

APPENDIX 12F-1

FIRST SUPPLEMENT TO REVISED AVIAN AND BAT PROTECTION PLAN

AVIAN AND BAT PROTECTION PLAN for the ANTRIM WIND ENERGY PROJECT

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1 INTRODUCTION

Antrim Wind Energy, LLC (AWE) is dedicated to producing clean, reliable, renewable power while demonstrating respect and stewardship for the natural environment. As the sponsor of the Antrim Wind Energy Project (Project), AWE submits the following Avian and Bat Protection Plan (ABPP) as evidence of its approach to responsible wind energy development. AWE believes that the Project will be a net-benefit to the health and prosperity of the host community and the wider New England region.

1.1 Project Description

The Antrim Wind Energy Project (the Project) is proposed to be located in the northwest portion of the Town of Antrim, in Hillsborough County, New Hampshire. The Project site is located on a ridgeline that starts approximately 0.75 miles south of NH Route 9 and runs south-southwest, for approximately 2.5 miles.

The Project will produce electricity using wind turbine electrical generators installed on tubular steel towers. The turbines will be horizontal axis, upwind rotor turbines typical of those currently in use in utility-scale wind projects in New England and throughout the United States. The Project will consist of ten (10) turbines in the 3 MW size class with an expected plant generating capacity of 30 MW (rated). Proposed access to the Project site is from Route 9 up the north slope of Tuttle Hill ridge.

The entirety of the Project is located in the sparsely settled rural conservation zoning district in Antrim on approximately 1,850 acres of private lands leased by AWE from five landowners. Post-construction, the total direct impact area (including access and spur roads, work pads, staging areas, turbine pads, substation and operations & maintenance building) will be approximately 57 acres.

The Project's proposed Point of Interconnection (POI) is Public Service of New Hampshire's (PSNH) 115kV Line L163, which sits in a PSNH transmission corridor contained within the Project's leased boundary. The POI is located approximately halfway

between Route 9 and the northern most turbine location. The interconnection facility will consist of a new three breaker ring bus substation to be built adjacent to the existing 115kV line and along the Project's main access road. See Attachment A for a detailed site map. Importantly, no new high voltage transmission lines will be constructed as a result of the Project.

1.2 Corporate Policy on Avian and Bat Protection

AWE recognizes that wind power generation has the potential to impact avian and bat species, and values the importance of minimizing these impacts for the sake of the ecosystems, species and the communities they benefit. AWE also understands that renewable power generation, as an alternative to fossil fuel energy sources, benefits the environment and its inhabitants as a whole. By instituting a comprehensive Avian and Bat Protection Plan (ABPP), AWE believes that the benefits of the Antrim Wind Energy Project will far outweigh its impacts and will provide significant positive contributions to both the human and natural environments.

In that spirit, AWE is committed to working cooperatively with state and federal agencies and non-governmental organizations to promote the reasonable protection of avian and bat species during all phases of the Project's development, construction and operation. AWE is dedicated to incorporating the latest, state of the art knowledge and best management practices in the field of avian and bat protection at wind farms into its pre-construction assessments, project design, construction, post-construction monitoring, and long-term adaptive management.

Over the course of the Project's operating life, AWE pledges to design and operate the Antrim Wind Energy Project in a manner which provides decades of clean, renewable energy to the public while effectively reducing project impacts to avian and bat species, thereby balancing the health of the environment with society's growing need for electricity.

1.3 Purpose of the ABPP

In fulfillment of AWE's commitment to environmental stewardship, AWE has developed this site-specific Avian and Bat Protection Plan (ABPP) to reduce potential impacts to birds and bats as a result of construction and operation of the Antrim Wind Energy Project. In formulating the ABPP, AWE incorporated recommendations and guidance from the following sources: the U.S. Fish and Wildlife Service (USFWS) Draft Land-Based Wind Energy Guidelines (USFWS 2011b); USFWS's Final Land-Based Wind Energy Guidelines (USFWS 2012); USFWS's Avian Protection Plan Guidelines (APLIC and USFWS, 2005); and the Edison Electric Institute's Avian Power Line Interaction Committee (APLIC). This ABPP is also draws upon: the results of pre-construction bird and bat studies conducted at the project site; results from relevant post-construction surveys conducted to date at similar facilities; the latest science regarding options for effectively avoiding and minimizing potential impacts to birds and bats; and direct correspondence with the USFWS and the New Hampshire Fish and Game Department (NHFGD).

Potential impacts to birds and bats that are typically associated with wind power facilities include: direct, turbine-associated mortality through either collision or barotrauma; and indirect impacts such as habitat loss, displacement and increased energy demands due to turbine avoidance.

