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WIND TURBINE GUIDELINES ADVISORY COMMITTEE: FEDERAL ADVISORY MEETING # 5

October 21-23, 2008
Washington, DC

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**WIND TURBINE GUIDELINES ADVISORY COMMITTEE
FEDERAL ADVISORY COMMITTEE MEETING #5**

AGENDA

**SOUTH MAIN INTERIOR BUILDING
1951 CONSTITUTION, NW
WASHINGTON DC 20240**

OCTOBER 21-23, 2008

WIND TURBINE GUIDELINES ADVISORY COMMITTEE MEETING

- Review Subcommittee recommendations/reports and develop proposal for moving forward with recommendations.
 - FAC first draft Recommendations *Table of Contents/Outline of FAC Recommendations*
 - Legal White Paper
 - Other Models: application to wind power
 - Landscape/Habitat [tools available]
 - Existing Guidelines [recommended guidelines to consider]
 - Science Tools & Procedures method(s) to [address risk & recommended tools]
- Hear lands panelists discuss their interests
- Agree on steps to develop the TOC/Outline of Recommendations into a “straw” report for the FAC to review and discuss in January
- Discuss Milestones, timelines and process steps to address additional items

Comments Protocol for FAC Meeting

If you are a member of the public and want to make a comment to the FAC, please sign up on the “Comment Sign-Up Sheet” at the registration desk. Comments will be taken at the designated time on the agenda. Comments may need to be held to 3 minutes, depending on the number of parties who request time to comment. If time does not allow for all comments, then members of the public will be asked to write their comments down and submit them to the FWS staff at the registration desk. All comments will be made part of the public record and will be electronically distributed to all FAC members after the FAC meeting.

Day One: October 21, 2008

2:15 – 2:30 **Welcome & Overview of Agenda** D.Stout, DFO/USFWS / A.Arnold, facilitator
 Introductions of all FAC members

- Opening comments from D.Stout
- Review and agree on meeting purpose
- Review and agree on meeting agenda
- Review status of pending nomination of alternates package

2:30-4:30

Landowner Panel

D.Stout will moderate a panel of landowners invited to address the FAC. The panelists include:

- Peggy Stolworthy, Idaho
- Rose Bacon, Kansas
- Bill Sproul, Kansas
- Joel Martin, West Virginia
- Ned Meister, Texas

Questions and Answers

4:30-4:50

Break

4:50-6:00

Overview of Subcommittee Progress, Questions to FAC

Objective of this session: A representative from each Subcommittee give a short update (5 min) so all parties have a full picture of subcommittee activities. For the remainder of meeting, return to each report and review and discuss reports, recommendations, and offer advice on next steps.

- TOC/Outline of Recommendations (tbd)
- Legal (tbd)
- Uncertainty/Other Models (tbd)
- Landscape/Habitat (tbd)
- Existing Guidelines (tbd)
- Science Tools & Procedures (tbd)

6:00

Next Steps and adjournment

6:15

Reception

To be held at Chef Geoff's: 1301 Pennsylvania Ave, NW, Washington, DC 20004 (on 13th Street between E and F, NW). Maps will be passed out at the FAC meeting.

Day Two: October 22, 2008

8:30-8:45

Review and Approve Agenda*Agenda is subject to change depending on the needs of the FAC*

8:45-4:20

Report on Subcommittee Reports*Objective of this session: get update on recommendations from each subcommittee, FAC offer direction regarding next steps.*

8:45-9:45

Table of Contents/Outline of Recommendations*Objective of this session: review comments from FAC on Table of Contents/Outline of Recommendations and decide next steps.*

- Review and comment on draft Table of Contents/Outline of Recommendations

9:45 – 11:00

*(including break)***Legal***Objective of this session: review white paper and FAC offer direction to subcommittee about next steps.*

- Briefing and discussion of legal subcommittee white paper [title?].
- What does the FAC want to work on?
- Are there terms to define?
- Next steps:
 - *What is FAC direction to the Subcommittee?*

11:00-12:00

Other Models*Objective of this session: get update on work conducted by this subcommittee, FAC offer direction to subcommittee about next steps.*

- Briefing on recommended Models the Subcommittee wants the FAC to consider, or review
 - Avian/Bat Protection Plan
 - Clean Air Act, Clean Water Act, other models
 - *FAC direction to the Subcommittee*
- Are there terms to define?
- Next steps; *FAC direction to the Subcommittee*

12:00-1:15

Lunch

- 1:15 **Report on Subcommittee Reports, continued**
Objective of this session: get update on work conducted by this subcommittee, FAC offer direction to subcommittee about next steps.
- 1:15-2:00 **Uncertainty/Other Models, continued**
- 2:00-3:00 **Landscape/Habitat**
- Briefing on recommendations from landscape habitat subcommittee
 - Next steps; *direction to the Subcommittee?*
 - Are there terms to define?
- 3:00-4:00 **Science Tools & Procedures**
(including break) *Objective of this session: get update on work conducted by this subcommittee, FAC offer direction to subcommittee about next steps:*
- Review matrix of tools
 - Next steps;
 - Direction from FAC to the Subcommittee?
 - Are there terms to define?
- 4:00-5:00 **Existing Guidelines**
- Discuss existing guidelines matrix, table of contents
 - Next steps; *direction from FAC to the Subcommittee?*
 - Are there terms to define?
- 5:00-5:15 **Reflections on Discussion, What Do We Need To do Tomorrow?**
- 5:15-5:30 **Public Comment**
Members of the public are invited to speak to the FAC; Please sign up on the Public Comment Form; time permitting each party will be asked to keep their comments to 3 minutes each. Written comments will be accepted by the Committee.
- 5:30 **Wrap Up and Review Next Steps** *A.Arnold, facilitator*
Review agenda for Day III in light of progress made on Day II; decide if need to meet in subcommittees tomorrow morning
- 5:45 **Adjourn for evening**

Day Three: October 23, 2008

- 8:00-8:15 **Review Day's Agenda**
- 8:15 – 8:45 **Horizon Kansas Conservation Project Presentation on Mitigation**
- 8:45-10:15 **Plenary or Subcommittees Meet in Person**
- *Continue with discussion from prior day, as needed*
 - *What is missing? What do we need to work on*
- 10:15 – 12:00
(including break) **Plenary; Return to Discussion of Draft Straw Set of Recommendations**
- *What is missing? What do we need to work on?*
- 12:00-1:15 **Lunch**
(on your own)
- 1:15-2:15 **Plenary; Return to Discussion of Draft Straw Set of Recommendations**
- *What is missing? What do we need to work on?*
- 2:15-2:45 **Review Outstanding Items and Today Reflections from Chairman/DFO**
Objective of this session: Clarify outstanding issues, direction, and next steps for Committee.
- Review list of outstanding items what are next steps for those items.
 - Hear from DFO on reflections of meeting, next steps....
- 2:45–3:00 **Review of Next Steps**
- Review next steps, activities between now and October
 - Agenda items for October
- 3:00-3:15 **Public Comment**
- 3:15 **Adjourn FAC Meeting**

ANSWER'S LANDOWNER'S PANEL QUESTIONS: Peggy Stolworthy**1. IN YOUR EXPERIENCE WITH WIND ENERGY DEVELOPMENT, WHAT ARE THE BENEFITS AND IMPACTS TO WILDLIFE AND THEIR HABITAT?**

First of all I would like to thank the US Department of the Interior and the Fish & Wildlife Service for having me here today. I am honored to have been selected to be on your landowner panel.

There are risks in anything we do, yet I have seen very little impact on our wildlife and their habitat concerning the Wolverine Creek Wind Farm that has been developed in my area in south-eastern Idaho. During the year of construction there was some disturbance though wildlife and their habitats have returned to the same as they were before. We have the following year seen birds and their young in the turbine areas. Also large game such as moose, deer and elk herds can be seen grazing near and below the wind turbines. This would not be true if the other development option in my area, new construction of housing that is being developed near the wind farm took place. When new housing developments come in I am seeing wildlife moving to other areas and their habitats being destroyed. I live in the area where these animals are moving to escape the houses and it feels as though they have less and less land as time goes by. I was fortunate to have grown up on a farm and cattle ranch and have lived close to wildlife all my life. I don't like what I am seeing and I especially do not like the housing developments closing in on my little paradise. I am very proud of our ranch and what we have accomplished; in fact every morning when I look out the window and see the sun rise I see a mountain. I can't imagine someday seeing houses on this mountain. I can visualize looking at wind turbines.

Wind turbines are not something that has been taken lightly. We signed our first wind contract in 2001 so that test towers could be erected. Yes, the wildlife can still have the security of running free. Just over the hill I have seen neighbor ranches being developed into their little ranchettes. Do you realize how upsetting it is to have the majority of them considering our ranch is their backyard? If you don't I will fill you in a little bit. Most of them own four wheelers and are constantly trespassing, and then there is the dreaded dog that as you can guess chases cows and the deer, elk and moose grazing in the meadows and on the rolling hills. There also is nothing more upsetting than seeing new trails on the side hills or a fence cut just because one of our new neighbors decided to go for a joy ride. At least I know the wind company we are working with is very responsible. Most of the roads that will be needed for the wind farm are already there because of old cattle roads, timber roads, and roads cut by trespassers for recreation. I look at this as an opportunity for those roads to serve a useful purpose. The step needs to be taken where to place the turbines that are the future to solve our energy crisis. I feel the unlawful users of my ranch and the encroachments by suburban development pose much greater threats to our wildlife. So many of them say not in my backyard, hey, take a look I own that backyard and I feel my love and consideration towards wildlife far out measures the little two acre ranchettes that are moving in .

2. HOW CAN USFWS GUIDELINES BE A USEFUL TOOL TO ASSIST WITH AND ENHANCE THERE PROCESS OF WIND ENERGY SITTING ON PRIVATE PROPERTY?

Wind energy places a light foot print on our lands. This is an area of active use by farmers, ranchers, loggers, and recreation. Roads have been cut through much of it and while I thought that might not be the best thing before, it helps us on our fence work and will help put in the wind farm. Though windy

property can also be found in undeveloped areas so habitat fragmentation can be of concern, those concerns aren't great in most of eastern Idaho because of the high level of development. The FISH AND WILDLIFE works in collaboration with our wind company even if it is private land. By proper evaluation of potential wind sites and the encouragement for the wind industry to follow these guidelines you are protecting and lessening the impact which naturally occurs in any development. In my own case, when our application was submitted to Planning and Zoning we suggested before they approve our 150 turbine wind project that conditions be put on the project, each turbine, before it can be positioned or any new road constructed it must be signed off by certain agencies for approval one being our local Fish and Game, DEQ and many other agencies. If we had a fish and wildlife guideline, we could have just presented it to the county and told them we would abide by what the guidelines said and that would have been that.

3. WHEN WORKING WITH USFWS AND STATE WILDLIFE AGENCIES TO EVALUATE PROJECTS, WHAT HAS YOUR EXPERIENCE BEEN WITH THE AGENCIES OR OTHER RELEVANT ENTITIES? IF YOU HAVE NOT WORKED DIRECTLY WITH USFWS OR A STATE AGENCY, WHAT IS YOUR PERSPECTIVE ON HOW WILDLIFE AGENCIES PERFORM SUCH EVALUATIONS?

I have done several projects on the ranch where I have worked with Idaho Fish and Game, DEQ, USDA Natural Resource Conservation Service, Idaho State Highways, Corp of Engineer's, Idaho State Department of Lands, and The Bureau of Land Management. I feel like all these agencies have been very thorough in their evaluations. Most doing a pre inspection of any sight, for instance the Natural Resource Conservation Service always sends a District Conservationist out to our private land to inspect a project, often furnishing an engineer to draw up drafts and to do surveys, we were fortunate to have furnished for us an engineer daily for one full summer to help us with a creek restoration. A few years back we installed a twelve mile pipeline on the highest ridges to keep cows off of the creek bottoms. The NRCS office again furnished an engineer, the district conservationist spent many hours working with the engineer and myself and surveying the proposed project. Then we worked with our excavator and my employees daily while we installed the pipeline. I very seldom had a day that the DC was not on the project, he was there until completion. Later I would see him checking on the sixteen troughs to make sure they were all working. When we do the inspections if there is a problem they always have a suggestion to fix it. We are in the "Access Yes" program with Idaho Fish and Game; they have really gone the extra mile with us, installing a sign in box and signs and have backed us all the way on trespassers. You see our ranch is horse and foot only, the only motorized vehicles you see on our 9500 deeded acres and 5000 acres of leased ground are when we are out fencing or doing other repairs. So if you want to hunt you walk or ride horse. We worked with our local county, by donating an old school house on our property (which was being destroyed by vandals) and had it removed to a local park, The original sight was made into a memorial park, they in return, had the school renovated back to it's original state so others could be educated and receive a part of our local history. The ranch has been saved many a dollar through time with the help of government agencies with there technical advice and EQIP and Conservation Programs.

4. WHAT OPPORTUNITIES EXIST FOR CONSERVATION EASEMENTS? WHAT ARE THE TRADE OFFS OF AGREEING TO EASEMENTS AS OPPOSED TO CONTINUED OPERATIONS SUCH AS FARMING OR GRAZING

There are many opportunities for conservation easements, I feel at this time many farmers and ranchers are reluctant to enter into a conservation easement. I feel much of that is do to lack of knowledge landowners' have when it comes to this type of easement. The success of conservation easement, I feel is that more landowner's need to educated more about land trusts and their mission and goals for the future of their region. Locally we have the Heart of the Rockies Initiative who is collaborating efforts of different conservation organizations in order to further land conservation. Many people know very little about land trusts. I know I didn't until about three years ago. This is when I learned the mission of a conservation easement is to protect and enhance quality of life, now and for future generations through the conservation of the natural and working landscapes. The Sage Steppe Land Trust one of six in Idaho worked with us to protect critical habitat on our ranch. The ranch put forty acres in a conservation easement. We had a creek on our ranch that when the ground was purchased had been moved, no longer being in it's original stream and had eroded through the past thirty years about to a depth of ten to fifteen feet. Partnering with US Natural Resource Conservation Service and the Idaho Fish and Game the ranch restored the creek back to its original channel, and then we put the creek and meadow into a lifetime Land Conservation Trust. We can still graze the property and can farm it yet this lifetime conservation easement prohibits anyone from building any homes or out buildings on the property. This not only protects the meadow for wildlife habitat but restored the creek for the Idaho cut throat and bull trout. As for benefits, this has increased surrounding property values, financial aide in improving the original stream, tax incentives, plus my main goal enforcing a strong commitment to the environment and wildlife to protect the land from being developed into any housing in the future. I and my family would like to see more easements similar to our conservation easement, we are a three generation ranch and I have grandchildren who also are very interested in ranching and our goal is to keep this a family ranch for the next generation. We recognize the resource value of our property and realized you can limit development potential.

5. OVERALL, WHAT WOULD YOU RECOMMEND TO THE COMMITTEE REGARDING THE PROTECTION OF WILDLIFE AND THEIR HABITATS RELATED TO WIND ENERGY DEVELOPMENT?

I would recommend enforcing the FISH AND WILDLIFE guidelines. As our local Planning and Zoning has made it mandatory after approving our permit agencies must sign off before a sight is approved. During construction efforts should be made to minimize impacts to surrounding drainages by employing sediment runoff controls and erosion control techniques. I would also recommend employing using as many of the existing roads as possible especially near forest habitat for fewer disturbances. During project planning every effort should be made to site wind turbines and associated facilities (roads, collector cables, transmission lines) outside of known sharp-tailed grouse leks which will minimize potential impacts on sharp tail grouse and their breeding habitat. Our wind company has studied where these birds are and where their habitat is so they can avoid them and minimize the disturbance and we're very impressed with that, but other wind company's aren't always as concerned or as thorough. When it comes to what we should do, it is hard to think of one thing to recommend because the issues on my ranch would likely be different from issues in Iowa or Texas. Even so, I'd say what I'd like to see is something that keeps in mind it's private property, that ranching is tough and getting tougher, that there are great pressures to subdivide and put in homes, I don't want to see this, yet I might be forced into it, and that would be the end of any realistic environment for wildlife, that most

of us are concerned about .The welfare of wildlife to begin with is what is important, we know that if it's not wind it's likely going to be coal or natural gas and we all know the affects of those aren't good for the wildlife or their habitat. I feel I'd like any guideline put together by USFWS to keep an eye on the big picture: that we need more energy sources and, other than wind and solar, the choices can be hard on the environment threatening to our wildlife.

The Mission of the USFWS: Working with others to conserve, protect, and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people.

Main Points:

1. Industrial wind development does negatively impact the few Tallgrass Prairies and natural areas that remain.
2. There are NO Federal or State regulations to protect these areas.
3. There are reasonable and responsible solutions to this problem.

What is the Tallgrass Prairie? Why should the prairies NOT be developed?

- The geology, climate, plants, animals, & birds exist in the Flint Hills in a combination that is unique in the world. There is less than 4% of our native Tallgrass Prairie remaining. Two thirds of these native Tallgrass prairies are in the Flint Hills. Many of the remaining native Tallgrass prairies are in the Smoky Hills, along with mixed grass prairies and important bird and wildlife habitat.
 - A true prairie has hundreds of different plants, insects, birds and wildlife living in its complex ecosystem. Each mini-ecosystem and area has its own predominance of plants: herbs, forbs, flowers and grasses. Thus each mini-ecosystem provides a different habitat, and all combine to form a vital and self-sustaining prairie ecology.
 - The Committee must recognize that a native prairie is much more than just a patch of grass, just as a desert is more than a pile of sand, a mountain is more than trees and rocks, and an ocean is more than a big pool of water. Each is made up of a complex mix of ecosystems.
1. Low flatlands: rich bottom ground frequently flooded along rivers & creeks. Hay meadows, small cropped areas, brome, native or fescue grasses. Meadow larks, shrikes, scissortails, thrushes, killdeer, crows, hawks, whip-poor-will. These and the riparian areas are home to the smaller animals; coons, possums, squirrels, bobcats, otter, & beaver, along with the deer.
 2. Riparian areas along creeks and rivers: Gallery forests, slow meandering clear water filtered through limestone and grasses, shade plants, mosses, & wind protection. Kingfishers, herons, orioles, bluebirds, nesting for eagles, songbirds, ducks and geese.
 3. Uplands/first level: rocky ledges and first level of higher & drier native grass areas. Most often the areas of clear springs and waterfalls, ponds, old buffalo wallows, upland plovers, horned larks, turkeys, deer, red-tailed hawks, & coyotes.
 4. Upland hillsides: Steep slopes dotted with rocks, slicks or seeps. Nesting for grassland sparrows, & nighthawks.
 5. Ridge tops: Flatter and drier grasslands dotted with buffalo wallows, home to the prairie chickens and their booming grounds.
1. In your experience with wind energy development, what are the benefits and impacts to wildlife and their habitats?
 - No Benefits: There are few, if any, wildlife species that benefit from artificially altering their habitat with industrial development.
 - Impacts:

1. Construction/ compaction/erosion
 2. Roads and compaction (Dr. Timothy Keane)
 3. Excavations – soil & grass disruption (Dr. Thomas Eddy)
 4. Large staging areas cleared
 5. Rock quarries formed or enlarged
 6. Cement plants on-site
 7. Turbines disrupt landscape & viewshed (Elk River photos)
 8. General habitat fragmentation (Dr. Robert Robel's study)
 9. Cumulative effect on migration flight ways?
 10. Maintenance phase continued disruption
- Development on a large scale, such as industrial wind complexes, large reservoirs, landfills, large feedlots, or residential developments involve and affect much more than just the footprint of the actual development. There are additional considerations such as unique ecologies at risk, water supply or drainage, ground cover or soil disturbances and compaction, erosion, increase in human or vehicle traffic to and from the site, contamination from the developments (hydraulic oil from turbines), and property rights issues.
 - Property Rights are similar to Personal Rights in that we have the right to do as we wish UNTIL it affects another person or their property.

