TETRA TECH

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TO: NextEra Energy Resources, LLC

FROM: Tetra Tech, Inc.

DATE: 5/2/2016

SUBJECT: Brady II Wind Energy Center Bat Acoustic Monitoring

Acoustic monitoring for bat species started at the proposed Brady II Wind Energy Center in April 2016. The proposed Brady II Wind Energy Center Study Area is located directly south and adjacent to the Brady I Wind Energy Center, where bat acoustic monitoring was conducted from July 22-December 3, 2015. This memorandum briefly summarizes the results of the bat acoustic monitoring study conducted at the Brady I Wind Energy Center and uses National Land Cover Database (NLCD) data to speculate on the expected results of the current acoustic monitoring study at the Brady II Wind Energy Center. Based on the close proximity of these projects (directly adjacent to each other) and similarities in land cover (Table 1), we expect similar findings within the Brady II Study Area.[1]

Table 1 NLCD land cover types of the Brady I and Brady II Wind Energy Centers. Bat activity is most closely associated with the land cover types in bold.

Land Cover Type	Brady I		Brady II (Study Area)	
	Acreage	Percent Composition	Acreage	Percent Composition
Cultivated Crops	16,436	55	13,889	51
Grassland/Herbaceous (Cattle Pastures)	7,465	25	8,646	32
Pasture/Hay	4,307	14	3,067	11
Developed, Open Space	1,222	4	1,150	4
Woody Wetlands	**213**	**<1**	**254**	**1**
Developed, Low Intensity	20	<1	19	<1
Deciduous Forest	**30**	**<1**	**46**	**<1**
Shrub/Scrub	**271**	**<1**	**164**	**1**
Emergent Herbaceous Wetlands	**21**	**<1**	**12**	**<1**
Open Water	**29**	**<1**	**12**	**<1**
Developed, Medium Intensity	2	<1	0	0
Barren Land (Rock/Sand/Clay)	4	<1	0	0
Evergreen Forest	**2**	**<1**	**3**	**<1**
Mixed Forest	**0**	**0**	**0**	**0**
TOTAL	29,983		27,264	

Source: Jin et al. 2013; National Land Cover Datasets (NLCD). Acreages rounded off to the nearest acre and percentages rounded to the nearest 1 percent.

[1] Project facilities (including access roads, electrical collection lines, and meteorological evaluation towers) will be located on lands within the Study Area where Brady Wind II has negotiated easements with the landowner. The permanent Project structures will only occupy up to 74 acres during operation (less than 1 percent of the Study Area).

Regulatory Background

The northern long-eared bat (*Myotis septentrionalis)* is a federally-threatened bat species that has the potential to occur in Hettinger and Stark counties (U.S. Fish and Wildlife Service [USFWS] 2015a). The final 4(d) ruling for NLEB prohibits incidental take of the species within the white-nose syndrome (WNS) zone through alteration or destruction of known hibernacula, or by tree removal activities within 0.25 miles of hibernacula entrance (USFWS 2016a). The final 4(d) rule also prohibits incidental take within the WNS zone through removal of any tree within 150 feet of a known maternity roost tree during the pup rearing season (June 1 – July 31; USFWS 2016a). Currently there are no known NLEB hibernacula documented in North Dakota. Hettinger and Stark counties are currently outside of the WNS zone (USFWS 2016b), so incidental take during any activity is not currently prohibited.

Even if WNS continues to spread as expected, and these counties become included in the WNS zone, incidental take of NLEB from operation of wind turbines is not prohibited. Any tree clearing required for construction will be complete by December 2016. On April 27, 2016, the USFWS published a notification in the federal register determining that designating critical habitat for NLEB is not prudent (USFWS 2016c). This determination does not change any take prohibitions established under the final 4(d) rule. Therefore no prohibited incidental take is anticipated at the Brady II Wind Energy Center.

Brady I Wind Energy Center - Acoustic Monitoring Results

Tetra Tech, Inc. (Tetra Tech) conducted bat acoustic monitoring at the Brady I Wind Energy Center from July 22 – December 3, 2015. We used four ground-based acoustic monitoring stations distributed across the project area which was dominated by cultivated crops and grasslands, with very few acres of suitable foraging or roosting habitat (Table 1).

This acoustic study documented five bat species within the project area, and did not include any detections of northern long-eared bat (*Myotis septentrionalis*; NLEB), a federally threatened species. Activity levels at Brady I were dominated by little brown bat (*Myotis lucifugus*). We also detected other common species (Big brown bat [*Eptesicus fuscus*]) and species known to be vulnerable to wind energy development (hoary bat [*Lasiurus cinereus*], eastern red bat [*Lasiurus borealis*], and silver-haired bat [*Lasionycteris noctivagans*]).

The relative activity levels of bats detected at each of the four stations within this project area were highly variable (1.5 – 159 bat passes/detector-night). Little brown bat activity represented the majority (85%) of the overall bat activity, across all stations. The overall, average activity rate documented in this study (47.4 bat passes/detector-night) is much higher than activity rates documented in Hein et al. (2013) for studies conducted in similar habitats; however, a simple comparison of the relative bat activity levels among different studies is not advisable due to the difference in study objectives and recording equipment.

Available Habitat Comparison

Available habitat is similar between the Brady I Wind Energy Center and the Study Area identified for the proposed Brady II Wind Energy Center (Table 1). Bat activity is most closely associated with the following land cover types; woody wetlands, deciduous forest, shrub/scrub, emergent herbaceous wetlands, open water, evergreen forest, and mixed forest. Percent composition of these land cover types most closely associated with bat activity is very similar between the two project locations.

Brady II Wind Energy Center Acoustic Monitoring – Expected Results

Currently, Tetra Tech is conducting bat acoustic monitoring at the Brady II Study Area. Because of the apparent similarities among available habitat types (as indicated by land cover) and the close proximity of the project locations, we expect to document similar bat species diversity and activity levels at the Study Area, as compared with findings at the Brady I Wind Energy Center. We expect that activity levels at the Brady I Wind Energy Center will be dominated by common species (i.e., little brown bat), but species known to be vulnerable to wind energy development (e.g., hoary, eastern red) will also be detected. NLEB roost and forage in forested areas (USFWS 2015b), and the lack of this habitat type likely precludes its presence within the Brady II Study Area and we do not expect to find NLEB in the Brady II Study Area.

Literature Cited

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