

**RoxWind:**  
**Incidental Take Plan for the**  
**little brown bat (*Myotis lucifugus*) and the**  
**eastern small-footed bat (*Myotis leibii*)**

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*Prepared for:*

RoxWind LLC by its manager  
Palmer Management Corporation  
13 Elm Street, Suite 200  
Cohasset, MA 02025

*Submitted to:*

Commissioner Chandler Woodcock  
Maine Department of Inland Fisheries and Wildlife (MDIFW)  
State House Station 41  
Augusta ME 04333-0041

*Prepared by:*

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**October 11, 2018**

## 1. INTRODUCTION

Palmer Management Corporation, on behalf of RoxWind LLC (“RoxWind”), has prepared this Incidental Take Plan (ITP) for the little brown bat (*Myotis lucifugus*) and the eastern small-footed bat (*Myotis leibii*) in accordance with provisions of the Maine Endangered Species Act (Title 12 M.R.S., Chapter 925, Subchapter 3, §12808-A.2). By statute, the Commissioner of the Maine Department of Inland Fisheries and Wildlife (MDIFW) can authorize take of state-listed endangered or threatened species if “(a) the taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity; (b) the taking will not impair the recovery of any endangered or threatened species; and (c) the person develops and implements an incidental take plan in accordance with subsection 5 and that plan is approved by the Commissioner.”

MDIFW regulations [Chapter 8.06(B).6] endorse the development of “Specific Activity ITPs” to address accidental mortality of these two listed bat species. This ITP is part of RoxWind’s application submitted to the Maine Department of Environmental Protection (MDEP) for Siting Certification for Small-Scale Wind Energy Developments (“Small Wind Certification,” Title 38 M.R.S., Chapter 3, Subchapter 1, §480-II). Both MDIFW and MDEP have reviewed earlier drafts during the development of this ITP and this final draft prior to its execution.

## 2. PROJECT DESCRIPTION

This ITP pertains to RoxWind’s proposed 4-turbine wind project on North Twin Peak in Roxbury, Maine (Figure 1). The project is designed to conform to the State’s Small Wind Certification process. Of particular note is the fact that it will create fewer than 3 new acres of impervious area, and when complete, will occupy fewer than 20 acres. Due to the project’s small size relative to other wind projects in the State, its individual environmental impact will be proportionally smaller.

The project has been in development since 2012 when the landowner entered into a lease agreement for the permitting, construction and operation of a wind energy project. Subsequently, a temporary meteorological tower was erected on site to verify the wind resource, and energy analyses have been undertaken. In addition, the project developer has completed environmental studies and received determinations of no hazard from the Federal Aviation Administration.

The proposed turbines will be sited along the ridgeline of North Twin Mountain. In the Town of Roxbury’s zoning ordinance, this area is designated as being within its “Mountain District.” The Mountain District has been identified by the Town as appropriate for wind energy development. The project has been presented to the Town at multiple Selectmen and Planning Board hearings starting in 2014. RoxWind submitted a permit application to the Town of Roxbury’s Planning Board to construct and operate the project on February 22, 2018, and held a Public Hearing in the Town on March 7, 2018. RoxWind also hosted an Open House in the Town of Roxbury on May 12, 2018. The Town of Roxbury’s Planning Board has indicated that

the project meets the Town’s zoning requirements and that a permit will be issued after receipt of the State’s Small Wind Certification.

Access to the site is by an existing road that will be improved for the project during construction. The project design will minimize site impacts by revegetating a portion of the road’s width after the equipment is erected and commissioned. An existing transmission line runs through a portion of the property and the project is designed so that its generator lead will follow the existing corridor down toward the utility substation.



### 3. SUMMARY OF CONSULTATIONS WITH MDIFW

RoxWind has consulted with MDIFW on multiple occasions, commencing in 2016.

RoxWind submitted an information request to MDIFW, and in response, MDIFW issued a letter, dated May 31, 2016, addressing Endangered, Threatened, and Special Concern Species – specifically listing Bats, Golden Eagle, Northern Bog Lemming, Roaring Brook Mayfly, Bicknell’s Thrush, and Northern Spring Salamander as species that may occur on the site, and recommending additional investigation. In the same letter, MDIFW also requested a copy of the vernal pool study that was completed for the site.