2. How can the USFWS guidelines be a useful tool to assist with and enhance the process of wind energy siting on private property?

- Focus on vital or unique and endangered landscapes and habitats. Such areas should not be considered for development.
- Do in-depth legitimate habitat and wildlife research on the area. Most project developers do VERY limited research or studies, usually by out-of-state biologists who are unfamiliar with the habitat or wildlife and who are paid by and answer to the developer. Notable exception is the Robel Prairie Chicken study for Horizon, a legitimate study. Use researchers who are experts in that particular habitat or wildlife species type.
- Researchers should live in or be very familiar with the area.
- Researchers need adequate time and resources for the study to be accurate and reflect seasonal or life cycle changes.
- Researchers should be contracted for and paid by an independent source, not by the project developers.
- Identify native grasslands and natural areas
 1. Amount of similar habitat available
 2. Amount of habitat in contiguous area
 3. Type and biodiversity of habitat
 4. Type of wildlife and plant life in area
 5. Cultural and historical significance of area
 6. Other impacts or development strategies in area
 7. Develop "Special Places" Map (Kansas Special Places Map)

8. Areas available for development that are already disturbed. (In Kansas, there are over 8 Million acres available with adequate wind that have already been cropped or disturbed.)
- Use native and natural areas as baseline of areas NOT to develop.
1. Native grasslands and unique natural areas as core of undeveloped zone. (Red Zone)
 2. Surrounding native or natural areas with fragmented habitat or minimal development serve as buffer zone. (Yellow Zone)
 3. Other areas with little habitat and considerable development would be accessible to development. (Green Zone)
- Use reduction of PTC subsidies or mitigation to redirect projects (Proposal by TNC's Brian Obermeyer for project siting.)
 - Guidelines would need to be regulations or have some teeth in them.
 - Developers have a history of disregarding "guidelines".
 - a. KREWG (comprised of conservation groups, environmental groups, and wind developers) developed a good set of wind energy development guidelines for Kansas. They are routinely ignored by developers.
 - b. Kansas Governor's appointed Wind & Prairie Task Force also developed guidelines for wind energy development that are routinely ignored.
3. When working with USFWS and State wildlife agencies to evaluate projects, what has your experience been with the agencies or other relevant entities? If you have not worked directly with USFWS or a State wildlife agency, what is your perspective on how wildlife agencies perform such evaluations?
- FWS in Kansas have been supportive of responsible development.
 - FWS has repeatedly recommended against wind energy development in native grasslands.
 - KDWP wrote a 3 page letter of protest to the Elk River developers refuting the developers' claims of no impact on wildlife or habitat.
 - When contacted to review a site, USFWS can give their opinion, but are only allowed to intervene if there are endangered species present.
 - They have no real power to stop a project even in an inappropriate area if there are not endangered species living there...even if the endangered species may pass through that area.
 - FWS personnel and their certification that there no endangered wildlife live in the project area is often used by the developers to justify a project even in an inappropriate area.
 - We (citizens, landowners, & conservation groups) have worked with several utilities to promote responsible siting. We and other landowner or conservation groups have worked with wind developers to promote responsible siting.
4. What opportunities exist for conservation easements? What are the trade-off of agreeing to easements as opposed to continued operations such as farming or

grazing?

- All conservation easements in my experience, (KRT, KLT, TNC, GRP or FRRP) allow and encourage continued responsible farming, ranching or grazing.
- To my understanding the conservation easements limit development of the land, residential or industrial and general disruption of the easement parcel, not ranching or grazing.
- The KLT easement on our property allows and encourages continued ranching and grazing practices. Our Ranch Management plan filed with the NRCS lays out stocking rates and grazing practices. A yearly onsite review by the KLT easement board protects the land now and in the future from development or disruption by future landowners.
- The USFWS is considering allowing wind energy developmental rights on conservation easements. This is a mistake and a very slippery slope. How do you allow industrial development of one type and not others? You cannot protect a natural area by developing it for industrial uses.

5. Overall, what would you recommend to the Committee regarding the protection of wildlife and their habitats related to wind energy development?

- I would like the Committee to remember that a true prairie has never been replicated or fully restored in our lifetime. According to Dr. David Harnett of Konza Prairie Research Station and Dr. Spencer Tomb, it could take 150 to 1000 years – it has never been done.
- Quote: Winston Churchill – “Men occasionally stumble over the truth, but most of them pick themselves up and hurry off as if nothing had happened.” The truth –development does destroy and permanently alters our remaining native prairies and natural places.
- To develop these native grasslands and other natural areas and destroy or disrupt natural habitats across the county is to disregard our responsibility to protect and preserve our natural areas for future generations.
- The wind industry wants to represent itself as being a realistic and responsible alternative energy. In order to do that, they have several challenges:
 1. Be able to actually produce reliable, efficient and cost effective energy.
 2. Be realistic about the impacts of an industrial wind energy complex.
 3. Be responsible in siting the industrial wind energy projects.

Organizations that support NOT developing native intact prairies:

- | | |
|---|------------------------------|
| Kansas Dept. of Wildlife & Parks | KS Natural Resource Council |
| Tallgrass Ranchers | Protect the Flint Hills |
| U.S. Dept. of Interior, Fish & Wildlife Serv. | National Wildlife Federation |
| Audubon of Kansas | The Nature Conservancy |
| Wildlife Management Institute | Kansas Sierra Club |
| Kansas Scenic Byways | National Scenic Byways |
| Friends of the Smoky Hills | Friends of McDowell Creek |
| Flint Hills Tallgrass Prairie Heritage Foundation | |

Rose & Kent Bacon live and ranch full time in the Flint Hills of Kansas. They have been active Prairie Proponents for many years. They worked on the PBS Documentary “Last Stand of the Tallgrass Prairie” from 1994 to 1999, and with Jim Richardson for a year in 2006 for a National Geographic article featuring the Flint Hills. They are members of the Tallgrass Ranchers, Protect the Flint Hills, Flint Hills Tallgrass Prairie Heritage Foundation, KLA and KCA.

INITIAL DRAFT
FWS Wind Turbine FAC Recommendations
ORIGINAL TABLE OF CONTENTS – Sent 9/11, 9/17, and 9/19

October 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
 - a. Site evaluation
 - (i) Preliminary site assessment²
 - (ii) Preconstruction surveys
 - (a) Avian Surveys
 - (b) Bat Surveys
 - (c) Assess displacement of species
 - (d) Assess habitat loss and fragmentation
 - (iii) Communication
 - b. Site design
 - 2. Project Impact Assessment
 - a. Site Development/Construction best practices
 - b. Site Operation
 - (i) monitoring
 - (ii) reporting and evaluation
 - (iii) adaptive management and potential mitigation
 - 3. Retrofit/Decommissioning
- C. Government Agency policy actions (interagency coordination, communication, and standardizing compliance)
 - 1. Federal-federal (*e.g.*, FWS and BLM)
 - 2. Federal-state
 - 3. Federal-tribal

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).

4. Agency (federal state and/or local)-developer (*e.g.*, ABPP, HCP, MOUs)
- D. NGO Actions
 1. Industry/AWEA
 2. Conservation organizations
 3. AWWI
 4. NWCC
 5. Others
- E. Guidelines revisions/feedback (what works, feedback mechanism)

III. Benefits

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

USFWS Wind Turbine FAC Outline of Recommendations
From the Scientific Tools & Procedures Subcommittee
October 2008

IV. Introduction

- A. Background
 - 1. Statement of USFWS mission
 - 2. Description of context and need for guidelines
- B. Statement of Committee Charter
- C. Guiding Principles³
- D. Members of FAC/signatures

V. Recommended Actions

- A. Preamble to Actions
 - 1. Avoid, minimize, mitigate impacts of wind energy development
 - 2. Result of actions taken
 - a. Project approval and no concerns
 - b. Project not undertaken
 - c. Project proceeds with design modifications and/or appropriate mitigation and/or compensation is available
 - 3. Tiered approach
 - a. Problem formulation at each Tier level
 - b. Outcomes at each Tier determine whether to continue with project assessment or project development
 - 4. Confidentiality
- B. Actions Taken by Developer
 - 1. Preliminary screening of potential wind development site or sites (Tier1)
 - a. Problem formulation
 - b. Preliminary evaluation of potential site(s)
 - c. Early consultation(s)
 - 2. Site Evaluation and Selection (Tier 2)
 - a. Problem formulation
 - b. Additional site characterization
 - c. Early consultation(s)
 - d. Develop project siting alternatives
 - e. Select site(s)
 - 3. Pre-construction Assessment, Project Design, and Permitting (Tier 3)
 - a. Problem formulation
 - b. Tier 3 studies – for prediction of risk or impact

³ At the July FAC meeting, members approved a set of principles that would be inserted here. The premises were tabled.

- (i) Field surveys
 - (ii) Recommended guidelines in “Methods and Metrics” document (Appendix X)
 - c. Siting decision
 - (i) Design modifications (micro siting considerations) to avoid predicted impacts
 - (ii) Mitigation/compensation
 - (iii) Consultation as appropriate
 - (iv) Communication
- 4. Site construction - site development and construction best practices
- 5. Site operation and project impact assessment (Tier 4 and Tier 5)
 - a. Problem formulation
 - b. Conduct Tier 4 studies – fatality assessments
 - c. Conduct Tier 5 studies – Continue studies begun during pre-construction (e.g., BACI, evaluation of predicted impact)
 - d. Conduct new Tier 5 studies – Conduct new studies to evaluation mitigation, risk reduction, and cumulative (i.e., population) impacts
 - e. Adaptive management – evaluation and adjustment
- 6. Retrofit and decommissioning
 - a. Implement land/habitat restoration standards
- C. Government Agency policy actions (interagency coordination, communication, and standardizing compliance)
 - 1. Federal-federal (e.g., FWS and BLM)
 - 2. Federal-state
 - 3. Federal-tribal
 - 4. Agency (federal state and/or local)-developer (e.g., ABPP, HCP, MOUs)
 - 5. Confidentiality
 - 6. Green certification
- D. NGO Actions
 - 1. Industry/AWEA
 - 2. Conservation organizations
 - 3. AWWI
 - 4. NWCC
 - 5. Others

VI. Benefits

- A. Reduced ecological impacts
- B. Increased compliance
- C. Reduced regulatory risk
- D. Improved predictability of wildlife and habitat impact

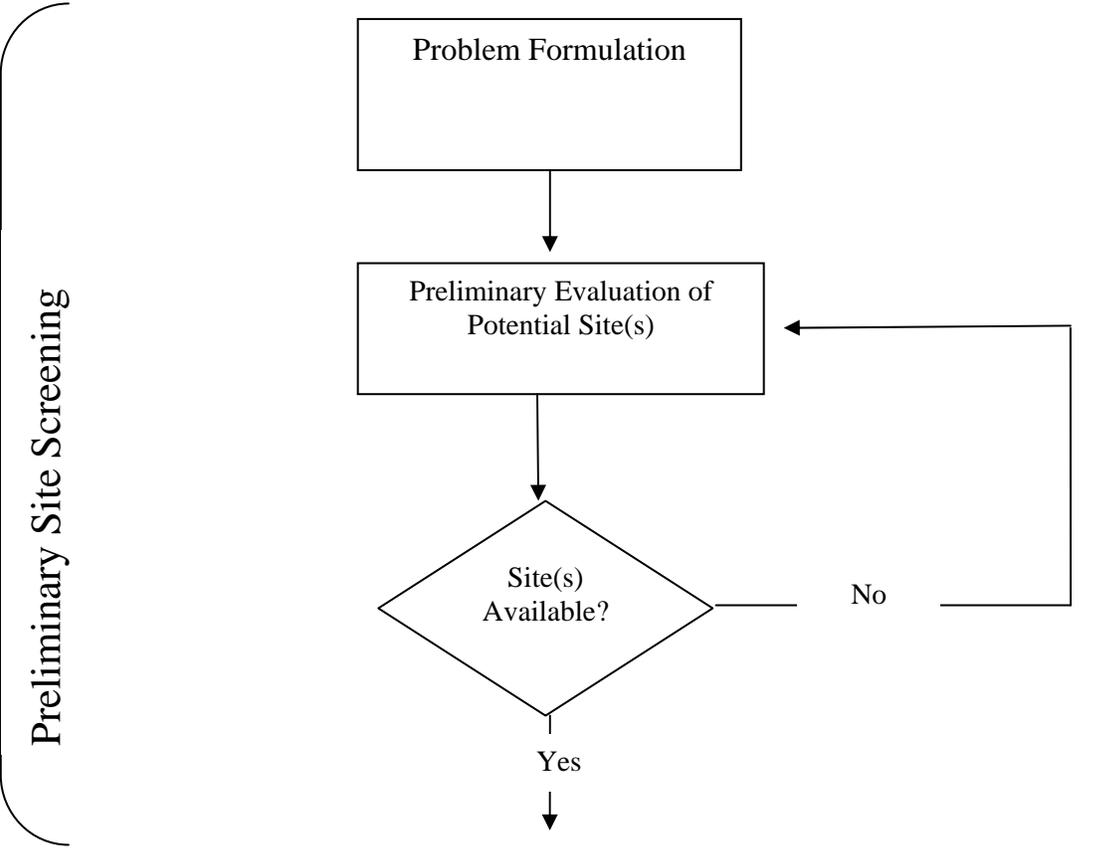
- E. Cost savings
- F. Improved likelihood of project financing

VII. Revisions to Guidelines

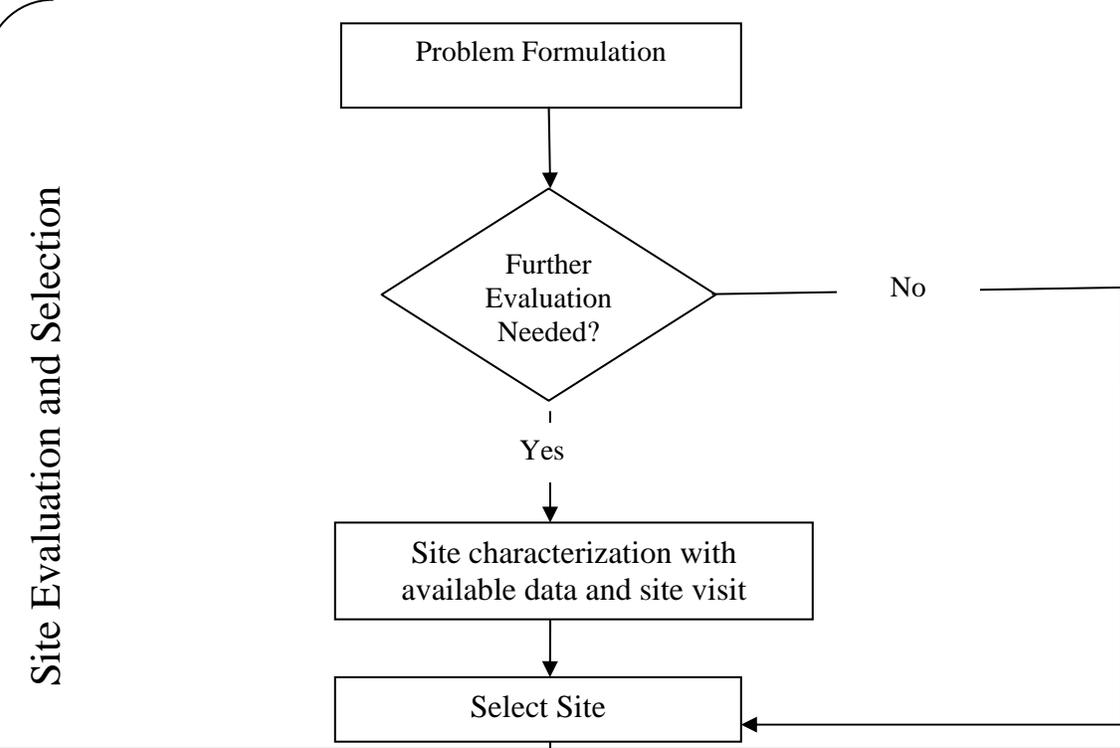
- A. Incorporating feedback
- B. Design and schedule mechanisms for revision

FWS FAC Scientific Tools & Procedures -- Figure 1. General Framework for Wildlife Studies in the Context of the Siting and Development of Wind Power

