

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

NO → **ARTIFICIAL LIGHTING**
Any new or additional temp or perm lighting at Project site?

YES → **Lighting**

NO → **BRIDGE, CULVERT, or STRUCTURE**
removal/replacement/alteration?

Lighting

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

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

NO → **OUTSIDE SCOPE OF THIS PBO**
Contact FWS Field Office for assistance

Will temporary lighting be used during construction?

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

NO → **Will permanent lighting (new or replacement) be installed?**

Will lighting be directed away from suitable habitat?

YES → **Temporary Lighting is NLAA bats**
CONTINUE

NO → **Will permanent lighting (new or replacement) be installed?**

Will permanent lighting (new or replacement) be installed?

YES → **Will the lighting be substantially different than baseline light conditions?**

NO → **Permanent lighting will have NO EFFECT on bats.**
CONTINUE

Will the lighting be substantially different than baseline light conditions?

YES → **Will lighting be installed as described in AMM below? ***

NO → **OUTSIDE SCOPE OF THIS PBO**
Contact FWS Field Office for assistance

Will lighting be installed as described in AMM below? *

YES → **Lighting is NLAA bats**
CONTINUE

NO → **Lighting will have NO EFFECT on bats.**
CONTINUE

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)?**

NO → **Do > 5 bats use/assumed to use the bridge/culvert or structure during Active Season?**

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

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

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

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?**

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

Are bats 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

Will bridge/culvert/structure remain suitable for roosting?

YES → **Bridge/Culvert or Structure work is NLAA bats²**
CONTINUE

NO → **OUTSIDE SCOPE OF THIS PBO**
Contact FWS Field Office for assistance

Did inspection show evidence of bats or are bats assumed present?

YES → **Was an assessment completed?**

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

Was an assessment completed?

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

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

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

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

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

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

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

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

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

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graph TD
    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 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{Is all work within 100' of existing road / rail surface?}
    Q9 -- YES --> Q10{Are all trees to be impacted < 9" DBH?}
    Q9 -- NO --> E2
    Q10 -- YES --> E3
    Q10 -- NO --> E2
  
```

Tree Removal / Trimming

Flowchart Logic:

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

<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.