Merricourt Wind Power Project

APPLICATION OF AMENDMENT FOR THE CERTIFICATE OF SITE COMPATIBILITY

Dickey and McIntosh Counties

October 2014

Prepared for:

EDF renewable energy

Prepared by:

KLJ

1.0 Introduction

The purpose of this application is to provide updated project information and seek approval of an amendment to the Certificate of Site Compatibility issued in Case No: PU-08-932. The Merricourt Wind Power Project had GE 1.5 MW turbines identified in the approved Certificate of Site Compatibility; however, these turbines are no longer available. This request for approval would include replacing the GE 1.5 MW turbines with Vestas V100-2.0 MW turbines, which in turn, has decreased the turbine count and study area size and changed the layout. The following sections have been revised to reflect the new project information.

1.1 Project Site:

A 50-square mile area was evaluated during initial project development. As part of the evaluation process, several wind turbine generator (WTG) layouts were analyzed.

A new project boundary and layout was created based on the wind regime, maximum energy output and proximity to available transmission lines while considering known constraints. More than 40 wind turbine layouts, 20 access road layouts, and 11 collector line layouts were reviewed but eliminated due to one or more of the following reasons:

- Proximity to designated piping plover critical habitat
- Direct and/or indirect impacts to wetlands and/or waterbodies
- Proximity to Waterfowl Production Areas
- Acquisition of new U.S. Fish & Wildlife Service (USFWS) wetland and grassland easements
- Identification of raptor nests and grouse leks
- Locality to cultural resources

Within the new project layout, a total of 259 turbine sites were evaluated, but only 75 primary locations and 8 alternate locations will be considered for the Certificate of Site Compatibility. The proposed facility would still be capable of producing 150 MW of power.

Revisions to the initial site layout have reduced the project area from 22,457 acres to 10,960 acres. Please refer to Table 1. Site Location and Figure 1. Proposed Turbine Placements on page E-3 for final project siting. For a comparative analysis, please refer to Figure 2. Turbines, Access Road & Collection Line Comparison on page E-4.

Table 1. Site Location

County	Township Name	Township	Range	Sections
Dickey	German	131	66	29–31
McIntosh	Rosenthal	131	68	24
	Antelope	131	67	19, 21, 23, 25–36
	Iowa	130	68	1
	Beresina	130	67	2–6, 8, 9

1.4 Project Schedule

Provided all pre-construction permits and approvals, financial closing and equipment deliveries, have been obtained, construction of the proposed project is anticipated to begin in June 2015 and be fully operational by the end of year.

1.5 Project Ownership

The Merricourt Wind Power Project remains under the same ownership; however, a company name change occurred in 2012 and enXco Development Corporation is now known as EDF Renewable Development, Inc. ("EDF"). Upon completion of the project, EDF may continue to own and operate the project or transfer ownership to a utility or another qualified entity. Accordingly, EDF will file a Ten-Year Plan pursuant to Section 49-22-04 of the North Dakota Century Code and Chapter 69-06-02 of the North Dakota Administrative Code.

3.1 Exclusion Areas

Siting for the turbines has taken into account necessary setbacks and the need to avoid environmentally sensitive areas. Per Section 69-06-08-01 of the North Dakota Administrative Code[1], certain geographical areas shall be excluded from energy facility siting consideration. A buffer zone or setback of a reasonable width shall be implemented to protect the integrity of these areas. Please refer to the revised ***Figure 3. Exclusion Areas Map on page E-5***.

Additional areas were also excluded from the development of WTG layout and/or have setbacks. These include:

- Occupied residences — a minimum setback of 1,500 feet
- Churches/cemeteries — a minimum setback of 800 feet
- Overhead Utilities — a minimum setback of 500 feet
- Gravel pits — a minimum setback of 700 feet

1 As defined in North Dakota Administrative Code 69-06-08-01, exclusion criteria is defined as "criteria that remove areas from consideration for energy conversion facility sites and transmission facility route." Exclusion areas are composed of these limiting criteria.

Proposed Turbine Layout

T131N~R 68W

T131N~R 67W

1A 2A 3A 4A 6A 7A 8A 9A 10A 11A 12A 13A 14A 15A 16A 17A 18A 19A 20A 21A 22A 23A 24A 25A 26A 27A 28A 29A 30A 31A 32A 33A 34A 35A 36A 37A 38A 39A 40A 41A 42A 43A 44A 45A 46A 47A 48A 49A 50A 52A 53A 54A 55A 56A 57A 58A 59A 60A 61A 62A 64A 65A 66A 67A 68A 69A 70A 71A 72A 73A 74A 75A 76A 77A 78A 79A 80A 81A 82A 83A 84A 85A

McIntosh Co.