Tier 1 -----

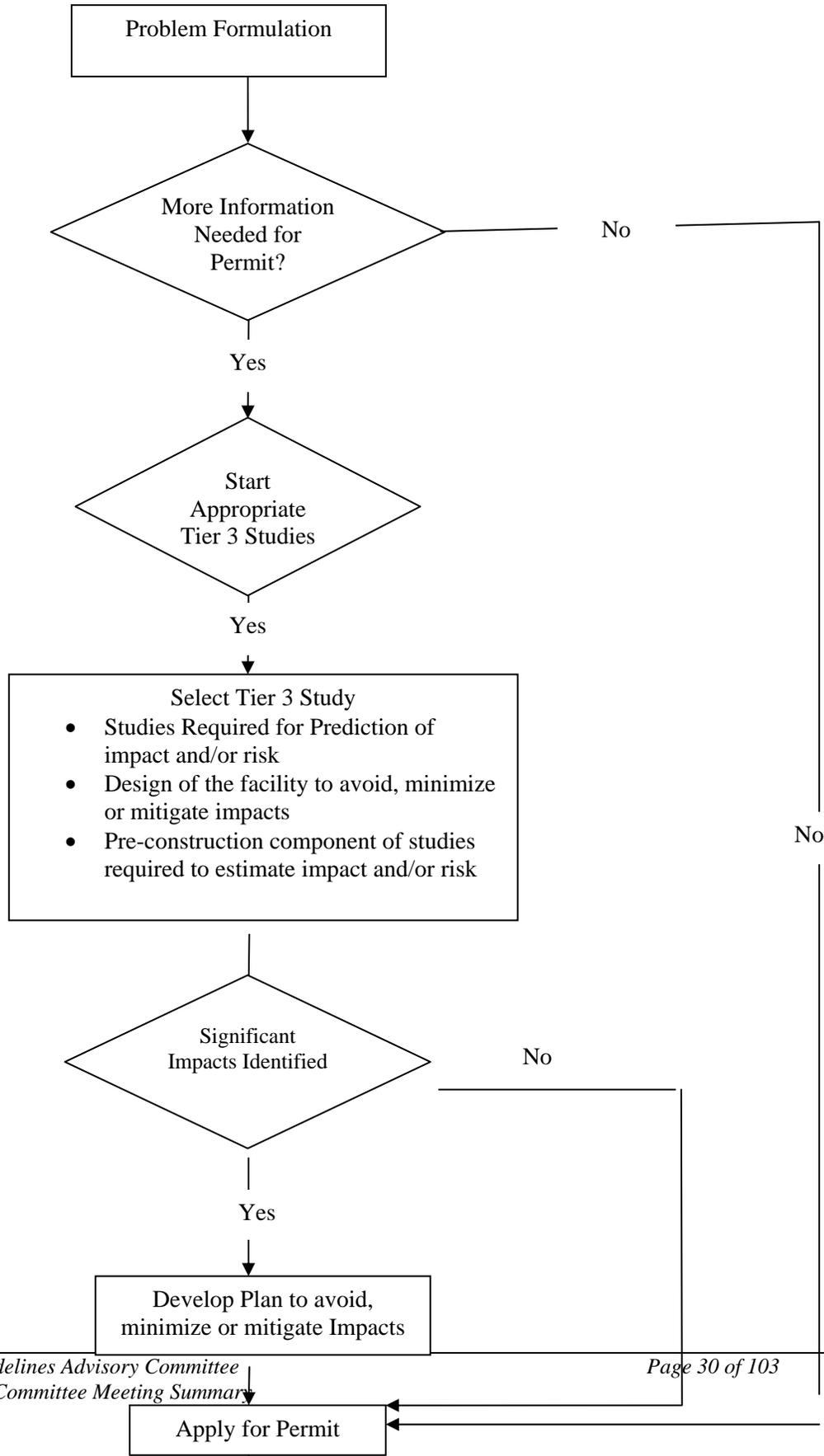


Tier 2 -----

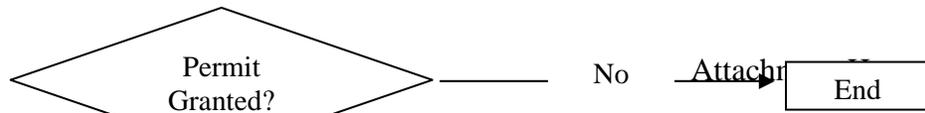


Tier 3-----

Project Design and Permitting Process

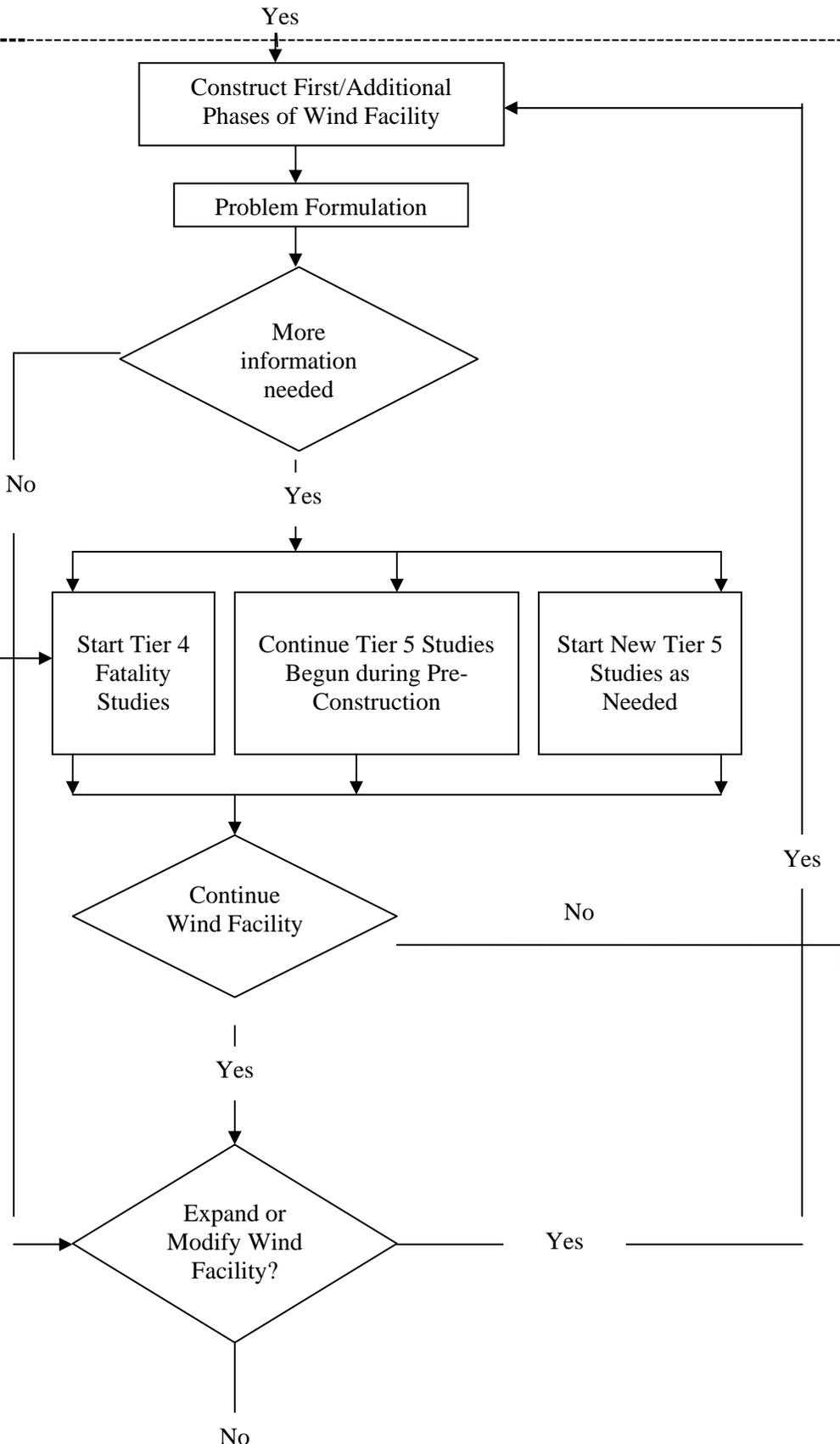


Draft



Tier 4 and 5

Site build-out, Operation, Post Construction Evaluation



Draft

Yes

Attachment H

Additional Data
Needed?

No

Continue Current
Phase (s)?

Yes

Reclaim Site at
the end of the
Project Life

**Decision Framework Workshop:
A Summary of a Workshop Held
September 15, 2008
National Renewable Energy Laboratory
Golden, Colorado**

**WIND TURBINE GUIDELINES ADVISORY
COMMITTEE FEDERAL ADVISORY
COMMITTEE MEETING #5**

Dr. Dale Strickland
President and Senior Ecologist
Western EcoSystems Technology, Inc.
Cheyenne, Wyoming

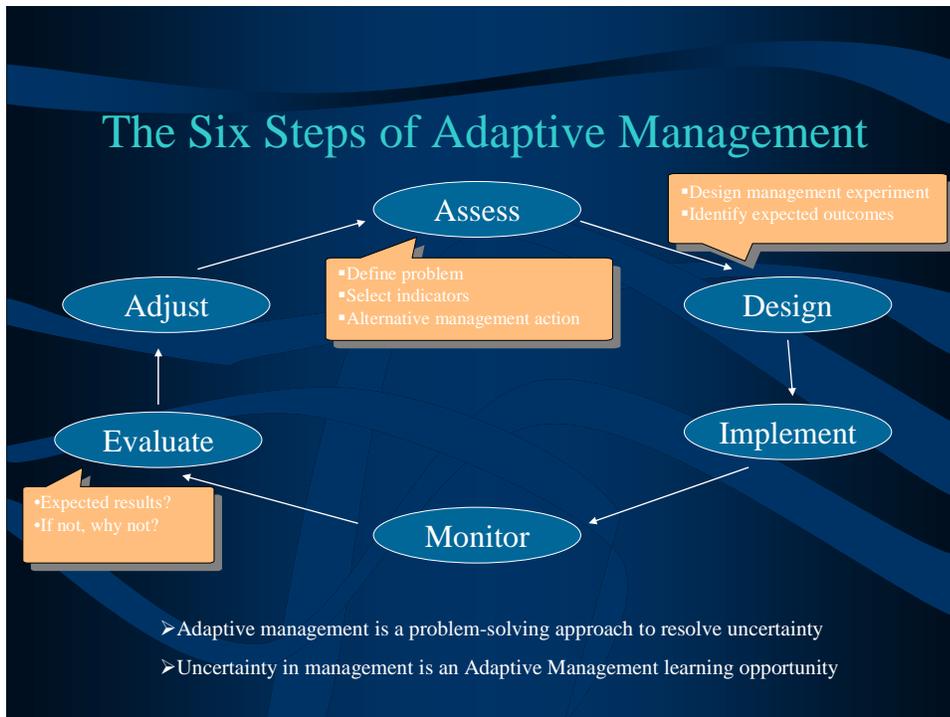
Adaptive Management

*“Management by
experiment.”*

*- Carl Walters,
University of British
Columbia*

*“Managing in the face of
uncertainty, with an emphasis
on its reduction.”*

*- B.K. Williams and F.A.
Johnson, USGS-BRD*



Conclusions Relevant to Wind Energy Development

- Within facilities
 - Adaptive management is a logical and efficient approach to managing risk in existing facilities in the face of uncertainty (e.g., facility modification to reduce avian risk, design of future phases of development)
- Among facilities
 - Large scale application (multiple facilities) to solve common problems has potential (e.g., bat deterrence, FAA lighting)
- Development uncertainty may be an issue

Structured Decision Making

Excerpts from a presentation by
Robin Gregory
Decision Research

"A formalization of common sense for decision problems which are too complex for informal use of common sense." *(Ralph Keeney)*

Steps in structured decision making

- 1 Define Problem
- 2 Define Issues, Objectives & Evaluation Criteria
- 3 Develop Alternatives
- 4 Estimate Consequences
- 5 Make Trade-Offs and Select
- 6 Implement and Monitor

Iterate as required

Introduction to SDM - Example

- In this example, our objectives might be to:
 - Minimize bird deaths
 - Possible indicator(?): expected number of bird deaths per year
 - Minimize cost
 - Possible indicator(?): Levelized \$ per year
 - Minimize visual impacts
 - Possible indicator(?): scale, where 1= Worst and 0= Best

Using SDM, develop a matrix or consequence table:

Objective	Indicator	Alt A	Alt B	Alt C
Minimize Bird Deaths	Expected number of bird deaths per year (50 th %ile estimate)	5,000	200	200
	Expected number of bird deaths per year (10 th %ile estimate)	2,000	10,000	2,000
Minimize Costs	Levelized \$ per year	\$ 1 million	\$ 2 million	\$ 3 million
Minimize Visual Impacts	Scale (1= Worst and 0= Best)	0	1	1

Summary of SDM

- A decision-focus leads to a different emphasis when evaluating risks
 - Compares choices across multiple objectives
 - Clearly defines measures of performance for each objective
 - Includes multiple alternatives
 - Links consequences to objectives, and includes estimates of uncertainty
 - Examines tradeoffs explicitly
- These steps are necessary to defensibly address the key questions identified earlier:
 - 1) Information needed to understand the impacts of wind turbines on wildlife
 - 2) Decide whether these impacts to wildlife are acceptable (issue permit?)

Ecological Risk Assessment

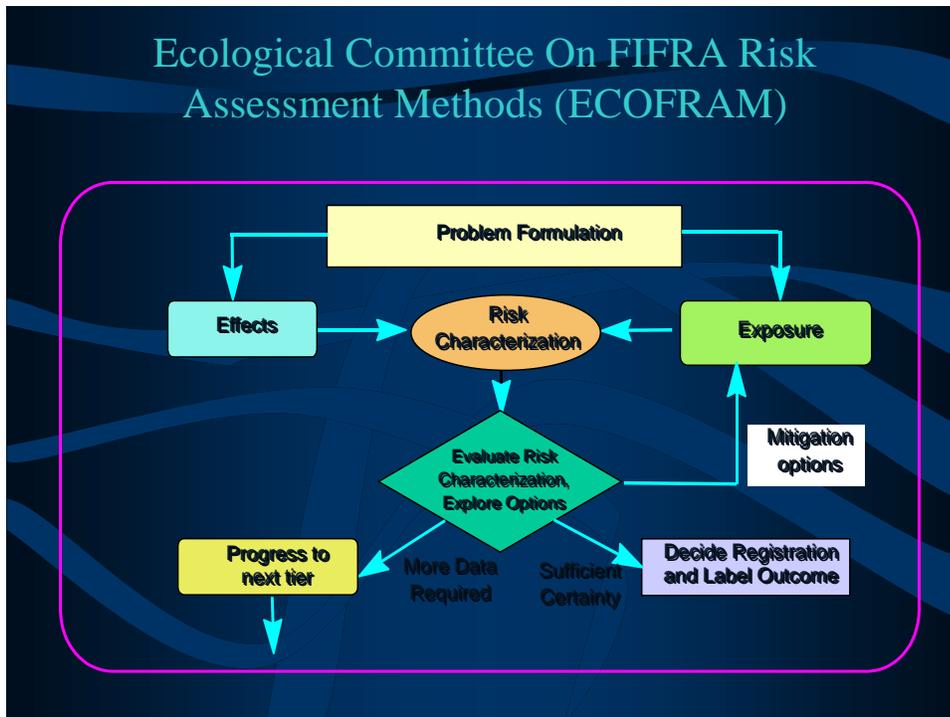
Excerpts from a presentation by
William Warren-Hicks, Ph.D.
EcoStat, Inc.

The process that evaluates the likelihood that adverse effects may occur, or are occurring,

to individual birds or bats, or populations of birds or bats, as a result of the ecological stress caused by wind power generation.

Core Concepts

- Decision oriented
- Tiered approach
 - Lower tiers: less data, conservative assumptions
 - Higher tiers: probabilistic, refined assessment
 - Focus on major concerns
- Feedback mechanism for decision-making
- Effective communication of risk and uncertainty to managers and lay audiences
- Stakeholder input
- Unifying framework that follows accepted format, making use of existing body of knowledge

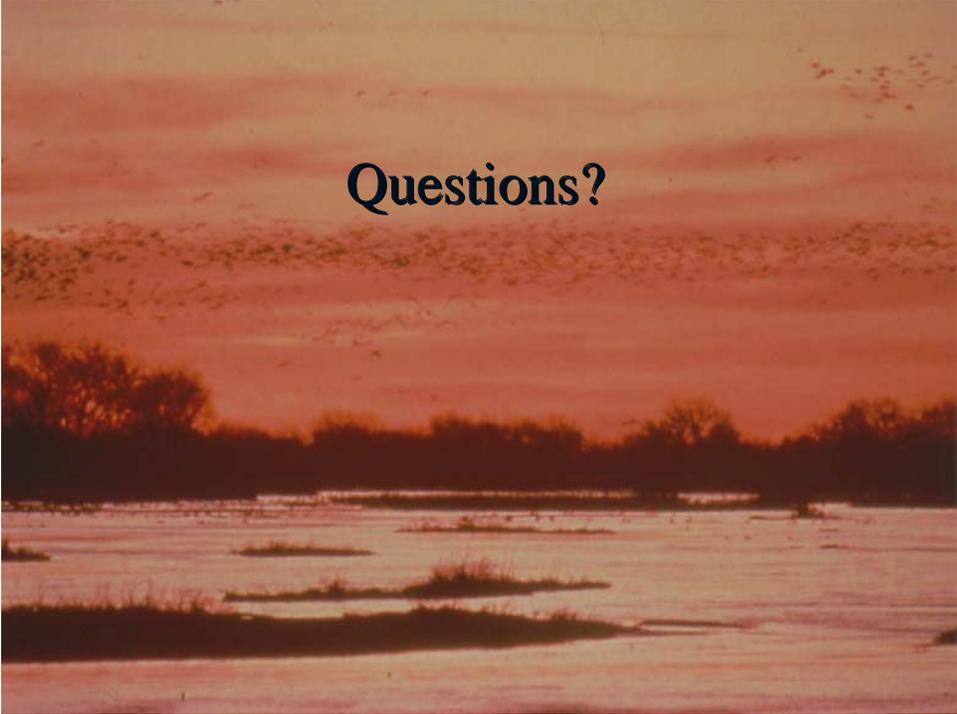


Bottom Line:

- Flexible and adaptable framework
- Objective: Increase uniformity of scientific decision process
- Increase consistency in what to measure, how much to measure, how to make decisions
- Cost-effective process: additional cost only when required
- In other regulatory programs: ensures input from stakeholders as part of standardized decision process
- Vocabulary can be an issue

Summary of Workshop

- Formal ecological risk assessment approach and structured decision making are foreign languages to those who are unfamiliar with them.
- Take principles used in tiered risk assessment and apply to wind energy wildlife problem.
- Use principles from adaptive management and structured decision making where appropriate.
- Prepare a draft tiered frame work.



Questions?

