



TO: NextEra Energy Resources, LLC

FROM: Tetra Tech

DATE: 4/15/2016

SUBJECT: Brady Wind Energy Spring Avian Report

Introduction

Brady Wind, LLC (Brady Wind), a wholly-owned, indirect subsidiary of NextEra Energy Resources, LLC (NextEra), is developing the Brady Wind Energy Center (Project) in Stark County, North Dakota. Brady Wind is committed to environmental due diligence and has contracted Tetra Tech, Inc. (Tetra Tech) to conduct spring avian surveys in the proposed Project Area. The studies were conducted to identify potential avian impacts associated with building and operating a wind energy facility. Birds have been identified as a group potentially at risk because of collisions with wind turbines, power lines and associated facilities along with, with displacement due to the presence of the associated structures.

Tetra Tech used information gathered during spring surveys conducted at the Project in March 2016, and at the proposed Dickinson Wind Energy Project (Dickinson) in Stark County, North Dakota (which was cancelled and not constructed) in spring 2015. Dickinson is only 8 miles to the north of the Proposed Brady Wind Energy Center and contains similar habitat and land use features (Table 1).

Table 1 Comparison of NLCD land cover types of the Brady and Dickinson Wind Energy Centers eight miles apart.

Land Cover Type	Dickinson		Brady (Project Area)	
	Acreage	Percent Composition	Acreage	Percent Composition
Cultivated Crops	17,601	45	16,436	55
Grassland/Herbaceous (Cattle Pastures)	14,535	37	7,465	25
Pasture/Hay	3,860	10	4,307	14
Developed, Open Space	1,728	4	1,222	4
Woody Wetlands	395	1	213	<1
Developed, Low Intensity	388	<1	20	<1
Deciduous Forest	338	<1	30	<1
Shrub/Scrub	190	<1	271	<1
Emergent Herbaceous Wetlands	55	<1	21	<1
Open Water	47	<1	29	<1
Developed, Medium Intensity	41	<1	2	<1
Barren Land (Rock/Sand/Clay)	5	<1	4	<1
Evergreen Forest	3	<1	2	<1
Mixed Forest	1	<1	0	0
TOTAL	39,182		29,983	

Source: Jin et al. 2013; National Land Cover Datasets (NLCD). Acreages rounded off to the nearest 1.0 acre and percentages rounded to the nearest 0.1 percent.

Data Collection

The protocol for data collection at both Dickinson and the Project Area were the same and designed to be responsive to the level of effort recommended in the National Wind Coordinating Committee's Comprehensive Guide to Studying Wind Energy/Wildlife Interactions (Strickland et al. 2011) and the voluntary U.S. Fish and Wildlife Service Land-Based Wind Energy Guidelines (USFWS 2012).

Data was available from surveys conducted at the Project Area on March 18 and 19, 2016. Weekly surveys were performed at Dickinson from March 20th through May 21st, 2015, which included the spring migration to early summer breeding seasons. At both the Project Area and Dickinson, point-count surveys (Fixed 800-meter [m] radius) were conducted at points distributed throughout the respective Project Areas. An experienced field biologist (biologist) conducted 20-minute (min) point-count surveys collecting data on all birds detected within the point-count area to evaluate avian use, behavior, and species richness. The point count locations at Dickinson were surveyed 10 times encompassing the spring migration to early breeding seasons. At both the Project Area and Dickinson, Tetra Tech distributed the survey locations along publicly accessible roads and chose locations that maximized the 360-degree sight distance for the observer.

The survey protocol used in these studies is designed to collect data on all bird species and to provide results that are comparable with other studies at wind farms, rather than to target specific taxa. The benefit of using this protocol is that it estimates avian use throughout the day and captures activity by a variety of bird species. During the spring migration and summer breeding season, songbirds are most active in the morning and can be difficult to detect during the afternoon. In contrast, raptors become active as the sunlight heats the air and creates thermals, which individual raptors use for soaring. Thus, raptors are more readily detected several hours after sunrise. Therefore, this protocol is appropriate for characterizing the entire bird community. It should be noted, however, that this survey protocol can only detect nocturnal migrants should they be local breeders or if they utilize the Project as stopover habitat. Tetra Tech chose 20-min survey periods because they provide adequate time to detect both raptors and non-raptors. However, time periods of 20 minutes may lead to double-counting of songbirds (i.e., counting the same individual more than once) because individuals may appear and disappear from view. For example, if a horned lark is detected perched on a fence then disappears from view and, 6 minutes later, a horned lark is seen flying, these birds are recorded as separate observations because it is not possible to distinguish individuals. Double-counting of birds is not problematic for this type of survey because the objective is to document use in terms of number of birds noted per 20-min survey, not number of distinct individual birds.