Dickey Co.

Merricourt Wind Power Project

- Primary Turbines
- Alternative Turbines
- Primary Access Rds.
- Preliminary Collector Lines
- Alternate Access Rds.
- Met Towers
- Operations and Maintenance
- Proposed Substation
- Final Project Boundary

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Turbines, Access Road & Collection Line Comparison

T131N~R 68W

T131N~R 67W

McIntosh Co.

Dickey Co.

Merricourt Wind Power Project

- Proposed Turbine Locations
- Previous Turbine Locations
- Proposed Access Rds.
- Previous Access Rds.
- Proposed Collector Lines
- Previous Collector Lines
- Final Project Boundary

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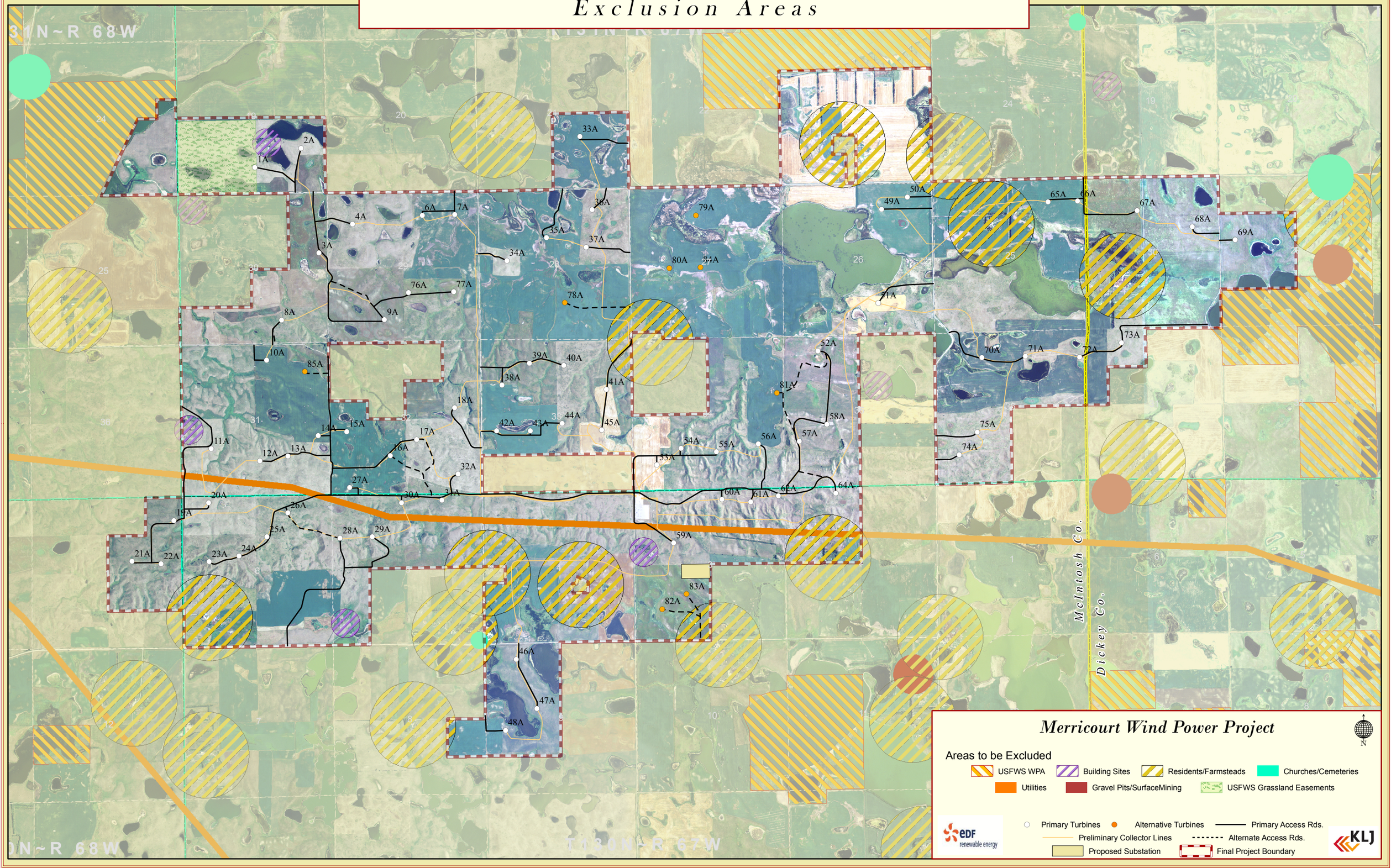
Exclusion Areas



