Avian and Bat Protection Plan for the Ashtabula III Wind Energy Center Barnes County, North Dakota

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Table 1 Life history, behavior and habitat preferences of bat species potentially occurring at the Baldwin Wind Energy Center, North Dakota

Figure 1 Ashtabula III Location

1.0 Introduction

1.1 Wind energy and birds

Birds have been identified as a group potentially at risk because of collisions with wind turbines and power lines and displacement due to the presence of the associated structures (Erickson et al. 2005, Drewitt and Langston 2006, Arnett et al. 2007). Specifically, migrant passerines (e.g., songbirds) are found more often in post-construction mortality monitoring compared to other groups of birds (Arnett et al. 2007), an observation that is consistent with overall patterns of avian abundance. In fact, at newer generation wind energy facilities outside of California, approximately 80 percent of documented mortalities have been songbirds, of which 50 percent are often nocturnal migrants (Erickson et al. 2001, Drewitt and Langston 2006, Johnson et al. 2007, Strickland and Morrison 2008). It is estimated that less than 0.01 percent of migrant songbirds that pass over wind farms are killed, based on radar data and mortality monitoring (Erickson 2007). Locally breeding songbirds may experience lower mortality rates than migrants because many of these species tend not fly at turbine heights during the breeding season. However, some breeding songbird species have behaviors that increase the risk of collisions with turbines. For example, horned larks have been commonly found as fatalities at wind farms (Erickson et al. 2002). Mortality may be partially attributed to the flight displays in which male horned lark fly to heights of 80 m to 250 m (Pickwell 1931). Although direct avian mortality has been documented at newer generation wind farms, it is relatively rare occurrence. In the Upper Midwest, fatality rates range from 2.0 to 5.9 birds/turbine/year (NWCC 2004). Additionally, construction activities can result in disturbance of habitat. However, many of these measures can be avoided or minimized through methods such as timing of construction activities and pre-disturbance monitoring.

In addition to mortality associated with wind farms, concerns have been raised that some bird species may avoid areas near turbines after the wind farm is in operation (Drewitt and Langston 2006). For example, at the Buffalo Ridge wind energy facility in Lincoln County, Minnesota, densities of male songbirds were significantly lower in Conservation Reserve Program (CRP) grasslands containing turbines than in CRP grasslands without turbines (Leddy et al. 1999). It was hypothesized that the reduced density may be due to avoidance of turbine noise and maintenance activities, and reduced habitat quality due to the presence of access roads and large gravel pads surrounding the turbines (Leddy et al. 1999). Reduced abundance of grassland songbirds was found within 50 m of a turbine pad for a wind farm in Washington and Oregon, but the investigators attributed displacement to the direct loss of habitat or reduced habitat quality and not the presence of the turbines, suggesting that both habitat loss and operational concerns can contribute to avian displacement (Erickson et al. 2004). Recent research at two wind farms in North and South Dakota (Shaffer and Johnson 2008) suggests that certain grassland songbird species (2 of 4 species studied) may avoid turbines by as much as 200 m but these results have not been finalized (i.e., more species are currently being analyzed) nor assessed at additional sites. No studies have addressed whether or not these avoidance effects are temporary (i.e., the birds may habituate to the presence of turbines over time) or permanent.

1.2 Wind energy and bats

Some wind energy generation facilities have experienced unexpected levels of bat mortality (Kunz et al. 2007). Several variables may contribute to the fatalities of bats at wind facilities including, but not limited to, biology of the bat species, season, region, and turbine design (Kunz et al. 2007). Species that have the highest risk of fatalities at wind facilities are tree, foliage, or cavity roosting migratory bats (Kunz et al. 2007; Arnett et al. 2008). Nearly 75 percent of all bat fatalities have been associated with migratory tree bats including the hoary bat, eastern red bat and silver-haired bat, all three of which occur in North Dakota. Migratory bats travel long distances at altitudes occupied by wind turbine blades, making them susceptible to collisions. The probability of mortality events increases during periods of poor weather, such as just before or after the passing of a storm front (Arnett et al. 2008).

There is a seasonal trend with bat fatalities at wind facilities, with spikes occurring in the late summer and early autumn which coincide with fall migration or dispersing juveniles that may be more prone to collisions with structures (Johnson 2004, 2005); however, Kunz et al. (2007) speculate this is a function of intensive carcass searches during this time and not due to seasonal factors. Many, if not most, of the bat species detected as fatalities at wind facilities in the United States (Arnett et al. 2008) are also resident during spring and summer months (Barbour and Davies 1969).