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

**EXISTING GUIDELINES SUBCOMMITTEE
October 16, 2008**

VIII. Introduction

- A. Background
- B. Statement of Committee Charter
- C. Guiding Principles⁴
- D. Members of FAC/signatures

IX. Recommended Actions

- A. Preamble to Actions: avoid, minimize, mitigate
- B. Actions Taken by Developer
 - 1. **Pre-construction Risk Assessment**
 - a. **Site evaluation**
 - (i) **Preliminary site assessment⁵**

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.

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.

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.

⁴ At the July FAC meeting, members approved a set of principles that would be inserted here. The premises were tabled.

⁵ For example, define method preferred (*i.e.*, site characterization or decision framework).

(1) Meet with qualified expert consultants, 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:

- (a) Federal and State listed endangered and threatened species, candidate, proposed and special concern species
- (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
- (c) areas recognized as rare, intact, declining, or specialized ecosystems, or state, regional or national conservation priorities (such as wetlands, old growth forests, bottomland hardwoods, native prairie grasslands)
- (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 (wilderness areas, etc.)
- (f) for wildlife species at risk 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.

(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.

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

(ii) **Preconstruction surveys**

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.

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, 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 a 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:

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

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 protocols contained in the 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.

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

- (1) National Wind Coordinating Committee, methods and metrics docs (give website)

(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.

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.

- (A) Standard Methods and Metrics
 (1) where they are located

(3) 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 appealing 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.

Tools for assessing displacement include:

- (A) Standard Methods and Metrics
 (1) where they are located

(4) Habitat Loss and Fragmentation

[Standard language regarding why it is important and what studies should be performed.]
 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).

- (a)
 (iii) Communication

- b. Site design
 - (i) Micrositing
 - (ii) Design best practices
 - (iii) Construction best practices

2. Project Impact Assessment

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.

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 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 agencies and the USFWS early in the planning process for each proposed project to identify concerns and potentially sensitive uses.
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).

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.
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.
10. FAA visibility lighting of wind turbines should employ only red or dual red and white flashing lights, not steady burning lights.
11. Keep lighting at both operation and maintenance facilities and substations located within ½ 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.
12. Establish non-disturbance buffer zones to protect raptor nests, bat roosts, areas of high bird or bat use, or specials-status species habitat. Determine the extent of the buffer zone in consultation with USFWS and state wildlife biologists.
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.
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.
15. Minimize the number and length of access roads.
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.
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.
18. Remove wind turbines when they are no longer operational so they cannot present a collision hazard to birds and bats.

b.

(b) Post Construction

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

(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.

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

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

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.

A Technical Advisory Committee is recommended to be responsible for reviewing results of monitoring data and making suggestions to the USFWS 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.

- (a)
- (ii) reporting and evaluation
- (iii) adaptive management and potential mitigation

(a) Mitigation consists of :

- (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.

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

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:

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.

(B) Mitigation Plans should include the following:

1. Baseline data,
 - a. estimate of impacts
 - b. maps and drawings of as-built mitigation proposal
2. Mitigation measures
 - a. Replacement ratio, based on USFWS compensation sequence and Resource Categories
4. Goals and objectives
 - a. Detailed implementation plan, with responsible party
 - b. Contingency plan with corrective actions to be taken if mitigation does not meet goals and objectives
7. Operation and maintenance
 - 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

1. Retrofitting of turbines should use installation techniques that minimize new site disturbance, soil erosion, and removal of vegetation of habitat value
2. Retrofits should employ shielded, separated or insulated electrical conductors that minimize electrocution risk to avian wildlife
3. Retrofit designs should prevent nests or bird perches from being established in or on the wind turbine or tower
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 ½ 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 repower 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 ½ 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

(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

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

- 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

DRAFT OTHER MODELS TEMPLATE

Other Regulatory Model	Description of Model Element	Explanation of Model Element Use	Application to Wind Turbine Guidelines
Clean Air Act New Source Review	Central reporting of air pollution control performance	EPA maintains a nationwide database of permitting decisions that includes detailed information regarding the “best available control technology” that has been installed on controlled sources	We recommend the establishment of a repository (public or privately-funded) that is searchable and lists the best management practices, technological innovation, and siting practices to which public officials and project proponents may refer in designing and approving/taking no action on projects.
	Case-by-case analysis of proposed emission controls	A state permitting authority reviews each project on a case-by-case basis, applying the emission controls that are best suited to the particular source, taking into account local concerns and issues	We recommend the adoption of a case-by-case project review process that—instead applying a fixed set of best management practices—uses a clearly-defined set of project review parameters to allow for the implementation of constantly evolving best management practices in a technology-forcing aspect that will drive improvements in wind development.
	Clearly defined process of establishing emission controls	EPA has published a permitting manual so that federal, state, and local permitting authorities apply the same rules consistently	We recommend the preparation of a dispositive text or manual to which all interested parties can turn for the guidance on the wildlife interaction elements of siting, constructing, and operating a wind facility.
	Permit shield	Once BACT is selected, even though technology improves, the older facility is still entitled to operate under old technology. The strong technology-forcing function of the case-by-case review is of prospective application.	We recommend that any guidelines-based recommendation include the provision that once a project proponent has constructed a wind facility consistent with the case-by-case guidelines, that facility secures protection from enforcement for non-intentional wildlife impacts.

Other Regulatory Model	Description of Model Element	Explanation of Model Element Use	Application to Wind Turbine Guidelines
	Technical feasibility	The case-by-case review carefully reviews whether an air pollution control strategy will actually work to reduce air pollution at the proposed source.	We recommend the adoption of the position and explanation in a guidance manual that—consistent with a case-by-case approach—it may be that some best management practices validly used at other facilities are simply not technically feasible at a particular proposed facility.
	Economic feasibility	Even if the control technology is technically feasible, irrationally expensive controls are precluded. EPA uses a “knee of the curve” statistical analysis that cuts off additional costs on a \$/ton emissions reduced when the incremental cost of the next most-expensive control falls out of line with other costs.	We recommend the adoption of the position and explanation in a guidance manual that—even if an approach is technically feasible—best management practices that are incrementally cost ineffective will not be required.
Avian Protection Plan	Corporate Policy	In APP, developer agrees to develop and commit to implement specific company policy to address wind/wildlife issues	APP provides pragmatic mechanism to ensure developers actually use and implement voluntary national guidelines
	Permit Compliance	In APP, developer identifies and implements a process to ensure compliance with permitting requirements and conditions related to wildlife	APP provides pragmatic mechanism to ensure developers obtain and comply with relevant permits
	Site Selection and Design Practices	In APP, developer agrees to implement best siting practices as identified by states and USFWS guidance	APP provides pragmatic mechanism to ensure developers perform macro and micro siting assessment and implement best practices as identified by voluntary national guidance
	Consultation and Information Sharing	In APP, developer agrees to share relevant site and study data and to work cooperatively with USFWS	APP ensures commitment by developer to work with USFWS early before siting decisions are made and to share relevant non-proprietary information

Other Regulatory Model	Description of Model Element	Explanation of Model Element Use	Application to Wind Turbine Guidelines
	Avian Reporting System	In APP, developer commits to establish mortality reporting system	APP ensures study & monitoring data are reported to USFWS [and states] in compatible format to advance adaptive management, learning, and site/region comparisons
	Risk Assessment Method	In APP, developer agrees to implement a rigorous method for evaluating avian risks and to use a risk assessment methodology in making siting decisions	APP provides mechanism to ensure developers use risk assessments and advances development of risk evaluation approaches
	Mortality Reduction Measures	In APP, developer agrees to use the results of initial risk assessment to revise siting decisions and identify mitigation upfront.	APP ensures that there is a commitment from developers to use pre-assessment studies to avoid high risk sites and to identify appropriate mitigation upfront
	Avian Enhancement Options	In APP, developer agrees to develop actions to provide a net benefit to habitat and species	APP ensures that developers pursue innovative actions that go beyond site-specific mitigation and the recommendation of the national guideline provisions to protect migratory birds and bats
	Quality Control and Adaptive Management	In APP, developer agrees to monitor its operations and other wind/wildlife learning continually to improve performance, mitigation, study protocols and methodologies to lower wind-related risks at existing and new sites	APP formalizes and implements adaptive management approach in wind/wildlife context
	Identification of Key Resources	In APP, developer identifies key resources and personnel to address wind/wildlife-related issues	APP ensures company accountability and provides for rapid response capability; also connects company personnel with experts in the field to ensure education and communication
Clean Water Act Stormwater Program	BMPs	Uses a series of BMPs that are standardized	Could be replicated in some locations
	Notification Requirements	Requires notification to EPA in a timely manner	Minimal value because of site variations

Other Regulatory Model	Description of Model Element	Explanation of Model Element Use	Application to Wind Turbine Guidelines
	Economic benefits	Provided a project complies with BMPs, approvals are usually issued quickly	Uncertain due to various site differences
Clean Water Act Section 316(b)	Site variability	Agencies focus on site-specific considerations	Allows for unique habitat evaluations
	Complications	Currently under challenge in the Supreme Court	Uncertain, based on upcoming Supreme Court decision
National Environmental Policy Act	Environmental assessment	A (relatively) brief summary of the expected environmental impacts of a project.	For wind, would include wildlife, historical resources, noise, etc. impacts in a public document.
	Environmental impact statement	A full analysis of the expected environmental impacts of a project.	For wind, would include the above impacts, and perhaps an alternatives analysis.
Clean Water Act/Clean Air Act Categorical Technology Standards	Categorical standards	Provide basic requirements for categories of water and air pollution. May be increased in stringency during case-by-case permitting.	We recommend that the guidelines include some basic best management practices that would be used at all developments, to which may be added additional best practices based on a case-by-case approach.

Recommendations for Use of Avian & Bat Protection Plan for Addressing Wind/Wildlife Interactions

October 21, 2008

The “Other Models” Subcommittee recommends that the Federal Advisory Committee include voluntary use of an Avian & Bat Protection Plan (ABPP) as part of a comprehensive framework for national guidelines to minimize wildlife impacts from wind development. An ABPP would serve as a complementary tool (*not a substitute*) to the development of more traditional, prescriptive “guidelines”, by providing a mechanism by which wind developers can voluntarily agree to *implement* a specific commitment and plan to address wind/wildlife interactions on an early and ongoing basis. For example, if the FAC develops formal, traditional guidelines (regarding studies, monitoring, etc.) or best management practices, an ABPP then would provide an important *mechanism* to ensure that the national guidelines are being used by a company.⁶

Under the concept, a wind project developer would create an ABPP that incorporates certain key elements or guiding principles (developed by the FAC) and include a commitment to implement the applicable federal and state formal guidelines to address project-specific avian issues. Based on development and implementation of the ABPP by a developer, the FAC also *could* consider recommending “incentives” for a developer, such as assurances regarding regulatory compliance.

Avian and Bat Protection Plan in the Context of the Wind Industry

A wind industry Avian & Bat Protection Plan would be a company-specific or project-specific document that delineates a program designed to reduce the risks that result from avian interactions with proposed and existing wind facilities. A company-wide ABPP may provide an opportunity for a company to address migratory bird and bat issues on a broader scale than afforded by a project by project approach, and may be used to establish company policies and processes that will help the company ensure compliance with Federal and state wildlife statutes. A project-specific ABPP would provide more site-specific measures to minimize impacts to wildlife resources. Although each company or project’s ABPP may be different, the overall goal of any ABPP would be to reduce avian and bat mortality. The development of an ABPP would be governed by specific Guidelines for ABPP Development – to be developed and recommended by the FAC – that lay out key elements and principles that should be reflected in the ABPP.

Therefore, in addition to establishing more traditional guidelines that govern project study requirements and siting BMPs, the FAC also would develop an ABPP guidance document that establishes guiding principles to aid developers in their development of a voluntary ABPP. Although not all of the recommended elements in the ABPP guidance document would need to be

⁶ The APP approach is employed successfully today by the electric utility industry and the USFWS to reduce avian electrocution and collision mortality associated with power lines. The utility industry and the Service engaged in cooperative development of guidelines for Avian Protection Plans. The principles and voluntary guidelines are intended to allow electric utilities to tailor an APP that will best fit their needs while furthering the conservation of avian species and improving reliability and customer service. A utility that implements the principles contained in the APP guidelines greatly reduces avian risk as well its risk of enforcement under the Migratory Bird Treaty Act.

In the power line context, the APP guidelines provide a framework for designing and implementing a utility program to reduce avian mortalities and document utility actions. It may include the following elements: corporate policy, training, permit compliance, construction design standards, nest management, avian reporting system, risk assessment methodology, mortality reduction measures, avian enhancement options, quality control, and public awareness.

included in every ABPP because of the specific circumstances of a project or geographical area, the recommended ABPP guidelines would represent an overview of elements that should be considered for inclusion in a project-specific ABPP and/or that developers may find helpful in crafting their own, individually-tailored ABPPs.

To ensure use of this voluntary implementation tool, the FAC also *could* recommend a set of incentives for the industry. For example, a wind company that implements the principles contained in ABPP guidelines could be provided with certification for good practices and/or assurances by the USFWS to reduce the risk of enforcement under the MBTA.

Development of ABPP Guidance Document:

Key Elements that Should be Included in an Avian & Bat Protection Plan

The ABPP guidance document should include the following elements or principles for development of an ABPP.

1. Corporate Policy

In the ABPP, a company should provide a commitment to develop and implement a specific company policy to address wind/wildlife issues. An ABPP should include a statement of company policy confirming a commitment to work cooperatively towards the protection of birds and bat species. This should include a commitment by the company to balance its goal of producing wind energy generation in a cost-effective manner with state and federal regulatory requirements protecting avian and bat species, as well as the need to obtain and comply with all necessary permits, monitor incidents of avian and bat mortality, and take all reasonable efforts to construct and alter infrastructure and project operations to reduce the incidence of avian and bat mortality.

2. Permit Compliance

An ABPP should identify and implement a process under which a company will obtain and ensure compliance with all necessary permits, as well as ensuring compliance with all federal, state and tribal laws related to wildlife.

3. Risk Assessment Methodology & Site Selection

In an ABPP, a company would agree to implement a rigorous method for evaluating avian and bat risks and to use the risk assessment methodology in making siting decisions. A company should agree to assess risk to birds and bats from development of wind power at all proposed sites in order to avoid, minimize, and mitigate adverse impacts. A company can have the greatest impact on reducing avian mortality by focusing its efforts in a cost-effective manner to avoid locations and areas that pose the greatest risk to migratory birds and bats. Therefore, as a general matter, an ABPP should include a method for evaluating the risks posed to birds in a manner that identifies areas and issues of particular concern. A risk assessment study should begin with a pre-assessment analysis of available data regarding habitat type, site topography, avian and bat use, avian mortality, established flyways, adjacent wetlands, prey populations, and other factors that can increase avian interactions with wind facilities. The process will include pre-construction surveys for avian and bat use, according to protocols and time frames recommended by states and the USFWS, as well as an evaluation of the effectiveness of design standards, and possible remedial actions. The avian reporting system should be an integral component of this risk assessment. An ABPP also should provide for the development of models that will enable a company to utilize biological information to assess risk and avoid and minimize avian impacts. The risk assessment methodology should be

used to identify sites where wind power development would pose high mortality risks or fragmentation of important habitats, and these sites should be avoided.

4. Site Design and Development Practices

In the ABPP, a developer would agree to implement best site design, construction and management practices as identified by states and the USFWS. A company also would agree to consider avian and bat interactions in micro-siting, design and installation of new facilities, as well as in the operation and maintenance of existing facilities. Inclusion of best site selection and design practices for both new and retrofit techniques should be included in an ABPP. The company also should agree to use all reasonable and feasible generally accepted best management practices during construction and operation of the facility.

5. Consultation & Information Sharing

In the ABPP, a company would agree to share relevant non-proprietary site and study data and to work cooperatively with USFWS. Specifically, the company should agree to share relevant, non-proprietary information concerning wildlife resources in and around a wind project area and the potential adverse impacts to those resources. Shared information should include publicly available data from monitoring efforts and pre and post-construction study results relative to the project area. In the ABPP, a company should agree to work cooperatively with the USFWS in the future to avoid and minimize impacts to wildlife resources as new relevant project information becomes available.

6. Post-construction Monitoring and Avian/Bat Reporting System

In the ABPP, a company would commit to establish post-construction monitoring and a mortality reporting system. A company agrees to voluntarily monitor relevant avian and bat interactions, including mortalities, through the development of a formal avian and bat fatality reporting system. A company also agrees to make the data reasonably available to the USFWS and the states, as much as possible in a compatible format to advance adaptive management, leasing, and site/regional comparison. The company also will make specimens collected on site reasonably available to the state and/or USFWS. An ABPP should provide for the development of such a reporting system, which can help a company pinpoint areas of concern by tracking both the specific locations where mortalities may be occurring and the extent of such mortalities. Data collected by company personnel should include avian and bat mortalities or injuries, as well as remedial actions taken.

7. Mortality Reduction Measures

In the ABPP, a company would agree to use the results of a risk assessment to revise siting decisions and identify and undertake appropriate mitigation. A company also commits to review and provide post-construction mortality monitoring data and to work cooperatively with the states and the USFWS to take action if the data indicate a mortality problem. Proposed actions may include actions beyond site-specific mitigation. After completing a risk assessment, a company should focus its efforts on areas of concern, ensure that development activities are not out of proportion to the risks encountered by birds and bats, and then determine whether a mortality reduction plan needs to be implemented for existing projects.

8. Avian Enhancement Options

In the ABPP, a company would agree to develop and implement actions that will provide a net benefit to habitat and species. An ABPP may include opportunities for a company to enhance avian

populations or habitat, including managing habitats to benefit migratory birds, or working cooperatively with agencies or organizations in such efforts. Where feasible, such proactive development of new ideas and methods to protect migratory birds and bats, through participation in research initiatives, should be encouraged and explored.

9. Quality Control & Adaptive Management

In the ABPP, a company would agree to monitor its operations and continually seek to improve wildlife-related performance, study protocols, mitigation approaches, and study methodologies to reduce future wind-related wildlife risks. An ABPP should include a mechanism to review existing practices, ensuring quality control and adaptive management. The company also commits to perform a regular self-audit of its performance on wildlife-related issues and to upgrade the ABPP periodically to improve its effectiveness at reducing wildlife problems.

