



Land-based Wind Energy Interim Voluntary Guidance for the Northern Long-eared Bat (*Myotis septentrionalis*): FAQ Supplement

Questions and Answers

1. How did the Service determine that incidental take (of northern long-eared bats) would not be “reasonably certain to occur”, if the measures in the guidance are implemented?

When the land-based wind energy guidance for northern long-eared bat (guidance) is implemented, the U.S. Fish and Wildlife Service (Service) anticipates that incidental take¹ of northern long-eared bats would not be reasonably certain to occur², because 1) northern long-eared bat fatalities at wind facilities are infrequent occurrences (prior to, and after the establishment of white-nose syndrome (WNS), as explained below), 2) the guidance is specific to projects that are not anticipated to pose risk to local congregations of bats (e.g., not sited in areas with summer maternity colonies, etc.), and 3) the guidance requires operational measures to reduce risk during the entire active season, and additional minimization measures (i.e., curtailment³) during elevated periods of risk (e.g., fall migration). In addition to these measures, the guidance requires one year of standardized intensive post-construction fatality monitoring, and additional monitoring at specified intervals to verify that these measures are effective, and continue to be effective, at a local level.

I. Northern long-eared bat mortality at wind facilities is infrequent

Northern long-eared bat fatalities at exiting wind facilities have been infrequent relative to other bat species (USFWS 2022, pgs. 115-118; Udell et al. 2021, entire). Service data demonstrates that northern long-eared bat fatalities made up 0.08% of all cumulative bat fatalities found within the species range prior to the impacts of WNS becoming established⁴.

Based on reports provided to the Service, 8.6% of unique projects within the range of the species have documented a northern long-eared bat fatality. There has been a total of 35 northern long-eared bat fatalities detected at wind facilities in the U.S. (Table 1) (USFWS 2022, unpublished data). All but three occurred when no cut-in speeds were being implemented (i.e., operating at or below the manufacturer’s cut-in speed) (Table 3). Two occurred during September at turbines

¹ The ESA defines 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. 1542 (b)).

² The reasonable certainty standard is explained in 80 FR 26832 and Section 3.1 of the Service’s Habitat Conservation Planning and Incidental Take Permit Processing Handbook.

³ Turbine “curtailment” is one strategy for reducing bat fatalities at wind turbines. Curtailment is when turbine operations are altered, that is, blades are “feathered”, during periods of high risk for bats. “Feathered” blades are rotated to reduce the blade angle to the wind, such that the turbine blades cease spinning or rotate very minimally [<1 rpm], thus eliminating or greatly reducing risk of bat fatalities until the designated operating conditions are met.

⁴ WNS impacts are considered established beginning five years following the first detection of *Pseudogymnoascus destructans* (Langwig et al. 2015)

that feathered below 3.5 meters per second (m/s) before WNS was established at both project locations (Tables 2 and 3) (USFWS 2022, unpublished data). The last reported fatality (n=1) occurred at a facility implementing a 5.0 m/s curtailment strategy in August 2016 during the invasion phase of WNS in Illinois (Tables 2 and 3) (USFWS 2022, unpublished data). This facility would not fit within the framework of this guidance given the presence of northern long-eared bats during the summer.

Since 2016, extensive post-construction monitoring efforts have been conducted at wind facilities throughout the northern long-eared bat range⁵ with no fatalities found. This could be partly due in part to the steep decline of northern long-eared bats resulting from WNS (USFWS 2022, entire), varying curtailment strategies, varying post-construction mortality monitoring methodologies, or a combination.

Table 1. Northern long-eared bat (NLEB) mortalities by state at wind facilities. Data were compiled from post-construction mortality monitoring completed in 1997 – 2022.

State	# Projects with NLEB mortality	Total NLEB Mortalities
Iowa	1	2
Illinois	3	4
Indiana	1	1
Maryland	1	1
Michigan	1	1
Missouri	1	1
New York	4	14
Pennsylvania	3	4
West Virginia	2	7
Total	17	35

II. *Siting to avoid foraging, roosting, and hibernation habitat*

The guidance is specifically for wind facilities that are not anticipated to pose risk, specifically incidental take in the form of wounding or killing, to local bat populations. Buffers specified in the guidance require turbines to be sited away from documented roosting, foraging, and hibernation habitat. The most recent version of the Range-wide Indiana Bat and Northern Long-eared Bat Survey Guidelines must be used to assess whether bats are present or reasonably absent during the summer in the project area. The Service assumes presence of migrating northern long-eared bats throughout the range of the species, because bats may use the airspace affected by wind turbines while migrating, even if the species is not detected on-site during

⁵ The Service has compiled data from 131 post-construction fatality reports received from existing wind facilities within northern long-eared bat range since 2016. The post-construction monitoring strategies in these reports include voluntary methods (compliance with State recommendations and the Service’s Land-based Wind Energy Guidelines) to required methods for compliance with Incidental Take Permits (Section 10(a)(1)(B) of the ESA).

summer surveys (Table 2). Risk to migrating bats is further reduced using curtailment strategies, as explained below.

