



TO: NextEra Energy Resources, LLC
FROM: Tetra Tech
DATE: April 21, 2016
SUBJECT: Oliver III Wind Energy Center Raptor Nest Survey Report

Introduction

Oliver III Wind, LLC (Oliver III Wind), a wholly-owned, indirect subsidiary of NextEra Energy Resources, LLC (NextEra), is developing the Oliver III Wind Energy Center (Project) located in Morton and Oliver counties, North Dakota (Figure 1). Oliver III Wind is committed to environmental due diligence and has contracted Tetra Tech, Inc. (Tetra Tech) to conduct raptor nest surveys in the Project Area and vicinity.

The objective of the raptor nest surveys was to document all raptor nests within the Project Area plus a 2-mile buffer, and all eagle nests within a 10-mile buffer of the Project Area. The search area during the summer and fall 2015 surveys included the Project Area plus a 2-mile buffer, and the search area during the spring 2016 survey included the Project Area plus a 10-mile buffer of the Project Area. Tetra Tech used standardized protocols for the raptor nest 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 raptor nest surveys conducted in summer 2015 (June 23), fall 2015 (November 28 and 29), and spring 2016 (March 16 and 17).

Tetra Tech requested locations of documented eagle nests within a 10-mile radius of the Project Area from North Dakota Game and Fish (NDGF) in June 2015. NDGF reported eight historic bald eagle nests, all located outside of the 2-mile buffer for the Project Area (Figure 2), possibly indicating seven territories based on spacing of the nests. Two of the nests provided by NDGF had been recorded as destroyed (Nests BE022 and BE021); nonetheless, surveyors checked for new nests in the vicinity of these historic nest locations during the spring 2016 aerial survey.

In April 2016, after the aerial surveys had been completed, NDGF sent updated shapefiles of known eagle nests within 10 miles of the Project Area. The dataset included two additional bald eagle nests not included in the dataset sent in June 2015; both nests were recorded by NDGF as occupied on April 08, 2016. The Tetra Tech survey crew had previously located both of these nests (Nests 304 and 305) on March 16, 2016, during the Oliver III spring 2016 aerial survey. As a result, the April 2016 nest dataset sent by NDGF did not include any nests unknown to Tetra Tech and all of the eagle nests from both the June 2015 and April 2016 NDGF datasets were checked by the Tetra Tech survey crew during the Oliver III aerial survey.

Data Collection

To aid in navigation and data recording, topographic maps, electronic tablets with a built-in global positioning system (GPS) were used during the surveys. An optically stabilized camera was used to photograph nests. When surveyors found a nest, the following data were collected:

- **Nest Identification Number:** corresponding with GPS waypoint number.
- **Raptor Species:** Using four-letter American Ornithologists' Union codes (e.g., RTHA = red-tailed hawk, UNKN = unknown species).
- **Adult Present:** On = bird sitting on nest, NEAR = bird near the nest, UNK = Unknown.
- **Eggs or Young:** Number of eggs or young observed.
- **Nest Substrate:** Structure in which nest was located (e.g., broadleaf tree, cut bank, transmission pole, etc.).
- **Nest Height:** Height relative to the structure it is on (e.g., on top of transmission pole, $\frac{3}{4}$ of height of tree).

Nest Status

To assess nest status, the following criteria were used (Postupalsky 1974, USFWS 2013):

- **Occupied:** nest containing eggs, young, or an adult sitting on the nest indicating incubation or brooding. Also, a nest not containing eggs or young but showing evidence of use in the survey year such as fresh lining, droppings, feathers on or underneath, or adults near the nest (i.e., in tree) but not sitting on the nest.
- **Unoccupied:** nest showing no evidence of use and no adults present at the nest.

Nest Condition

To assess nest condition, the following criteria were used (Postupalsky 1974, USFWS 2013):

- **Excellent:** defined cup or nest bowl with a well-maintained rim; adult or young present.
- **Good:** nest bowl intact and rim defined; minor repair needed for nest to be used; margins of nest in loose configuration, minor slumping occurring.
- **Fair:** nest bowl intact and nest not dilapidated; but needs significant repair in order to be used; material is slumping or sliding.
- **Poor:** loose structure of nest bowl still present; nest walls and side falling out; nest is in need of major repair to be used.
- **Remnant:** nest bowl not defined; scant material remaining and not usable unless fully rebuilt.

Summer 2015 Raptor Nest Surveys

The objective of the summer 2015 survey was to document the location of any raptor nest structures within 2-miles of the Project Area to facilitate planning for the avoidance of nest disturbance during construction. Tetra Tech conducted an initial summer ground-based survey on June 23, 2015. The survey was conducted from public roadways by a local field biologist equipped with a spotting scope.

Eagle nests and large stick nests

No bald or golden eagle nests were found within the Project Area or the 2-mile buffer surrounding the Project Area during the summer 2015 survey. No bald eagles or golden eagles were incidentally observed within 2 miles of the Project Area during the summer 2015 raptor nest survey.