RoxWind responded by commissioning Stantec Consulting Services, Inc. to investigate the presence of the aforementioned species on the site and the appropriateness of the site to host

such species. In addition, RoxWind and its consultants have reviewed available environmental monitoring reports from a nearby wind project. These site-specific studies, along with the vernal pool study, were submitted to MDIFW for review and comment on November 23, 2016. As of January 27, 2017, after review of the submittals, MDIFW agreed with the studies' conclusions that the species listed in the May 31, 2016 letter, excepting bats, were not identified on site. RoxWind, MDIFW and staff from Maine's Department of Environmental Protection (DEP) met on August 16, 2018 to review a draft of this ITP and to discuss the environmental impacts of the proposed project.

The remainder of this ITP document will focus on bats that are known to inhabit the State of Maine, and proposed mitigation that has been discussed among the parties.

Through numerous discussions with MDIFW, RoxWind understands that MDIFW is having, has had, or plans to have, conversations with owners and operators of both operating and proposed wind projects in Maine to discuss the implementation of protective protocols to decrease the probability of bat takings.

To initially address MDIFW's identification of bats in its May 2016 response to RoxWind's information request, RoxWind commissioned a bat acoustic monitoring study that followed USFWS Guidelines. The study concluded that no northern long-eared bats (*Myotis septentrionalis*), the only Maine bat listed (as a Threatened Species) under the Federal Endangered Species Act at the time of the study, were recorded during the monitoring period.

While the monitoring did not detect northern long-eared bats, RoxWind and MDIFW continued conversations regarding operational curtailment of the project during specific periods of concern as a measure to provide protection to the eight species of bats known to reside in Maine.

The Maine legislature adopted recommendations from MDIFW to designate three species of bats under the Maine Endangered Species Act, effective October 30, 2015:

- Eastern small-footed bat – State Threatened
- Little brown bat – State Endangered
- Northern long-eared bat – State Endangered

#### **4. PROJECT ACTIVITIES COVERED BY THE INCIDENTAL TAKE PLAN**

This ITP covers all reasonable activities related to State-listed bats at the site necessary for the permitting, future construction, operation and maintenance of this wind energy facility. The Plan is based upon operational adjustments to raise cut-in speeds by feathering turbine blades during nocturnal periods with low wind speeds when bats are most active.

RoxWind has the financial capacity to implement this ITP. The conservation measures outlined here do not require significant initial capital investments beyond cost estimates to develop and operate the project. There will be a minor capital cost to implement and automate the plan through programming at each turbine. While the initial capital investment is minimized through this ITP, there are recurring costs to the project attributed to lost revenue. As the project is currently designed and submitted to permitting, RoxWind anticipates that the wind resource at this location is sufficient for the project to absorb the revenue reductions resulting from the conservation measures (i.e., curtailment via elevated cut-in speeds; see Section 6.0).

## **5. ANALYSIS OF POTENTIAL ALTERNATIVES**

All operating wind energy facilities in Maine have the potential to incidentally impact bats during their operation. These impacts are not unique to wind energy facilities, as bats have historically been impacted by other large developments both during and after construction. Risks cannot be fully avoided, but wind energy facilities that incorporate appropriate siting, design, and operational practices can minimize bat mortality to an extent that avoids significant adverse impacts to bat populations.

Wind energy has been a rapidly developing technology. Strategies that minimize unintended outcomes such as bat mortalities are still in development. Collaborative research by the industry and bat conservation organizations currently focus on acoustic deterrents at turbines, physical attributes of turbines, and real-time feathering of turbine blades in response to an approaching bat or bird. If these (or other) technologies achieve proven efficacy and become commercially available, such alternatives will be considered during periodic reviews of this ITP by RoxWind in consultation with MDIFW and MDEP.

## **6. CONSERVATION MEASURES**

It is unknown how the general bat population will recover from the impact of white-nose syndrome in future years. Due to this uncertainty, and the project's projected 25-year or longer operating design, RoxWind proposes the conservation measures outlined here.

Through discussions with MDIFW, it was determined that curtailment practices are the most effective method currently available to minimize bat fatalities. Based on guidance from MDIFW, the operational constraints outlined below are expected to achieve at least an 80% reduction in bat fatality. Turbine cut-in speeds will be pre-set to at least 6 meters per second (m/s) from April 15 – September 30 during nocturnal periods. The cut-in speeds will be elevated to 6.9 m/s during periods of traditionally higher bat mortality during July 16 – September 15. Protocols are further detailed below.