There are geographic differences in fatalities/MW/year among bat species, ranging from 0.2 to 53.3 bats/MW/year, with the highest fatalities being reported along forested ridges in the eastern United States (Arnett et al. 2008). However, bat fatalities have also been reported from the agricultural regions of northern Iowa (8.9 bats/MW/year; Jain 2005) and the mixed-grass prairie of north-central Oklahoma (0.8 bats/MW/year; Piorkowski 2006). Therefore, caution must be taken in assuming that only facilities in the forested eastern United States have the potential of producing high bat fatalities because of the small number of studies to date and the possibility of other regions being underrepresented.

1.3 Regulatory framework

Native birds in North America are protected primarily under three pieces of legislation: the Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), and Bald and Golden Eagle Protection Act (BGEPA). The purpose of the ESA is "to provide a means whereby the ecosystems upon which endangered and threatened species depend may be conserved, and to provide a program for the conservation of these species." The Act defines three fundamental terms as follows:

- Endangered means a species of fish, animal or plant is "in danger of extinction throughout all or a significant portion of its range".
- Threatened means a species "is likely to become endangered within the foreseeable future".
- Critical habitat means "specific geographical areas that are…essential for the conservation and management of a listed species, whether occupied by the species or not".

Section 9 of the ESA 9 prohibits everyone, private person and federal agency alike, from "taking" endangered and threatened wildlife. "Take" includes "harming" a listed species, and "harm" is defined by the US Fish and Wildlife Service (USFWS) regulations to include habitat alteration. Harm in the definition of "take" in the Act means, “an act which actually kills or injures wildlife.” Any activity that may result in the “incidental take” of threatened or endangered species requires permission from the USFWS under ESA Sections 7 or 10.

Under the MBTA it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any native migratory bird, part, nest, egg or product. The USFWS has established a permitting scheme for a variety of intentional activities, such as hunting and scientific research, but has not done so for the incidental take of migratory birds during otherwise lawful activities. As a result, there is no permitting framework that allows a wind energy company to protect itself from liability at wind facilities; however, the USFWS does not usually take action under the MBTA if good faith efforts have been made to minimize impacts.

The BGEPA prohibits the take of any bald eagle (*Haliaeetus leucocephalus*) or golden eagle (*Aquila chrysaetos*), alive or dead, including any part, nest, or egg. “Take” is defined as “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb” a bald or golden eagle. “Disturb” means to agitate or bother an eagle to a degree that causes, or is likely to cause, 1) injury to an eagle, 2) a decrease in its productivity, or 3) nest abandonment. The USFWS (2009a) has implemented a permitting process to allow take of bald and golden eagles on a limited basis under certain conditions (i.e., if the USFWS determines that the take is compatible with the preservation of the eagles and cannot be practicably avoided). Preservation is defined as consistent with the goal for a stable or increasing breeding population based off of regional populations. Additionally, preservation is valid if the take is necessary to alleviate a safety hazard to the public or the eagles, ensures public health, nest prevents the use of a human engineered structure, or the activity or mitigation will provide a net benefit for the eagles. Permit applications can be found at www.fws.gov/migratorybirds/CurrentBirdIssues/Management/BaldEagle.

Compared to bird species, there are relatively few laws that protect bats; on federal lands such as National Forests, National Wildlife Refuges, and lands administered by the Bureau of Land Management, agencies have developed habitat management guidelines and other regulations to enhance or minimize disturbance to habitats. Existing environmental laws primarily address the protection of caves and wanton destruction of wildlife.

1.4 Corporate policy and the Ashtabula III Avian and Bat Protection Plan

Ashtabula Wind III, LLC (Ashtabula Wind III), a subsidiary of NextEra Energy Resources, LLC (NextEra Energy) is committed to its responsibility to be a good steward of the environment and to adhere to the law. As part of this commitment, Ashtabula Wind III has developed an Avian and Bat Protection Plan (ABPP) for the Ashtabula III Wind Energy Center (Project). The development and application of this ABPP will ensure that:

- all Project-related actions comply with federal and state regulations;
- all Project-related actions comply with conditions of existing permits;
- avoidance and minimization measures designed for Project-specific species concerns (Section 3.0) are implemented;
- effective documentation of bird injuries and fatalities will provide the basis of ongoing development of avian protection procedures; and,
- Ashtabula Wind III and NextEra Energy staff and all relevant subcontractors will receive the appropriate training pursuant to wildlife monitoring and reporting.

