



TO: NextEra Energy Resources, LLC  
FROM: Tetra Tech, Inc.  
DATE: May 4, 2016  
CORRES. NO.: TTCES-PTLD-2016-047  
SUBJECT: Brady II Wind Energy Center Eagle Use Report, August 2015 – April 2016

## Summary

NextEra Energy Resources, LLC (NextEra) is developing the Brady II Wind Energy Center (Project) located in Hettinger and Stark counties, North Dakota. NextEra is committed to environmental due diligence and has contracted Tetra Tech, Inc. (Tetra Tech) to conduct eagle use surveys in the Study Area identified for the proposed Project.

Changes in turbine layout and Project boundary occurred after the initiation of the studies. Figure 1 shows survey locations relative to the original Study Area identified for the Project (dated 10-29-15), and Figure 2 shows survey locations relative to the revised Study Area (dated 3-3-16). The revised Study Area encompasses the current turbine layout and all associated facilities.

The objective of the eagle use surveys was to document eagle movements and behavior within and adjacent to the proposed Project. 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; U.S. Fish and Wildlife Service [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 to April 2016.

During a March 2016 raptor nest survey Tetra Tech found an active golden eagle nest approximately 0.2 miles outside the revised Study Area boundary (Figure 2). Brady Wind II has moved all project facilities outside of a one-half mile buffer around this occupied golden eagle nest. As a result, the closest turbine is 0.9 miles away to the northwest. Brady Wind II is continuing direct consultation with the U.S. Fish & Wildlife Service and the North Dakota Game & Fish Department regarding this nest.

## Methods

### Eagle Use Surveys

Two point-count locations (Points 14 and 15) were identified in August 2015 as part of the eagle use surveys for the proposed Brady Wind Energy Center, which is adjacent to the northern boundary of the original and revised Study Areas shown in Figures 1 and 2. Data collection began at

these points in August 2015. After data collection started, the Brady Wind Energy Center boundaries were revised and excluded points 14 and 15. Subsequently, the original Study Area for the proposed Project (Brady II Wind Energy Center) was identified, and points 14 and 15 were located within the original Study Area boundary (Figure 1). Because data collection from points 14 and 15 had already started, Tetra Tech included them in the identification of point-count locations for the proposed Project. An additional 12 point-count locations were identified in November 2015, resulting in a total of 14 point-count locations within the original Study Area for the proposed Project (Figure 1).

Initially, these 14 point-count locations provided spatial coverage of approximately 29 percent of the 1-kilometer buffer around the original proposed turbine locations (dated October 28, 2015), consistent with recommendations in the ECP Guidance (USFWS 2013) (Figure 1). Those proposed turbine locations have recently been modified (dated April 22, 2016). As a result, Survey Point 11 no longer overlapped any part of the 1-km turbine buffer and the remaining 13 point-count locations now provide spatial coverage of approximately 23 percent of the 1-kilometer buffer around the current proposed turbine locations (Figure 2). Point 11 is not located in the revised Study Area.

At points 14 and 15, eagle use surveys were conducted over 1 to 2 days every 2 weeks, totaling 17 rounds, from August 20, 2015 to April 2, 2016. From August 20 to October 25, 2015, survey visits included 20 minutes of general fall avian surveys followed by 60 minutes of eagle use surveys for a total of 1 hour and 20 minutes of survey time at each point-count location (Table 1). The fall general avian surveys ended on November 04, 2015. From November 11, 2015 to February 23, 2016, eagle use surveys were conducted for 60 minutes at each of the 13 point-count locations (Table 1). Additionally, on April 1 and April 2, 2016, survey visits (at all 13 points), included 20 minutes of general spring avian surveys followed by 60 minutes of eagle use surveys (a total of 1 hour and 20 minutes of survey time at each point-count location; Table 1). The total eagle survey time at the Study Area was 163.35 hours (Table 1). 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 low 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 1-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 Study Area, and later digitized using a geographic information system (GIS) software.