Other raptor nests and small stick nests

Raptor nests detected within the Project Area and the 2-mile buffer area during the summer 2015 survey included two occupied Swainson's hawk nests, two occupied red-tailed hawk nests, one occupied great horned owl nest, and three unoccupied small stick nests. (Table 1). The unoccupied small stick nests were all located in trees and are most likely used by smaller raptor species (e.g., red-tailed hawk and Swainson's hawk).

Fall 2015 Raptor Nest Surveys

A follow-up to the summer 2015 raptor nest survey was conducted on November 28-29, 2015 during the non-breeding season after trees had dropped their leaves, which increased visibility of raptor nests (Tetra Tech 2015). Data collected within the Project Area plus the 2-mile buffer included location and status of all stick nests, and any observations of eagles.

Eagle nests and large stick nests

No large potential bald or golden eagle nests were found within the Project Area or the 2-mile buffer surrounding the Project Area during the fall 2015 raptor nest survey. One adult golden eagle was observed incidentally within the northeastern portion of the Project Area. The golden eagle was observed perched on the crossbar of a utility pole before flushing and flying between 9 and 12 meters above ground level.

Other raptor nests and small stick nests

Seventeen unoccupied small stick nests were documented within the Project Area and the 2-mile buffer during the fall 2015 nest survey (Table 1). Nine of the 17 unoccupied small stick nests were newly documented. All of the nests located during the summer were still present during the fall survey.

Spring 2016 Raptor Nest Surveys

Tetra Tech conducted a spring aerial raptor nest survey on March 16-17, 2016 with the objective of documenting all raptor nests within 2 miles of the Project Area and any eagle nests within the Project Area plus a 10-mile buffer, following recommendations of the ECP Guidance. Surveyors also checked the status of previously documented raptor nests, including all known nests within 2 miles of the Project and known bald eagle nests identified by NDGF within 10-miles of the Project Area. The aerial survey was conducted from a Bell-206 Jet Ranger helicopter (Double M Helicopters, Mandan, North Dakota) that was flown approximately 200 feet above ground level at an approximate speed of 60 miles per hour. The crew consisted of a Tetra Tech biologist, a local field biologist, and pilot.

Surveyors primarily focused on potentially suitable nesting habitat along riparian corridors and any large trees sufficient to support nesting by bald eagles.

Data collected within the Project Area plus the 2-mile buffer included the location and status of all previously documented or new stick nests (occupied or unoccupied), and any observations of eagles. Data collected within the remainder of the 10-mile buffer around the Project Area included the location and status of any confirmed or potential eagle nests (large stick nests), and any observations of eagles.

Eagle nests and large stick nests

No occupied eagle nests were located within the Project Area or within the 2-mile buffer around the Project Area. Eight occupied bald eagle nests were found between the 2-mile and 10-mile buffer around the Project Area (Table 2, Figure 2). The nearest bald eagle nest (Nest 19) is located 6 miles from the nearest turbine. Three of the occupied bald eagle nests (Nests 304, 305, and 306) were newly documented nests. Nest 306 was found less than 1 mile to the east of Nest 24 (NDGF Nest BE22), a historic nest that was recorded as destroyed in April 2015, according to the nest dataset provided by NDGF. Nest 20, a historic bald eagle nest that was found to be unoccupied, is located 0.2 miles from Nest 23, an occupied bald eagle nest. Sometimes a bald eagle territory includes multiple alternate, inactive nests. An average bald eagle territory is about 1 mile in diameter, but varies by food availability. In areas where food is harder to find, territories tend to be larger, and in areas where food is abundant, territories tend to be smaller. Based on the spacing of these two nests and proximity to abundant food sources along the Missouri River, Nest 20 is likely to be an alternate nest of the pair of eagles at Nest 23. One large unoccupied nest (Nest 307) was found during the survey. The nest is located near the Missouri River, approximately 1.5 miles west of Nest 23. Other than adult eagles observed sitting on active nests or perched in close proximity to an active nest, there were no other eagle observations during the survey.

Other raptor nests and small stick nests

Surveyors located three occupied great horned owl nests, two occupied red-tailed hawk nests, and six small unoccupied small stick nests within the Project Area and the 2-mile buffer during the spring 2016 survey (Table 1; Figure 2). Two of the red-tailed hawk nests and one of the great horned owl nests were newly documented. Ten of the 17 small stick nests documented in summer and fall 2015 were no longer present in spring 2016 (Table 1). Previously documented nests from summer and fall 2015 that were not found during the spring 2016 survey are not depicted in Figure 2 of this report, as they are no longer present. At the time of the spring 2016 aerial survey, Swainson's hawks would not be present in the area, as Swainson's hawks migrate and usually do not start returning to North Dakota until late April (Bechard et al. 2010).

Table 1 Small Raptor Nests at Oliver III Wind Energy Center, North Dakota.