2.0 Environmental Setting and Project Description

2.1 Environmental Setting

The Project is located in Northeastern Glaciated Drift Planes Ecoregion (Figure 1). The landscape surrounding the proposed turbine array is a mix of cropland, native prairie, tame and mixed grasslands, and wetlands interspersed with shelterbelts. Historically, the plant communities consisted of mixed bluestem-needlegrass-wheatgrass prairie with patches of shrubland and green ash (*Fraxinus pennsylvanica*), burr oak (*Quercus macrocarpa*), and other deciduous woodlands; however, the vast majority of native vegetation within the Ashtabula III has been replaced with croplands. Major crops in the Ashtabula III are soybean, corn, wheat and other grains or planted grasses.

2.2 Project Description

The Project is anticipated to have a nameplate capacity of 68.8 megawatts (MW) consisting of 43 GE Xle 1.6-MW wind turbine generators. Additional facilities include a collection substation, a construction laydown area, access roads (up to 32 feet in width), and electrical collection systems and cabling. All collection lines will be underground and will connect to the existing common overhead transmission line. No new overhead transmission is proposed as part of the Project.

Once the Project is constructed, maintenance activities would occur periodically, resulting in approximately one truck trip along project roads per day from spring through the fall and periodic visits to Project turbines and substations during the winter. Equipment to be used at the Project for operation and maintenance activities would include the following: one service truck on site, a small bulldozer with a forklift and snow plow, a road grader that would be shared with other projects, a 4-wheeler for noxious weed control and remote access and a snowmobile. Project access roads would be graded on an as needed basis. Each turbine would be serviced twice a year. Typical

turbine servicing includes monitoring turbine critical parameters and overall performance 24 hours a day, on site or at NextEra Energy's Fleet Performance Diagnostic Center (FPDC) in Juno Beach, Florida. This provides performance and reliability optimization through remote turbine operation and fault reset capability, the use of advanced real-time equipment performance statistical modeling for advanced diagnostics, benchmarking among similar components and replication of best practices across the fleet. During routine maintenance activities, staff will also be alert to the presence of dead and/or injured wildlife. During these routine maintenance activities, staff will also conduct a ground search for dead or injured wildlife (Section 5.2).

3.0 Avoidance and Minimization Measures

3.1 No permanent wetland impacts

Ashtabula Wind III has designed the layout of the Project so that no permanent impacts to wetland areas will occur. As a result, direct effects on wildlife that utilize wetlands will be eliminated. Also, avoiding wetland impacts will reduce potential impacts to migratory birds and bats.

3.2 Buried collection systems

The development of the Project will not require the construction of any additional transmission lines, and all collection lines will be buried. As a result, Project construction will not create any additional risk of avian collision or electrocution with respect to overhead transmission lines.

4.0 Avian and Bat Concerns at the Project

4.1 Avian Surveys

Surveys were conducted in fall 2007 and spring 2008 for the Ashtabula Wind Energy Center. An additional avian survey was conducted in spring 2010 (8 locations) for the Ashtabula III Wind Energy Center, which is adjacent (Figure 1). No federally listed species were observed during any of the surveys.

In the fall 2007 survey, songbirds had the highest mean use out of all species groups observed. Waterfowl also had relatively high mean use. Due to the large numbers of waterfowl observed during the fall survey, waterfowl mortality could result, but should not have population level impacts because high rates of waterfowl mortality have not been documented. Five species observed are listed as North Dakota Species in Greatest Need of Conservation (SGNC): American white pelican, Franklin's gull, northern harrier, Swainson's hawk, and sharp-tailed grouse.

In the spring 2008 survey, the most commonly observed species were snow goose, red-winged blackbird, Canada goose, and American coot. All of these are widespread species and have relatively stable populations. Three bald eagles were observed on one single day during the survey. The bald eagle is protected under the Bald and Golden Eagle Protection Act (BGEPA). In addition to the bald eagle, 18 SGNC were detected: horned grebe, American white pelican, Swainson's hawk, upland sandpiper, marbled godwit, Wilson's phalarope, black tern, grasshopper sparrow, northern pintail, canvasback,

redhead, northern harrier, bald eagle, prairie falcon, sharp-tailed grouse, American avocet, red-headed woodpecker, and bobolink.

In the spring 2010 survey, one bald eagle was observed as an incidental observation. Twelve SGNC were detected: American white pelican, Swainson's hawk, upland sandpiper, willet, grasshopper sparrow, lark bunting, northern pintail, redhead, bald eagle, northern harrier, sharp-tailed grouse, and bobolink. Of the SGNC, the American white pelican and Swainson's hawk were observed flying at the anticipated Rotor Sweep Area (RSA) height.

A permit is not required for the take of a SGNC, but all (except sharp-tailed grouse) are protected under the Migratory Bird Treaty Act.

Raptor nest surveys and prairie grouse lek surveys were also conducted in the Project Area. Seven raptor nests were observed, all red-tailed hawk nests; three of these nests were active during the survey period. One active sharp-tailed grouse lek was observed. Up to 14 males and 2 females were observed attending this lek in the spring of 2010.

4.2 Whooping crane

The whooping crane (*Grus americana*) was considered endangered in the United States in 1970 and the endangered listing was 'grandfathered' into the ESA of 1973, which prohibits "take" (CWS and USFWS 2007). "Take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct (16 U.S.C. §1532(19)). "Incidental take" occurs when a fatality of an ESA-listed species occurs as an unintended consequence of an otherwise legal activity, as would the case in the unlikely event of a fatality occurring at a wind farm. Although unlikely, potential impacts to whooping cranes as a result of the proposed action include direct impacts, such as collisions with wind turbines, and indirect impacts, such as actual loss of habitat due to construction activities or functional loss of habitat due to crane avoidance. The whooping crane is also considered a Level III species of conservation priority under the state of North Dakota's Game and Fish Department's Comprehensive Wildlife Conservation Strategy. A Level III species has a moderate level of conservation concern but is thought to be peripheral or non-breeding within the state of North Dakota (Hagen et al. 2005).

Power lines pose a threat to whooping cranes when they are located in the vicinity of foraging or roosting habitat because individuals often fly at low altitudes (33 to 49 feet above the ground) when moving among sites (CWS and USFWS 2007; Stehn and Wassenich 2008). The majority of documented fatalities during migration are due to collision with power lines. Since 1956, 46 whooping cranes have been killed (91% of collisions) or seriously injured (9% of collisions) as a result of collisions with power lines (Stehn and Wassenich 2008). The majority of confirmed power-line fatalities have occurred within the experimental populations that are maintained by the introduction of captive-reared young. Power-line fatalities have also been reported for the Aransas-Wood Buffalo National Park population (at least seven fatalities and two serious injuries). Ashtabula Wind III has committed to burying all collection systems within the Project Area.

Whooping cranes are present in North Dakota during migration (spring: April 1 to May 15; fall: September 10 to October 31; dates approximate). The small population size (the latest estimate is 263 birds in wild population) and narrow window of occurrence in North Dakota suggest a low probability of occurrence in the Project Area. In addition, a detailed likelihood of occurrence assessment further suggests a low likelihood of occurrence of cranes in the vicinity of the Project due to the Project being located outside of the defined migratory corridor for whooping cranes. No whooping cranes were observed during any of the surveys at Ashtabula I or III.

4.3 Interior least tern

The interior population of the least tern (*Sterna antillarum athalassos*) was listed as an endangered species in 1985 (USFWS 1985a). In North Dakota, the interior least tern is primarily found on sandbars on the Missouri River between the Garrison Dam and Lake Oahe, and on the Missouri and Yellowstone Rivers upstream of Lake Sakakawea (North Dakota Ecological Field Services Office 2008). The Project Area contains no sizeable rivers with sandbars, and Project development will not affect water quantity or quality. Therefore, the Project will have no impact on breeding interior least terns. Furthermore, the limited extent of wetlands close to the Project and the low likelihood that existing wetlands (e.g., farm ponds) contain enough fish to attract foraging terns suggests that the likelihood of terns occurring near the Project is very low. In the highly unlikely event of this species occurring in the Project Area, the avoidance of permanent wetland impacts and the burying of all new utility lines will minimize the risk of collisions with transmission lines. To date, no interior least tern fatality has been reported at a wind farm. No interior least terns were observed during any avian surveys at Ashtabula I or III.

4.4 Piping plover

The Great Plains population of the piping plover (*Charadrius melodus*) was listed as a threatened species in 1985 (USFWS 1985b). The plover nests in 23 counties in North Dakota, primarily in alkali wetlands in the Missouri Coteau with some on the Missouri River. Critical habitat for the piping plover was listed on September 11, 2002 (USFWS 2002), and mostly includes the entire length of the Missouri River in North Dakota. There are no alkali lakes within 0.5 mile of the Project, eliminating the possibility of piping plovers breeding in the area. In the highly unlikely event of this species occurring in the Project Area, the avoidance of permanent wetland impacts and the burying of all new utility lines will minimize potential impacts. To date, no piping plover fatality has been reported at a wind farm. No piping plovers were observed during any avian surveys at Ashtabula I or III.

4.5 Bald eagle

Although no longer protected under the ESA, the bald eagle is still protected by the BGEPA and the MBTA, both of which prohibit the take of any bald eagle, alive or dead, including any part, nest, or egg. Bald eagles were observed during spring 2008 (3 individuals) and 2010 (1 individual) avian surveys. The bald eagle currently nests along the Missouri River in North Dakota. The distance of the Project to the Missouri River, the lack of suitable nesting habitat within close proximity of the Project, and the burying of all new utility lines associated with the Project greatly minimize potential impacts to this

species. To date, no bald eagle fatality has been reported at a wind farm in the United States.

4.6 Bats

Of the 46 bat species in the United States, 10 occur in North Dakota (ASM 2007; NatureServe 2008, BCI 2009). Of these 10 species, six potentially occur within the Project based on current known distribution ranges (Table 1). None of the species that potentially occur within the Project are federally listed as threatened or endangered. Three of these species, hoary bat, silver-haired bat and eastern red bat, are considered highly migratory are found in the greatest abundance in North Dakota during May through September (Cryan 2003). The remaining species, big brown bat, little brown bat, and northern myotis are bats that use various substrates for roosting and are common to uncommon year-round residents. The avoidance of permanent wetland impacts will minimize the potential for negative impacts on bats.

5.0 Post-construction Strategies

5.1 Wildlife Reporting and Response System

Ashtabula Wind III will implement a Wildlife Reporting and Response System (WRRS). The purpose of the WRRS is to standardize the actions taken by Ashtabula Wind III or its subcontractors in response to any wildlife fatalities or injuries observed within the Project boundary.

Any dead or injured animals found within the Project boundaries by Project employees will be marked and its location reported immediately to the on-duty Plant Lead/Site Supervisor. The Plant Lead/Site Supervisor will proceed to the site of the discovery, will complete an incident report, and will take photographs. The carcass or injured animal will not be moved or removed by any individual who does not have the appropriate permits. If an endangered or threatened species is found dead or injured on the site, Ashtabula Wind III will immediately notify the USFWS-North Dakota Field Office (701-250-4481) and the Office of Law Enforcement (Region 6; 402-468-4218) of the discovery.

In addition to opportunistic discoveries of dead or injured birds, Ashtabula Wind III staff will also perform wildlife surveys whenever a turbine is visited. These surveys will consist of walking circular transects at three distances from the base of the turbine (30, 90, and 150 feet) searching for dead or injured birds. If a dead or injured bird is detected, the same reporting procedures will be followed as for other incidents.

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Table 1. Life history, behavior and habitat preferences of bat species potentially occurring* at the Ashtabula III Wind Energy Center, North Dakota.

English Name	Scientific Name	Listing Status	Abundance and ND Distribution	Maximum Foraging Area	Habitat/Foraging Habits	Summer Maternity Colony Size	Bachelor Summer Roosts	Winter Hibernacula Colony Size	Winter Roosts or Hibernacula
big brown bat	*Eptesicus fuscus*	None	Common year -round resident. Statewide	1.2 square miles	A generalist, more common in deciduous forests. Adapted to human development. Forages over land and water, open areas and forests. Aerial hawking.	25–75 individuals	Roosts in hollow trees, crevices in cliffs, buildings, bridges and bat houses.	Rarely more than a few hundred individuals.	Winters in caves, mines, and man-made structures.
eastern red bat	*Lasiurus borealis*	None	Common migratory species. Statewide (except southwest corner)	3.5 square miles	Conifer and deciduous trees in floodplain preferred. Aerial hawking.	Small family groups of 2-3 individuals	Solitary. Roosts on foliage.	Solitary; groups up prior to migration.	Not believed to winter in the Dakotas.
hoary bat	*Lasiurus cinereus*	None	Common migratory species. Statewide	0.03 square mile	Conifer and deciduous trees in floodplain preferred. Found near water. Aerial hawking.	Small family groups of 2-3 individuals	Solitary. Roosts on foliage.	Solitary; groups up prior to migration.	Not believed to winter in the Dakotas.

