

Cassadaga Wind Project's
Northern Long-eared Bat Net Conservation Benefit Plan
Revised January 2019

INTRODUCTION

The northern long-eared bat (*Myotis septentrionalis*; NLEB) is one of the species of bats most impacted by the disease white-nose syndrome (WNS). WNS is a disease caused by an invasive fungus that ultimately causes affected hibernating bats to starve to death over the winter. Due to declines caused by WNS and continued spread of the disease, the northern long-eared bat was listed as "threatened" by the United States Fish and Wildlife Service (USFWS) and New York State Department of Environmental Conservation (NYSDEC) in 2015. Since WNS was first discovered in New York in 2006, a 98% decline in the abundance of NLEB has been observed.

Prior to filing its Article 10 Application, Cassadaga Wind LLC (Cassadaga or Cassadaga Wind) conducted pre-construction acoustic monitoring surveys to document *Myotis* presence and bat activity patterns at the Cassadaga Wind Project (Facility) site, located in the towns of Charlotte, Cherry Creek, Arkwright and Stockton, Chautauqua County, New York. Members of the *Myotis* genus, although not identified to species, made up 1% (39) of the total recorded bat passes (2,771) over 843 detector nights during pre-construction acoustic monitoring. Relative to the proposed Facility site, the nearest winter occurrence of NLEB is in Newstead, Erie County (>40 miles). The nearest summer occurrences are confirmed for Chautauqua and Ellington towns in Chautauqua County (>20 miles). NYSDEC asserts the entire state is occupied habitat for northern long-eared bat during the fall migration period.

TAKE DETERMINATION

Given the above, NYSDEC determined that the Facility will require an Endangered/Threatened Species Permit pursuant to Environmental Conservation Law (ECL) § 11-0535 and 6 NYCRR Part 182 as the Facility may result in the "take" or "taking" of NLEB during the fall migration period. While, the procedural requirements of ECL § 11-0535 and Part 182 are supplanted by Article 10, the Facility must still conform to the substantive requirements of ECL § 11-0535 and Part 182, which requires a mitigation plan that will result in a net conservation benefit to the listed species.

Therefore, this Net Conservation Benefit Plan has been prepared in accordance with the *Order Granting Certificate of Environmental Compatibility and Public Need, Conditions for Cassadaga Wind LLC* (Case 14-F-0490), issued by the New York State Board on Electric Generation Siting and the Environment on January 17, 2018, and the substantive requirements of 6 NYCRR §182.11.

NORTHERN LONG-EARED BAT TAKE ESTIMATE

Cassadaga estimated take of NLEB based on the product of a regionally relevant average bat fatality rate and proportion of NLEB out of the total number of carcasses found at selected post-construction fatality studies in New York and Pennsylvania. Please see the NLEB Take Estimate Memo (Stantec to Cassadaga Wind, dated June 1, 2017) attached hereto as **Attachment A** for detailed information regarding Cassadaga Wind's NLEB take estimate. Cassadaga and the NYSDEC did not use the same sets of post-construction studies to derive estimated bat fatality rates and species composition, resulting in different NLEB take estimates. Further, Cassadaga estimated bat fatality based on a per-turbine basis whereas NYSDEC based their estimate on per-megawatt rates, also contributing to the difference between the NLEB take estimates.

For purposes of this Net Conservation Benefit Plan, Cassadaga Wind has elected to proceed with a net conservation benefit plan that will mitigate for a level of NLEB take which corresponds with NYSDEC's method for NLEB take calculation, as outlined in Table 1.

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Table 1. Summary NYSDEC estimated take of northern long-eared bat take at the Cassadaga Wind Project, Chautauqua County, New York.

NY fatality rate	Proportion NLEB	NLEB fatality rate	Proposed Facility capacity	Est. annual take w/o min.	Est. life-of-Facility take w/o min.	Est. annual w/ min. (80% reduction)	Est. life-of-Facility take w/ min.
6.1 b/MW/y	0.0040	0.025 NLEB/MW/yr	126 MW	3.15	94.5	0.63	18.9

As of 2016 USFWS has estimated that there are 228,480 Northern Long-eared Bats in New York State. (*Programmatic Biological Opinion on Final 4(d) Rule for Northern Long-Eared Bat and Activities Expected from Take Prohibitions*, USFWS 2016). According to USFWS, NLEB account for only 0.09% of bat mortality at wind projects throughout the species range. (USFWS calculated that NLEB comprise 0.09% of bat mortality based on 8,934 bat carcasses collected in 71 post-construction studies across the NLEB species' range).