Detectability varies among species and potentially not all individuals within the 800-m radius were counted. This variation in detectability could result in an overestimate of mean use for conspicuous species and an underestimate of mean use for reclusive species. Birds not easily identifiable, such as those seen under low light conditions or small birds seen at a distance were identified to the lowest taxonomic level possible. Hence, unidentified birds are included in the results.

Results and Evaluation

A total of 1,881 birds from 32 species was observed at Dickinson during the survey period (March 20th - May 21st, 2015). A total of 483 birds from 13 species were observed at the Project Area on March 18 and 19, 2016. No federally listed threatened or endangered species were detected during avian point-count surveys at either Dickinson or in the Project Area. Overall mean bird use at Dickinson was 23.51 birds/20 minute (min) and ranged from 1 to 259 birds/20 minute for each individual point count. Mean use was highest for songbirds (20.05 birds/20 min). The species with the highest mean use was red-winged blackbird (9.39 birds/20 min). Overall, red-winged blackbird accounted for 39.9 percent of all birds observed at Dickinson. The western meadowlark was a songbird species with relatively moderate mean use but high frequency within Dickinson (1.59 birds/20 min, observed in 78.8 percent of all surveys). Red-winged blackbird had the highest encounter rate (0.93 birds flying at rotor swept area [RSA] height/20 min). All other species had an encounter rate below 0.44 birds flying at RSA height/20 min. Although there is potential for turbine-related fatalities of red-winged blackbird and western meadowlark at the Project, fatalities are not expected to have population-level impacts as each species has a large population in North Dakota (8.2 and 5.6 million respectively; PIFSC 2013) that are increasing (Sauer et al. 2014).

High raptor use (greater than 2.0 birds/20 min) has been associated with high raptor mortality at wind facilities. Conversely, raptor mortality appears to be low when raptor use is low (less than 1.0 birds/20 min), which was the case at Dickinson (0.98 birds/20 min). Turkey vulture had the highest mean use among raptors (0.29 birds/20 min). Turkey vultures had a low encounter rate (0.29 birds flying at RSA height/20 min); however, all turkey vulture observations were in flight and within the RSA, which may indicate a higher risk for collision with turbines. Turkey vultures have been recorded as fatalities at wind facilities with publicly available data. Project-related fatalities of turkey vultures, should they occur, are unlikely to have population-level impacts because turkey vultures are common in the United States (population greater than 5 million, PIFSC 2013) and show increasing population trends from Breeding Bird Surveys (Sauer et al. 2014). Other raptor species detected during spring surveys at Dickinson included red-tailed hawk, northern harrier, Swainson's hawk, and American kestrel. Of these remaining raptor species, Swainson's hawk and red-tailed hawk have the highest risk of colliding with turbines as 100 percent of flights observed for both species were within the RSA. However, any Project-related fatalities are unlikely to have population-level impacts because Swainson's hawk and red-tailed hawks have large and increasing populations in North Dakota (populations of 30,000 and 57,000, respectively; PIFSC 2013) that show steady to increasing population trends from Breeding Bird Surveys in North Dakota (Sauer et al. 2014). The remaining raptor species detected during spring surveys have low risk for turbine collisions due to a combination of relatively low mean use rates, infrequent flights within the height of the RSA, and/or few to no records of fatalities at other wind facilities with publically available results of mortality studies.

The Project Area is 8 miles to the south of the location where Dickinson was formerly proposed. This close proximity and alignment provide an opportunity to utilize data collected at both sites providing additional insight into the avian community in the area and informing avian presence on the Project Area. Both Dickinson and the Project Area are located in the Central Flyway, one of 4 major flyways in North America, and birds move through this flyway in a north-south direction (USFWS 2011). Thus we would expect that migratory birds at the two closely spaced sites to be very similar. Additionally the habitats and land use at the Project Area and Dickinson are very similar which allows comparison of the avian community between the sites (Table 1). However, caution must be taken when comparing overall numbers between years. Although the composition of avian communities is typically stable from year to year, barring any significant habitat alterations, population levels can vary due to a variety of natural factors. Results of these surveys suggest an overall low impact of the Project on avian resources.

Literature Cited

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