Table 2. Northern long-eared bat mortalities by month from two datasets. Protocol refers to the post-construction mortality monitoring protocol a wind facility used. Data were compiled from post-construction mortality monitoring completed in 1997 – 2022.

Data Source	Protocol	May	May/ June	June	July	August	August/ September	September	October
USFWS unpublished data (2022) ¹	variable	0	1	2	5	12	6	9	0
WEST (2020) ²	variable	2	n/a	4	5	17	n/a	13	1

¹ Data from post-construction mortality reports from the U.S.

² Incorporated data post-construction mortality reports from the U.S. and Canada

III. c. Turbine Curtailment to Minimize Risk

Eligible wind facilities must implement a 5.0 m/s cut-in speed with feathering during the fall migration period⁶. In addition, wind facilities must feather below the manufacturer’s cut-in speeds (which vary by turbine model, but typically range 3.0-3.5 m/s) during the rest of the species active season to reduce the risk of taking northern long-eared bat.

Operational curtailment is an effective strategy for reducing bat fatalities at wind energy facilities, and studies have shown meaningful all-bat fatality reductions. Cut-in speeds of 5.0 m/s have been demonstrated to reduce total bat fatalities by an average of 62% (Whitby et al. 2021, Arnett et al. 2013, USFWS unpublished data); feathering (i.e., adjusting the angle of the turbine blade parallel to the wind, to slow or stop the blade rotation) below manufacturer’s rate is expected to reduce bat fatalities by over 30% (Whitby et al. 2021, Good et al. 2016, Arnett et al. 2011), although the effectiveness of feathering below various cut-in speeds differs among sites and years (Berthinussen et al. 2021, Arnett et al. 2013). In these studies, the effectiveness of curtailment is measured using all bat fatality rates; we are unable to directly measure the effectiveness of curtailment on northern long-eared bat specifically, due to the limited number of fatalities and variability in monitoring strategies. However, we review fatalities and available data on curtailment strategies in general, below.

Of the 35 northern long-eared bat fatalities that have been detected, 32 occurred when no operational curtailment was implemented. Of the three fatalities that occurred where curtailment was implemented, two fatalities occurred at wind facilities that were feathering below manufacturers’ cut-in speeds, and one occurred at a facility curtailing below wind speeds of 5.0 m/s (Table 3).

⁶ Northern long-eared bat fatalities occur more frequently in the fall months (including sites without summer risk), as bats are moving between summer maternity areas to hibernacula (Table 2; USFWS unpublished data 2022, West 2020); this pattern is also consistent with seasonal fatalities using all bat fatality data (Arnett et al. 2008).

Table 3. Cut-in speeds at which northern long-eared bats fatalities have been documented. Data were compiled from post-construction mortality monitoring completed in 1997 – 2022.

Cut-in Speed (m/s)	Northern long-eared bat fatalities
None implemented	32
3.0	1
3.5	1
4.0	0
4.5	0
5.0	1
6.9	0
7.0	0

2. What does this guidance mean for projects with a federal nexus?

Section 7 of the Endangered Species Act (ESA) requires federal agencies to consult with the Service to ensure that actions they fund, authorize, permit, or otherwise carry out will not jeopardize the continued existence of any listed species. Although this guidance specifies a way for wind facilities to operate in a way that “take” (i.e., wound, kill) of northern long-eared bats is not likely to occur, the action (50 CFR 402.02) may still cause adverse effects to northern long-eared bats (i.e., harass, harm) and/or other federally listed species or critical habitats and necessitate formal consultation between the action agency and the Service. However, incorporating this guidance into the agency’s action would streamline consultation with the Service because incorporating this guidance could support the action agency’s determination for northern long-eared bat.

3. What does this guidance mean for projects with existing Section 10(a)(1)(B) Incidental Take Permits for northern long-eared bats?

Projects with existing Incidental Take Permits (ITP) and associated Habitat Conservation Plans (HCPs) for northern long-eared bats under Section 10(a)(1)(B) of the ESA do not need to implement this guidance as their project already has coverage for incidental take. In addition to take authorization, ITPs provide regulatory assurances (Habitat Conservation Plan Assurances “No Surprises” Rule, FR 8859 8859-5573 1998); the Service will not impose additional requirements or restrictions as long as the permittee is properly implementing the HCP. If an unforeseen circumstance occurs, unless the permittee consents, the Service will not require him/her to commit additional land, water, or financial compensation or impose additional restrictions on the use of land, water, or other natural resources beyond the level agreed to in the HCP. The Service will honor these assurances as long as a permittee is implementing the requirements of the HCP, permit, and other associated documents in good faith, and their permitted activities will not jeopardize the species.