The ABPP is structured around an adaptive management framework and includes detailed provisions for avoiding, reducing, and, if warranted, mitigating for these potential impacts to birds and bats. The ABPP will be a living document throughout an initial Evaluation Phase (described in Section 7). During the Evaluation Phase, AWE will work with USFWS and NHFGD to evaluate the findings of post-construction studies, formulate recommendations and definitions, and incorporate them into the ABPP on a prospective basis. The monitoring, reporting and adaptive management programs described in this ABPP will allow this plan to respond and adapt to both actual results and unforeseen or changing (biological or technological) circumstances over the life of the Project.

1.4 Goals and Objectives

This ABPP has been developed to be consistent with the Final USFWS Land-Based Wind Energy Guidelines, dated March 23, 2012. The goal of this ABPP is to minimize Project's impacts to birds and bats in a scientifically sound, and commercially reasonable manner. AWE intends to achieve this goal by incorporating into the ABPP the following actions:

- Study baseline mortality and injury rates during the first year of project operation, and work with USFWS and NHFWD to establish management strategies and, if applicable, acceptable mortality thresholds;
- Implement a permanent (for the life of the Project) informal wildlife mortality monitoring and reporting program and an immediate alert procedure for biologically significant events;
- Implement a tiered consultation strategy to guide decision-making and allow for modifications to the ABPP, based on actual results and unexpected events over the life of the Project; and
- Study the effectiveness of a curtailment strategy on minimizing bat mortality and work with USFWS and NHFWD to determine if and how curtailment might be applied as a long-term management strategy for the Project.
- Permanently conserve approximately 685 acres of valuable forestland in the immediate vicinity of the Project to preserve important and diverse habitat types for birds, bats and other species.

2 PROTECTION OF AVIAN AND BAT SPECIES IN NEW HAMPSHIRE

There are several laws which protect avian and bat species in the United States and in New Hampshire. These include:

- The federal Endangered Species Act;
- The New Hampshire Endangered Species Conservation Act;
- The federal Migratory Bird Treaty Act and;
- The Bald and Golden Eagle Protection Act.

The legal protection status of avian and bat species in New Hampshire, pursuant to these laws, is described in the following subsections.

2.1 Federal and State Endangered Species Acts

The federal Endangered Species Act (ESA) protects threatened and endangered plants and animals and the habitats in which they are found. Protection of birds and mammals under the ESA is administered by the USFWS. The law requires federal agencies, in consultation with the USFWS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a "taking" of any listed species of endangered fish or wildlife.

The State of New Hampshire has its own Endangered Species Conservation Act (NH RSA 212-A¹) that protects all non-domesticated species of wildlife indigenous to the state. The list of New Hampshire's endangered and threatened wildlife is maintained by the NHFGD.

According to the New Hampshire Endangered Species Conservation Act (NH ESCA) "Endangered" species are those in danger of being extirpated from the state, while

¹ Note that under RSA 212-A:13, III, the provisions of RSA 212-A or any rule promulgated under that statute shall not interfere in any way with the siting or construction of any energy facility as defined in RSA 162-H:2.

"Threatened" species face the possibility of becoming "endangered." Some of New Hampshire's listed species are also listed under the federal ESA.

In addition to those species listed as threatened or endangered, New Hampshire also maintains a list of species of "special concern". Species listed as "special concern" include: (a) those that could become "threatened" in the foreseeable future if conservation actions are not taken or that were recently recovered enough to be removed from the endangered and threatened category, and; (b) those for which a large portion of their global or regional range (or population) occurs in New Hampshire and where actions to protect these species' habitat will benefit the species' global population. Species that do not meet the criteria for "endangered", "threatened", or "special concern", but that are still biologically rare, as indicated by the State and Global Ranks, are also listed as rare in New Hampshire.

Table 1 lists New Hampshire's rare bird and bat species and identifies each species' rank and listing.