Given this low percentage of NLEB mortality, cumulative mortality of roughly 470 NLEB at the Facility and all other wind facilities in New York State over a 30-year period is not likely to lead to population-level decline of NLEB (<1% of the New York population) and will not reduce the likelihood of the survival or recovery of the species in New York. This is consistent with a 2016 determination by the USFWS that "there may be adverse effects posed by wind-energy development to individual northern long-eared bats; however, there is no evidence suggesting that effects from wind-energy development has led to significant declines in this species, nor is there evidence that regulating the incidental take that is occurring would meaningfully change the conservation or recovery potential of the species in the face of WNS. Furthermore, with the adoption by wind-energy facilities of the new voluntary standards, risk to all bats, including the northern long-eared bat, should be further reduced." (USFWS 2016)

TAKE MINIMIZATION

Implementing a curtailment regime during the Fall migration period is expected to significantly minimize, if not avoid altogether, NLEB fatalities based on three factors, all of which suggest a low propensity for turbine-related mortality and efficacy of curtailment to reduce this risk to negligible levels. First, NLEBs are reported to forage below tree canopy (Nagorsen and Brigham 1993 as cited by USFWS 2015). Second, analyses of echolocation call character (Faure et al. 1993) and diet contents (Griffith and Gates 1985, Brack and Whitaker 2001, Feldhamer et al. 2009) suggest NLEBs glean considerably while foraging, further indicating a propensity for subcanopy flight and foraging. Third, based on wing morphology and observed foraging behavior, *Myotis*, in general, are indicated as slow-flying bats adapted for maneuverability in cluttered environments (Norberg and Rayner 1987 as cited by USFWS 2016, Ratcliffe and Dawson 2003). Hence, NLEBs are less likely to fly within the turbine rotor-swept area (above canopy height) or fly during periods of high winds as compared to long-distance migratory bat species.

The life-of-Facility take estimate of 94.5 NLEBs assumes no minimization (i.e., feathering turbines below manufacturer's rated cut-in speed or at higher cut-in speeds).

Cassadaga Wind will implement a curtailment regime of 5.0 m/s 30 minutes prior to sunset through 30 minutes after sunrise, when temperatures are greater than 10 degrees Celsius from July 1 through October 1.

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NLEB fatalities have not been reported at wind facilities where any form of turbine curtailment was implemented (Gruver and Bishop-Boros 2015).¹ In the northeast, 74% of NLEB fatalities occurred from August 1 to October 5 (Gruver and Bishop-Boros 2015). It is anticipated that Cassadaga Wind's curtailment regime could reduce rates of *Myotis* mortality by more than 90%. Based on the biological and behavioral characteristics of NLEB, the lack of reported fatalities at turbines under any form of curtailment and the demonstrated effectiveness of raised cut-in speeds at reducing all bat mortality, this plan conservatively assumes that the proposed minimization strategy would reduce potential risk of NLEB mortality by 80% relative to fully operating turbines. In reality, this value is likely to be higher, although the conservative approach will ensure that any mitigation will more than compensate for the potential impacts.

Therefore, based on NYSDEC's take calculation method it is estimated that the Facility may take a maximum of 0.63 NLEBs per year (up to 18.9 NLEBs over the 30-year assumed life of the Facility). It is likely these values will be lower considering greater reductions in mortality observed at curtailed turbines, the NLEB behavioral factors mentioned above, the reduced NLEB population post WNS syndrome, and low levels of acoustic activity of any *Myotis* species detected at the Facility during preconstruction surveys.

In addition to the curtailment regime described above, to minimize mortality to nesting/roosting bats during construction and operation, all tree-clearing activities will be conducted consistent with NYSDEC's Guidelines for the protection of northern long-eared bats, specifically the Requirements for Projects that Result in a Change of Land Use within NLEB Occupied Habitat. Consistent with these guidelines, tree clearing will be conducted with the following restrictions:

November 1 to March 30

During this period, the NLEB are inactive and are within the hibernation sites. No restrictions to tree clearing activities.