However, if a permittee would like to amend their existing permit to remove northern long-eared bat or adjust their conservation strategy in light of this guidance, they may reach out to their [local](#)

[Ecological Services Field Office](#) to discuss further, and if appropriate, begin the process. [Additional information on Habitat Conservation Plans can be found on our website.](#)

4. What does this guidance mean for projects with existing Section 10(a)(1)(B) permits, where the HCPs meet the eligibility requirements outlined in the guidance?

Some projects may be sited and operating in alignment with the guidance (i.e., in a manner such that take of northern long-eared bat is unlikely to occur) and be authorized incidental take for northern long-eared bat. Limited data on risk of northern long-eared bat fatalities at wind facilities was available at the time these permits were issued. For this reason, permit applicants and the Service erred on the side of conservation of the species and developed HCPs. Now, in part due to the standardized post-construction monitoring conducted at these permitted facilities, data demonstrates siting and operational protocols reduce risk to northern long-eared bats to the point where take is not reasonably certain to occur (See question 1, above).

These permits are still valid and necessary for the authorized take to other covered bat species (e.g., Indiana bat (*Myotis sodalis*), little brown bat (*M. lucifugus*), etc.). In addition, these permits also continue to provide projects with the benefit of regulatory assurances for northern long-eared bat (see question 3, above). However, if a permittee would like to amend their existing permit to remove northern long-eared bat or adjust their conservation strategy in light of this guidance, they may reach out to their [local Ecological Services Field Office](#) to discuss further, and if appropriate, begin the process.

5. Do I need a Section 10(a)(1)(B) Incidental Take Permit for northern long-eared bats and other species?

The guidance offers our current recommendation for wind projects to site and operate in a manner in which take of northern long-eared bat is not reasonably certain to occur, based on the Service's examination of the best available information (see question 1, above), however we recognize not all wind facilities will adhere to this guidance. Projects with no federal nexus that are not able to follow the guidance and pose unavoidable risk to northern long-eared bats (or other Endangered or Threatened species) are advised to apply for an ITP; although, seeking an permit is voluntary and the HCP process is applicant driven. [Additional information on Habitat Conservation Plans can be found on our website.](#)

6. Does this guidance apply to other bat species?

Currently, our records do not suggest that this approach is likely to minimize take to the level that take is not reasonably certain to occur for other listed or proposed bat species. However, there are locations where operating in this manner may reduce risk to the level that take is not reasonably certain for listed bat species. Field Offices may consider this approach based on project-specific data and occurrence records. Information on local Field Offices is available online: [U.S. Fish and Wildlife Service Ecological Services Field Office in your area.](#) Any approval to use this guidance for other bat species would need to be approved by the relevant Regional Office to ensure consistency.

7. Are there other options to modifying turbine operations beyond blanket curtailment that may be included in the technical assistance letter (TAL)?

Individual Field Offices, in coordination with the Regional Office, may approve alternative curtailment strategies beyond blanket curtailment described in the guidance (e.g., activity-based informed curtailment, etc.). For an alternative approach to be approved, the project proponent should provide evidence (e.g., results of effectiveness from multiple studies, site-specific analysis, etc.) that these curtailment strategies will reduce risk to bats at the same level or better than blanket curtailment at 5.0 m/s during the fall season and at manufactures cut-in speeds (3.0 – 3.5 m/s) during spring and summer.

8. Why is post-construction mortality monitoring required, if Service has determined take is not likely to occur?

The effectiveness of the guidance at individual wind facilities is validated through one year of standardized site-specific post construction fatality monitoring and defined intervals thereafter. This monitoring is important to confirm whether implemented operational commitments were as effective as anticipated and to detect if a facility is high risk to northern long-eared bats (when no take was initially anticipated). Additional monitoring at specified intervals (e.g., every 7 years) would continue to validate the effectiveness of the guidance in light of variables that may change over time (e.g., landscape cover change, etc.). The monitoring required for consistency with the guidance is in alignment with the Service’s Land-based Wind Energy Guidelines (USFWS 2012). Although the Service anticipates that incidental take of northern long-eared bats would not be “reasonably certain to occur” (Question 1, above), monitoring is required for the Service to validate expectations and reaffirm determinations through the TAL.

9. Where can I learn more about the northern long-eared bat and the final rule to list it as endangered?

[Information on the northern long-eared bat is available online](#)

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