Table 1: Rare Bird and Bat Species of New Hampshire

Name	Rank		Listing	
	Global	State	Federal	State
<p>Rank Prefix: G = Global Rank; S = State Rank; T = Global or State Rank for a subspecies or variety Rank Suffix: 1 = Critically imperiled; 2 = Imperiled; 3 = Vulnerable; 4 = Apparently secure ; 5 = Secure; B = Breeding population; N = Non-breeding population; H = Occurred historically, not seen recently; X = Extirpated; NR/U = Not ranked / Unknown; Q = Questionable taxonomy; ? = Uncertain Listing Codes: E = Endangered; T = Threatened; SC = Special Concern</p>				
Birds				
American Bittern (<i>Botaurus lentiginosus</i>)	G4	S3B	--	--
American Kestrel (<i>Falco sparverius</i>)	G5	S3B	--	SC
American Pipit (<i>Anthus rubescens</i>)	G5	S2B	--	SC
American Three-toed Woodpecker (<i>Picoides dorsalis</i>)	G5	S2	--	T
Arctic Tern (<i>Sterna paradisaea</i>)	G5	S1B	--	SC
Bald Eagle (<i>Haliaeetus leucocephalus</i>)	G5	S2	--	T
Bank Swallow (<i>Riparia riparia</i>)	G5	S3B	--	SC
Bicknell's Thrush (<i>Catharus bicknelli</i>)	G4	S2S3B	--	SC
Cerulean Warbler (<i>Dendroica cerulea</i>)	G4	S3B	--	SC
Cliff Swallow (<i>Petrochelidon pyrrhonota</i>)	G5	S3B	--	SC
Common Loon (<i>Gavia immer</i>)	G5	S2B	--	T
Common Moorhen (<i>Gallinula chloropus</i>)	G5	S2B	--	SC
Common Nighthawk (<i>Chordeiles minor</i>)	G5	S1B	--	E
Common Tern (<i>Sterna hirundo</i>)	G5	S2B	--	T
Eastern Meadowlark (<i>Sturnella magna</i>)	G5	S3B	--	SC
Golden Eagle (<i>Aquila chrysaetos</i>)	G5	SHB	--	E
Golden-winged Warbler (<i>Vermivora chrysoptera</i>)	G4	S2B	--	SC
Goshawk (<i>Accipiter gentilis</i>)	G5	S3	--	--
Grasshopper Sparrow (<i>Ammodramus savannarum</i>)	G5	S2B	--	T
Great Blue Heron (Rookery) (<i>Ardea herodias</i>)	G5	S4B	--	--
Henslow's Sparrow (<i>Ammodramus henslowii</i>)	G4	SHB	--	--
Horned Lark (<i>Eremophila alpestris</i>)	G5	S3B	--	SC
King Rail (<i>Rallus elegans</i>)	G4	SHB	--	--
Least Bittern (<i>Ixobrychus exilis</i>)	G5	S1B	--	SC
Least Tern (<i>Sterna antillarum</i>)	G4	SHB	--	E
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	G4	SHB	--	--
Marsh Wren (<i>Cistothorus palustris</i>)	G5	S3B	--	--
Nelson's Sharp-tailed Sparrow (<i>Ammodramus nelsoni</i>)	G5	S3B	--	SC
Northern Harrier (<i>Circus cyaneus</i>)	G5	S1B	--	E
Olive-sided Flycatcher (<i>Contopus cooperi</i>)	G4	S3B	--	SC

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Name	Rank		Listing	
	Global	State	Federal	State
Osprey (<i>Pandion haliaetus</i>)	G5	S3B	--	SC
Peregrine Falcon (<i>Falco peregrinus anatum</i>)	G4T4	S2	--	T
Pied-billed Grebe (<i>Podilymbus podiceps</i>)	G5	S2B	--	T
Piping Plover (<i>Charadrius melodus</i>)	G3	S1B	T	E
Purple Martin (<i>Progne subis</i>)	G5	S1B	--	SC
Roseate Tern (<i>Sterna dougallii dougallii</i>)	G4T3	S1B	E	E
Rusty Blackbird (<i>Euphagus carolinus</i>)	G4	S3B	--	SC
Saltmarsh Sharp-tailed Sparrow (<i>Ammodramus caudacutus</i>)	G4	S3B	--	SC
Seaside Sparrow (<i>Ammodramus maritimus</i>)	G4	S1B	--	SC
Sedge Wren (<i>Cistothorus platensis</i>)	G5	S1B	--	E
Sora (<i>Porzana carolina</i>)	G5	S3B	--	SC
Spruce Grouse (<i>Falcapennis canadensis</i>)	G5	S3	--	SC
Upland Sandpiper (<i>Bartramia longicauda</i>)	G5	S1B	--	E
Vesper Sparrow (<i>Pooecetes gramineus</i>)	G5	S2S3B	--	SC
Whip-poor-will (<i>Caprimulgus vociferus</i>)	G5	S3B	--	SC
Willet (<i>Catoptrophorus semipalmatus</i>)	G5	S3B	--	SC
Bats				
Eastern Red Bat (<i>Lasiurus borealis</i>)	G5	S3?B	--	SC
Hoary Bat (<i>Lasiurus cinereus</i>)	G5	S3B	--	SC
Indiana Bat (<i>Myotis sodalis</i>)	G2	SNA	E	--
Northern Long-eared Bat (<i>Myotis septentrionalis</i>)	G4	S3	--	SC
Silver-haired Bat (<i>Lasionycteris noctivagans</i>)	G5	S3B	--	SC
Small Footed Bat (<i>Myotis leibii</i>)	G3	S1	--	E
Tricolored Bat (<i>Pipistrellus subflavus</i>)	G5	S1N,SUB	--	SC
Bat Hibernacula				
Bat hibernaculum	GNR	S1	--	--