3.2 Avoidance Areas

Per section 69-06-08-01 of the North Dakota Administrative Code[2], certain geographical areas shall not be approved for the use as energy conservation facilities unless the applicant shows that, under the circumstances, there is no reasonable alternative. In determining whether an avoidance area should be designated for a facility, the PSC may consider the following: the proposed management of adverse impacts; the orderly siting of facilities; system reliability and integrity; the efficient use of resources; and alternative sites. A buffer zone of reasonable width shall be implemented to protect the integrity of these areas. Please refer to the revised ***Figure 4. Avoidance Areas Map***.

Avoidance Measures (including access roads and other ancillary facilities):

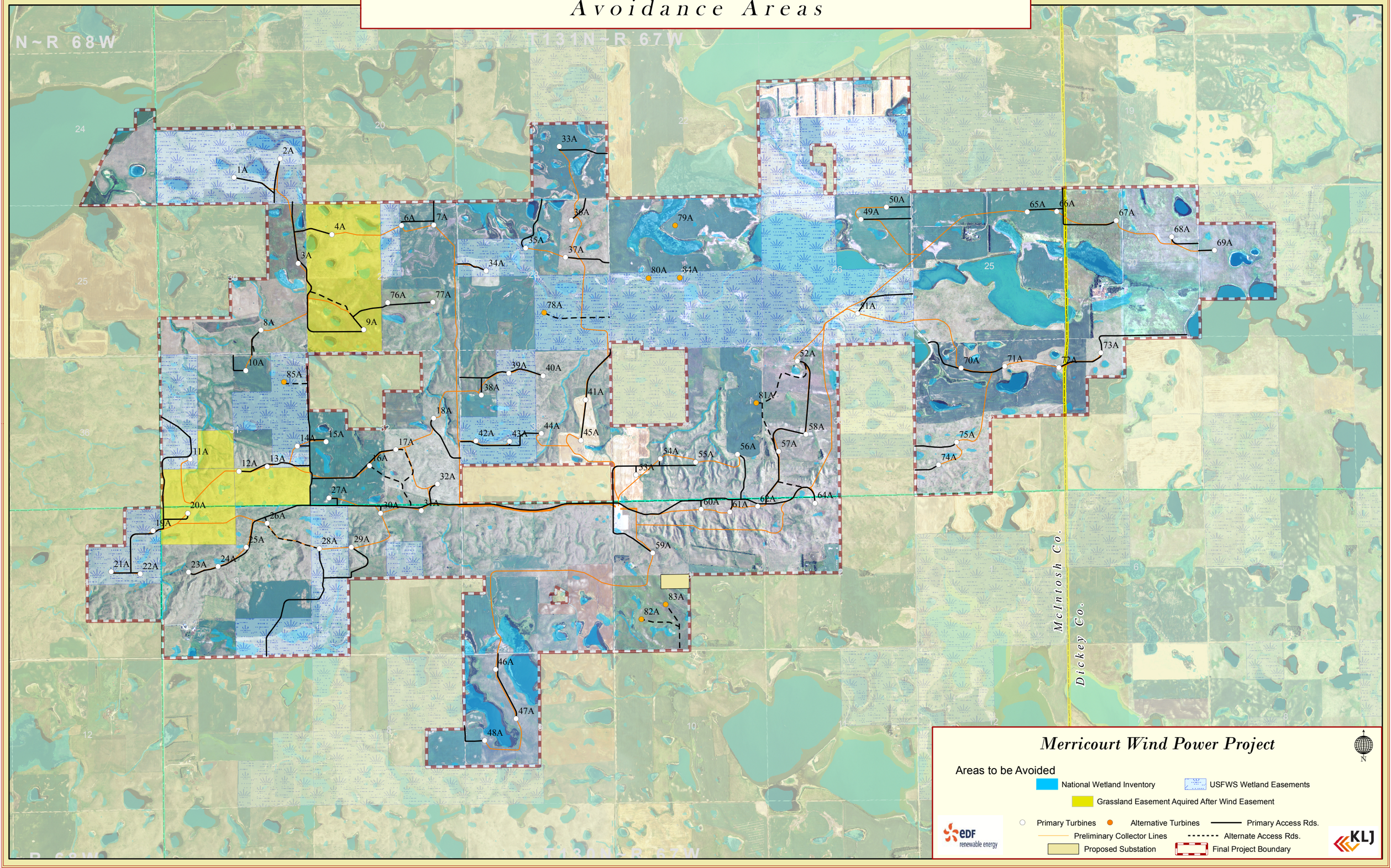
These parameters reflect the minimum efforts made to date by EDF in the project's design.