**Table 1. Eagles Observed within 800-Meter-Radius Circular Plots During Eagle Use Surveys at the proposed Brady II Wind Energy Study Area, August 20, 2015 to April 2, 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, 2015 <sup>1</sup>	2	2.67	0	0	0	0	0	0	0	0
2	9/1, 2015 <sup>1</sup>	2	2.67	0	0	0	0	0	0	0	0
3	9/16, 2015 <sup>1</sup>	2	2.67	0	0	0	0	0	0	0	0
4	9/29, 2015 <sup>1</sup>	2	2.67	0	0	0	0	0	0	0	0
5	10/14, 2015 <sup>1</sup>	2	2.67	0	0	0	0	0	0	0	0
6	10/25, 2015 <sup>1</sup>	2	2.67	0	0	0	0	0	0	0	0
7	11/11 - 11/12, 2015 <sup>2</sup>	13	13.00	0	0	0	0	0	0	0	0
8	11/21 - 11/22, 2015 <sup>2</sup>	13	13.00	0	0	0	0	0	0	0	0
9	12/5 - 12/6, 2015 <sup>2</sup>	13	13.00	0	0	0	0	0	0	0	0
10	12/19 - 12/20, 2015 <sup>2</sup>	13	13.00	0	0	0	0	0	0	0	0
11	12/31, 2016 - 1/1, 2016 <sup>2</sup>	13	13.00	0	0	0	0	0	0	0	0
12	1/16 - 1/17, 2016 <sup>2</sup>	13	13.00	0	0	0	0	0	0	0	0
13	1/28 - 1/30, 2016 <sup>2,3</sup>	13	13.00	0	0	0	0	0	0	0	0
14	2/11 - 2/13, 2016 <sup>2,3</sup>	13	13.00	0	0	0	0	0	0	0	0
15	2/22 - 2/23, 2016 <sup>2</sup>	13	13.00	0	0	0	0	0	0	0	0
16	3/6-3/7, 2016 <sup>2</sup>	13	13.00	0	0	0	0	0	0	0	0
17	4/1-4/2, 2016 <sup>4</sup>	13	17.33	1	0	0	0	0	0	0	0
	<b>TOTAL</b>	<b>155</b>	<b>163.35</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

<sup>1</sup> During survey visits 1-6, only point-count locations 14 and 15 were surveyed, for a total of 1 hour and 20 minutes at each point-count location (included general fall avian surveys for 20 minutes).

<sup>2</sup> During survey visits 7-16, after the Brady II project boundary was defined, eagle use surveys were conducted exclusively at all 13 points, for a total of 60 monitoring minutes at each point-count location.

<sup>3</sup> No surveys occurred on 1/29 and 2/12 due to weather.

<sup>4</sup> During survey visit 17, all 13 point-count locations were surveyed for a total of 1 hour and 20 minutes at each point-count location (included general fall avian surveys for 20 minutes).

## **Incidental Observations**

Eagles observed during the surveys outside the 800-meter-radius circular plot, as well as eagles observed within or near the Study 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 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 Study Area. The biologist also noted incidental observations of other raptors, large birds, and avian species that were uncommon or unusual within the Study Area.

## **Results**

### **Eagle Use Surveys**

One golden eagle and no bald eagles were observed within the 800-meter-radius circular plots during 163.35 hours of monitoring during eagle use surveys (Table 1). The golden eagle observed during the April 2, 2016 survey was incubating at a known nest to the south of Survey Point 9 (but within the 800-meter-radius) for the entirety of the observation period. This is golden eagle nest 2015\_39 which was determined to be occupied during the March 2016 aerial raptor nest surveys (Tetra Tech 2016). According to the ECP Guidance, "Eagles are mapped when perched or when otherwise not flying, but the summary of eagle-minutes for a count excludes these observations and includes only eagles in flight." Therefore, no eagle exposure minutes were recorded for the incubating golden eagle and overall mean use for the surveys, 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 adult golden eagle was observed incidentally within the Study Area during the setup of points 1 – 12 on November 2, 2015 (Figure 1). This incidental observation occurred prior to the eagle use surveys and therefore accrued no exposure minutes. The golden eagle was observed perched on a utility pole before flushing and flying between 3 and 13 meters above ground level, near Survey Point 15. During the entire survey period, the biologist documented four other species of interest incidental to eagle use surveys: red-tailed hawk (six individuals), Swainson's hawk (one individual), great-horned owl (one individual), and rough-legged hawk (one individual). Along with the golden eagle, the Swainson's hawk is a designated species of conservation priority by the North Dakota Game and Fish Department (Dyke et al. 2015). There were no other incidental eagle observations for the August 2015 to April 2016 survey period.

## References

Dyke, S.R., S.K. Johnson, and P.T. Isakson. 2015. North Dakota State Wildlife Action Plan. North Dakota Game and Fish Department, Bismarck, ND.

Tetra Tech. 2016. Brady II Wind Energy Center Raptor Nest Survey Report.

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](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.



