

Interim Eagle Use
Survey Memo



TO: NextEra Energy Resources, LLC
FROM: Tetra Tech
DATE: 2/17/2016
CORRES. NO.: TTCES-PTLD-2016-004
SUBJECT: Brady Wind Energy Center Eagle Use Report, August 2015 – February 2016

Introduction

NextEra Energy Resources, LLC (NextEra) is developing the Brady Wind Energy Center (Project) located in Stark County, North Dakota (Figure 1). NextEra is committed to environmental due diligence and has contracted Tetra Tech, Inc. (Tetra Tech) to conduct eagle use surveys in the Project Area. The objective of the eagle use surveys is to document eagle movements and behavior within and adjacent to the Project Area. Tetra Tech used standardized protocols for the eagle use surveys that were designed to be responsive to the level of effort recommended in Tier 3 of the voluntary Land-Based Wind Energy Guidelines (WEG; USFWS 2012) and Stage 2 of the Eagle Conservation Plan Guidance (ECP Guidance; USFWS 2013). This report describes eagle use surveys conducted from August 2015 through January 2016.

Methods

Eagle Use Surveys

In August 2015, 13 observation points, each with an 800-meter-radius, were established within the original proposed Project layout and boundary (dated May 21, 2015; Figure 1). These observation points provided spatial coverage of approximately 28 percent of a 1-kilometer buffer around the proposed turbine locations, consistent with recommendations in the ECP Guidance (USFWS 2013). However, subsequent changes to the proposed turbine array after the point-count locations were established reduced spatial coverage to approximately 17 percent of the 1-kilometer buffer around the proposed turbine locations (dated November 06, 2015). Therefore, in January 2016, three of the original point-count locations with poor coverage of the turbine buffer were removed and eight additional point-count locations were established within the Project Area, resulting in a total of 18 point-count locations and spatial coverage of approximately 30 percent of the 1-kilometer buffer around turbine locations (Figure 1).

Eagle use surveys were conducted on two or three consecutive days every 2 weeks from August 20, 2015 to January 30, 2016 for a total of 13 rounds of surveys. From August 20 to October 27, general avian point counts were conducted consecutively with eagle use surveys at each point-count location. All birds, including eagles, were recorded during the general avian point-count surveys,

whereas only eagles were recorded during the eagle use surveys. Eagles were tracked on separate data sheets from other species during all surveys to facilitate analysis. Each general avian point count lasted 20 minutes, and was followed by an eagle use survey lasting an additional 60 minutes, for a total of 80 monitoring minutes per location. The fall avian surveys ended on November 04, 2015, and from November 8, 2015 to January 30, 2016, eagle use surveys were conducted exclusively at each point-count location, for a total of 60 monitoring minutes. Surveys were conducted during daylight hours, and the order in which points were surveyed was altered between subsequent rounds so that each point was surveyed at different times of the day over the course of the season. Surveys were not conducted if fog or cloud cover reduced visibility to less than 400 meters of horizontal distance or less than 200 meters of vertical distance.

During each eagle use survey, the biologist continuously scanned the surrounding landscape for eagle activity using an unlimited viewshed. For each eagle observed, the biologist recorded the species, age class (Adult, Immature, or Unknown), time first and last observed, minimum and maximum flight heights, and flight behavior. Eagle flights were recorded in two height categories (less than or equal to 200 meters and greater than 200 meters above ground), based on the ECP Guidance. The time an observed eagle spent flying within the 800-meter-radius circular plot around the count location at each of these height categories was recorded and rounded up, in one-minute intervals, so that these data could then be translated into eagle exposure minutes for projected fatality modeling. In accordance with the ECP Guidance, exposure minutes were defined as the number of minutes that an eagle was observed below 200 meters within the 800-meter-radius circular plot. Flight paths were drawn for each eagle within the viewshed on a topographic map of the Project Area, and later digitized using a geographic information system (GIS) software.

Incidental Observations

Eagles observed during the surveys but outside the 800-meter-radius circular plot as well as eagles observed within or near the Project Area, but outside of the survey period (such as when the biologist was traveling between observation points), were recorded as incidental observations. Flight paths of eagles observed during the surveys but outside the 800-meter-radius circular plot were collected, however, flight paths were not recorded for incidental eagles observed while in transit. Exposure minutes were not recorded for the incidental eagle observations. Therefore, incidental observations were not included in the analysis and are presented in this report as supplemental information to the eagle use and point-count data to describe the overall activity by eagles within the Project Area. The biologist also noted incidental observations of other raptors, large birds, and avian species that were uncommon or unusual within the Project Area.

Results

Eagle Use Surveys

No bald or golden eagles were observed within the 800-meter-radius circular plots during 205 hours of monitoring during the general avian point counts and eagle use surveys (Table 1).