10. Key Resources

An ABPP should identify key resources and personnel to address avian protection issues, including, for example, a list of experts who may be called upon to aid in resolving avian issues. These could include consultants, State and Federal resource agencies, universities, or conservation groups. An ABPP that connects avian experts with company decision-makers may reduce the risk of avian incidents.



Adapting the Avian Protection Plan Model to Wind Energy

Presentation to the Wind Turbine Guidelines Federal Advisory Committee



22 October, 2008



Avian Protection Plan Model—Good Fit for Wind?

Reasons the APP model has been attractive to some utilities:

- Provides a tool for avian risk reduction and compliance with the Migratory Bird Treaty Act (and other wildlife statutes)
- Allows each utility to tailor the plan to its own situation (scaled at utility or operating unit level)
- Provides for a systematic approach for addressing existing high-risk lines over time and plan for new lines
- Provides for self-certification, with reporting to the USFWS

2



Challenges with the APP model as applied to wind:

- No wind-specific guidelines or examples available
- Easier to address new facilities than existing facilities
- Broader range of avian issues for wind energy than for transmission/distribution
- USFWS also interested in addressing bat issues
- Apply at project or corporate level or both?

4



Development of IBR Avian and Bat Protection Plan

- Began with "translation" of APP guidelines
- Drafted over 1/2008 to 10/2008 period
- Internal team included development, operations, asset management, EHS, and legal
- USFWS review team included Ecological Services, Law Enforcement, and field staff
- IBR expects to update once USFWS Guidelines are revised; then revisit regularly

4



Avian Protection Plan Guidelines
(APLIC/USFWS 2005): APP Principles

1. Corporate Policy	8. Mortality Reduction Measures
2. Training	9. Avian Enhancement Options
3. Permit Compliance	10. Quality Control
4. Construction Design Standards	11. Public Awareness
5. Nest Management	12. Key Resources
6. Avian Reporting System	
7. Risk Assessment Methodology	

5



APP Principles Applied to Wind (IBR Avian and Bat Protection Plan Table of Contents)

1. Corporate Policy —commitment to implement ABPP, signed by CEO
2. Site Suitability Assessment and Project Design
 1. Preliminary Site Assessment —early information-gathering with agencies and NGOs; review of wildlife issues before irretrievable commitment of resources to a project
 2. Preconstruction Studies —tailored to the project issues; normally one year of pre-construction monitoring (more or less depending on site and available relevant data)
 3. Site Design —BMPs

6



ABPP Table of Contents (con't.)

- 3. Wildlife Considerations at Operating Projects
 - 1. Post-Construction Monitoring —will be done at most projects
 - 2. Reporting —IBR will pilot-test on-line reporting system with USFWS; annual reporting to USFWS
 - 3. Impact Assessment —unexpectedly high mortality will be trigger to review causes in discussion with agencies
 - 4. Nest Management —minor issue for wind projects
- 4. Mortality Reduction, Mitigation, Research and Other Initiatives
 - 1. Impact Reduction and Mitigation Measures—commitment to address avian and bat mortality; enumeration of range of tools
 - 2. Research—support for cooperative research and AWM
 - 3. Other Initiatives—guidelines processes, FAC, etc.

7



ABPP Table of Contents (con't.)

- 5. Permit Compliance —processes to assure permit compliance
- 6. Implementation
 - 1. Training —field staff and management
 - 2. Quality Control—audit of processes; revisions to ABPP
 - 3. Key Resources —key internal staff resources
 - 4. Public Awareness —company preference for transparency
 - 5. Implementation Schedule —will apply to new projects coming on line after 1/2010; existing projects during 2009

8



ABPP Implementation

1. Goal is to develop project-specific ABPPs for each project during 2009
 - Project ABPPs implement processes of corporate ABPP
 - Scale and complexity matched to project
2. Will add staff to implement ABPP

9



Conclusions about IBR's ABPP Document

- ABPP includes a commitment to agency and NGO contact at key points in the development process, but there is no "approval process" for project-specific ABPPs.
- ABPP includes a significant commitment to reporting to the USFWS and addressing avian and bat impacts from all projects.
- ABPP provides for consistency of effort and attention across all IBR projects, but also provides for tailoring efforts to project-specific issues.
- The ABPP will increase our costs of development and operations, but promises to reduce avian and bat risk, and our risk, over the long term.

10



Other Implications

- ABPP is one possible model for Guideline implementation—it does not replace Guidelines
- Could the FAC and USFWS develop an ABPP framework that could provide a mechanism for protection under the MBTA?

11



M. Sinclair, July 31, 2008: USFWS/State “Step-down Agreement”

**MEMORANDUM OF UNDERSTANDING
BETWEEN
U.S. FISH & WILDLIFE SERVICE
AND
THE STATE OF _____
BY AND THROUGH ITS DEPARTMENT OF FISH & WILDLIFE**

The State of _____, by and through its Department of Fish & Wildlife, and the US Fish & Wildlife Service (USFWS), as parties to this Memorandum of Understanding (MOU) hereby acknowledge and declare as follows:

- A. USFWS may become involved in the review of potential wind energy developments through several laws, including, but not limited to, the National Environmental Policy Act, the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and the Endangered Species Act.
- B. The State has authorities with respect to review of potential wind energy projects under the following laws: _____
- C. The parties have a mutual interest in the timely and coordinated review of proposed wind energy projects under applicable wildlife protection laws to promote clean, renewable sources of energy while protecting habitat and wildlife, especially birds and bats. The parties also have an interest in creating uniform and consistent guidance on how best to avoid, minimize, and/or mitigate adverse impacts to wildlife resources.
- D. The purpose of this Memorandum of Understanding is to ensure that there is coordinated review of wind energy projects and their potential impact on wildlife and habitat by the state and USFWS and to provide a timely, stable, and predictable means for developers of such projects to seek necessary review and approvals under applicable wildlife laws.

Now, therefore, the USFWS and State agree that:

1. The USFWS supports the efforts of the State to establish and implement procedures and guidelines to ensure that wind energy projects are developed to avoid or minimize impacts to wildlife and habitats.
2. The State supports the efforts by USFWS to establish and implement national guidelines to ensure wind energy projects will not have a significant adverse effect on wildlife and habitats.
3. Whenever the State or USFWS becomes aware that a prospective developer is proposing to develop a wind energy project in the State, the party obtaining the information will notify the other party to enable the parties to begin planning how to coordinate review of the project. In such cases, the USFWS and State will work together, along with the prospective developer and other stakeholders, to identify potential wildlife issues and to

determine what information and studies are justified in order for the USFWS and State to undertake the necessary reviews of the project.

4. The parties agree that they will work together to coordinate their reviews of-the wildlife-related impacts of any proposed wind energy projects in the State, so that information and studies required to assess the wildlife impacts are consistent and can be used by both parties to satisfy any statutory or regulatory requirements. The parties also agree to consult together and with the prospective developer concerning the design of studies and environmental measures (including adaptive management measures) for wind energy projects.
5. The State and USFWS will designate management contacts to work to resolve wildlife-related issues that may arise during joint review of specific wind energy projects.
6. The USFWS and State will communicate sufficiently to ensure that each party is fully informed regarding interpretation of state and federal guidelines and review processes for determining and addressing the potential impacts of wind energy projects.
7. **[Optional “State Delegation” Provisions]** *The USFWS finds that the State’s wind/wildlife guidance, dated ____, is consistent with or more stringent than the USFWS national guidance on wind and wildlife interactions and/or sets forth reasonable measures to achieve the avoidance and/or minimization and mitigation of potential adverse impacts from wind energy projects to wildlife and habitats. Provided the State implements the state guidance with a good faith effort and adequate resources, the USFWS agrees to defer to the State as the primary reviewer [and enforcer] or “front line” agency in review of wind energy compliance with[and enforcement of] applicable wildlife laws [state wildlife regulations and the MBTA, but not the ESA] as applicable to wind development projects. However, the USFWS retains the full authority to initiate review and/or enforcement actions, as appropriate, under the MBTA in the following circumstances:*
 - a. *At the State’s request*
 - b. *If the State’s review and/or enforcement actions are determined to be inadequate*
8. Nothing in this Memorandum of Understanding requires any party to take any action that is contrary to applicable federal or state law or regulation.
9. The MOU is neither a fiscal nor a funding obligation document.
10. This MOU will take effect when signed by all the parties hereto. This MOU may be modified at any time by the mutual written agreement of the parties. Either party may terminate the MOU upon 30 days notice to the other party. During this period, the parties shall make good faith efforts to resolve any disagreement.

M. Sinclair, July 31, 2008: USFWS Voluntary Cooperation Agreement

**MEMORANDUM OF UNDERSTANDING
BETWEEN
U.S. FISH & WILDLIFE SERVICE
AND
WIND ENERGY DEVELOPER**

The Wind Developer and the US Fish & Wildlife Service (USFWS), as parties to this Memorandum of Understanding (MOU), hereby acknowledge and declare as follows:

- E. USFWS may become involved in the review of potential wind energy developments through several laws, including, but not limited to, the National Environmental Policy Act, the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, and the Endangered Species Act.
- F. USFWS has published national guidance on avoiding and minimizing wildlife impacts from wind turbines (citation). The guidelines are intended to assist the USFWS in providing review of wind energy projects to avoid or minimize impacts to wildlife and habitats.
- G. The parties have a mutual interest in ensuring the protection of wildlife and habitat while promoting clean, renewable sources of energy.
- H. The purpose of this Memorandum of Understanding is to provide a timely, stable, and predictable means for developers of such projects to seek necessary review by the USFWS to ensure compliance with the Migratory Bird Treaty Act and other applicable laws under which the USFWS has authority.

Now, therefore, the USFWS and Developer agree that:

- 11. The Developer shall notify the USFWS of any potential wind energy development sites or expansion of a facility at least 12 months prior to construction. With this notification, the USFWS shall provide timely review of the site and any relevant wildlife and habitat information to the Developer.
- 12. The Developer and USFWS shall share all relevant information concerning the wildlife resources under the jurisdiction of the USFWS in and around the project area and the potential impacts to these wildlife resources. Shared information shall include all known, publicly available data and pre- and post construction study results related to the proposed project.
- 13. The Developer shall comply with the suggested requirements, protocols, and best practices of the USFWS National Guidance subject to appropriate modification and flexible application based on the characteristics of the proposed project site and in consultation with the USFWS.

14. The Developer shall employ to the fullest extent feasible all generally accepted best management practices for siting of wind energy projects relevant to protection of wildlife and habitat resources. The USFWS shall provide copies of all known and updated best management practices to the Developer on an annual basis.
15. The USFWS shall not pursue liability against the Developer due to any incidental takings of trust wildlife resources under the MBTA as a result of the Developer's wind energy project and operations, provided that such takings were not malicious in their intent, the Developer remains in compliance with the terms and conditions of this MOU, the Developer has made a good faith effort to avoid and minimize potential adverse impacts by way of implementing best management practices, the USFWS national guidance, and a wildlife protection plan approved by the USFWS.
16. The USFWS and the Developer shall work cooperatively in the future to avoid and/or minimize further impacts to USFWS trust species as new relevant project information becomes available. The Developer agrees to take all reasonable measures as deemed appropriate by the USFWS and Developer to further avoid, minimize, and/or mitigate such wildlife losses in the future.
17. The Developer shall provide coordinated access, upon prior notice, to all wind energy facilities as deemed necessary by USFWS staff in order to ensure compliance with the MOU. Access shall be coordinated in advance as much as possible and subject to normal safety precautions implemented by the Developer with regard to facility access.
18. Nothing in this Memorandum of Understanding requires any party to take any action that is contrary to applicable federal or state law or regulation.
19. This MOU will take effect when signed by all the parties hereto. This MOU may be modified at any time by the mutual written agreement of the parties. Either party may terminate the MOU upon 30 days notice to the other party. During this period, the parties shall make good faith efforts to resolve any disagreement.

Department of the Interior Wind Turbine Guidelines Advisory Committee Legal Subcommittee

WHITE PAPER

The Charter for the U. S. Department of the Interior Wind Turbine Guidelines Advisory Committee (the “Committee”) directs the Committee to provide advice and recommendations to the Secretary of the Interior concerning wind turbine guidelines that “avoid and minimize impacts to wildlife and their habitat related to land-based wind energy facilities.” The Charter describes the authority of the Committee to act in furtherance of the Migratory Bird Treaty Act (“MBTA”),ⁱ the Bald and Golden Eagle Protection Act (“BGEPA”),ⁱⁱ the Endangered Species Act (“ESA”),ⁱⁱⁱ and the National Environmental Policy Act (“NEPA”).^{iv} The Charter also directs the Committee to consider wildlife impacts, costs of information acquisition, scientific approaches, and compliance with State and Federal laws. In order to assist the Committee with regard to these directives, the Legal Subcommittee has prepared this memorandum summarizing: (1) the authority under the above-noted environmental laws to protect wildlife and habitat and regulate the impacts of land-based wind energy facilities; (2) the consequences of noncompliance with these laws; and (3) the means by which a person or entity may avoid or reduce liability and avoid, minimize and mitigate adverse effects on wildlife or habitat under these laws.

Scope of authority to protect wildlife and habitat under federal law and consequences of noncompliance

Endangered Species Act

By delegation of authority from the Secretary, the ESA is administered by the U.S. Fish and Wildlife Service (“FWS”) and the National Marine Fisheries Service (“NMFS”) in the U. S. Department of Commerce, with the former having primary responsibility for terrestrial and freshwater species and the latter having primary responsibility for marine life. The purpose of the ESA is to “provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved, to provide a program for the conservation of such endangered species and threatened species, and to take such steps as may be appropriate to achieve the purposes of [certain] treaties and conventions”^v In furtherance of this purpose, Sections 7 and 9 of the ESA contain independent provisions that may set species- and habitat-related standards relevant to wind energy projects.

Section 7(a)(2) Requirements

Section 7(a)(2) requirements relate to Federal agency actions. Section 7(a)(2) requires that:

each Federal agency shall, in consultation with . . . the Secretary, insure that any action authorized, funded or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [designated critical] habitat of such species.^{vi}

The broad statutory description of agency action means that the Section 7(a)(2) standards apply to private actions that require Federal permits, licenses or other forms of authorization or that receive federal grants or other forms of federal funding.

Section 7(a)(2) contains two relevant standards: the “jeopardy standard” and “critical habitat standard.” FWS has defined both standards in terms of “survival and recovery” of the endangered species or threatened species (“listed species”).^{vii} However, several courts have described as invalid the regulatory definition of the critical habitat standard.^{viii} Critical habitat—as with listed species—is designated by rulemaking under Section 4 of the ESA. Section 3 defines critical habitat in terms of conservation (“features” or “areas” that are “essential to the conservation of the species”).^{ix} Section 3 also defines “conservation” in terms of recovery of the listed species to the point that it no longer needs the protection of the ESA.^x Based on those statutory definitions, some courts have opined that the regulatory definition of “survival” in the critical habitat standard is inappropriate. Although the courts have not provided a substitute definition for the standard, they have determined that, where a listed species’ critical habitat is involved in an agency action,^{xi} the FWS must at least consider the effect of the action on conservation (and not just survival) of that species (even though, when designating critical habitat, the FWS can exclude all habitat for economic or other reasons up to the point that extinction would result from failure to designate).^{xii} The FWS also has not adopted a new or modified definition of the critical habitat standard; instead, it has declared it will not apply its existing regulatory definition of the standard and apply the standard solely in accordance with the statutory wording (*i.e.*, “destruction or adverse modification”).^{xiii}

Section 9 Requirements

Section 9 sets a standard applicable to all persons, whether they are subject to any Federal agency action.^{xiv} Section 9(a)(1)(B) prohibits the “take” of endangered species of fish and wildlife within the United States or its territorial waters.^{xv} A “take” is defined with extraordinary breadth to mean “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.”^{xvi} A “take” of individual members of a listed endangered or threatened species constitutes a violation of the ESA.

With regard to the impacts of habitat modification on listed species covered by the Section 9 take prohibition, the FWS has by regulation defined “harm” as “an act which actually kills or injures wildlife,” which “may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.”^{xvii} Injury or death to a listed wildlife species can be the direct or indirect result of habitat modification or degradation, such that the act, “impair[s] essential behavioral patterns, including breeding, feeding or sheltering.”^{xviii} To be actionable, habitat modification or degradation must be “significant,”^{xix} and land use activities that result in habitat modification or degradation are not sufficient in themselves to constitute a “take” of listed wildlife under Section 9 and the “harm” regulation.^{xx} Instead, only a land use activity that “actually kills or injures wildlife” will constitute a “take” of a listed species.^{xxi} Accordingly, “harm” requires proof of actual injury—the mere potential for injury to listed wildlife is not “harm.”^{xxii} Moreover, the regulation determines “harm” by reference to an individual member of a listed species.^{xxiii}

The FWS also by regulation defined “harass,” but has—unlike the regulatory definition of “harm”—excluded consideration of habitat modification in the context of “harass.”^{xxiv} While “harm” requires “actual” injury to wildlife, the definition of “harass” includes a “negligent act or omission which creates the likelihood of injury to wildlife by annoying it to” a significant extent. Under the regulatory intent, instead of covering physical modifications of habitat, the “harass” rule

addresses the annoying effects of persistent noise, light, or motion. In promulgating the definition, the FWS stated:

The concept of environmental damage being considered a “taking” has been retained but is now found in a new definition, of the word “harm” By moving the concept of environmental degradation from the proposed definition of “harass” to the definition of “harm,” potential restrictions on environmental modifications are expressly limited to those actions causing actual death or injury to a protected species of fish or wildlife.^{xxv}

The only role that habitat modification might play in the “harass” form of take might be the *act* of habitat modification (where the presence of, and noise from, heavy equipment and construction crews are involved). However, courts have been extremely reluctant to find violations of the “harass” form of take.

There are three notable differences between the standards of Section 9 and Section 7(a)(2). Unlike the Section 7(a)(2) jeopardy standard, the Section 9 take standard only considers injuries to an individual member of a listed species. The take standard applies only to listed wildlife species, while the Section 7(a)(2) standards apply to all listed species, plants as well as wildlife. Moreover, the Section 9 standard applies to any habitat of listed wildlife species, while the Section 7(a)(2) critical habitat standard applies only to designated critical habitat of listed species.