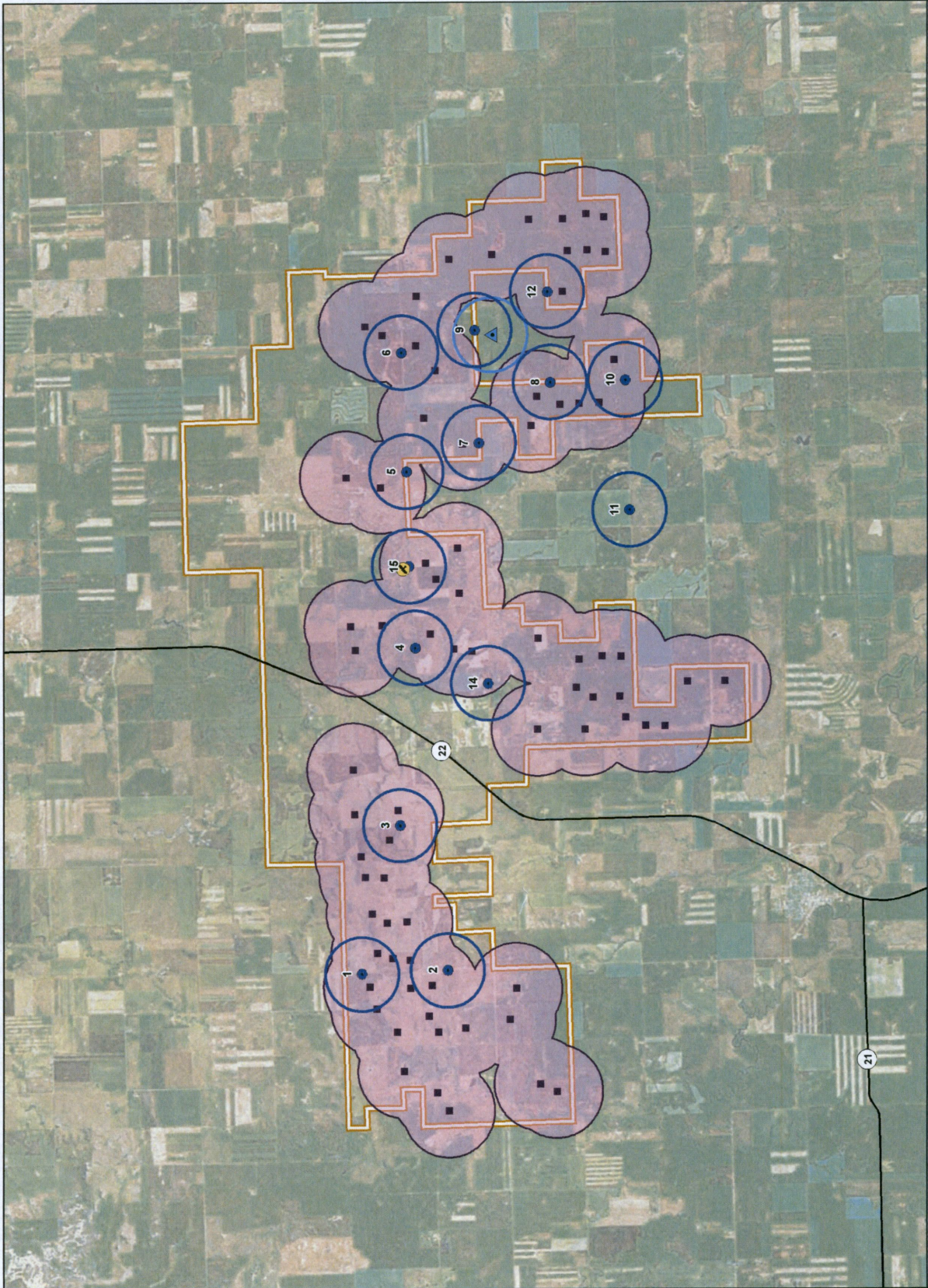
**Figure 2**

Eagle Survey Locations and Observations - Revised Study Area



Brady II Wind Energy Center  
Hettinger and Stark counties, ND

- Eagle Survey Locations
- 800-m Radius
- Occupied golden eagle nest
- Golden Eagle nest 0.5-mile Buffer
- Incidental Observation
- Golden Eagle
- Proposed Turbine (5-2-16)
- 1-km Turbine Buffer (5-2-16)
- Study Area (3-3-16)



1:80,000 WGS84 UTM Zone 13N