Therefore, no eagle exposure minutes were recorded during the surveys and overall mean use, calculated as the total number of eagles observed divided by the total number of observation hours, was 0.00 eagles per hour.

Incidental Observations

One bald eagle and five golden eagles were observed incidentally within the Project or surrounding area (Figure 1). These incidental eagle observations occurred during the eagle use surveys but beyond 800-meter-radius circular plots or outside of the surveys, and therefore accrued no exposure minutes. The bald eagle was observed in flight between 50 and 80 meters above ground level, near Survey Point 5 on September 30, 2015. The first golden eagle was observed perched in a tree, before being flushed and flying away to the south at a flight height between 10 and 50 meters above ground level south of Survey Point 4 on August 19, 2015. The second golden eagle was observed on December 4, 2015, perching on a large butte in proximity to a group of five large, unoccupied stick nests outside of and to the northwest of the Project Area; the nests were first located during an aerial raptor nest inventory conducted in November 2015 (Tetra Tech 2015). The third golden eagle was observed on January 3, 2016, perched on a utility pole, approximately 4 meters above the ground, near Survey Point 20. The fourth golden eagle was observed on January 15, 2016; the eagle was observed flying to the west at a flight height between 50 and 70 meters above ground level, to the north of the Project Area. The fifth golden eagle was observed on January 29, 2016; the eagle was observed to the west of Survey Point 18, flying to the north at a flight height between 30 and 80 meters. The biologist documented six other species incidental to eagle use surveys: prairie falcon (1 individual), Swainson's hawk (26 individuals), northern harrier (4 individuals), red-tailed hawk (9 individuals), great-horned owl (3 individuals), and sharp-tailed grouse (4 individuals). Along with the bald and golden eagle, the prairie falcon, Swainson's hawk, northern harrier, and sharp-tailed grouse have been designated as species of conservation priority by the North Dakota Game and Fish Department (Hagen 2005).

References

- Hagen, S.K., P.T. Isakson, and S.R. Dyke. 2005. North Dakota Comprehensive Wildlife Conservation Strategy. North Dakota Game and Fish Department. Bismarck, ND.
- Tetra Tech, Inc. 2015. Fall 2015 Avian Report for the Brady Wind Energy Center, Stark County, North Dakota. Report prepared for NextEra Energy, LLC.
- USFWS (United States Fish and Wildlife Service). 2012. Land-based Wind Energy Guidelines. Available online at: http://www.fws.gov/windenergy/docs/WEG_final.pdf
- USFWS. 2013. Eagle Conservation Plan Guidance. Module 1 – land-based wind energy, version 2. U.S. Fish and Wildlife Service, Division of Migratory Bird Management, Washington D.C., USA.

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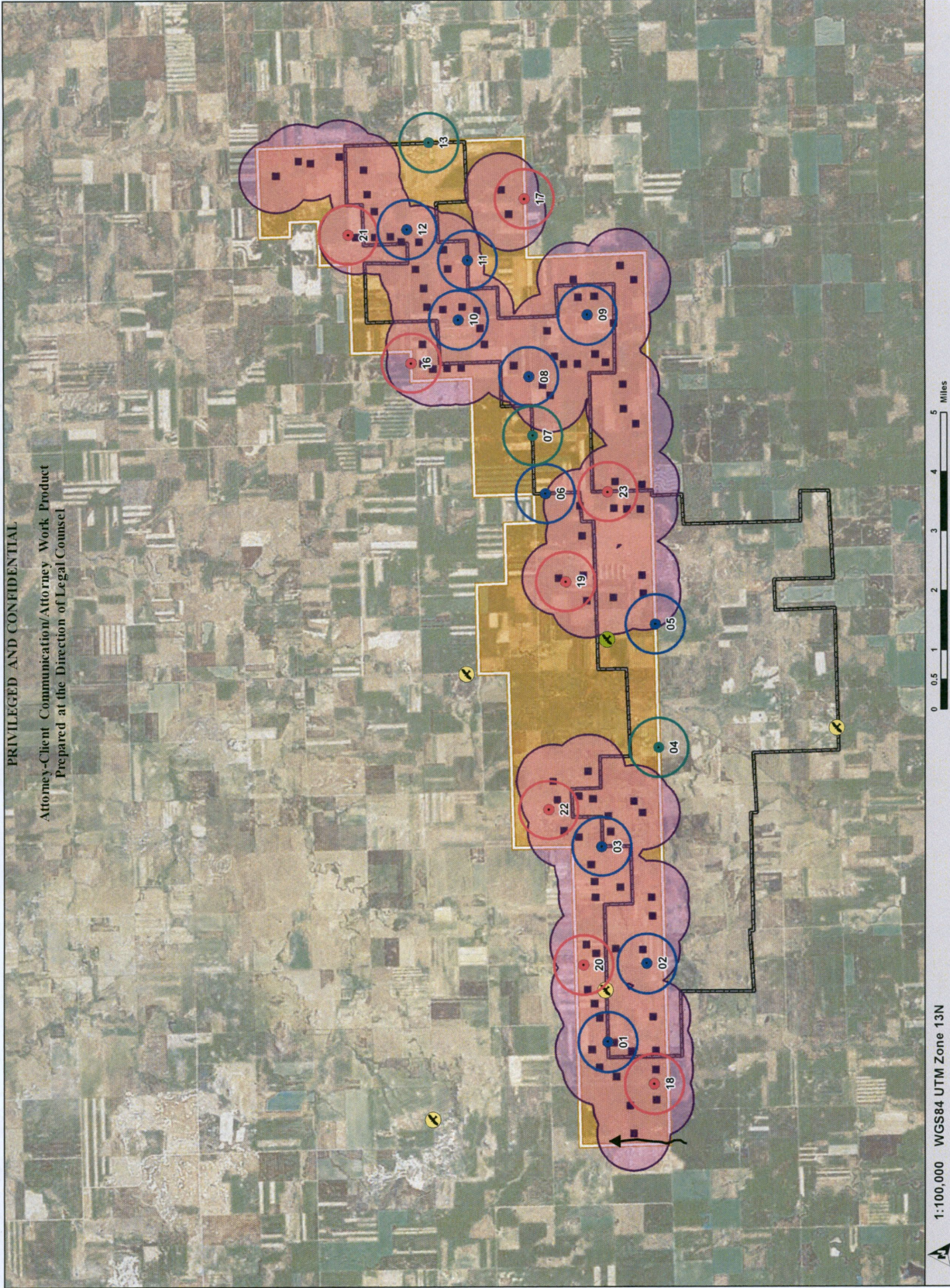
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Figure 1
Eagle Survey Locations
and Observations