April 1 to October 31

During this period, NLEB may be active and within the forested landscape. The following restrictions will be implemented to minimize potential impacts:

- Leave uncut all snag and cavity trees, as defined under DEC Program Policy ONR-DLF-2 Retention on State Forests, unless their removal is necessary for protection of human life and property. Snag or cavity trees may also be removed after being cleared by an Environmental Monitor who will conduct a brief survey for bats exiting the tree. This survey should begin 1/2 hour before sunset and continue until at least 1 hour after sunset or until it is otherwise too dark to see emerging bats. Unoccupied snag and cavity trees will be removed within 24-hours of observation.
- Leave uncut all known and documented roost trees and any trees within a 150-foot radius of a documented summer occurrence (note: this restriction is not applicable to the Facility area as the comprehensive wildlife studies within the Application determined there are no known or documented roost trees or documented summer occurrence in the Facility).
- If any bats are observed flying from a tree, or on a tree that has been cut, tree clearing activities within 150 feet of the tree will be suspended and DEC Wildlife staff will be notified as soon as possible. Cassadaga will have an Environmental Monitor present on site during all tree clearing activities. If any bat activity is noted,

¹ Wind facilities in the eastern U.S. that implemented turbine operational adjustments include Mount Storm (WV), Casselman (PA), Criterion (MD), Pinnacle (WV), Bull Hill (ME), Sheffield (VT), and Beech Ridge (WV).

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a stop work order will immediately be issued and will remain in place until such time as DEC and DPS staff have been consulted and authorize resumption of work.

According to NYSDEC guidance, forest management (tree clearing) activities that incorporate the above requirements do not need a permit under 6 NYCRR Part 182 because cutting of live trees under the prescribed conditions is unlikely to result in an incidental take of NLEB. These restrictions are also consistent with the US Fish and Wildlife Service 4(d) rule under the Endangered Species Act, which extends protections only to known occupied maternity roosts and hibernacula, of which none occur in the Facility area. Therefore, the above listed restrictions will ensure that impacts to nesting/roosting bats during the April 1 to October 31 timeframe are minimized. The above minimization is capable of successful implementation, and is legally, technologically, economically and biologically practicable.

TAKE MITIGATION

As described above, it is conservatively assumed that the proposed minimization strategy would reduce potential risk of NLEB mortality by 80% relative to fully operating turbines, therefore the Facility is estimated to take up to 18.9 NLEBs over the 30-year assumed life of the Facility. Therefore, pursuant the *Order Granting Certificate of Environmental Compatibility and Public Need, Conditions for Cassadaga Wind LLC* (Case 14-F-0490), issued by the New York State Board on Electric Generation Siting and the Environment on January 17, 2018, and the requirements of 6 § NYCRR 182.11 Cassadaga Wind will implement mitigation measures to completely offset the estimated effects and reasonably provide a positive benefit on the species.

NYSDEC has identified a number of potential mitigation measures and sites for NLEB including: (1) gating of known hibernacula (2) identification of new maternity roosts or hibernacula at department identified priority landscapes (3) identification of new maternity roosts or hibernacula near the project site and (4) implementation of studies that are designed to improve the status of NLEB. Pursuant to Certificate Condition 33(d) and (e) of the *Order Granting Certificate of Environmental Compatibility and Public Need, Conditions for Cassadaga Wind LLC* Cassadaga Wind has considered all potential mitigation measures identified by NYSDEC Staff.

Of the acceptable mitigation measures and sites identified by NYSDEC, Cassadaga Wind has committed to identifying new maternity roosts or hibernacula at department identified priority landscapes. This mitigation option is the most capable of successful implementation, and is the most legally, technologically, economically and biologically practicable.

In the event that Cassadaga finds the proposed mitigation unsuccessful, either in part or in whole, it shall notify NYSDEC and NYSDPS. Should NYSDEC and NYSDPS concur with Cassadaga's findings, this NCBP shall be modified to include a new mitigation strategy. Any such modification must be made in consultations with and approved by NYSDEC and NYSDPS, and said consultations shall be open to any Party to Case No.: 14-F-0490 desiring to participate or observe.

i. **Identification of new maternity roosts or hibernacula at department identified priority landscapes**

Cassadaga Wind will fund a mist netting study to newly identify roosts or hibernacula on unprotected lands at NYSDEC identified priority landscapes.² The study will attempt to capture female NLEB and track them to unknown roost locations. It is anticipated that 20 net nights and 14 days of tracking tagged bats will be needed to capture and track 4 female NLEB to newly identify roosts or hibernacula at NYSDEC identified priority landscapes. Each newly identified roost would offset the loss of 5 NLEB or the actual number of NLEB identified using the new roost. Therefore, at a

² NYSDEC will provide Cassadaga Wind with a list of priority landscapes.

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minimum, Cassadaga Wind will need to newly identify 4 roosts to achieve a net conservation benefit for the species (4 x 5 = 20). Newly identified hibernacula would offset the loss of 50% of the estimated resident NLEB found at the hibernacula.