MDIFW and RoxWind have worked collaboratively to create an operating protocol, to be implemented seasonally following commissioning, that will remain in effect for the operating life of the project, or until there is cause to re-evaluate the protocol to allow for more operational flexibility for the project. These causes may include, but are not intended to be limited to, (i) technological advancements that could be implemented which provide similar levels of bat protection while allowing the project to increase production; (ii) MDIFW's determination that curtailment is no longer required for operating or proposed wind energy projects to protect bat species; or (iii) additional research or guidance becomes available that supports decreased levels of overall curtailment.

#### Proposed Conservation Measures Protocol

Commencing daily ½ hour before dusk and concluding ½ hour after dawn of the following day, when ambient air temperatures are at or above 32 degrees Fahrenheit:

- A) April 15 – July 15: Cut-in wind speed is increased from manufacturer's designed speed to 6 meters per second (m/s)
- B) July 16 – September 15: Cut-in wind speed is increased to 6.9 m/s
- C) September 16 – September 30: Cut-in wind speed returns to 6 m/s
- D) October 1 – April 14: No adjustments to cut-in wind speed, wind turbines operate as designed by manufacturer.

#### Notes:

- 1) The aforementioned levels of curtailment are agreed upon with the underlying assumption that there will be no required formal species monitoring or mortality counts during the operational life of the project.
- 2) While no formal monitoring will be required at the site, RoxWind will inform its operators to report any incidentally discovered deaths of bats or birds to MDIFW (Section 7.5).
- 3) RoxWind will have the right to operate, irrespective of this protocol, in periods of time when the Independent System Operator - New England (or any successor to ISO-NE) determines that there is a capacity shortage. Reviewing the records for the last 5 years, this has been an infrequent scenario which rarely coincides with nighttime curtailment requirements proposed under this Plan (one overnight event in 2013; one event lasting 1.5 hours after sunset 2014; no events between dusk and dawn since then), and is forecast to decrease in frequency in the future.
- 4) The curtailment settings for the turbines will be programmed as follows:
  - a) The following website will be used to determine the dusk and dawn times for Roxbury, ME: <https://www.timeanddate.com/sun/@z-us-04275>
  - b) The turbine manufacturer will create a custom program for each individual day between April 15 and September 30 for the life of the project, or until the requirement for operational curtailment protocol is removed. For each day, a curtailment start time will be established that is ½ hour before the published

Civil Twilight end time and a curtailment end time will be established that is ½ hour after the published Civil Twilight start time.

- c) For each day, a new cut-in wind speed will be established during the curtailment period. If the average wind speed, determined as described below, is below the programmed cut-in speed, the turbine blades will be feathered so that the turbine is not operational. Once the average wind speed is above the cut-in speed, the turbine blades will be feathered so that the turbine is capable of operating.
- 5) All wind speeds will be measured at the hub height at each wind turbine and averaged over 5-minute intervals. The ambient air temperature will be measured at ground level from a central location within the wind farm. If the ground level temperature is at or above 32 degrees Fahrenheit, that temperature will be applied to each turbine. Each turbine will be curtailed individually when all of the curtailment parameters are met at that turbine's location, and the blades will be feathered while the curtailment parameters persist.
- 6) Technological advances that could decrease the required level of curtailment may include, among other things, bat detectors that integrate with the SCADA system, bat deterrence systems, physical changes to the wind turbines to decrease the likelihood of bat take, or other technology that decreases the likelihood of bat impact. Implementation of such practices requires review by MDIFW and formal approval by revision of this ITP.
- 7) New research may include, among other things, more precisely defined operating parameters that allow the turbines to operate more regularly while providing similar levels of protection to bat species of concern. Implementation of such practices requires review by MDIFW and formal approval by revision of this ITP.

## **7. MONITORING**

**7.1. Compliance documentation:** An annual operations summary demonstrating compliance with curtailment requirements (Section 6.0) in the previous calendar year will be submitted to MDIFW by March 1 of the following year. The summary document will be a table of curtailment events from the previous year's curtailment season, and shall include a log of the evenings that the curtailment conditions occurred, a verification that the turbine(s) automatically curtailed, and notes explaining any discrepancies between the two prior log entries.

**7.2. Site inspections:** MDIFW personnel will be allowed to visit the facility to search for bat fatalities with advance notice to parties identified in the ITP. Such notice shall provide reasonable cause, the requested date and time, and the number of personnel anticipated on-site for the inspection. MDIFW shall coordinate any such visits with site operators to ensure safety protocols are followed and that the site is entered and exited securely.