- Access roads have been sited within section line right-of-ways, where practical, to minimize impacts to cropland and native rangeland.
- USFWS protected wetland basins would be fenced off during construction to ensure fill would not be placed within wetland basins.
- Collector lines would be routed around USFWS protected wetland basins or directionally bored beneath.
- Setback WTGs 75 feet from wetlands and USFWS wetland easements.[3]
- Setback WTGs 25 feet from USFWS grassland easements.
- Elimination of any overhead power lines in the project site design (to the point of interconnect) to avoid avian impacts.
- Construction buffer of ¼-mile from active red-tailed and Swainson hawk nests between April 15 and August 15.
- Construction buffer of ¼-mile from active sharp-tailed grouse leks between March 15 and May 15.
- A construction buffer of ½-mile from all active ferruginous hawk nests between March 15 and July 15.
- Total avoidance of identified cultural resource sites and artifacts.
    - A Cultural Resources Identification Plan has been developed, as well as a Monitoring and Discovery Plan. Cultural sensitivity training will be provided for construction and operation personnel. Tribal monitoring will be in place during project construction.

2 As defined in North Dakota Administrative Code 69-06-01-01, avoidance criteria is defined as "criteria that remove areas from consideration for energy conversion facility sites and transmission facility routes unless it is shown that under the circumstances there are no reasonable alternatives." Avoidance areas are composed of these limited criteria.

3 As the USFWS easement program is on-going, a number of new wetland and grassland easements were signed into protection following EDF obtaining wind energy easements. According to the Kulm Wetland Management District, EDF's wind energy easements would supersede the newly acquired USFWS easements.

Avoidance Areas



Merricourt Wind Power Project

Areas to be Avoided

- National Wetland Inventory
- USFWS Wetland Easements
- Grassland Easement Aquired After Wind Easement

- Primary Turbines
- Alternative Turbines
- Primary Access Rds.
- Preliminary Collector Lines
- Alternate Access Rds.
- Proposed Substation
- Final Project Boundary

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6.1 Project Layout and Associated Facilities

The proposed project would consist of 75 wind turbine generators, approximately 29.4 miles of access roads and approximately 37.4 miles of underground electrical collector cables to primary turbines.

6.2 Description of Wind Turbines

EDF plans to utilize Vestas, V100-2.0 MW turbines for the project. These turbines reach a height of 262 feet at the hub, and the maximum height from tower base to blade tip would be 427 feet. The 13.5-foot diameter wind turbine towers would be mounted on concrete foundations approximately 25 feet in diameter and would each occupy an approximately 116-foot diameter graveled pad. Description of this turbine type is included in the table below. Please refer to Table 2. Turbine Specifications.

Table 2. Turbine Specifications

Rated Capacity	2.0 MW
Begin Operation Wind Speed	6.7 mph
Capacity Reached Wind Speed	26.8 mph
Maximum Operation Wind Speed	44.7 mph
Withstandable Wind Speed	100 mph
Rotor Diameter	328 feet
Rotor Swept Area	84,539 square feet
Cold Temperature Limit	To -22 °F
Generator	doubly fed generator, slip rings

7.6 Noise

A revised noise analysis was completed by EDF on residences within and surrounding the proposed wind project of 75 Vestas V100-2.0 wind turbines. All noise modeling assumptions were equal to or more conservative than the refined noise analysis previously reported by EAPC in "Merricourt 187.5 MW Wind Farm Preliminary Noise Analysis Merricourt, North Dakota." The notable differences are that EDF has modeled the sound power levels at occupied residences at 4 m above ground level [AGL] rather than the 1.5 m AGL previously modeled. EDF also added in a 2 dB buffer to each octave band to take into account the uncertainty within the noise model and any future noise monitoring. Both these changes lead to more conservative results compare to the previous report. The results of this analysis are presented in the table in Appendix A.

In addition to noise, EDF also completed a revised shadow flicker analysis on residences within and surrounding the newly proposed project layout. All shadow flicker assumptions were equal the refined shadow flicker analysis previously reported by EAPC in "Merricourt 187.5 MW Wind Farm Preliminary Shadow Flicker Merricourt, North Dakota." The results of this analysis are presented in the table in

Appendix A. The home locations in question have significant wind breaks around the property, so it is likely that these shadow flicker results would not be as high as reported in the results.