As discussed in Section II, because most methods of compliance—or securing immunity for noncompliance—with the Section 9 take standard require at least some form of permit from, or agreement with, the FWS, and because that FWS permit or agreement itself constitutes a Federal agency action subject to Section 7(a)(2), the standards of Section 9 and Section 7(a)(2) are often applied together when private land uses or projects are involved.^{xxvi}

Enforcement

Three general types of enforcement actions are available under Section 11 for violations of the ESA. First, Section 11(a) authorizes the government to seek civil penalties against violators, and Section 11(b) authorizes the government to seek criminal penalties.^{xxvii} Second, Section 11(e)(6) authorizes the government to bring suits to enjoin violations.^{xxviii} And third, Section 11(g) authorizes private citizens to bring actions to enjoin violations of the ESA by any person and to force certain compliance with the ESA by the Secretary.^{xxix} The ESA provides significant penalties only for “knowing” acts,^{xxx} but it is a general intent statute which requires only that a violator knew that it was taking a particular action and not that the action was illegal.^{xxxi} Anyone who violates the ESA generally may be fined up to \$25,000 for a civil violation and up to \$100,000 (\$200,000 for an organization) and/or imprisoned for not more than one year for a criminal violation.^{xxxii}

Migratory Bird Treaty Act

The MBTA is a criminal environmental law which implements four international treaties that the United States has entered into in order to protect over eight hundred species of birds that migrate across the United States and its territories.^{xxxiii} The MBTA states as follows:

Unless and except as permitted by regulations...it shall be unlawful at any time, by any means, or in any manner to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell...offer to purchase, purchase...ship, export, import...transport or cause to be transported...any migratory bird, any part, nest, or eggs of any such bird, or any product...composed in whole or in part, of any such bird or any part, nest, or egg thereof.^{xxxiv}

FWS regulations broadly define “take” to mean “pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect.”^{xxxv} An unauthorized “take” of any one of the protected bird species constitutes a violation of the MBTA. By delegation of authority from the Secretary, the FWS administers the MBTA.

With regard to the impacts of habitat modification on protected birds, unlike the ESA the definition of “take” in the MBTA does not include “harm” or “harass.” And the MBTA itself is silent in regard to habitat modification and destruction. As a result, the MBTA’s applicability to habitat modification and destruction is unclear. In *Seattle Audubon Society v. Evans*,^{xxxvi} which involved a claim that the MBTA prohibited the U.S. Forest Service from logging activities that may provide habitat for a protected bird, the Ninth Circuit Court of Appeals concluded that the MBTA covers only direct, though unintended, bird deaths, and that habitat destruction leading indirectly to bird deaths was not a take for purposes of the MBTA.^{xxxvii} In contrast to this and similar cases involving timber activities, there are several cases which have found MBTA liability in connection with the discharge of extra-hazardous materials or the misapplication of pesticides.^{xxxviii}

Reconciling these cases or determining what may constitute prohibited direct harm to migratory birds from habitat modification or destruction is not easy.^{xxxix} A case which attempted to provide some order to the evaluation of claims under the MBTA is *United States v. Moon Lake Elec. Ass’n*,^{xl} which is noteworthy for the wind energy industry because the court found the defendant electrical association liable under the MBTA and the BGEPA for the killing of protected birds resulting from its failure to install inexpensive protective equipment on its power poles. In *Moon Lake*, the district court disagreed with the distinction in *Seattle Audubon* between direct and indirect take, finding that the MBTA’s misdemeanor provision may apply to unintended bird deaths which are a probable consequence of a defendant’s actions. The court also ruled that the MBTA is not limited simply to physical conduct associated with hunting or poaching.^{xli} Although *Moon Lake* did not involve habitat modification, the court’s extensive analysis of incidental take under the MBTA could influence subsequent decisions. Based on the case law and other precedent,^{xlii} it appears that incidental take of a protected bird can subject one to liability under the MBTA in some contexts, but the precise scope of the MBTA in connection with habitat modification or destruction and wind energy projects remains to be determined.

Unlike the ESA, the MBTA has no provision which expressly authorizes the issuance of permits by the FWS authorizing incidental take. The MBTA does authorize the Secretary to determine when, to what extent, if any, and by what means it is compatible with the terms of the related treaties “to allow hunting, taking, capture, killing, possession, sale, purchase, shipment,

transportation, carriage, or export of any . . . [protected] bird, or any part, nest, or egg thereof” and to adopt regulations governing the same.^{xliii} Pursuant to this authority the FWS has promulgated regulations which set forth requirements for the issuance of permits for a wide variety of specific purposes, including falconry, scientific collecting, conservation education, taxidermy, and waterfowl sale and disposal, as well as for the hunting of migratory waterfowl.^{xliv} To date, however, the FWS has not promulgated regulations expressly providing for a permitting program for incidental take (although the FWS, in very limited circumstances, has issued individual permits). As discussed in Section II(C), the FWS recently began—and has partially completed—a rulemaking under a similar statute, the BGEPA, which authorizes incidental takes of bald and golden eagles in certain circumstances. As discussed in Section II(C)(2), the FWS believes it has the authority to do the same under the MBTA.

The MBTA is enforced by the FWS through the U.S. Department of Justice (“DOJ”) and there is no private cause of action enabling others to bring suit to enforce this law.^{xlv} The MBTA imposes only criminal penalties on those who violate the MBTA. Under the felony provision, anyone who “shall knowingly (1) take by any manner . . . any protected bird with intent to sell, barter or offer to barter such bird, or (2) sell, offer for sale, barter or offer to barter, any protected bird” is subject to a felony violation and may be fined up to \$250,000 (\$500,000 for organizations) and/or imprisoned for up to two years. All other takes under the MBTA, (other than by placing or directing the placement of bait for a protected bird, which also is a felony), regardless of intent, are subject to the misdemeanor provision of the MBTA, under which a violator may be fined up to \$15,000 and/or imprisoned for up to six months.^{xlvi} The misdemeanor provision is likely to be the most applicable provision in a wind energy context.

To date no actions under the MBTA or the BGEPA have been brought against the developer of a wind energy project. The FWS has stated that it carries out its mission to protect migratory birds through investigations and enforcement and by fostering relationships with individuals, companies, and industries that have programs to minimize their impacts on migratory birds.^{xlvii} Because, the FWS has not promulgated regulations expressly providing for issuance of permits for unintentional take, the FWS exercises enforcement discretion and focuses on those individuals, companies, or agencies that take migratory birds without regard for their actions and the law, especially when conservation measures have been developed and not implemented.^{xlviii} Although two authors recently questioned whether the exercise of enforcement discretion and lack of enforcement by the FWS and State agencies effectively results in an exemption from the MBTA for wind energy developers,^{xlix} it is possible that in the appropriate circumstances the FWS would pursue an action against a wind energy developer under the MBTA or the BGEPA.¹

Bald and Golden Eagle Protection Act

The BGEPA provides specific protections to bald and golden eagles. Under the BGEPA, it generally is unlawful for anyone to “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or in any manner, any bald eagle . . . or any golden eagle, alive or dead, or any part, nest, or egg thereof”^{li} As defined in the BGEPA, “take” for this purpose includes “pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb.”^{lii} Recently, the FWS clarified the meaning of the word “disturb” in the BGEPA in anticipation of the ultimate removal of the bald eagle from the list of threatened species and thus loss of protection under the ESA.^{liii} Under the new regulation, “disturb” means

to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1)

injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.^{liv}

Although there are differences in the meaning of these terms, as noted by the FWS, the term “disturb” in the BGEPA significantly overlaps with the terms “harm” and “harass” in the ESA.^{lv} At the same time as it adopted the final definition of “disturb,” the FWS proposed to amend the regulatory definition of “take” as it applies to eagles to add the word “destroy” and thereby make it consistent with the statutory prohibition on unpermitted eagle nest destruction. An unauthorized “take” of any one of the protected eagles constitutes a violation of the BGEPA and MBTA. By delegation of authority from the Secretary, the FWS administers the BGEPA.

The United States Supreme Court has described BGEPA as both “exhaustive” and “consistently framed to encompass a full catalog of prohibited acts.”^{lvi} Relying on this language, one court has held that the BGEPA prohibits electrocutions of eagles.^{lvii} Such a decision suggests that the “taking” of a bald or golden eagle by a wind turbine could be prosecutable under the BGEPA.

Unlike the ESA—but like the MBTA—the definition of “take” in the BGEPA does not expressly include impacts arising from habitat modification.^{lviii}

The BGEPA provides that the Secretary may authorize certain otherwise prohibited activities through promulgation of regulations. Specifically, the Secretary is authorized to prescribe regulations permitting the

taking, possession, and transportation of [bald and golden eagles] . . . for the scientific or exhibition purposes of public museums, scientific societies, and zoological parks, or for the religious purposes of Indian tribes, or . . . for the protection of wildlife or agricultural or other interests in any particular locality [provided such permits are] compatible with the preservation of the bald eagle or the golden eagle.^{lix}

Unlike the ESA but like the MBTA, the BGEPA does not contain an express incidental take permit program. In connection with the removal of the bald eagle as a listed species under the ESA, however, the FWS recently adopted regulations which authorize incidental takes of eagles which are comparable to those authorized under the ESA, and has indicated that it intends to adopt an additional regulation in this regard in the near future.^{lx}

Like the MBTA, the FWS enforces the BGEPA through the DOJ and there is no private cause of action enabling others to bring suit to enforce this law. The BGEPA imposes both civil and criminal penalties on those who violate the BGEPA. In order to be criminally liable, a violator “shall knowingly, or with wanton disregard for the consequences of his act take, possess, sell, purchase, barter . . . transport . . . at any time or in any manner any [eagle] . . . or any part, nest, or egg thereof.” If convicted of a criminal violation under the BGEPA, the first offense is a misdemeanor for which the violator may be fined up to \$100,000 (\$200,000 for an organization) and/or imprisoned for up to one year, and in the case of a second or subsequent conviction for such a violation the offense becomes a felony for which the violator may be fined up to \$250,000 (\$500,000 for an organization) and/or imprisoned up to two years. Civil penalties may be imposed regardless of intent up to a maximum of \$5,000 for each violation.

National Environmental Policy Act

NEPA and its implementing rules require an environmental impact statement (“EIS”) assessing alternatives, before any discretionary major Federal agency action with significant environmental consequences can be adopted.^{lxi} Additionally, NEPA rules require an environmental assessment (“EA”) before a Federal agency can take many actions that do not rise to the level of environmental significance requiring an EIS.^{lxii} NEPA is an information-disclosure law that is procedural only, and does not limit the agency’s substantive range of decision.^{lxiii} But NEPA compliance process, by obtaining and disclosing environmental impact information and allowing public comment, often affects the substance of the agency’s decision. If a wind power project needs any federal permit (such as a Clean Water Act Section 404 permit, a permit for use of federal lands, or an incidental take permit), this can trigger NEPA analysis duties. NEPA can be useful in analyzing the impacts of a proposed wind power project, and potential alternatives, on species and habitat, and in providing mitigation recommendations. That is, NEPA can add to the analytic rigor in considering wind power impacts.

Laws Relating to Native Americans

In contrast to the straightforward application of Federal and State wildlife laws to private land or public (State or Federal) land, the application of such laws to Indian land is more complex. Not only are the general rules applicable to jurisdiction in Indian country different, but Congress has also passed specific legislation for particular reservations or States that change even those general rules. Federal law applies everywhere in Indian country just as it does across the rest of the United States. State regulatory law generally does not apply on land held by the United States in trust for Indian tribes or individual Indians, unless Congress has provided otherwise. The major exceptions are in portions of Oklahoma and lands of certain tribes in the Northeast, especially in Maine. If a State is administering Federal law elsewhere, *e.g.*, a delegated program under the Clean Water Act, the Federal agency will generally still administer that law on trust land within the State. Tribal law applies within the boundaries of the tribe’s reservation (which is not necessarily the same as the land held in trust for the tribe or individuals). Tribal law also applies to non-Indians doing business with the tribe (*e.g.*, lessees), and to air and water flowing across the reservation.

methods FOR COMPLIANCE OR AVOIDANCE/Reduction OF LIABILITY FOR NON-COMPLIANCE

The Committee charged the Legal Subcommittee with identifying all existing methods for compliance and avoidance or reduction of liability for noncompliance with these four statutes. For each of the primary wildlife statutes identified in the Committee’s Charter—the ESA, MBTA, and the BGEPA—we have identified all potentially relevant statutory, regulatory, judicial, and informal techniques.

Compliance with Section 7(a)(2) of the Endangered Species Act

Except in the extremely rare circumstance where a specially convened committee of cabinet members excuses compliance,^{lxiv} there is no method for avoiding compliance with Section 7(a)(2), although typically only the applicable Federal agencies are liable for noncompliance. As noted above, Section 7(a)(2) addresses Federal agency actions, but private landowners or project proponents frequently encounter Section 7(a)(2)’s requirements in the context of federal permitting or licensing actions, particularly “wetland permits” issued under Section 404 of the Clean Water Act.

Regulations establish three different processes for compliance with Section 7(a)(2) based on the degree of impact the Federal agency action may have on listed species or designated critical habitat. If the Federal agency finds that the proposed agency action (in the case of federal permits, both the permit issuance and the private land use or project authorized by the permit) will not affect a listed species or critical habitat, the action may proceed without involvement of the FWS in a consultation process.^{lxv} Otherwise, the Federal agency typically prepares a biological assessment to determine the effects of the proposed agency action. If the Federal agency finds that the action is “not likely to adversely affect” a listed species or critical habitat, the action may proceed if the FWS concurs in writing (termed “informal consultation”).^{lxvi} If the Federal agency determines that the action is likely to adversely affect a listed species or critical habitat (or the FWS does not concur in the agency’s not-likely-to-adversely-affect determination), the Federal agency and the FWS engage in what is termed “formal consultation” as prescribed in Section 7(b).^{lxvii} The formal consultation process begins with submission of the biological assessment to the FWS and proceeds under statutory and regulatory deadlines.^{lxviii}

The initial product of formal consultation is a biological opinion issued by the FWS. If the FWS finds that the proposed action passes the Section 7(a)(2) standards (jeopardy to the species or adverse modification of critical habitat is not likely), it will so advise the Federal agency in the biological opinion and then typically suggest “reasonable and prudent measures” to minimize any impacts of “takes” that might occur. Unlike the voluntary mechanisms for avoidance of take liability discussed below, the FWS is limited under Section 7(a)(2) to proposing measures to “minimize” take impacts and may not propose measures to mitigate for those impacts.^{lxix} If the FWS finds instead that the action would result in jeopardy or adverse modification, it will suggest to the Federal agency “reasonable and prudent alternatives” to the proposed agency action.^{lxx} FWS regulations limit the degree to which the reasonable and prudent measures or alternatives may alter the agency action.

Federal agencies engaged in formal consultation are not required to follow the biological opinions and reasonable and prudent measures or alternatives,^{lxxi} however, the agencies seldom depart significantly from them. If the Federal agencies incorporate reasonable and prudent measures or a reasonable and prudent alternative in permits, licenses, and the like, then the authorized parties and certain other affected parties (*e.g.*, the owner of land leased to a permitted project) are also covered (including, as discussed below, granted immunity from certain possible take of listed species).^{lxxii}

Regulations require reinitiation of the Section 7(a)(2) process for a Federal agency action in certain circumstances.^{lxxiii} The principal circumstances calling for reinitiation occur: (1) when the scientific understanding of the action’s impacts on listed species or critical habitat covered by the original Section 7(a)(2) process changes significantly and results in harsher impacts than those analyzed in that process; (2) when a new species is listed or new critical habitat is designated that would be impacted by the agency action; or (3) when (as described in Section II(B)(1) below) the amount of incidental take allowed by an incidental take statement is exceeded. The reinitiation of the Section 7(a)(2) process may lead to the FWS proposing new reasonable and prudent measures or alternatives for the proposed agency action.

Avoidance of Liability for Noncompliance with the Section 9 “Take” Prohibition in the Endangered Species Act

The ESA has a well-developed array of techniques for avoidance of liability for certain types of “take” otherwise prohibited under Section 9. As the Section 9 standard is violated if an agency action or private land use or project takes even a single member of a listed wildlife species, it is quite stringent. Because the standard applies to all persons, it is also quite pervasive. In 1982 Congress enacted amendments to the ESA that established the basis for these take-liability-avoidance techniques. In so doing, Congress recognized that few agency actions or private land uses or projects that occur in the vicinity of a listed wildlife species could be designed to avoid entirely the possibility of take of even a single member of that species. The FWS has developed several additional techniques by regulation or practice. These statutory provisions, regulations, and practices apply to takes that are “incidental” to an otherwise lawful activity—commonly referred to as “incidental take.”^{lxxiv} In the following ten subsections, the subcommittee has described one technique under Section 7(b)(4) for avoiding take liability in connection with Federal agency actions and multiple techniques under Sections 10(a)(1)(A) and (B) for avoiding take liability for private land uses or projects.

1. Incidental Take Statements

The single technique for take liability avoidance for Federal agency actions under Section 7 is limited to those actions that undergo formal consultation (*i.e.*, actions for which a no effect or “not likely to adversely affect” listed species or critical habitat finding cannot be made). Section 7(b)(4) provides that, if the biological opinion issued by the FWS concludes that the proposed Federal agency action complies with the Section 7(a)(2) jeopardy and critical habitat standards, the FWS will issue an incidental take statement (“ITS”) to the agency.^{lxxv} The ITS will allow a specified amount of incidental take (stated either in number of species members or in acreage or other measurement of occupied or suitable habitat) over a specified term, if the Federal agency complies with the reasonable and prudent measures recommended by the FWS. Should the biological opinion find that the Federal agency action would violate either the jeopardy standard or the critical habitat standard, the FWS may still issue an ITS if the agency adopts a reasonable and prudent alternative offered by the FWS. In the case of federal permits, licenses, or other authorizations, the ITS will grant immunity for the specified incidental takes not only to the applicable Federal agencies, but also to the permittees, licensees, and certain other associated parties (*e.g.*, the owner of land leased to the permitted or licensed project).^{lxxvi}

The principal differences between the ITS for Federal agency actions under Section 7(b)(4) and the permits and agreements with private landowners or project proponents under Section 10(a)(1)(A) and (B) of the ESA described in the next sections below, are that: (i) the latter techniques provide critical “No-Surprises” assurances (also described below) and the ITS does not; (ii) the ITS has statutory and regulatory deadlines and the latter techniques do not; and (iii) the Federal agencies assume more of the costs in the formal consultation process that produces the ITS (even when private land or projects are involved) than in the latter techniques.