Nest ID Number	Species	Substrate	Size Category	Status on June 23, 2015	Status on November 28-29, 2015	Status on March 16-17, 2016*	**Distance to Nearest Turbine (miles)	Nearest Turbine
001	Swainson's Hawk	Tree	Small	Occupied	Unoccupied	Gone	1.8	18
002	Great Horned Owl	Tree	Small	Occupied	Unoccupied	Gone	0.5	10
003	Swainson's Hawk	Tree	Small	Occupied	Unoccupied	Unoccupied	0.9	30
004	Red-tailed Hawk	Tree	Small	Occupied	Unoccupied	Gone	1.5	Alt3
005	Red-tailed Hawk	Tree	Small	Occupied	Unoccupied	Gone	1	1
006	Great Horned Owl	Tree	Small	Not Found	Unoccupied	Occupied	1.8	Alt1
007	Unknown	Tree	Small	Not Found	Unoccupied	Gone	2.2	2
008	Unknown	Tree	Small	Not Found	Unoccupied	Gone	0.7	18
009	Unknown	Tree	Small	Not Found	Unoccupied	Gone	0.8	18
010	Unknown	Tree	Small	Not Found	Unoccupied	Unoccupied	0.5	37
011	Unknown	Tree	Small	Not Found	Unoccupied	Unoccupied	1.3	10
012	Unknown	Tree	Small	Not Found	Unoccupied	Gone	0.7	22
013	Unknown	Tree	Small	Not Found	Unoccupied	Unoccupied	2.5	48
014	Great Horned Owl	Tree	Small	Not Found	Unoccupied	Occupied	2.8	30
015	Unknown	Tree	Small	Unoccupied	Unoccupied	Gone	0.4	48
016	Unknown	Tree	Small	Unoccupied	Unoccupied	Unoccupied	1.4	31
017	Unknown	Tree	Small	Unoccupied	Unoccupied	Gone	0.7	Alt1
300	Unknown	Tree	Small	Not Found	Not found	Unoccupied	0.3	6
301	Red-tailed Hawk	Tree	Small	Not Found	Not found	Occupied	0.3	16
302	Great Horned Owl	Tree	Small	Not Found	Not found	Occupied	2.8	18
303	Red-tailed Hawk	Tree	Small	Not Found	Not found	Occupied	2.8	18

*Nests classified as Gone are not included in Figure 2 because they are no longer present.

**Distance to the nearest turbine and nearest turbine number are based on the turbine array dated 4/5/16.

Table 2 Eagle Nests and Large Stick Raptor Nests at Oliver III Wind Energy Center, North Dakota.

Nest ID Number	Species	Substrate	Size Category	Status on June 23, 2015	Status on November 28-29, 2015	Status on March 16-17, 2016*	Distance to Nearest Turbine (miles)**	Nearest Turbine*	Comments
018	Bald Eagle	Tree	Large	Outside Survey Area	Outside Survey Area	Gone	9.4	2	NDGF Nest BE021. Located in close proximity to residential area. Nest was blown down in May 2004.
019	Bald Eagle	Tree	Large	Outside Survey Area	Outside Survey Area	Occupied	6.0	47	NDGF Nest BE268
020	Bald Eagle	Tree	Large	Outside Survey Area	Outside Survey Area	Unoccupied	8.9	2	NDGF Nest BE004
021	Bald Eagle	Tree	Large	Outside Survey Area	Outside Survey Area	Occupied	9.8	Alt1	NDGF Nest BE209
022	Bald Eagle	Tree	Large	Outside Survey Area	Outside Survey Area	Occupied	10.2	Alt1	NDGF Nest BE182
023	Bald Eagle	Tree	Large	Outside Survey Area	Outside Survey Area	Occupied	8.9	2	NDGF Nest BE186
024	Bald Eagle	Tree	Large	Outside Survey Area	Outside Survey Area	Gone	10.4	2	NDGF Nest BE022. Nest was recorded as destroyed in April 2015.
025	Bald Eagle	Tree	Large	Outside Survey Area	Outside Survey Area	Occupied	9.0	1	NDGF Nest BE134
304	Bald Eagle	Tree	Large	Outside Survey Area	Outside Survey Area	Occupied	7.5	48	NDGF Nest BE366. Newly documented in 2016.
305	Bald Eagle	Tree	Large	Outside Survey Area	Outside Survey Area	Occupied	6.5	43	NDGF Nest BE363. Newly documented in 2016.
306	Bald Eagle	Tree	Large	Outside Survey Area	Outside Survey Area	Occupied	10.0	2	Newly documented in 2016.
307	Unknown	Tree	Large	Outside Survey Area	Outside Survey Area	Unoccupied	7.5	2	

*Nests classified as Gone are not included in Figure 2 because they are no longer present.

**Distance to the nearest turbine and nearest turbine number are based on the turbine array dated 4/5/16.

References

- Bechard, M.J., C.S Houston, J.H. Sarasola and A.S England. 2010. Swainson's Hawk (*Buteo swainsoni*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu.bnaproxy.birds.cornell.edu/bna/species/265doi:10.2173/bna.265>.
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