7.8 Cultural and Archaeological Resources

Previous Class III Cultural Resource inventories were conducted by KLJ in 2009, 2010 and 2011. Additional cultural fieldwork was completed by KLJ in 2013 for approximately 1,907 acres. Wind turbines, access roads, and associated facilities were sited to avoid archaeological sites and traditional cultural properties. A 100-foot buffer from all known cultural resource sites has been incorporated into the project layout. Due to the proximity to the Whitestone Hill State Historic Site, the USFWS and ND State Historical Preservation Office recommended a view-shed analysis be completed to identify possible impacts from the proposed project. The Cultural Resources Report will be finalized following the view-shed analysis.

7.14 Wetlands

Numerous wetlands of various hydrology and vegetation exist within the revised project area. Field wetland delineations were completed by KLJ progressively during layout analysis to determine wetland impacts. Turbines and access roads have been sited using a minimum set-back distance of 75 feet from delineated wetlands. In addition, collector lines would be routed around USFWS protected wetland basins or directionally drilled beneath. A total of approximately 233 acres of wetlands have been delineated within the project area. Wetland impacts will be avoided the greatest extent possible. Additionally, KLJ and the USFWS will be onsite during micro-siting to identify and delineate any additional wetlands not previously analyzed. The Wetlands Report will be finalized in the next couple weeks.

Noise modeling results at Merricourt for Layout v64 (V100-2.0)
Cordinates reported in UTM datum NAD83 Zone 14

Receptor ID	Easting [m]	Northing [m]	Noise [dB]
16	490283	5105421	44.90
15	495120	5108250	44.26
9	500078	5108882	43.97
17	493302	5105806	43.27
8	498719	5109392	42.85
7	493436	5110464	42.13
5	498236	5110200	42.06
6	497191	5110317	40.42
23	492488	5104255	39.50
22	495757	5105037	39.48
14	500243	5106869	37.92
25	489541	5104486	36.99
24	490239	5103986	35.77
21	497769	5104152	33.87
2	493612	5112879	32.35
1	493771	5113184	31.54
10	503221	5109799	30.97
3	494256	5113407	30.91
26	497902	5102858	30.71
4	495901	5113848	29.44
18	502098	5105119	29.13
27	500571	5102128	26.77
34	497559	5099194	24.86
13	506005	5107911	24.21
33	501205	5100191	23.83
28	504260	5102971	23.70
32	501750	5100252	23.48
12	506625	5109337	23.17
42	497919	5097919	23.11
35	501219	5098859	22.41
20	505904	5103621	22.34
41	496475	5096801	22.30
11	507698	5110376	21.48
29	506768	5102402	20.73
38	504339	5097824	19.63
39	504524	5097792	19.49
19	509583	5104876	19.09
31	507435	5100144	18.98
40	504993	5096786	18.56
30	508386	5100217	18.34
43	511145	5108851	18.07
36	508449	5099327	17.88
37	507752	5096650	16.99
44	511544	5098216	15.57
45	511147	5096893	15.30

Noise modeling results at Merricourt for Layout v64 (V100-2.0)
Results for all receptors with more than one hour of shadow flicker per year.

Receptor ID	Easting [m]	Northing [m]	Shadow flicker [hours/yr]
8	498719	5109392	24.3
15	495120	5108250	18.8
5	498236	5110200	11.7
6	497191	5110317	7.7
23	492488	5104255	6.7
7	493436	5110464	6.1
17	493302	5105806	4.4
16	490283	5105421	2.7
9	500078	5108882	2.7

Noise modeling: EDF performed noise analysis on residences within and surrounding the proposed wind farm of 75 Vestas V100-2.0 wind turbines (150 MW) near Merricourt, ND. All noise modeling assumptions were equal to or more conservative than the refined noise analysis previously reported by EAPC in "Merricourt 187.5 MW Wind Farm Preliminary Noise Analysis Merricourt, North Dakota."

The notable differences are that EDF has modeled the sound power levels at occupied residences at 4 m above ground level [AGL] rather than the 1.5 m AGL previously modeled. EDF also added in a 2 dB buffer to each octave band to take into account the uncertainty within the noise model and any future noise monitoring. Both these changes lead to more conservative results compare to the previous report. The results of this analysis are presented in the table.

Shadow Flicker: EDF performed shadow flicker analysis on residences within and surrounding the proposed Merricourt Wind Farm. All shadow flicker assumptions were equal the refined shadow flicker analysis previously reported by EAPC in "Merricourt 187.5 MW Wind Farm Preliminary Shadow Flicker Merricourt, North Dakota." The results of this analysis are presented in the table.

The home locations in question have significant wind breaks around the property, so it is likely that these shadow flicker results would not be as high as reported in the results.