

Use Flowchart 2 if your project is in NLEB/TCB Year-Round Areas (Zones 1 & 2)

Stressors to bats within 0.5 mi of a hibernaculum or Impacts to a karst feature that could impact a known hibernaculum?

YES → **OUTSIDE SCOPE OF THIS PBO**
Contact FWS Field Office for assistance

NO → **PERCUSSIVE ACTIVITIES**
Any to be conducted beyond 100' from road/rail surface during Pup Season?

YES → **ARTIFICIAL LIGHTING**
Any new or additional temp or perm lighting at Project site?

YES → **BRIDGE, CULVERT, or STRUCTURE**
removal/replacement/alteration?

YES → **OUTSIDE SCOPE OF THIS PBO**
Contact FWS Field Office for assistance

NO → **Lighting**

Will any lighting be used during the bats' Active Season?

YES → **Will temporary lighting be used during construction?**

YES → **Will lighting be directed away from suitable habitat?**

YES → **Will permanent lighting (new or replacement) be installed?**

Will the lighting be substantially different than baseline light conditions?

Will lighting be installed as described in AMM below? *

Lighting will have NO EFFECT on bats. Continue to next section

Lighting is NLAA bats. Continue to next section

Permanent lighting will have NO EFFECT on bats. Continue to next section

OUTSIDE SCOPE OF THIS PBO
Contact FWS Field Office for assistance

Bridge, Culvert, and Structure

Bridge/Culvert or Structure: Will work be performed during Inactive Season?

YES → **Are bats present during Inactive Season (i.e., hibernating)?**

YES → **Do > 5 bats use/assumed to use the bridge/culvert or structure during Active Season?**

YES → **Are bats likely to be disturbed or killed during project activities?**

YES → **OUTSIDE SCOPE OF THIS PBO**
Contact FWS Field Office for assistance

NO → **Will bridge/culvert/structure remain suitable for roosting?**

YES → **Bridge/Culvert or Structure work is NLAA bats². Continue to TREE REMOVAL section**

NO → **Did inspection show evidence of bats or are bats assumed present?**

YES → **Will bridge/culvert/structure remain suitable for roosting?**

YES → **Bridge/Culvert or Structure work is NLAA bats². Continue to TREE REMOVAL section**

NO → **Was an assessment completed?**

YES → **Is it w/in 1,000' of suitable habitat?¹**

YES → **Does culvert meet minimum dimensions or is project a bridge or structure?**

YES → **Bridge/Culvert/Structure work will have NO EFFECT on bats**

NO → **Are bats likely to be disturbed or killed during project activities?³**

YES → **OUTSIDE SCOPE OF THIS PBO**
Contact FWS Field Office for assistance

NO → **Bridge/Culvert or Structure work is LAA a small # of bats². Continue to TREE REMOVAL section**

Are bats likely to be disturbed or killed during project activities?

Will bridge/culvert/structure remain suitable for roosting?

Are bats (none or ≤5) likely to be disturbed or killed during Project activities?

YES → **OUTSIDE SCOPE OF THIS PBO**
Contact FWS Field Office for assistance

NO → **Bridge/Culvert or Structure work is NLAA bats². Continue to TREE REMOVAL section**

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graph TD
    Start([Start]) --> Q1{TREE REMOVAL / TRIMMING activities?}
    Q1 -- YES --> Q2{In documented bat habitat?}
    Q1 -- NO --> E1([Tree Removal / Trimming will have NO EFFECT on bats  
END OF FLOWCHART])
    Q2 -- YES --> Q3{Will work be performed during Pup Season?}
    Q2 -- NO --> Q4{Was a P/A survey conducted?}
    Q3 -- YES --> E2([OUTSIDE SCOPE OF THIS PBO  
Contact FWS Field Office for assistance  
END OF FLOWCHART])
    Q3 -- NO --> E3([Tree Removal / Trimming is LAA bats²  
END OF FLOWCHART])
    Q4 -- YES --> Q5{IBAT, NLEB or TCB captured?}
    Q4 -- NO --> Q6{Will work be performed during bats' Active Season?}
    Q5 -- YES --> E4([Tree Removal / Trimming is NLAA bats²  
END OF FLOWCHART])
    Q5 -- NO --> E3
    Q6 -- YES --> Q7{Will work be performed during Pup Season?}
    Q6 -- NO --> Q8{Is all work within 100' of existing road / rail surface?}
    Q7 -- YES --> E2
    Q7 -- NO --> E3
    Q8 -- YES --> E3
    Q8 -- NO --> Q9{Are all trees to be impacted < 9" DBH?}
    Q9 -- YES --> E3
    Q9 -- NO --> E2
  
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Tree Removal / Trimming

Flowchart Logic:

- Start:** TREE REMOVAL / TRIMMING activities?
 - YES:** In documented bat habitat?
 - YES:** Will work be performed during Pup Season?
 - YES:** OUTSIDE SCOPE OF THIS PBO (Contact FWS Field Office for assistance)
 - NO:** Tree Removal / Trimming is LAA bats²
 - NO:** Was a P/A survey conducted?
 - YES:** IBAT, NLEB or TCB captured?
 - YES:** Tree Removal / Trimming is NLAA bats²
 - NO:** Tree Removal / Trimming is NLAA bats²
 - NO:** Will work be performed during bats' Active Season?
 - YES:** Will work be performed during Pup Season?
 - YES:** OUTSIDE SCOPE OF THIS PBO (Contact FWS Field Office for assistance)
 - NO:** Tree Removal / Trimming is NLAA bats²
 - NO:** Is all work within 100' of existing road / rail surface?
 - YES:** Tree Removal / Trimming is NLAA bats²
 - NO:** Are all trees to be impacted < 9" DBH?
 - YES:** Tree Removal / Trimming is NLAA bats²
 - NO:** OUTSIDE SCOPE OF THIS PBO (Contact FWS Field Office for assistance)
 - NO:** Tree Removal / Trimming will have NO EFFECT on bats

<https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines>

New/additional lighting will be installed or existing lighting will be replaced using downward-facing, full cut-off lens lights (with same intensity or less for replacement lighting); or for those Transportation Agencies using the BUG system developed by the Illuminating Engineering Society, lighting is to be as close to 0 for all three ratings with a priority of "uplight" of 0 and "backlight" as low as practicable.

² Must implement applicable AMMs in the PBO User's Guide (Appendix C): <https://www.fws.gov/sites/default/files/documents/2024-12/appendix-c-avoidance-and-minimization-measures-december-2024.pdf>

³ If no assessment was completed, it is assumed that >5 bats are using the bridge/culvert/structure during Active Season.