

Bats and Distributed Wind

Padma Kasthurirangan (She/Her)
Buffalo Renewables
Siva Powers America



What's wrong with Bats?

2



White Nose Syndrome
Climate Change
Habitat Loss - Construction
Wind Farms

Bats R Us

3

Bats love wind turbines

Bats get hit by blades

Barotrauma

Bats are known to occur at sites after a turbine is built

Bats fly higher during migration

Bat migration habits are not well known

Wind Farms may require habitat clearing



Who and Where?

4

Northern Long Eared Bat (NLEB)

Endangered

Requires curtailment at 5 m/s or manufacturer cut-in wind speed depending on occurrence



Tri Colored Bat (TCB)

Proposed Endangered

Curtailment at 5 - 6.9 m/s depending on state and activity season regardless of occurrence at project site.



Hoary Bat

Under USFWS review 2025-26

Expected listing in 2027

Curtailment speeds expected to be higher since hoary bats are active at higher wind speeds.



How this affects DW?

5



U.S. Fish & Wildlife Service

[About Us](#)

[Laws & Regulations](#)

[Library](#)



[SERVICES](#)

[SPECIES](#)

[VISIT US](#)

[GET INVOLVED](#)

[NEWSROOM](#)

[INITIATIVES](#)

[I WANT TO](#)



Section 7

The Endangered Species Act (ESA) directs all Federal agencies to work to conserve endangered and threatened species and to use their authorities to further the purposes of the Act. Section 7 of the Act, called "Interagency Cooperation," is the mechanism by which Federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the existence of any listed species.

ESA Section 7 Consultation Categorical Exclusions

6

1970.53 CEs involving no or minimal disturbance without an environmental report

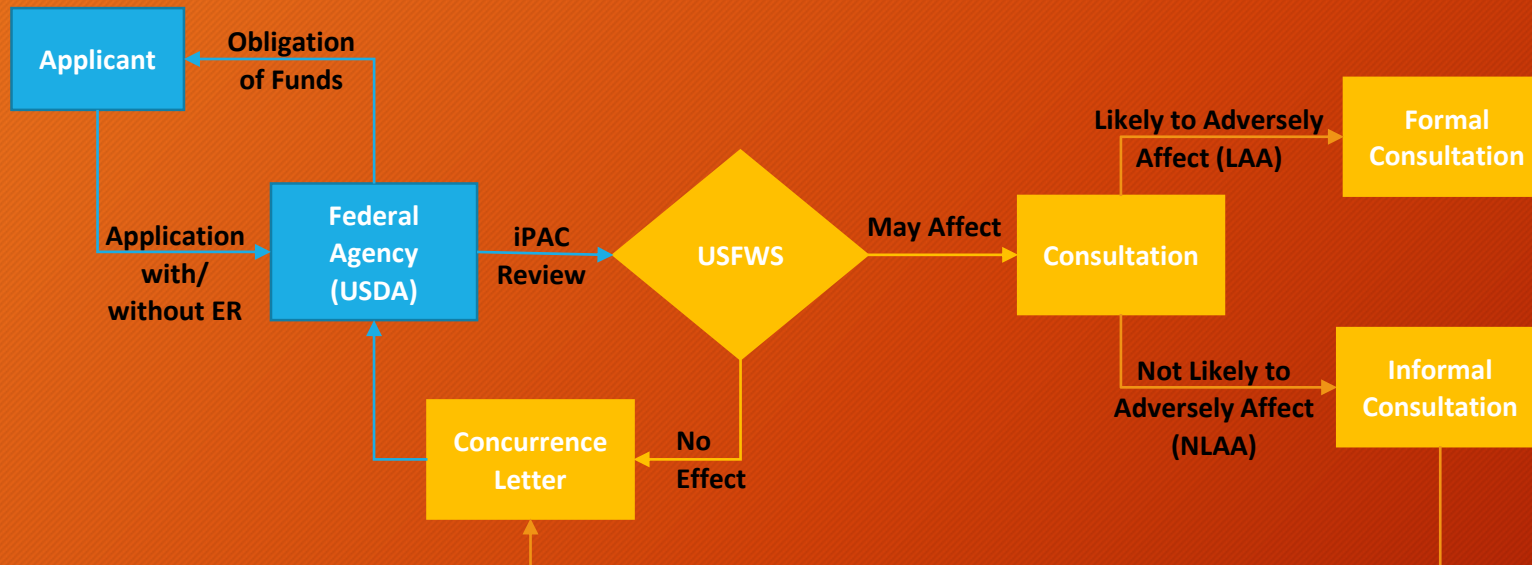
- The CEs in this section are for proposals for financial assistance that involve no or minimal alterations in the physical environment and typically occur on previously disturbed land. These actions normally do not require an applicant to submit environmental documentation with the application.
- Repair, upgrade, or replacement of equipment in existing structures for such purposes as improving habitability, energy efficiency (including heat rate efficiency), replacement or conversion to enable use of renewable fuels, pollution prevention, or pollution control;

1970.54 CEs involving small-scale development with an environmental report.

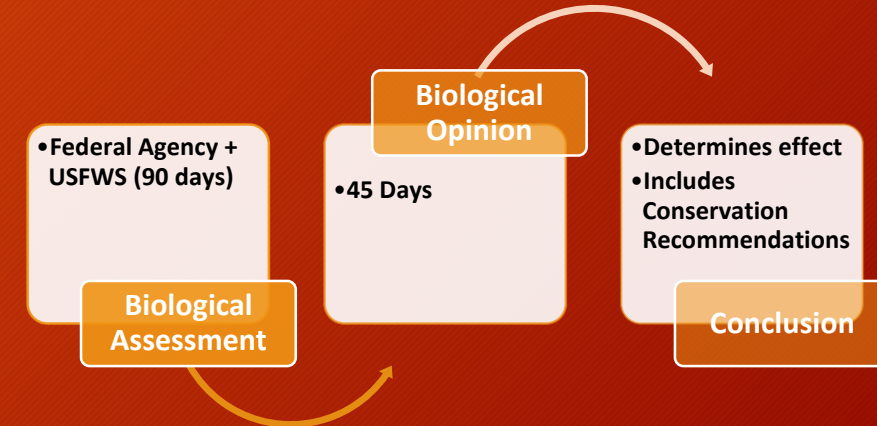
- The CEs in this section are for proposals for financial assistance that require an applicant to submit an ER with their application to facilitate Agency determination of extraordinary circumstances.
- Construction of small electric generating facilities (except geothermal and solar electric projects), including those fueled with wind or biomass, with a rating of 10 average MW or less.

ESA Section 7 Consultation Process USFWS

7



Formal Consultation



Process for DW

8

Before April 2024

DETERMINATION KEY RESULT

Based on the information you provided, you have determined that the Proposed Action will have no effect on the Endangered northern long-eared bat (*Myotis septentrionalis*). Therefore, no consultation with the U.S. Fish and Wildlife Service pursuant to Section 7(a)(2) of the Endangered Species Act of 1973 (87 Stat. 884, as amended 16 U.S.C. 1531 *et seq.*) is required for those species.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of the northern long-eared bat or any other listed species?

Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

No

2. The proposed action does not intersect an area where the northern long-eared bat is likely to occur, based on the information available to U.S. Fish and Wildlife Service as of the most recent update of this key. If you have data that indicates that northern long-eared bats are likely to be present in the action area, answer "NO" and continue through the key.

Do you want to make a no effect determination?

Yes

Since April 2024

4. Does any component of the action involve leasing, construction or operation of wind turbines? Answer 'yes' if the activities considered are conducted with the intention of gathering survey information to inform the leasing, construction, or operation of wind turbines.

Note: For federal actions, answer 'yes' if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

Yes

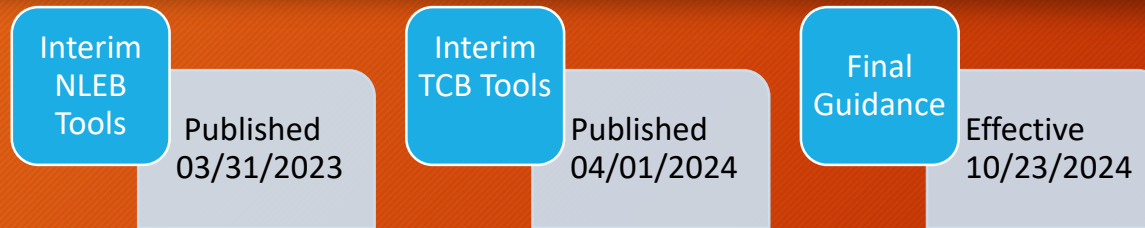
Your project is outside the scope of this key; however, the Service has developed interim guidance for the northern long-eared bat and tricolored bat for projects involving wind facility development or wind turbine operation. Review the guidance posted here for more information:

<https://www.fws.gov/species/northern-long-eared-bat-myotis-septentrionalis>

<https://www.fws.gov/species/tricolored-bat-perimyotis-subflavus>

The Guidance - Voluntary

9



- This document articulates three options on how new or existing land-based wind energy facilities can site and operate in a manner in which incidental take of <listed species> is not “reasonably certain to occur” and describes standard post-construction monitoring needed to validate the effectiveness of the operational requirements described below at individual wind facilities.

[Land-based Wind Energy Voluntary Avoidance Guidance for the Tricolored Bat | U.S. Fish & Wildlife Service](#)

[Land-based Wind Energy Voluntary Avoidance Guidance for the Northern Long-eared Bat | U.S. Fish & Wildlife Service](#)

Option 1 - Blanket Curtailment

10

What?

- Blanket Curtailment* from 30 mins before sunset to 30 minutes after sunset, temps > 40 F during active season according to Appendix A.
- Curtail 6 - 6.9 m/s during peak migration
- In year round active states, feather blades < 5 m/s and temp > 40 F during active season

Why Not?

- DW turbines < 25 kW typically don't have brakes and/ or sophisticated sensors and controllers to change cut- in wind speed
- Most 25 - 250 kW turbines can curtail by braking - but would add wear to brakes and structural issues.
- Most DW turbines < 250 kW are fixed pitch systems so cannot curtail by feathering.
- Loss in production - esp at lower wind speeds - Negates years of investment in longer blades

*** 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.**

Option 2 - Activity Based Informed Curtailment (ABIC)

11

What?

- Curtail per option 1 for year 1 and gather acoustic data at nacelle height during 1 active season period from 15% of turbines in a farm
- Develop site specific curtailment algorithm based on gathered data

Why Not?

- Acoustic monitoring equipment is 2000 - 4000\$ per system
- Automated Systems can screen for calls, but requires manual verification by certified biologist for species identification - cost of biologist verification for a whole active season (180-200 nights worth of data) is expensive and time consuming.
- Existing algorithm require data points from several turbines to develop reliable algorithm - estimated cost is ~ \$40,000 per site. Since DW sites are developed, higher chance of getting very less call data form one collector - so the \$ might not yield an algorithm.
- Depending on call data gathered, could likely result in blanket curtailment or worse.
- Acoustic data to be gathered at nacelle height, so pre construction monitoring is not possible / requires a met tower/ risk building and collecting data after construction.

Option 3 - Realtime acoustic activated smart curtailment

12

What?

- Actively monitor for Bat calls and feather turbines during periods when bat calls are detected, specifically during active periods per option 1

Why Not?

- \$\$ - Cost of one such equipment approved/ listed in the guidance/FAQ ranges from \$250,000 per turbine. Other systems vetted were in similar price range.
- Existing systems are based on feathering. If blades don't feather, repeated braking will wear out brakes and cause structural issues.

Why else Not?

13



Smaller Rotor Swept Areas (RSA)

Only 1 or 2 to a site allowing bats to fly past

Anti Deforestation

Located in developed areas

In terms of RSA, a DWEA analysis indicates that DW turbines represent only 0.0038% of total wind turbine swept areas within the ranges of the Northern Long-Eared Bat and the Tricolored Bat.

DWEA's Efforts

14

- The Final Guidance states “Generally applicable to utility-scale land-based wind facilities, that aim to receive a TAL from the Service.”
- FAQ - The wind energy guidance for tricolored bat is not specifically tailored for small, distributed wind projects involving single turbines. These projects typically pose lower risk to listed bat species due to their singular nature and smaller rotor-swept zone. Distributed wind energy projects are usually subject to Section 7 consultation with the lead federal agency. Consultations for such projects may be conducted either individually or programmatically through the lead federal agency. During the consultation process, the Service acknowledges and considers logistical constraints.

DWEA asks

CATEGORICAL EXCLUSION -New DW projects < 10 MWs comprising of up to 2 turbines per site built on developed land do not require environmental reports/reviews

USFWS

Create a Determination Key for Distributed Wind Projects using 1 - 2 DW turbines up to 1200 m² rotor swept area, < 200' total height installed in areas with no bat occurrence data.

Create a Technical Assistance Letter option for DW projects with turbines > 1200 m² rotor swept area and/or near bat occurrence/potential occurrence areas - with no curtailment and appropriate monitoring.

USDA

Consider New DW projects on developed land under 1970.53 CEs involving no or minimal disturbance without an environmental report

Request programmatic consult for all REAP eligible DW projects

DOE

Support biological assessment for programmatic consult by USDA

Fund acoustic monitoring at installed turbines

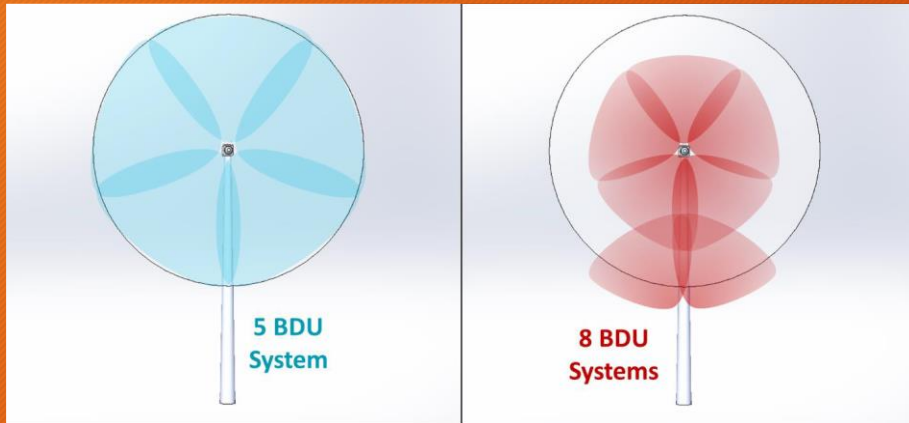
Fund development of lower cost acoustic deterrents

Investigate visual deterrents.

Develop reasonable pre construction and post construction monitoring plans for DW

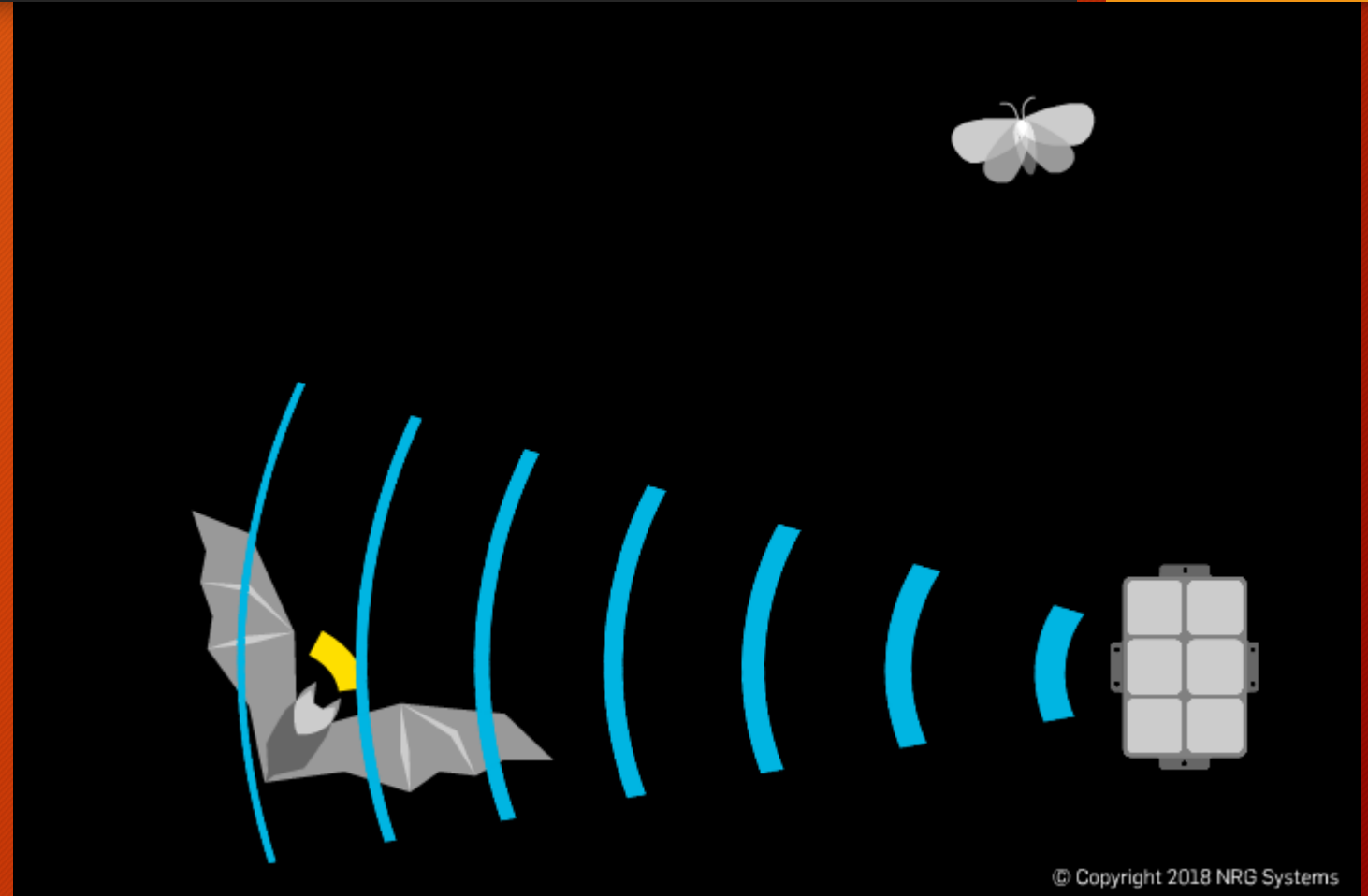
Siva's solutions - Acoustic Deterrents

16



Typical Installation schemes

- Design and build a cost effective acoustic deterrent for distributed wind turbines with <60m rotor diameter
- Gather efficacy data in distributed wind sites





Join the Bat Team!

Email - padma@buffalorenouvelables.green

17