**7.3. Monitoring by the permittee:** MDIFW stipulates that implementation of conservation measures (Section 6.0) in this ITP should yield 80% or more reduction in bat mortality including potential losses of State-listed little brown bats and eastern small-footed bats. Operational curtailment provides more safeguards to vulnerable bats than additional, costly studies to sample and estimate reduced bat fatality. Accordingly, no further pre- or post-construction monitoring for bats is necessary unless agreed to by all parties as ITP amendments (Section 8.0). Based on the best available science, conservation measures (Section 6.0) in this ITP reflect the level of curtailment requested by MDIFW and sufficiently minimize potential losses to little brown bats and eastern small-footed bats to the extent that this project does not impair their recovery.

However, RoxWind will direct its operators to record any incidental discovery of mortalities of bats or birds. Whenever possible, any carcass discovered (especially bats) should be collected, stored in a plastic bag, and frozen with a label noting the date, time, and nearest turbine #. Similar practices are requested of all wind energy facilities in Maine. MDIFW authorizes the salvage and temporary possession of such specimens via issuance of a “Scientific Collection Permit” that requires annual reporting of all specimens. The Department will provide a sample template for logging fatalities. Encounters of more than 2 bats or 10 bird carcasses during any operator inspection should be reported within 24 hours. MDIFW contacts include:

- Chuck Hulsey, Regional Wildlife Biologist - Strong = [charles.hulsey@maine.gov](mailto:charles.hulsey@maine.gov) / office tel. 207-778-3324
- Sarah Boyden, Asst. Regional Wildlife Biologist - Strong = [sarah.boyden@maine.gov](mailto:sarah.boyden@maine.gov) / office tel. 207-778- 3324
- John Perry, Environmental Coordinator - Augusta = [john.perry@maine.gov](mailto:john.perry@maine.gov) / office tel. 207-287-5254
- Charlie Todd, Endangered Species Coordinator - Bangor = [charlie.todd@maine.gov](mailto:charlie.todd@maine.gov) / office tel. 207-941-4468
- Shevenell Webb, Furbearer and Small Mammal Biologist - Bangor = [shevenell.webb@maine.gov](mailto:shevenell.webb@maine.gov) / office tel. 207-941-4473

**7.4. Bat monitoring by MDIFW:** It is beneficial to all parties to document long-term trends of bat populations. MDIFW reserves the right to monitor bat activity (*e.g.*, use of acoustic detectors) at one or more locations on the project site as approved in consultation with the permittee.



## 8. AMENDMENT PROCEDURE

**8.1. Compliance Periodic Review:** The ITP will be reviewed at least once every five years on anniversary dates of the commencement of operation of the project. This provision will be tracked by MDIFW as described in Appendix A.

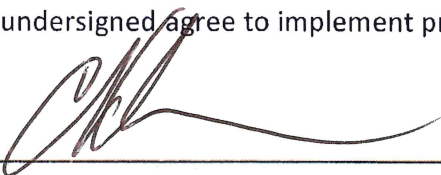
**8.2. Changes in Project Permits:** The ITP will be reviewed during any future permit changes that influence the risks for incidental take of bats. Concurrence with existing terms or appropriate changes will be identified in sequential Appendices (B, C, D, E, etc.) over the duration of the Plan. All parties to the ITP and a representative of the permitting agency must sign and date their concurrence.

**8.3. Substantive Changes:** Either party may initiate re-evaluation of the ITP by written notice to all parties, requesting to seek changes in conservation measures or other major provisions. Appropriate triggers for potential revisions of the ITP may include (but are not limited to) new science regarding changes in the status or activity of bat populations, demonstrated efficacy of deterrents, technological advances to minimize bat mortality, etc.

**8.4. Transfer of ITP provisions to subsequent project owners or operators:** Terms of this ITP must be adopted without change by new owners or operators in the future. All parties to the ITP must sign and date their concurrence as an appendix to the plan.

## 9. SIGNATURES

The undersigned agree to implement provisions of this ITP presented herewith.



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Chandler Woodcock, Commissioner  
Maine Department of Inland Fisheries and Wildlife

10-23-18

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date



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Lindsay Deane-Mayer, Project Manager  
Palmer Management Corporation, manager of RoxWind LLC

October 15, 2018

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date

**Appendix A. Periodic review and ITP concurrence.**

This ITP requires review at least once every 5 years commencing with the start of operations planned in 2020:

**2025 (first planned ITP review):**

- I concur that conservation measures and other provisions of this ITP are appropriate.

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(signature / title – date), MDIFW)

- I concur that conservation measures and other provisions of this ITP are appropriate.

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(signature / title – date), permittee

- I concur that conservation measures and other provisions of this ITP are appropriate.

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(signature / title – date), permittee)

Comments: