

**INITIAL DRAFT
FWS Wind Turbine FAC Recommendations
TABLE OF CONTENTS**

**EXISTING GUIDELINES SUBCOMMITTEE
October 16, 2008**

Deleted: September 2008

I. Introduction

- A. Background
- B. Statement of Committee Charter
- C. Guiding Principles¹
- D. Members of FAC/signatures

II. Recommended Actions

- A. Preamble to Actions: avoid, minimize, mitigate
- B. Actions Taken by Developer

1. **Pre-construction Risk Assessment**

Formatted: Font: Bold

a. **Site evaluation**

(i) **Preliminary site assessment²**

The goals of this stage of assessment are to provide early information on environmental issues in order to help (1) steer developers toward lower impact sites, and (2) start identifying environmental information and survey needed for project risk assessment.

Comment [p1]: One option here would be to make one explicit outcome of this stage to classify each site within a matrix of risk/available information, if we decide to go in that direction

This step should occur early enough in project development that the information it produces can be meaningfully used by the developer to assess whether to continue further steps in project development. Because it should occur early in the development process, when land or other competitive issues limit developers' willingness to share information on the project with the public and competitors, this stage will often be primarily internal to the developer. Nonetheless, during this stage, relevant wildlife agencies and other sources of data should be contacted for general information about the project vicinity (e.g., data at the County level). In addition, because key NGOs are often valuable sources of relevant local environmental information, developers are highly recommended to contact NGOs, even if the developer is not able to identify specific project location information at this stage.

Formatted: Font: 12 pt

To the extent possible, this preliminary site assessment should utilize existing information from wind projects in comparable habitat types in locations close to the proposed project. This stage should primarily use existing information, but should also include a site visit by an environmental professional.

¹ At the July FAC meeting, members approved a set of principles that would be inserted here. The premises were tabled.

² For example, define method preferred (*i.e.*, site characterization or decision framework).

Deleted: TOC

(1) Consult with existing data sources and/or meet with qualified experts, and meet with relevant agencies, and as possible, NGOs, to identify potential environmental concerns listed below and to determine whether these overlap with the general project study region:

Deleted: M

Formatted: Indent: Left: 36 pt

Deleted: consultants

(a) Federal and State listed endangered and threatened species, candidate, proposed and special concern species

Formatted: Indent: Left: 72 pt

(b) areas that support high numbers of endemic species and a high degree of threat, as indicated by the percentage of remaining habitat in a region

Formatted: Font: (Default) Times New Roman

(c) areas recognized as habitat types of specific concern, or state, regional or national conservation priorities (such as wetlands, old growth forests, bottomland hardwoods, native prairie grasslands), or priority habitats as identified in state comprehensive wildlife conservation strategies.

Deleted: rare, intact, declining, or specialized ecosystems

(d) mapped significant bird, bat, or large mammal migration corridors, stopover points

(e) locations designated by local, state or federal land owners or land use authorities as incompatible with wind development (for example federal wilderness areas.)

Deleted: etc.

(f) for wildlife species identified in (a), whose ranges overlap with the project study area, check existing information sources to determine whether actual or potential habitat or residences for these species are present in the study area.

Deleted: at risk

(See Appendix A for information sources--this could include a reference to AWWI's mapping initiative and Appendix B-Natural Heritage Database locations, Fish and Game Agencies)

(2) Conduct a site visit that includes a basic characterization of habitat type, habitat quality, and topographic features of the project study area. Note presence of shorelines, ridges, wetlands, landfills, caves, mines, etc. on or near study area that are viewable from public roads.

Formatted: Indent: Left: 36 pt

(3) Assess level of effort required during the pre-construction surveys in order to characterize risk

(ii) Preconstruction surveys

Formatted: Font: Bold

The goals of preconstruction surveys are: (1) to assess risk to birds and bats, (2) to characterize impacts to key habitats, and (3) to initiate consideration of mitigation, if needed. Pre-construction studies should normally address the following key issues associated with wildlife and wind power: avian risk, bat risk, wildlife displacement, and habitat loss and fragmentation.

Comment [C2]: There is a question regarding habitat protection in the context of wind development under federal authorities.

Deleted: and

The pre-construction surveys should be designed in discussion with the permitting authorities, resource agencies, and interested stakeholders with wildlife expertise. The site-specific components and the duration of the pre-construction surveys should depend on the size of the project, the availability and extent of existing and applicable information in the vicinity of the project, the habitats potentially affected, the likelihood and timing of occurrence of Threatened and Endangered and other Sensitive-Status (TES) species at the site, and other factors identified during the preliminary site assessment phase. If applicable pre-existing information is available,

Comment [p3]: I adapted this from the Oregon guidelines document that was just issued.

Formatted: Font: (Default) Times New Roman

Formatted: Font: (Default) Times New Roman

the project developer, permitting authorities, and resource agencies should take this information into consideration when designing (and potentially modifying) the baseline studies identified below. Conversely, in areas where pre-existing information is not available or in areas of unique biological significance and/or high quality habitat, additional study may be required. The results of the information review and baseline studies should be reported to and discussed with the permitting authorities and resource agencies in a timely fashion..

(1) Avian Surveys

The objective of avian surveys is to gather information about avian use of potential project sites to characterize risks associated with collisions between birds and wind turbines (displacement effects are addressed in section 4 below).

Developers should collect appropriate and pertinent information that takes into consideration factors associated with region and habitat and that is designed to capture species occurrence and abundance during all seasons of the year in which there is avian use at the site. These studies are to be conducted on representative areas of the site that are expected to include wind turbines. Studies should typically be conducted for one year. A full year may not be necessary if there are sufficient existing studies completed for other projects or phases in comparable habitats nearby in the region. More than one year may be appropriate where preliminary assessment or initial preconstruction surveys indicate potential for high avian use and risk. Information should be collected that considers the following issues as appropriate to the site:

Deleted: a

1. Identify avian use of a project area by species;
2. Understand potential impacts from construction and operation of the proposed site;
3. Determine seasonal variation, if any; and
4. Collect data to aid in the analysis of impacts such as topographic features and weather conditions

Comment [MSOffice4]: Our preliminary assessment process does not yet specify a framework or decision tree that would lead logically to this. Andy: Agreed—see my note above.

Formatted: Bullets and Numbering

Available tools for general avian studies include diurnal point count surveys, raptor nest surveys, breeding bird surveys, area searches, mist netting, migration counts, marine radar surveys, large Doppler surveillance radar, thermal infrared imagery, and radio tracking. Which of these tools should be used at a particular site should be a site-specific determination. All surveys should follow established and accepted protocols, such as in the current edition of the NWCC's Methods and Metrics document. A revision of this document is currently underway (late 2008). The National Academy of Sciences also lists methods and metrics in its 2007 document on wind energy.

Deleted: contained

Deleted: the

(A) Standard Methods and Metrics (or these could be in the Appendices)

- (1) National Wind Coordinating Collaborative, methods and metrics docs (give website)
- (2) National Academy of Sciences

Deleted: ng

Deleted: mmittee

(2) Bat Surveys

The objective of pre-construction bat surveys is gather information about bat use of potential project sites to characterize risks associated with collisions between bats and wind turbines.

There is not a consensus on which methodology is effective in predicting bat impacts for pre-construction studies. Wind energy representatives commit to continue to work with bat organizations and scientists to implement methodologies to assess potential bat mortality at prospective wind project locations in sensitive areas. In areas of known bat concentrations or near sensitive bat habitat, information should be collected that considers the following issues as appropriate:

1. Seasonal patterns of abundance and use of a prospective site by bats; and
2. Roosting areas and daily movement patterns.

Formatted: Bullets and Numbering

Some available methods for bat surveys include acoustic monitoring, night-vision imaging, infrared imaging, light tagging, radiotelemetry, mist netting, exit counts, harp traps, roost searches, weather surveillance radar, marine radar and molecular techniques. These techniques are described in detail in Kunz et al. 2007's Journal of Wildlife Management paper. The appropriate survey technique will depend on the species known to exist at or near the site. For example, mist netting and radiotelemetry may be appropriate if Indiana Bats are known to exist in the vicinity, while acoustic monitoring using monitors elevated on meteorological towers may be appropriate where bat use is uncertain but not expected to include protected species.

Formatted: Indent: Left: 0 pt

(A) Standard Methods and Metrics

(1) where they are located

(3) Federal and State (as appropriate) Threatened and Endangered species – use appropriate protocols as identified by USFWS or the appropriate state.

(4) Displacement of species

Indirect impacts to wildlife and habitat may occur because the wind project may cause disturbance to wildlife, causing the habitat to be less functional and suitable to both resident and/or migratory birds and other wildlife species. There have been only a handful of studies addressing displacement of wildlife from land-based wind projects. Displacement effects to wildlife may be temporary or permanent. If there is a strong likelihood for displacement (e.g. an existing species or habitat assemblage is especially vulnerable to displacement by wind project development), the project developer should consult with the permitting authority and resource agencies. Projects sited in higher quality habitat with sensitive species are more likely to raise displacement concerns than projects sited in lower quality habitat. The need for site specific assessment of potential wildlife displacement should be determined on a project-by-project basis.

Deleted: 3

Comment [p5]: Adapted from new OR guidelines

Formatted: Font: (Default) Times New Roman

Formatted: Font: (Default) Times New Roman

Formatted: Indent: Left: 36 pt

Deleted: appealing

Formatted: Font: (Default) Times New Roman

Tools for assessing displacement include:

(A) Standard Methods and Metrics

(1) where they are located

Deleted: TOC

(4) Habitat Loss and Fragmentation

[Standard language regarding why it is important and what studies should be performed.] Need to add reference to policy vs. legal basis. Information about general vegetation and land cover types, wildlife habitat, habitat quality, extent of noxious weeds, and physical characteristics within the project site should be collected and compiled. All habitats within the project site should be mapped into specific, clearly defined habitat types, such as forested ridge, native prairie, grassland, shrub-steppe, cultivated agriculture, and Conservation Reserve Program (CRP).

(Once decision tree has been approved, we need to go back through this document to insure its compatibility.)

- (a)
- (iii) Communication
- b. Site design (move up to site development)
 - (i) Micrositing
 - (ii) Design best practices
 - (iii) Construction best practices

Comment – needs to be reorganized

2.

- a. Site Development/Construction best practices

The risk of adverse impacts to wildlife from turbines can be reduced through careful site selection and facility design. The following best management practices can assist a developer in the planning process to reduce potential wildlife impacts.

Each wind energy project site is unique, and no one recommendation will apply to all site selection and layout planning. However, consideration of the following elements in site selection, turbine layout and development and operation of a facility can be helpful to avoid and minimize impacts.

(review and check for content)

1. Minimize, to the extent practicable, the area disturbed by pre-construction site monitoring and testing activities and installations.
2. Avoid locations identified to have the potential for high risk to birds or bats.
3. Site a wind power project on disturbed lands where possible unless the disturbed lands would result in greater risk to wildlife than undisturbed lands.
4. Avoid using or degrading high value habitat areas.
5. Minimize habitat destruction, habitat fragmentation and disturbance of breeding, staging and wintering birds to the extent possible. Use maps that show the location of sensitive resources to establish the layout of roads, fences, and other infrastructure. In natural

- Formatted: Font: (Default) Times New Roman
- Formatted: Font: (Default) Times New Roman
- Formatted: Indent: Left: 0 pt, Don't adjust space between Latin and Asian text, Don't adjust space between Asian text and numbers
- Formatted: Font: (Default) Times New Roman
- Comment [p6]: Adapted from new OR guidelines
- Formatted: Font: (Default) Times New Roman
- Formatted: Font: 12 pt
- Formatted: Font: (Default) Times New Roman
- Formatted: Font: 12 pt
- Formatted: Font: (Default) Times New Roman, 12 pt
- Formatted: Font: (Default) Times New Roman
- Formatted: Font: 12 pt
- Formatted: Indent: Left: 36 pt
- Deleted: <#>Avian Surveys ¶
<#>Bat Surveys ¶
<#>Assess displacement of species ¶
Assess habitat loss and fragmentation
- Formatted: Bullets and Numbering
- Formatted: Bullets and Numbering
- Deleted: Project Impact Assessment
- Deleted: <#>Site Development/Construction best practices¶
- Formatted: Font: Bold
- Deleted: Operation¶
- Formatted: Font: Not Italic
- Formatted: Bullets and Numbering

settings, maintain habitat at the site as close as possible to pre-construction conditions. Use only plants native to the area for seeding or planting.

6. Developers should contact and consult appropriate affected state and local agencies and the USFWS and appropriate tribes early in the planning process for each proposed project to identify concerns and potentially sensitive uses.

Formatted: Font: Not Italic

Formatted: Bullets and Numbering

Formatted: Font: Not Italic

7. To prevent avian collisions, place low and medium voltage connecting power lines associated with the wind energy development underground, to the extent possible, unless burial of the lines is prohibitively expensive (i.e., where shallow bedrock exists), or where greater impacts to biological resources would result. Overhead lines may be acceptable if sited away from high bird crossing locations such as between roosting and feeding areas, or between lakes, rivers and nesting areas. Overhead lines may be used when they parallel tree lines, employ bird flight diverters, or are otherwise screened so that collision risk is reduced. All above-ground lines, transformers and conductors should fully comply with the Avian Power Line Interaction Committee (APLIC).

Formatted: Bullets and Numbering

Formatted: Font: Not Italic

8. Communication towers and permanent meteorological towers should not be guyed at turbine sites. If guy wires are necessary, bird flight diverters or high visibility marking devices should be used.

Formatted: Bullets and Numbering

9. Reduce habitat for prey near turbines. Use construction and management practices to minimize activities that may attract prey and predators to the wind turbine site.

Formatted: Bullets and Numbering

10. FAA visibility lighting of wind turbines should employ only red or dual red and white flashing lights, not steady burning lights.

Formatted: Bullets and Numbering

11. Keep lighting at both operation and maintenance facilities and substations located within 1/2 mile of the turbines to the minimum required to meet FAA guidelines and safety and security needs. Use lights with sensors and switches to keep lights off when not required. Lights should be hooded and directed to minimize horizontal and skyward illumination. Do not use high intensity lighting, steady-burning, or bright lights such as sodium vapor or spotlights.

Formatted: Font: Not Italic

Formatted: Bullets and Numbering

12. Establish non-disturbance buffer zones to protect raptor nests, bat roosts, areas of high bird or bat use, or special-status species habitat. Determine the extent of the buffer zone in consultation with USFWS and state, local and tribal wildlife biologists.

Formatted: Font: Not Italic

Formatted: Bullets and Numbering

Formatted: Font: Not Italic

Formatted: Font: Not Italic

13. Locate turbines to avoid separating birds and bats from their daily roosting, feeding, or nesting sites and to avoid location in high bird or bat use areas.

Formatted: Bullets and Numbering

14. Use tubular towers (as opposed to lattice towers) or best available technology to reduce ability of birds to perch and to reduce risk of collision.

Formatted: Font: Not Italic

Formatted: Bullets and Numbering

15. Minimize the number and length of access roads.

Formatted: Font: Not Italic

Formatted: Bullets and Numbering

Deleted: TOC

16. Adopt a decommissioning plan and fund for removal of the turbines and infrastructure when it ceases operation, and for restoration of the site to approximate pre-project conditions.

Formatted: Bullets and Numbering

17. Where warranted, develop a project-specific habitat conservation or restoration plan to avoid or minimize negative impacts on vulnerable wildlife while maintaining or enhancing habitat values for other species.

Formatted: Bullets and Numbering

18. Remove wind turbines when they are no longer operational so they cannot present a collision hazard to birds and bats.

Formatted: Bullets and Numbering

2. Project Impact Assessment

Deleted: ¶

(b) Post Construction

Formatted: Font: Not Italic

At a minimum, the primary objectives for post-construction monitoring are to determine:

Formatted: Font: Bold

(1) Whether estimated fatality rates from the preliminary or preconstruction assessments were reasonably accurate from direct strikes with the wind turbines, or indirectly through displacement of species or the altering of wildlife habitats.

Formatted: Font: Bold

Deleted: Monitoring¶

Formatted: Font: Times New Roman

Formatted: Indent: Left: 0 pt

(2) Whether the avoidance, minimization, and mitigation measures implemented for the project were adequate or whether additional corrective action or compensatory mitigation is warranted.

Formatted: Font: Times New Roman

Formatted: Font: Times New Roman, Not Highlight

(3) Whether certain species are affected by indirect or cumulative impacts of habitat loss or fragmentation, and whether certain species become habituated to development.

Formatted: Font: Times New Roman

Formatted: Font: Times New Roman, Not Highlight

The duration of operations monitoring should be sufficient to determine whether pre-permitting estimates of impacts to birds or bats were reasonably accurate and to determine whether turbines are causing unanticipated fatalities that require impact avoidance or mitigation actions. The duration and focus of operations monitoring studies should be based on the availability of existing, site-specific data; the species potentially affected; and the magnitude of the anticipated effect. Consult local, state, or federal scientists and appropriate stakeholders regarding study protocol and the duration of an operations monitoring program.

Formatted: Font: Times New Roman

Formatted: Indent: Left: 0 pt

Formatted: Font: Times New Roman

Formatted: Highlight

Formatted: Font: Times New Roman

Formatted: Left, Indent: Left: 0 pt, Adjust space between Latin and Asian text, Adjust space between Asian text and numbers

(may be moved to (ii) Reporting and Evaluation section and Government Agency Policy section)

Formatted: Indent: Left: 0 pt

A Technical Advisory Committee can be useful, based on the scope and scale of the project and potential wildlife impacts, to be responsible for reviewing results of monitoring data and making suggestions to the federal, state, and or local agencies and tribes regarding the need to adjust mitigation and monitoring requirements based on results of monitoring data and available data from other projects. The range of possible adjustments to the monitoring and mitigation requirements should be clearly stated in the pre and post construction study designs and the mitigation plan. Adjustments should be made if unanticipated impacts become apparent from monitoring data. Examples of such changes may include additional monitoring or research focused to understand the identified impacts.

Deleted: is recommended

Deleted:

Deleted: USFWS

Formatted: Not Highlight

Formatted: Not Highlight

Formatted: Not Highlight

(a)

Formatted: Bullets and Numbering

(ii) reporting and evaluation

(iii) adaptive management and potential mitigation

(a) Mitigation consists of:

Formatted: Indent: Left: 180 pt, First line: 36 pt

- 1. Start with legal/policy distinction
- 2. establishing parameters or bounds for compensation during pre-construction phase
- 3. establishing types of compensation that we want to endorse
- 4. establishing level of compensation commensurate with project impacts
- 5. requiring mitigation for temporary impacts (temporal loss of habitat function)
- 6. Need to address adaptive management
- 7. Need to consider ABPP for the mitigation plan

- (1) avoiding the impact by not taking a certain action or parts of an action or limiting the degree or magnitude of the action and its implementation;
- (2) employing specific equipment, project designs, careful placement of facilities, or using corrective techniques that reduce or eliminate the impact;
- (3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- (4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- (5) compensating for the impact by replacing or providing substitute resources or environments (from the President's Council on Environmental Quality as defined in the National Environmental Policy Act regulations).

A. **Avoidance:** Avoiding adverse impacts through changes in project location, design, operation, or maintenance procedures, or through selection of other less damaging alternatives to the project or action.

B. **Minimization:** Minimizing impacts by project modification, or rectification and rehabilitation to restore or improve impacted habitat to pre-project conditions, or through reducing or eliminating the impacts over time.

C. **Compensation:** Compensating for unavoidable impacts by providing replacement or substitute resources (including appropriate management) for losses caused by project construction, operation, or maintenance.

Formatted: Font: Times New Roman

Formatted: Left, Indent: Left: 0 pt, First line: 0 pt, Widow/Orphan control, Tabs: Not at 36 pt + 58.5 pt + 108 pt + 144 pt + 180 pt + 216 pt + 252 pt + 288 pt + 324 pt + 360 pt + 396 pt + 432 pt + 468 pt

Formatted: Indent: Left: 0 pt, First line: 0 pt

Compensation should follow the sequence preference established by the USFWS as follows:

- 1. On-site, in-kind
- 2. Off-site, in-kind
- 3. On-site, out-of-kind
- 4. Off-site, out-of-kind

Formatted: Indent: Left: 0 pt, First line: 0 pt

For off-site mitigation to be accepted, the project developer must demonstrate greater habitat function and value can be achieved off-site than on-site. It is recommended that compensation values or ratios be based on habitat types given priority according to state environmental regulations, ordinances, State Wildlife Action Plans or other environmental planning guidance, to provide compensation ratios:

Formatted: Indent: Left: 0 pt

a. **Resource Category 1.** Habitat to be impacted is of high value and is unique and irreplaceable on national basis or in the ecoregion section. The mitigation goal is to avoid impacts to these habitats.

b. Resource Category 2. Habitat to be impacted is of high quality and is relatively scarce or becoming scarce on a national basis or in the ecoregion section. The mitigation goal is no net loss of in-kind habitat value.

c. Resource Category 3. Habitat to be impacted is of high to medium value. The mitigation goal is no net loss of habitat value while minimizing loss of in-kind habitat value. D.

d. Resource Category 4. Habitat to be impacted is of medium to low value. The mitigation goal is to minimize loss of habitat value

(2) Mitigation Actions

(A) Mitigation Plans are integral part of construction and should be completed prior to or during project construction. Any mitigation plan should include some or all of the following: compensation for permanent, temporary and cumulative impacts to habitat(s) from the project, adequate replacement ratio, mitigation measures, goals and objectives, implementation plan, performance standards (survival percentage), operation and maintenance plans, and monitoring and evaluation plans. Mitigation sites should be protected for the life of the project.

Formatted: Indent: Left: 0 pt

(B) Mitigation Plans should include the following:

1. Baseline data,

Formatted: Indent: Left: 0 pt, First line: 36 pt

a. estimate of impacts

Formatted: Indent: Left: 72 pt, First line: 36 pt

b. maps and drawings of as-built mitigation proposal

2. Mitigation measures

Formatted: Indent: Left: 0 pt, First line: 36 pt

a. Replacement ratio, based on USFWS compensation sequence and

Resource Categories

Formatted: Indent: Left: 72 pt, First line: 36 pt

4. Goals and objectives

Formatted: Indent: Left: 0 pt, First line: 36 pt

a. Detailed implementation plan, with responsible party

b. Contingency plan with corrective actions to be taken if mitigation does

not meet goals and objectives

Formatted: Indent: Left: 72 pt, First line: 36 pt

7. Operation and maintenance

Formatted: Indent: Left: 72 pt

a. Party responsible for implementation

b. Monitoring and evaluation plan

3. Retrofit/Decommissioning

(A) Retrofitting herein is defined as replacing portions of existing wind turbines or project facilities so that at least part of the original turbine, tower, electrical infrastructure or foundation is being utilized

Formatted: Font: Bold

Formatted: Justified, Space After: 0 pt, Tabs: Not at 216 pt

Formatted: Bullets and Numbering

1. Retrofitting of turbines should use installation techniques that minimize new site disturbance, soil erosion, and removal of vegetation of habitat value

Formatted: Indent: Left: 0 pt

2. Retrofits should employ shielded, separated or insulated electrical conductors that minimize electrocution risk to avian wildlife

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 18 pt + Tab after: 36 pt + Indent at: 36 pt

3. Retrofit designs should prevent nests or bird perches from being established in or on the wind turbine or tower

Formatted: Bullets and Numbering

4. FAA visibility lighting of wind turbines should employ only red or dual red and white flashing lights, not steady burning lights.