2. Habitat Conservation Plans and Incidental Take Permits

Section 10(a)(1)(B) of the ESA^{lxxvii} authorizes the Secretary to issue an Incidental Take Permit (“ITP”) that will allow a non-federal landowner to engage in otherwise lawful activity covered by a Habitat Conservation Plan (“HCP”), even if it results in the incidental taking of a listed species. The ITP will allow a specified amount of incidental take (stated either in number of species members or in acreage or other measurement of occupied or suitable habitat) over a specified term, if the permittee continues to comply with the ITP. The incidental taking of a listed

species must be covered by the HCP and identified in the ITP. An HCP must be included in every application for an ITP.

In approving an ITP and HCP, the FWS or NMFS, as applicable, must find that the taking will be incidental, that the applicant will minimize and mitigate the impacts of the taking, that the applicant will ensure proper funding for the plan and that the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild.^{lxxviii} The FWS and the NMFS have published comprehensive guidance on HCPs and the incidental take permitting process in the form of a detailed handbook, including an addendum which sets forth a five-point policy that provides clarifying guidance of these agencies for those applying for an incidental take permit under Section 10 of the ESA^{lxxix} The so-called “No-Surprises” rule allows a permit holder to negotiate assurances that additional mitigation in the form of land, property interests, or financial compensation will not be required beyond the level of mitigation provided for under the HCP, regardless of a change in circumstance during the period covered by the permit.^{lxxx} However, the trade off for these regulatory assurances is that the ITP/HCP application process is lengthy. Because granting a permit is a final Federal agency action subject to the Section 7 consultation requirement, the FWS must consult with itself.^{lxxxii} This may add significant time to the period it takes for a landowner to submit a HCP and obtain an ITP.

3. General Conservation Plans

A general conservation plan (“GCP”) allows the FWS to develop a Section 10(a)(1)(B) conservation plan suitable for the needs of a local area, complete all NEPA requirements for a Section 10(a)(1)(B) ITP issuance, and then issue individual permits to landowners who wish to apply for an ITP and demonstrate compliance with the terms and conditions of the GCP. The development of a GCP is undertaken by the FWS, rather than an individual applicant, and is ideally based upon a conservation strategy for the species and addresses the needs of the local community. Basically, the GCP has everything that is contained in a traditional HCP, including No-Surprises assurances, except the names of the applicant and future permittees. The GCP is not a substitute for a regional multiple action HCP which a county or other jurisdiction may use. Such a large-scale effort would be better developed using the traditional HCP approach because of the complexity of fully analyzing all activities under a regional multiple action HCP.^{lxxxii}

4. Safe Harbor Agreements

A safe harbor agreement is a voluntary agreement in which a non-federal landowner works with the FWS to develop management actions that will contribute to the recovery of a listed species for an agreed-upon time period.^{lxxxiii} Management actions can include habitat maintenance and reintroduction of listed species onto the land. In exchange for implementing these management actions, the FWS provides regulatory assurance to the landowner by issuing an enhancement of survival permit pursuant to Section 10(a)(1)(A) of the ESA.^{lxxxiv} This permit provides that property that is part of a safe harbor agreement can be altered and returned to agreed-upon baseline conditions at the end of the agreement time period, even if it involves the taking of listed species.^{lxxxv} This permit also may include No-Surprises assurances similar to those discussed under II.B.2.^{lxxxvi}

Candidate Conservation Agreements

A candidate conservation agreement is a formal agreement between a non-federal landowner and the FWS that addresses the conservation needs of candidate or at-risk species.^{lxxxvii} The goal of candidate conservation agreements is to prevent the listing of these species. A non-federal landowner that enters into a candidate conservation agreement with the FWS typically receives certain regulatory assurances.^{lxxxviii} In the case of a candidate conservation agreement with assurances, the agreement provides incentives for the non-federal landowner to voluntarily implement conservation measures for candidate or at-risk species. In exchange for implementing conservation measures that will remove or reduce the threat to candidate or at-risk species, the FWS provides regulatory assurances (similar to the No-Surprises assurances) to the landowner by issuing an enhancement of survival permit pursuant to Section 10(a)(1)(A) of the ESA.^{lxxxix} This permit provides that no additional conservation measures will be required of the landowner if the species becomes listed in the future, even if it involves the taking of listed species.^{xc} In addition, this permit allows permit holders to take species and modify habitat conditions to those baseline conditions agreed upon and specified in the agreement.^{xc}

Conservation Agreements and Memoranda of Understanding

A few FWS Regions have experimented with a basic contract between the FWS and a landowner—called a “conservation agreement” or memorandum of understanding (“MOU”)—which describes land use activities the landowner intends to take and methods the landowner will use to provide protection for potentially affected listed species. The FWS’s signing of a conservation agreement or MOU constitutes an agency action which permits the FWS to issue a biological opinion and ITS which provides incidental take immunity to the landowner as well as the FWS.^{xcii} This technique to secure incidental take immunity was found valid by the Ninth Circuit Court of Appeals in a citizen suit challenge to the Plum Creek conservation agreement.^{xciii} Recently, as a matter of practice, Region 8 of the FWS has settled on the “net conservation benefit” standard for conservation agreements identical to the standard applied by rule to Safe Harbor Agreements.^{xciv} This technique benefits the landowner by requiring significantly less time and fewer procedural steps to secure the incidental take immunity than does an ITP, but it lacks the No-Surprises assurances landowners obtain with an ITP.

Conservation Banking

Conservation banks are lands that are permanently protected and managed for listed or at-risk species, with the concept having been developed from the concept of wetland mitigation banking.^{xcv} The FWS approves these banks to sell mitigation credits to developers who need to offset adverse environmental impacts elsewhere. Thus, conservation banking utilizes traditional concepts of supply and demand to facilitate the buying and selling of mitigation credits. By selling mitigation credits, landowners can generate income, preserve their property and participate in conservation management plans. Developers who purchase these habitat or species mitigation credits are able to offset their negative environmental impacts in one simple transaction.

One instance in which conservation banking can be utilized is to assist in the obtainment of incidental take permits pursuant to Section 10 of the ESA. In applying for an incidental take permit, a landowner must submit an HCP that reports actions that will be taken to minimize and mitigate any adverse impacts on listed species. This mitigation may involve the purchase of mitigation credits from a conservation bank.^{xcvi}

Section 6 State Cooperative Agreements

Section 6 of the ESA provides for substantial federal funding of State conservation programs benefiting endangered fish, wildlife and plants. Section 6(c) of the ESA authorizes the Secretary to enter into a cooperative agreement with any State or territory which establishes and maintains an adequate and active program for the conservation of endangered species and threatened species.^{xcvii} States with eligible cooperative agreements are eligible to receive funds from the Cooperative Endangered Species Conservation Fund (“CESCF”) established pursuant to Section 6 of the ESA up to specified limits.

The “adequate and active programs” established by the States to secure funding under the CESCF are usually skeletal in substance and do not contain provisions for the protection of any specific listed species. These State programs provide no basis for securing take liability immunity. However, Section 6(c) does provide for cooperative agreements with States when “plans are included under which immediate attention will be given to those resident species of fish and wildlife [and, in a similar provision, for “resident species of plants] which are determined by the Secretary [of the Interior] or the State agency to be endangered or threatened and which the Secretary and the State agency agree are most urgently in need of conservation programs.”^{xcviii} If such a species-specific cooperative agreement is developed, the State, and private landowners or project proponents who enroll in the program, can secure incidental take immunity through an incidental take statement issued by the FWS. The FWS’s decision to approve the species-specific cooperative agreement is a Federal agency action that is subject to the Section 7(a)(2) process; if that process includes formal consultation, the FWS issues an ITS. For example, the State of Idaho and the Federal government (the FWS and the NMFS) are working on a cooperative agreement specific to listed salmonids in the Snake River basin in which irrigators and private timberland owners could voluntarily enroll and obtain certificates of inclusion that would secure for them the immunity of the ITS if they abide by the agreement’s salmon protection provisions.

Section 4(d) Rules

Section 4(d) of the ESA gives the Secretary authority to issue regulations to conserve threatened species or prohibit the taking of threatened species. As previously mentioned, this authority has been delegated to the FWS and NMFS. While the FWS has adopted a general blanket rule that extends the Section 9(a)(1) take prohibition to all threatened wildlife species, it has also retained the authority to remove this general prohibition for certain threatened species on a species-specific basis.^{xcix} Thus, it is within the jurisdiction of the FWS to provide exemptions for conservation efforts, for example, by providing species-specific take protection for landowners who pursue certain habitat conservation measures. However, a 4(d) rule is not easy to obtain, and it is generally very specific. Moreover, a 4(d) rule only applies to threatened species, as noted above.

Bird Letters

Landowners are encouraged to engage in open communication with the FWS on how to avoid a Section 9 violation, and the FWS has a history of providing advice and recommendations to landowners.^c Historically, this advice has been rendered in the form of letters providing guidelines to avoid take of listed wildlife species or simple declarations of the FWS that it “believes” the landowner’s property would not provide suitable habitat for particular listed species or that the landowner’s activity would not likely result in a take of listed wildlife species. Although these so-called “bird letters” do not as a legal matter preclude future liability, the expectation is that the government will use prosecutorial discretion regarding landowners who have cooperated with the FWS in avoiding the taking of a listed species.^{ci}

Liability Avoidance and Mitigation under the Migratory Bird Treaty Act

Bird Letters and Avian Protection Plans

Like the ESA bird letters, MBTA bird letters are generally enforcement discretion documents that outline the FWS’s willingness not to recommend prosecution for MBTA takings if a project proponent agrees to follow certain “best management practices.”^{cii} This enforcement discretion approach can take several forms, including project-specific letters, general guidance, and the proffer of enforcement/prosecutorial discretion in avian protection plans. In particular, it has been used for avian protection plans for power lines prepared by electric utilities and acknowledged by the FWS.^{ciii}

Incidental Take Authorizations Pursuant to a Possible New Regulation

The language of the MBTA gives the FWS authority and discretion to adopt regulations to permit reasonable activities that result in the taking of birds. Congress, in Section 704 of the MBTA, expressly authorizes the promulgation of regulations that permit the taking of migratory birds in a broad grant of authority to the FWS.

Pursuant to Section 704, the FWS has promulgated a series of regulations that permits the taking of migratory birds in many circumstances. For example, as discussed under Section I(B) above, current regulations authorize the issuance of permits and season limitations for migratory bird hunting, as well as for a number of other activities that would otherwise be proscribed by the MBTA, such as falconry, raptor propagation, scientific collecting, take of depredated birds,

taxidermy, take of overabundant birds, and waterfowl sale and disposal. Special purpose permits, for activities outside the scope of the specific permits, are also available.^{civ}

From this broad Congressional grant of authority in Section 704(a), the FWS may have the authority to promulgate regulations establishing a new permit that would allow for the taking of birds at wind energy developments under certain conditions. Although the FWS does not have express authorization in the MBTA to issue “incidental take permits” as provided in the ESA, the broad grant of authority in Section 704 seems to allow issuance of such permits if the FWS chose to exercise this authority in the wind energy and other contexts. This would require the promulgation of a new regulation by the FWS.

Special Purpose Permits

As an alternative to a new regulation, under current MBTA regulations at 50 C.F.R. Part 21, “special purpose permits” may be granted when an applicant makes a sufficient showing of an activity’s benefit to the migratory bird resource or other compelling justification.

FWS regulations provide for migratory bird permits for special purpose activities which are otherwise outside the scope of standard permits available for such activities as falconry, raptor propagation, scientific collecting, taxidermy, control of depredating birds, control of overabundant bird populations, etc.^{cv} According to 50 C.F.R. § 21.27, “permits may be issued for special purpose activities related to migratory birds, their parts, nests, or eggs, which are otherwise outside the scope of the standard form permits of this part.” A special use permit may be issued to an applicant who submits a written application and “makes a sufficient showing of benefit to the migratory bird resource, important research reasons, reasons of human concern for individual birds, or other compelling justification.”^{cvi}

The FWS in very limited circumstances has used special purpose permits to authorize incidental take. This provision potentially could be used to authorize incidental take caused by wind energy projects. For example, a wind energy project theoretically could apply to the FWS for a special use permit for an incidental take of birds based on a showing that the wind facility was providing an overall positive benefit to the migratory bird resource, perhaps through accompanying mitigation measures, or constitutes a situation of compelling justification due to the benefits of renewable energy generation. To date, however, the FWS has not endorsed such an interpretation of the special-purpose activity regulation.

FWS Interagency MOUs

Pursuant to Executive Order 13186,^{cvi} FWS has worked with over twenty Federal agencies over the last few years in developing Memoranda of Understanding (“MOUs”) (add footnote to executive order) to deal with possible violations of the MBTA by addressing migratory bird conservation in a proactive manner and to minimize take of migratory birds. There are currently two official MOUs between the FWS and Federal agencies, and the FWS hopes to enter into approximately eighteen more in the future. An MOU does not authorize a take, but it can establish a good faith effort of interagency communication, give agencies more certainty in their practices, and aid conservation in the long term. To date, the FWS has not entered into this type of MOU with the private sector.

Liability Avoidance and Mitigation under the Bald and Golden Eagle Protection Act

Special and Incidental Take Permits

As discussed under Section I(C) above, the Secretary may authorize otherwise prohibited activities by regulation and the Secretary recently proposed a permit program under the BGEPA.^{cviii}

Endnotes

ⁱ 16 U.S.C. §§ 703–712.

ⁱⁱ *Id.* §§ 668–668d.

ⁱⁱⁱ *Id.* §§ 1531–1544.

^{iv} 42 U.S.C. § 4371 et. seq.

^v 16 U.S.C. § 1531(b).

^{vi} *Id.* § 1536(a)(2).

^{vii} 50 C.F.R. § 402.02.

^{viii} *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service*, 278 F.3d 1059, 1069–72 (9th Cir. 2004); *Sierra Club v. U.S. Fish and Wildlife Service*, 245 F.3d 434 (5th Cir. 2001).

^{ix} 16 U.S.C. § 1532(5).

^x *Id.* § 1532(3).

^{xi} Critical habitat has been designated for only thirty-eight percent of listed domestic species.

^{xii} *Gifford Pinchot*, 278 F.3d at 1071–74; see *Northern Spotted Owl v. Lujan*, 758 F. Supp. 621, 623 (W.D. Wash. 1991); 16 U.S.C. § 1533(b)(2).

^{xiii} Memorandum of FWS Director to Regional Directors, December 9, 2004. The memorandum also advised the FWS to apply the statutory standard by “discuss[ing] whether, with implementation of the proposed Federal action, critical habitat would remain functional (or retain the current ability for the primary constituent elements [the regulatory wording for the statutory features ‘essential to the conservation’ of the species] to be functionally established) to serve the intended conservation role for the species.”

^{xiv} 16 U.S.C. § 1538.

^{xv} *Id.* § 1538(a)(1)(B). The Secretary has extended the “take” prohibition to threatened species of fish and wildlife. *Id.* § 1533(d); 50 C.F.R. § 17.31(a).

^{xvi} 16 U.S.C. § 1532(19).

xvii 50 C.F.R. § 17.3.

xviii *Id.*

xix *Id.* § 17.3 (2002). *See* 46 Fed. Reg. 54,750 (1981) (“To be subject to Section 9, the modification or degradation must be *significant*”) (emphasis in original).

xx 46 Fed. Reg. 54,750 (1981) (“[H]abitat modification or degradation, standing alone, is not a taking pursuant to Section 9.”).

xxi *See Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 691 n.2 (1995); 40 Fed. Reg. 44,413 (1975) (“[P]otential restrictions on environmental modifications are expressly limited to those actions causing actual death or injury to a protected species of fish or wildlife.”). *See also* Memorandum from Associate Solicitor, Conservation and Wildlife, to Director, Fish and Wildlife Service (May 11, 1981) (stating that the *Palila* court decision “erroneously supports the view that habitat modification alone may constitute ‘harm’”); “Endangered and Threatened Wildlife and Plants: Final Redefinition of ‘Harm,’” 46 Fed. Reg. 54,748 (1981) (“[H]abitat modification or degradation, standing alone, is not a taking pursuant to Section 9.”).

xxii *See Babbitt*, at 708–709 (O’Connor, J., concurring) (“[T]he challenged regulation is limited to significant habitat modification that causes actual, as opposed to hypothetical or speculative, death or injury to identifiable protected animals.”); *Am. Bald Eagle v. Bhatti*, 9 F.3d 163, 166 (1st Cir. 1993) (stating that while bald eagles can be harmed by ingesting lead, there is no evidence of actual harm to bald eagles as a result of deer hunting and eagles feeding on deer carrion containing lead slugs). *But see Forest Conservation Council v. Rosboro Lumber Co.*, 50 F.3d 781, 783 (9th Cir. 1995) (“[A] showing of a future injury to an endangered or threatened species is actionable under the ESA.”); *Marbled Murrelet v. Babbitt*, 83 F.3d 1060, 1064 (9th Cir. 1996) (holding that an imminent threat of future harm is sufficient for an injunction under the ESA).

xxiii 46 Fed. Reg. 54,749 (“[S]ection 9’s threshold does focus on individual members of a protected species.”).

xxiv *See* 50 C.F.R. § 17.3.

xxv 40 Fed. Reg. 44,413 (1975).

xxvi The third, and most stringent behavioral standard—species’ “conservation”—is less relevant to wind energy projects. It is contained in two ESA sections—Sections 7(a)(1) and 4(f). Section 3(2) of the ESA defines “conservation” to mean actions that permit eventual recovery of the listed species to the point that it no longer requires ESA protection. *See* 16 U.S.C. § 1532(2). Section 7(a)(1) relates solely to federal agencies, and speaks of programs, not agency actions as does Section 7(a)(2). Section 7(a)(1) requires that federal “agencies shall, in consultation with” the Secretary of the Interior or the Secretary of Commerce, as applicable, “utilize their authorities in furtherance of the purposes of this Act by carrying out programs for the conservation of” listed

the biological opinion prepared by the FWS or NMFS during the consultation process). Even as to agency programs (including any “program” that might be established in a federal agency for wind energy development), due to those Congressional and regulatory interpretations, federal agencies often have ignored the Section 7(a)(1) “consultation” command for possible conservation programs. However, the finding of the Fifth Circuit Court of Appeals that such consultations with the FWS or NMFS are legally enforceable in *Sierra Club v. Glickman*, 156 F.3d 606 (5th Cir. 1998), may prompt more Section 7(a)(1) consultations, as evidenced by the emphasis given to this provision in the Memorandum of Agreement between FWS/NMFS and the Environmental Protection Agency on “Enhanced Coordination Under the Clean Water Act and Endangered Species Act.” 66 Fed. Reg. 11,202 (2001).