Please see the Northern Long-eared Bat Maternity Roost Study Plan attached hereto as **Attachment B** for detailed information regarding Cassadaga Wind's mist-netting study to newly identify roosts or hibernacula on unprotected lands at NYSDEC identified priority landscapes.

Cassadaga chooses to identify new maternity roosts or hibernacula at department identified priority landscapes as this mitigation option is the most capable of successful implementation, and is the most legally, technologically, economically and biologically practicable, and will result in tangible benefits to the NLEB resulting in a positive benefit to the species. The mist netting study will offset the loss of 18.9 NLEBs and result in a positive benefit to the NLEB as the study results will allow NYSDEC to protect occupied habitat. The identification of new roost trees and hibernacula will assist NYSDEC in identifying occupied habitat and protecting the species per NYSDEC regulations and guidance. See 6 NYCRR §182.11; NYSDEC Guidance, *Protective Measures Required for Northern Long-eared Bats When Projects Occur within Occupied Habitat* (<https://www.NYSDEC.ny.gov/animals/106090.html#Change>).

OTHER NYSDEC IDENTIFIED MITIGATION MEASURES

i. Gating of known hibernacula

While the gating of known hibernacula could also result in tangible benefits to NLEB, after consulting with DPS and NYSDEC about potential gating sites, it was apparent that the amount of benefit to NLEB at NYSDEC identified gating sites would have made it difficult to achieve a net conservation benefit of the species without conducting additional mitigation. The majority of the gating locations identified by NYSDEC had small populations of NLEB and therefore it would be challenging to protect <18.9 NLEB with gating alone.

Furthermore, given the timing of construction and operation of the Facility, it would be difficult to obtain the necessary land control to implement the gating projects prior to the start of operation of the Facility. Given the timing of Facility operation and that Cassadaga would likely have to implement other mitigation in addition to gating, it was determined that identifying new maternity roosts or hibernacula at department identified priority landscapes was a more cost effective and practical mitigation option for this Facility.

ii. Identification of new maternity roosts or hibernacula near the project site

Due to the species decline in the project area, it will take significant effort to capture a female NLEB near the project site, and therefore identify new maternity roosts or hibernacula. It is predicated that it would take at least 118 mist-net nights to capture one female NLEB near the project site. Although NYSDEC would consider 118 mist-net nights with no captures successful mitigation, one capture would result in the need for up to another 118 mist-net nights and so on, causing this mitigation option to potentially result in the need for over 472 mist-net nights (4 x 118) and cost at least \$600,000 in expenses. Given the high costs associated with this mitigation option and the low likelihood of identifying new maternity roosts and hibernacula near the project site, it was determined that identifying new maternity roosts or hibernacula at department identified priority landscapes was a more cost effective and practical mitigation option.

iii. Implementation of studies that are designed to improve the status of NLEB

WNS is the primary cause of NLEB decline. Cassadaga is unaware of any on-going studies or research that is close to developing a successful WNS treatment option which could be practically implemented. Given the lack of current

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WNS treatment options and other studies which could be implemented at the Cassadaga Facility, it was determined that this mitigation option was not technologically or biologically practical or feasible at this time.

MONITORING

Cassadaga will implement a Post Construction Avian and Bat Monitoring Plan, which will be submitted as a compliance filing as part of the Article 10 proceeding, at least 60 days prior to the start of commercial operation of the Facility. The plan will include direct impact fatality studies and habituation/avoidance studies. The details of the post-construction studies (i.e., the start date, number and frequency of turbine searches, search area, bat monitoring, further monitoring beyond the second year, etc.) will be described following NYSDEC's June 2016 *Guidelines for Conducting Bird and Bat Studies at Commercial Wind Energy Projects*, for Standard Post-Construction Studies and through consultation between Cassadaga, USFWS, and NYSDEC. Post-construction monitoring will be conducted for a minimum period of at least two (2) years but no more than three (3) years.

FUNDING

Cassadaga Wind LLC will fund the Mist Netting Study as described in Attachment B. Cassadaga has entered into a contract with Stantec Consulting to conduct the mist netting study in the summer of 2018. Please see a copy of the Implementation Agreement attached hereto as **Attachment C**.

REFERENCES

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ATTACHMENT A

NLEB Take Estimate Memo

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ATTACHMENT B

Northern Long-eared Bat Maternity Roost Study Plan

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ATTACHMENT C

Implementation Agreement