Source: New Hampshire Natural Heritage Bureau, 2011

2.2 Avian Protection

2.2.1 The Migratory Bird Treaty Act

The federal Migratory Bird Treaty Act (MBTA, as amended (16 U.S.C. 703–712; 40 Stat. 755) prohibits the "take" of migratory birds, their eggs, feathers or nests. The MBTA defines "take" to include by any means or in any manner, any attempt at hunting, pursuing, wounding, killing, selling, purchasing, possessing or transporting any migratory bird, nest, egg, or part thereof. As of 2012, a total of 1007 bird species are protected by the MBTA; 58 of these are currently legally hunted as game birds (USFWS 2011c). A migratory bird is any species or family of birds that live, reproduce or migrate within or across international borders at some point during their annual life cycle.

The United States Fish and Wildlife Service (USFWS) is primary entity responsible for ensuring the implementation and enforcement of the MTBA.

2.2.2 Bald and Golden Eagle Protection Act

Bald eagles and golden eagles are protected under the MBTA, described above. In addition, these species are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250). The Bald and Golden Eagle Protection Act (Eagle Act) is the primary law protecting bald and golden eagles in the U.S. and in New Hampshire. The Eagle Act prohibits take of bald and golden eagles, including their parts, nests, or eggs. The statutory definition of "take" includes to take, possess, purchase, sell, transport, pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest or disturb eagles.

The USFWS is primarily responsible for ensuring the implementation and enforcement of the Eagle Act. On September 11, 2009, the USFWS issued its final rule regarding take permits for bald and golden eagles (50 CFR Parts 13 and 22). According to this rule, wind power projects which are deemed likely to incur take of eagles or their nests would need to obtain a programmatic take permit.

2.3 Bat Protection

Eight species of bats occur in New Hampshire, based upon their normal geographical range (NHFGD 2010). These are:

- little brown bat (*Myotis lucifugus*)
- northern long-eared bat, (*Myotis septentrionalis*)
- eastern small-footed bat (*Myotis leibii*)
- silver-haired bat (*Lasionycteris noctivagans*)
- tri-colored bat (*Perimyotis subflavus*)
- big brown bat (*Eptesicus fuscus*)
- eastern red bat (*Lasiurus borealis*), and
- hoary bat (*L. cinereus*).

As shown in Table 1, several of these species are of interest to the NHFGD: the eastern small-footed bat is state-listed as endangered, and five species (eastern red bat, silver-haired bat, hoary bat, northern long-eared bat, and tri-colored bat) are species of special concern in the state. Little is known about the distribution of any of these species in New Hampshire and very little is known about their summer breeding habitat (NHFGD 2005; DeGraff and Yamasaki 2001). With the exception of the small-footed bat, which possibly uses rocky crevices on cliffs or crevices on buildings for summer roosting, the five state-listed species of special concern all apparently roost in trees (NHFGD 2005).

In addition to the species listed above, a single record exists for the federally endangered (and New Hampshire S1 ranked) Indiana Bat in New Hampshire. Aside from this record, there is no known population of Indiana bats in New Hampshire and this species is not managed within the state (because there is too little distribution data available to develop conservation or management strategies) (Veilleux and Reynolds 2005). Although the *New Hampshire Wildlife Action Plan* (NHFGD 2005) identified the Indiana bat (*M. sodalis*) as potentially occurring in the state, current available resources suggest that it is not present or is unlikely to be present (NHFGD 2011a, Reynolds 2007).

Of important note: the USFWS is currently performing a status review (USFWS 2011a) in response to a petition to list two bat species (eastern small-footed and northern long-eared) as threatened or endangered, due to rapid and dramatic population decline caused by White-nose Syndrome (WNS). This emerging disease has spread throughout the New England states in the past five years and has resulted in the unprecedented decline of all 6 bat species that hibernate in caves or mines in the northeast (NHFGD 2011b).