5. Lighting at operation and maintenance facilities and substations located within 1/2 mile of the turbines should be kept to the minimum required to meet FAA guidelines and safety

and security needs. Use lights with sensors and switches to keep lights off when not required. Lights should be hooded and directed to minimize horizontal and skyward illumination. Do not use high intensity lighting, steady-burning, or bright lights such as sodium vapor or spotlights.

- 6. Remove wind turbines when they are no longer cost effective to retrofit so they cannot present a collision hazard to birds and bats.

(B) Repowering Existing Wind Projects

- 1. To the greatest extent practicable, existing roads, disturbed areas and turbine strings should be re-used in re-power layouts
- 2. Roads and facilities that are no longer needed should be stabilized and re-seeded with native plants appropriate for the soil conditions and adjacent habitat
- 3. Existing substations and ancillary facilities should be re-used in repowering projects to the extent practicable.
- 4. Existing overhead lines may be acceptable if located away from high bird crossing locations such as between roosting and feeding areas, or between lakes, rivers and nesting areas. Overhead lines may be used when they parallel tree lines, employ bird flight diverters, or are otherwise screened so that collision risk is reduced.
- 5. All above-ground lines, transformers and conductors should be brought into compliance with the Avian Power Line Interaction Committee (APLIC) "Suggested Practices for Avian Protection on Power Lines".
- 6. Guyed structures should be avoided unless guy wires are treated with bird flight diverters or high visibility marking devices, or are located where known low bird use will occur.
- 7. FAA visibility lighting of wind turbines should employ only red or dual red and white flashing lights, not steady burning lights.
- 8. Lighting at operation and maintenance facilities and substations located within 1/2 mile of the turbines should be kept to the minimum required to meet FAA guidelines and safety and security needs. Use lights with sensors and switches to keep lights off when not required. Lights should be hooded and directed to minimize horizontal and skyward illumination. Do not use high intensity lighting, steady-burning, or bright lights such as sodium vapor or spotlights

Formatted: Font color: Black

Formatted: Font color: Black

Formatted: Justified, Space After: 0 pt

Formatted: Space After: 0 pt, Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 18 pt + Tab after: 36 pt + Indent at: 36

Formatted: Bullets and Numbering

(C) Decommissioning Wind Projects

- 1. Decommissioning methods should minimize new site disturbance and removal of native vegetation, to the greatest extent practicable.
- 2. Foundations should be removed to a depth of 2 feet below surrounding grade or covered with soil, stabilized and re-vegetated with native plants appropriate for the soil conditions and adjacent habitat
- 3. Overhead pole lines that are no longer needed should be removed
- 4. After decommissioning erosion control measures should be installed in all disturbance areas where potential for erosion exists.
- 5. Fencing should be removed unless the land owner will be utilizing the fence
- 6. Petroleum product leaks and chemical releases that constitute a Recognized Environmental Condition should be remediated prior to completion of decommissioning

Formatted: Font color: Black

Formatted: Justified, Space After: 0 pt

Formatted: Font color: Black

Formatted: Numbered + Level: 1 + Numbering Style: 1, 2, 3, ... + Start at: 1 + Alignment: Left + Aligned at: 18 pt + Tab after: 36 pt + Indent at: 36 pt

C. Government Agency policy actions (interagency coordination, communication, and standardizing compliance)

Formatted: Indent: Left: 162 pt

Formatted: Indent: Left: 18 pt

Formatted: Bullets and Numbering

- i. Federal-federal (e.g., FWS and BLM)
- ii. Federal-state
- iii. Federal-tribal
- iv. Agency (federal state and/or local)-developer (e.g., ABPP, HCP, MOUs)

D. NGO Actions

- v. Industry/AWEA
- vi. Conservation organizations
- vii. AWWI
- viii. NWCC
- ix. Others

E. Guidelines revisions/feedback (what works, feedback mechanism)

III. Benefits

- A.** Increased Compliance
- B.** Reduced regulatory risk
- C.** Improved predictability of wildlife impact

Formatted: Indent: Left: 18 pt

Formatted: Indent: Left: 18 pt

Formatted: Indent: Left: 18 pt

Formatted: Bullets and Numbering

DRAFT