Brady Wind Energy Center
Stark County, ND
Last modified: 02-15-2016

- Eagle Survey Locations (August - January)
- Eagle Survey Locations 800-m Radius
- Eagle Survey Locations (August - February)
- Eagle Survey Locations 800-m Radius
- Eagle Survey Locations (January - February)
- Eagle Survey Locations 800-m Radius
- Golden Eagle Flight Path (Below 200m)
- Incidental Observation
- Bald Eagle
- Golden Eagle
- Proposed Project Area (10-21-2015)
- Original Proposed Project Area (05-28-2015)
- Proposed Turbine (11-06-2015)
- 1-km Turbine Buffer (11-06-2015)



0 0.5 1 2 3 4 5
Miles

1:100,000 WGS84 UTM Zone 13N

Table 1. Eagles Observed Within 800-meter Radius Circular Plots During General Avian Point-count and Eagle Use Surveys at the Brady Wind Energy Center, August 20 to January 30, 2016

Survey visit	Dates	Number of points surveyed	Length of surveys (Hours)	Number of Eagles	Flights observed		Minutes of eagle flight below 200 meters and within 800 meters of observation Point		Minutes of eagle flight above 200 meters and within 800 meters of observation Point	
					Bald Eagle	Golden Eagle	Bald Eagle	Golden Eagle	Bald Eagle	Golden Eagle
1	8/20 - 8/21, 2015 ¹	13	17	0	0	0	0	0	0	0
2	9/1 - 9/2, 2015 ¹	13	17	0	0	0	0	0	0	0
3	9/15 - 9/16, 2015 ¹	13	17	0	0	0	0	0	0	0
4	9/29 - 10/1, 2015 ¹	13	17	0	0	0	0	0	0	0
5	10/13 - 10/14, 2015 ¹	13	17	0	0	0	0	0	0	0
6	10/24 - 10/27, 2015 ¹	13	17	0	0	0	0	0	0	0
7	11/8 - 11/9, 2015 ²	13	13	0	0	0	0	0	0	0
8	11/19 - 11/20, 2015 ²	13	13	0	0	0	0	0	0	0
9	12/3-12/4, 2015 ²	13	13	0	0	0	0	0	0	0
10	12/17-12/18, 2015 ²	13	13	0	0	0	0	0	0	0
11	1/2-1/3, 2016 ²	13	13	0	0	0	0	0	0	0
12	1/14-1/15, 2016 ²	18	18	0	0	0	0	0	0	0
13	1/29-1/30, 2016 ²	18	18	0	0	0	0	0	0	0
TOTAL	NA³	161	205	0	0	0	0	0	0	0

1. From August 20 to October 27, 20-minute general avian point-counts and 60-minute eagle use counts were conducted consecutively, for a total of 80 monitoring minutes at each point-count location.

2. From November 8 to November 20, eagle use surveys were conducted exclusively, for a total of 60 monitoring minutes at each point-count location.

3. NA - total not applicable to this column