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English Name	Scientific Name	Listing Status	Abundance and ND Distribution	Maximum Foraging Area	Habitat/Foraging Habits	Summer Maternity Colony Size	Bachelor Summer Roosts	Winter Hibernacula Colony Size	Winter Roosts or Hibernacula
little brown bat	*Myotis lucifugus*	None	Common year -round resident. Statewide	0.11 square mile	Found commonly in cottonwood floodplains, typically near water. In arid parts of state found in riparian woodlands. Often hunts over water. Aerial hawking.	Solitary or small colonies	Diverse range of roost substrates: buildings, caves, hollow trees, piles of stacked lumber.	NA	Winters in caves, tunnels and abandoned mines. Winter roosts have high humidity.
northern myotis	*Myotis septentrionalis*	None	Uncommon year-round resident. Southwest part of the state.	0.85 square mile	Associated with large forest galleries in floodplains in plains and badland habitat. Forages in the area of the tree canopy. Aerial hawking and gleaning insects.	Typically small numbers (5 individuals) but has been documented as up to 75 individuals in the Black Hills, SD	Diverse range of roost substrates: tree cavities, under loose bark, in buildings, caves, mines. Seeks cooler temperatures.	Not found in large aggregations- known from a single cave in the Black Hills.	Winters in caves and mines.
silver-haired bat	*Lasionycteris noctivagans*	None	Uncommon migratory species. Erratic statewide distribution	2.8 square miles	Found in forested areas, most abundant in Oregon in older Douglas-fir/western hemlock forests. Forages over ponds and streams in woods. Aerial hawking.	6-65 individuals	Roosts on tree foliage, tree cavities and under loose bark.	Usually solitary	Winters in small tree hollows, underneath bark, in woodpiles and cliff faces.

* *Sources*: ASM 2007, Lacki et al. 2007, NatureServe 2008, Swier 2003, WBWG 2009

Devils Lake
Benson County
Stump Lake
Stump Lake
Nelson County
Goose Creek
Little Goose River
Hazen Brook
Grand Forks
Grand Forks County
English Coulee
Goose River
North Branch Goose River
Cole Creek
Sheyenne River
North Washington Lake
Eddy County
Mannie Lake
Lake Coe
Johnson Lake
Cherry Lake
Beaver Creek
Middle Branch Goose River
Golden Lake S W M A
Juanita Lake
Baldhill Creek
Sibley Lake
Foster County
Griggs County
Steele County
Goose River
Traill County
South Branch Goose River
North Branch Elm River
Elm River
North Dakota
Lake Ashtabula
South Branch Elm River
Spiritwood Lake
Rush River
Jamestown Reservoir
Stutsman County
Eckelson Lake
Sheyenne River
Valley City
Barnes County
Cass County
Swan Creek
James River
Kee Lake
Buffalo Creek
Beaver Creek
Spring Creek
Maple River
James River
Bone Hill Creek
LaMoure County
Ransom County
Richland County
Cottonwood Creek
Maple Creek
Lone Tree Lake
Sheyenne River

Figure 1

Vicinity map

NEXTera ENERGY RESOURCES

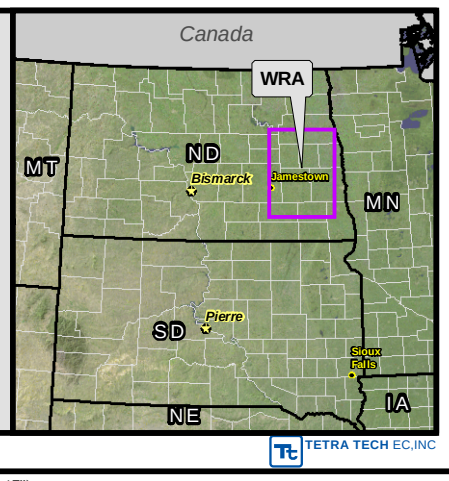
Ashtabula III Wind Energy Center

Barnes County, ND

1:500,000
NAD 1983 UTM 14

Wind Resource Area (3-9-2010)
Ashtabula Wind I
Ashtabula Wind II
State Boundary
County Boundary
River/Stream
Lake/Pond
Interstate Highway
Federal Highway
State Highway

0 2 4 6 8 10
Miles



TETRA TECH EC,INC

P:\GIS_PROJECTS\NextEra\Ashtabula_3_2010\MXDs\Avian_Survey\2010\Spring\Report_Maps\NextEra_Ashtabula3_AvianSurvey_Figure1_WRA_Location_071410_PTab - Last Accessed: 8/3/2010 - Map Scale correct at: ANSI B (11" x 17")