
JASON UTTON Director Development NEER	Mr. Utton currently directs all wind energy development efforts in the Midwest ISO and PJM markets. Jason joined NEER in 2007. While with NEER, he has successfully developed over 500 MW of clean, renewable energy, which reflects a total company investment of over \$2.0B. Jason is the lead negotiator for all commercial contracts in North Dakota.
JOE MARCHESE Senior Director Construction NEER	Mr. Marchese is responsible for the management and oversight of all phases of engineering, construction, startup and performance testing of wind projects. Duties also include budget development, contract writing and administration, production, safety, and Operation & Maintenance setup, transition and turnover of facilities. Joe has over 30 years of experience in the supervision and construction management of energy facilities. He has supervised and managed design, construction, testing, operation and maintenance of wind, oil, coal, and nuclear energy facilities. He has also served as the maintenance manager at FPL's nuclear facilities where he had the responsibility to manage over 300-station construction and maintenance personnel. Joe is a professional Engineer licensed in Florida and Virginia.
BRIAN BJELLA Attorney for Applicants Crowley Fleck PLLP	Applicant's counsel. J.D. and Bachelor's degree, both from University of North Dakota.
ANNE-MARIE GRIGER, AICP Project Manager Tetra Tech, Inc.	Ms. Griger has ten years of experience in environmental planning and permitting, including NEPA compliance, for large-scale infrastructure projects including wind energy generating facilities, solar energy facilities, and highways. She serves as Project Manager for wind energy projects in Kansas, North Dakota, South Dakota, and Texas. Master's in Urban and Regional Planning and Bachelor's degree in Environmental Policy and Planning, both from Virginia Tech.

Name Project Role	Education and Professional Experience
LORI DAVIDSON Environmental Planner Tetra Tech, Inc.	<p>Ms. Davidson has nine years of experience in environmental planning and landscape architecture. She has a particular expertise in working with public agencies and private sector clients on a variety of project types and scales, including transmission line studies, and solar and wind facility studies, as well as preparing federal, state, and local documents such as Environmental Assessments and Environmental Impact Statements.</p> <p>Master's in Landscape Architecture, University of Michigan Bachelors of Science in Environmental Studies and Application, Michigan State University</p>
JAKE ENGELMAN GIS Analyst Tetra Tech	<p>Mr. Engelman prepared the application figures, impact calculations, and other GIS tasks in support of this permit application.</p> <p>He is a GIS specialist with four years of experience in environmental resource and utility planning projects. His skills include geographic information systems (GIS), cartographic and graphic design, remote sensing, natural and cultural environmental resource mapping, and global positioning system (GPS) data collection. He uses these skills to produce high-quality graphic products of proposed projects, ranging from generation scale utility projects to single parcel substations.</p> <p>BS, Geography, Minnesota State University-Mankato, 2010</p>
ADAM HOLVEN Archaeologist Tetra Tech	<p>Mr. Holven led the Class I and Class III Cultural Resources Inventory for archaeology for the Project. He has extensive archaeological field experience, including large-scale multi-square mile cultural resource surveys for wind farms in North Dakota, South Dakota, and Minnesota.</p> <p>MA, Anthropology, Iowa State University, 2006 BA, Anthropology, University of Northern Iowa, 2003 BS, Geology, University of Northern Iowa, 2001</p>
MELINDA MCCARTHY, RPA Archeologist and Architectural Historian AECOM	<p>Ms. McCarthy has 7 years of experience in archaeology and historic preservation. She specializes in cultural resource surveys and making determinations/recommendations for eligibility on the National Register of Historic Places. Her survey experience includes leading crews of 10-20 people in surveys covering pipeline corridors, well pads locations, access roads, and transmission lines. Additionally, she is a permitted architectural historian in North Dakota and is listed on the Register of Professional Archaeologists.</p> <p>MA, Historic Preservation, Southeast Missouri State University, 2011 BA, Anthropology emphasis Archaeology, Southeast Missouri State University, 2008</p>
STEVE YARBROUGH Wetlands Biologist Tetra Tech	<p>Mr. Yarbrough led the wetlands delineation surveys for the Project.</p> <p>He is a certified professional ecologist with the Ecological Society of America and a director on the board of the Colorado Native Plant Society, and has 26 years of experience as a biologist and environmental scientist in the environmental consulting field.</p> <p>MA (Master of Arts), Biology, University of Colorado, Denver, 2000 BA (Bachelor of Arts), Environmental Studies, University of Kansas, 1983</p>
LINDSEY MEYERS, PHD, PWS Ecologist AECOM	<p>Dr. Meyers has 7 years of experience as a wetland scientist. She specializes in wetland and natural resources surveying, assessments, and permitting and is certified as a Professional Wetland Scientist (PWS) through the Society of Wetland Scientists. Dr. Meyers has experience with performing wetland assessments and delineations and botany surveys. Additionally, she has completed research on</p>

Name Project Role	Education and Professional Experience
	<p>vegetation and soil nutrients, floristic quality, statistical models, grazing and burning interactions, and plant community spatial patterns.</p> <p>PhD, Natural Resources Management, North Dakota State University, 2013 MS, Natural Resources Management, North Dakota State University, 2010 BS, Biology and Mathematics, University of Jamestown, 2008</p>
<p>EVONNE SCHROEDER Wildlife Biologist Tetra Tech</p>	<p>Ms. Schroeder has 10 years of experience as a wildlife biologist, conducting wildlife monitoring and other field studies in a variety of habitats and regions. Her primary focus has been in avian biology. She has experience conducting field studies including breeding bird surveys, avian point count surveys, avian capture using mist nests and banding, raptor surveys, vegetation sampling, and small mammal trapping using live traps.</p> <p>MS, Wildlife Science, Texas Tech University, 2010 BS, Conservation Biology (emphasis: Wildlife Biology), Brigham Young University, 2002</p>

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11.0 DEFINITIONS

APE	Area of Potential Effects
APLIC	Avian Power Line Interaction Committee
Class I Cultural Resources Inventory	Existing data inventory – a large-scale review and compilation of known cultural resource data
Class II/III Cultural Resources Inventory	Field inventory to identify cultural resources that could be affected by project facilities within the Project Area
Commission	North Dakota Public Service Commission
Corridor Certificate Distribution	Certificate of Corridor Compatibility and Route Permit
Generator	Relatively low-voltage lines that deliver electricity to the retail customer's home or business A machine by which mechanical energy is changed into electrical energy
Geotechnical	A science that deals with the application of geology to engineering
GIS	Geographic information system
Guidelines	North Dakota Public Service Commission Application Guidelines for a Certificate of Corridor Compatibility
kV	kilovolt
NEER	NextEra Energy Resources, LLC
NDAC	North Dakota Administrative Code
NDCC	North Dakota Century Code
Project, the	Dickinson Transmission Line
PSC	Public Services Commission
ROW	right-of-way
SHSND	State Historical Society of North Dakota Office
Siting Act	North Dakota Energy Conversion and Transmission Facility Siting Act
Substation	A subsidiary station in which electric current is transformed
SWPPP	Storm Water Pollution Prevention Plan
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WoUS	waters of the United States

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Figures

Appendix A
Excerpt of NextEra Energy, Inc.'s 2014 Corporate
Responsibility Report

**Appendix B
Studies**

Appendix C
Agency Notification Letters and Responses