In recognition that “conservation” is the ultimate objective of the ESA and to enlist the most knowledgeable in the cause, Section 4(f) directs Services to prepare “recovery plans” for most listed species and suggests the appointment of “recovery teams” to draft those documents. 16 U.S.C. § 1533(f). A recovery plan is not a legally binding document under *Fund for Animals v. Rice*, 85 F.3d 535, 547 (11th Cir. 1996). However, some courts have conducted judicial review of recovery plans and required compliance with Section 4(f). *See, e.g., Grand Canyon Trust v. Norton*, 2006 WL 167560 (D. Az. 2006).

^{xxvii} 16 U.S.C. §§ 1540(a) and (b).

^{xxviii} *Id.* § 1540(e)(6).

^{xxix} *Id.* §§ 1540(g). In any suit filed by a private citizen pursuant to Section 11(g), a court may award costs of litigation, including reasonable attorney and expert witness fees, to any party whenever the court deems such an award appropriate. *See id.* § 1540(g)(4).

^{xxx} *Id.* §§ 1540(a) and (b) (“Any person who knowingly violates . . .”).

^{xxxi} *See United States v. McKittrick*, 142 F.3d 1170, 1177 (9th Cir. 1998) (ESA is a general intent statute, meaning the defendant did not have to know he was killing a wolf, only that he was shooting an animal that turned out to be a wolf); *United States v. Nguyen*, 916 F.2d 1016 (5th Cir. 1990) (defendant did not need to know that possessing the turtle was illegal to violate the ESA, only that he possessed the turtle); *United States v. St. Onge*, 676 F. Supp. 1044 (D. Mont. 1988) (government did not have to show the defendant knew the animal he was killing was a grizzly bear).

^{xxxii} 16 U.S.C. §§ 1540(a) and (b). The statutory fines and periods of imprisonment authorized for violations of the ESA, MBTA and BGEPA noted herein reflect the inflation-based adjustments required by Federal Fines and Sentencing Laws, 18 U.S.C. §§ 3551, et. seq. The Alternative Fines Act, 18 U.S.C. § 3571, in general sets forth maximum monetary fines a defendant who has been found guilty of any federal crime (not just a wildlife crime) may be sentenced to pay. The Alternative Fine Based on Gain or Loss, 18 U.S.C. § 3571(d), requires that if any person derives pecuniary gain from the offense, or if the offense results in pecuniary loss to a person other than the

^{xxxvi} 952 F. 2d 297 (9th Cir. 1991).

^{xxxvii} *Id.* at 302.

^{xxxviii} *E.g., United States v. FMC Corp.*, 572 F.2d 902 (2d Cir. 1978); *United States v. Corbin Farm Serv.*, 444 F. Supp. 510 (E. D. Cal. 1978), *aff'd*, 578 F2d (9th Cir. 1978).

^{xxxix} *See* Blaydes and Firestone, *Wind Power, Wildlife and the Migratory Bird Treaty Act: A Way Forward*, accepted for publication, 38(4) *Environmental Law* ____ (2008) (“The line between habitat modification and direct harm can be quite fine, if not nonexistent.”); Baldwin, *The Endangered Species Act, Migratory Bird Treaty Act, and Department of Defense Readiness Activities: Background and Current Law*, CRS Report for Congress (2004) at p. 7 (“There evidently is . . . confusion as to what constitutes direct harm [from habitat modification and destruction].”); Lemly and Ohlendorf, *Regulatory Implications of Using Constructed Wetlands to Treat Selenium-Laden Wastewater*, 52 *ECOTOXICOLOGY ENV'T'L SAFETY* 46–56 (2002) (noting the unforeseen impact of selenium-laden wastewater in artificial wetlands on migratory birds).

^{xi} 45 F. Supp. 2d 1070 (D. Co. 1999).

^{xli} *Id.* at 1185. According to the court, the proximate causation requirement distinguished the bird deaths involved in the case from those which may result from the “driving an automobile, piloting an airplane, maintaining an office building, or living in a residential dwelling with a picture window” *Id.* at 1085.

^{xlii} The U. S. Congress first explicitly acknowledged that the MBTA covers “incidental take” in some circumstances when, in 2002, it enacted P. L. 107-314, which provides that during a specified period of time the take proscription in the MBTA does not apply to the incidental take of a protected bird during authorized military readiness activities. This suspension of the MBTA was enacted in response to a case finding that take of protected birds during military readiness activities was unlawful under the MBTA (*Center for Biological Diversity v. Pirie*, 191 F. Supp. 2d 161 (D. D.C. 2002) and remained in effect until a new regulation to exempt incidental take of migratory birds during military readiness activities was finally adopted by the FWS. The final regulation was adopted by the FWS in 2007 and is located at 50 C.F.R. § 21.15. The regulation generally permits incidental take in connection with military preparedness activities, and requires for those ongoing or proposed activities that the armed forces determines may result in a significant adverse effect on a population of a migratory bird species that the armed forces must confer and cooperate with the FWS to develop and implement appropriate conservation measures to minimize or mitigate such significant adverse effects.

In addition to the above-noted Congressional action, while not dispositive for purposes of the MBTA, an executive order signed by President Clinton which imposed additional obligations on federal agencies to protect migratory birds defined the term “take” to include “unintentional take” (in a manner which did not mean “unintended” but the equivalent of incidental take as defined

by asserting a claim against a federal agency under the Administrative Procedure Act, which allows courts to review and set aside agency actions which are “not in accordance” with law. *See Humane Society v. Glickman*, 217 F.3d 882 (D. C. Cir. 2002); *Fund for Animals v. Norton*, 281 F. Supp. 2d 209 (D. D.C. 2003).

^{xlvi} 16 U.S.C. §§ 707(a) and (b).

^{xlvii} *See* Letter from Jamie Rappaport Clark, Director, U.S. Fish and Wildlife FWS, to Regional Directors (Sept. 14, 2000), *available at* <http://www.fws.gov/migratorybirds/issues/towers/comtow.html>; Suggested Practices for Avian Protection on Power Lines—The State of the Art in 2006, at page 21, available on the website for the Avian Power Line Interaction Committee at <http://www.aplic.org>. *See also* Authorizations Under the Bald and Golden Eagle Protection Act for Take of Eagles, 73 Fed. Reg. 29,075 (2008) (noting that incidental take permits issued under Sections 7 and 10 of the ESA for the bald eagle while it was listed under the ESA were issued with regulatory assurances that the FWS would exercise enforcement discretion with respect to violations of the MBTA and the BGEPA).

^{xlviii} *Id.*

^{xlix} Blaydes and Firestone, *supra* note xxxix.

¹ There is an extensive history of discussions between the DOI (and its subdivisions including the FWS) and the DOJ about the interpretation of the MBTA, and the application of its criminal penalty provisions in circumstances other than unpermitted “take” by hunting. In 1985, Secretary Hodel and Solicitor Richardson sought the DOJ’s opinion as to whether DOI officials and employees would be subject to prosecution for MBTA offenses in connection with the operation of Kesterson Reservoir, an agricultural waterbody at which toxic levels of selenium were bioaccumulating in migratory waterfowl, causing thousands of bird deaths, mutations, and reproductive dysfunction. The DOJ memorandum reviewed the entire body of judicial and administrative interpretations of the statute to that juncture, including the limited caselaw imposing liability on the basis of avian mortalities resulting from hazardous or inherently dangerous activities such as chemical or pesticide manufacture and disposal. The DOJ concluded in that situation that MBTA charges were not appropriate. The rationale of the DOJ memorandum clearly would not have approved MBTA prosecution of entities or persons involved solely in the construction, or use of houses, office buildings or other structures in the air column, into which birds might speculatively or even predictably collide. Since the DOJ’s comprehensive analysis of MBTA prosecution authority in 1985, there has been no significant change in its broad institutional position of nonliability except in matters of hazardous chemical or petroleum activities. In sum, the DOJ’s longstanding charging policy does not criminalize actors solely on the basis of their construction or use of structures with which avian collisions may occur.

^{li} 16 U.S.C. § 668(a).

“destroy” and thereby make it consistent with the statutory prohibition on unpermitted eagle nest destruction.

^{lvi} *Andrus v. Allard*, 444 U.S. 51, 56–59 (1979).

^{lvii} *See Moon Lake*, 45 F. Supp. 2d at 1086–88.

^{lviii} The only court to have addressed the relationship between the prohibitions of the ESA and the BGEPA suggested that the latter may cover habitat modification through the term “disturb” in the definition of “take” in the BGEPA. The court stated as follows in this regard: “Both the ESA and the Eagle Protection Act prohibit the take of bald eagles, and the respective definitions of ‘take’ do not suggest that the ESA provides more protection for bald eagles than the Eagle Protection Act The plain meaning of the term ‘disturb’ is at least as broad as the term ‘harm,’ and both terms are broad enough to include adverse habitat modification.” *Contoski v. Scarlett*, Civ No. 05–2528 (JRT/RLE), slip op. at 5–6 (D. Minn. Aug 10, 2006). In response to a public comment that the FWS’s proposed definition of the term “disturb” in the BGEPA inappropriately incorporates habitat protection which is not authorized by the BGEPA, the FWS stated that it “agrees that the Eagle Act is not a habitat management law,” but noted that “there is a difference between protecting habitat per se, and protecting eagles in their habitat. The proposed and final definitions protect eagles from certain effects to the eagles themselves that are likely to occur as the result of various activities, including some habitat manipulation.” *Protection of Bald Eagles; Definition of “Disturb,”* 72 Fed. Reg. 31,132, 31,134 (2007).

^{lix} 16 U.S.C. § 668a. Pursuant to this authority the Secretary has promulgated BGEPA permit regulations for scientific and exhibition purposes, Indian religious purposes, to take depredating eagles, to possess golden eagles for falconry and for the take of golden eagle nests that interfere with resource development or recovery operations. 50 C.F.R. §§ 22.21–22.25.

^{lx} Under new paragraph (a) to 50 C.F.R. § 22.11, the FWS provides take authorization under the BGEPA to existing holders of incidental take permits under Section 10 of the ESA where the bald eagle is covered in a habitat conservation plan or the golden eagle is covered as a non-listed species, as long as the permit holder is in full compliance with the terms and conditions of the ESA permit. Under a new regulation located at 50 C.F.R. § 22.28, the FWS established a new permit category to provide expedited permits to entities authorized to take bald eagles through incidental take statements issued pursuant to Section 7 of the ESA. It is anticipated that Section 22.28 will be superseded later this year upon adoption of a previously-proposed regulation which would establish a new permit for incidental take of eagles. Under this proposed regulation, to be located at 50 C.F. R. § 22.26, incidental take of bald or golden eagles would be authorized only where it is determined to be compatible with the preservation of bald and golden eagles and cannot practicably be avoided. *See Authorizations Under the Bald and Golden Eagle Protection Act for Take of Eagles*, 73 Fed. Reg. 29075 (2008). For a description of proposed Section 22.26, *see Authorizations Under the Bald and Golden Eagle Protection Act for Take of Eagles*, 72 Fed. Reg. 31,141 (2007). At the same time

^{lxiv} See 16 U.S.C. § 1536(a)(2) and (e)–(h).

^{lxv} 50 C.F.R. § 402.14(a) and (b). Any such finding by a federal agency must be with the consent of a specified representative of the FWS or NMFS, as applicable.

^{lxvi} *Id.* § 402.13.

^{lxvii} 16 U.S.C. § 1536(b); 50 C.F.R. § 402.14.

^{lxviii} See 16 U.S.C. § 1536(b)(1); 50 C.F.R. 402.14(e).

^{lxix} See 16 U.S.C. § 1536(b)(4); *Endangered Species Consultation Handbook – Procedures for Conducting Consultation Under Section 7 of the Endangered Species Act* at 4-50 (FWS 1998) (“Section 7 requires minimization of the level of take. It is not appropriate to require mitigation for the impacts of incidental take.” (emphasis in original)).

^{lxx} See 50 C.F.R. § 402.02 (definitions of “reasonable and prudent alternatives” and “reasonable and prudent measures”).

^{lxxi} *Bennett v. Spear*, 520 U.S. 154, 169–70, 177–78 (1997).

^{lxxii} See 16 U.S.C. § 1536(b)(4); 50 C.F.R. § 402.14(i); *Ramsey v. Kantor*, 96 F.3d 434, 440–42 (9th Cir. 1996).

^{lxxiii} 50 C.F.R. § 402.16.

^{lxxiv} 16 U.S.C. §§ 1536(b)(4) and 1539(a)(2) (allowing a permit to be issued if the “taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity”).

^{lxxv} 16 U.S.C. § 1536(b)(4); see 50 C.F.R. § 402.14(i) (incidental take statement issued only after formal ESA consultation).

^{lxxvi} 50 C.F.R. § 402.14(i); *Ramsey v. Kantor*, 96 F.3d 434, 440–42 (9th Cir. 1996).

^{lxxvii} 16 U.S.C. § 1539(a)(1)(B).

^{lxxviii} *Id.* § 1539(a)(2)(B).

^{lxxix} The Handbook for Habitat Conservation Planning and Incidental Take Permitting Process is available at <http://www.fws.gov/Endangered/hcp/hcpbook.html>. In the addendum to the Handbook the FWS and NMFS provide guidance on the following five concepts: permit duration, public participation, adaptive management, monitoring and biological goals and objectives. See generally Notice of Availability of a Final Addendum to the Handbook for Habitat Conservation Planning and Incidental Take Permitting Process, 65 Fed. Reg. 35,242 (2000).

^{lxxx} 50 C.F.R. §§ 17.22(b)(5), 17.32(b)(5), and 222.307(g). See generally, Habitat Conservation Plan Assurances (“No Surprises”) Rule, 63 Fed. Reg. 8859 (1998).

^{lxxxi} 50 C.F.R. § 17.32(b)(5).

^{lxxxv} 64 Fed. Reg. at 32,717–26 (1999).

^{lxxxvi} 43 C.F.R. §§ 17.22(c)(5) and 17.32(c)(5).

^{lxxxvii} *See generally* Announcement of Final Policy for Candidate Conservation Agreements with Assurances, 64 Fed. Reg. 32,726 (999); FWS – Candidate Conservation Agreements with Assurances for Non-federal Landowners (2004), available at <http://www.fws.gov/endangered/factsheets/CCAAsNon-Federal.pdf>. Candidate conservation agreements are authorized in 50 C.F.R. § 17.22(d) and 17.32(d).

^{lxxxviii} For privacy and other reasons a non-federal landowner may not request regulatory assurances.

^{lxxxix} 16 U.S.C. § 1539(a)(1)(A).

^{xc} 64 Fed. Reg. at 32,726–36 (1999).

^{xci} *Id.*

^{xcii} Examples of such conservation agreements and MOUs include a 2007 agreement involving the FWS, State of California, Sonoma County, several towns, and stakeholders concerning the California tiger salamander and three listed plants in the Santa Rosa Plain, California; a 1997 agreement among the FWS, Plum Creek Timber Company and the State of Montana concerning the grizzly bear on private land in Swan Valley, Montana; a 1995 MOU between the FWS and White Mountain Apache Tribe concerning endangered species on tribal land in Arizona; and a 1993 MOU between the FWS and Georgia-Pacific Corp. concerning the red-cockaded woodpecker on 4.2 million acres of Southern timberland.

^{xciii} *Friends of the Wild Swan v. Babbitt*, 168 F.3d 498 (table) (9th Cir. 1999), 1999 WL 38606 (unpublished opinion).

^{xciv} 50 C.F.R. §§ 17.22(c)(2)(ii) and 17.32(c)(2)(ii). “[C]onservation agreements” were specifically identified in an August 2, 2004 memorandum from the FWS’s Manager of California-Nevada Operations Office (now Region 8) to all staff, entitled “Updating Guidance for Designating Critical Habitat on Private Lands in California and Nevada.”

^{xcv} *See generally*, Guidance for the Establishment, Use and Operation of Conservation Banks, 60 Fed. Reg. 58605 (November 28, 1995); FWS—Conservation Banking: Incentives for Stewardship, available at http://www.fws.gov/endangered/factsheets/banking_7_05.pdf.

^{xcvi} *Id.*

^{xcvii} *See* 16 U.S.C. § 1535(c)(1) (for fish and wildlife) and § 1535(c)(2) (for plants). Requirements for state programs pertaining to plants differ from those for fish and wildlife only in that plant programs need not include land acquisition.

^{cii} *See id.*

^{ciii} *See* MOU between the FWS and Edison Electric Institute regarding the use and development of avian protection plans.

^{civ} 50 C.F.R. §§ 13 (general permit procedures), 20.1–20.155 (hunting permits, season limits), 21.21–21.60 (specific permits), and 21.27 (special purpose permits).

^{cv} 50 C.F.R. Part 21

^{cvi} *Id.*

^{cvii} Exec. Order No. 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001).

^{cviii} *See, supra*, note 68, and accompanying text.

Organization Managing File(s)	Map/Database Title	Available?	Available as GIS layer	Pixel Size	Scale	Regions/States Covered	Fauna/Flora	Habitat types covered	Information not included	Map layers	Source Info	Date of Source	Date of Compilation	How to Access
The Nature Conservancy	Ecoregional Portfolio Sites	Yes, some states. Lower 48 expected by end of 2008		N/A (Polygons)	Varies, and not explicitly stated, but approx 1:100,000.	USA (50 states)	NA (applicable to birds and most other organisms)	Large & intact	Freshwater and marine ecoregional portfolios; biodiversity conservation targets (species and ecosystems) and goals for their conservation. Areas were identified as untilled if they did not appear to have been converted from natural vegetation to agricultural, residential/urban, surficial mining, or other uses. Untilled landscapes do include small inclusions of converted areas with varying degrees of impact from non-conversion land use activities, such as grazing, oil extraction, and shrub/tree removal (e.g., chaining). As such, this coverage represents a snapshot in time, circa 1990.	One	TNC ecoregional assessments conducted by TNC ecologist and outside agency experts.	Varies from mid to late 1990s and 2008.		available
The Nature Conservancy	Great Plains Untilled Landscapes	Yes		N/A (Polygons)	Nominal scale 1:280,000	Great Plains Bioregion	NA (applicable to birds and most other organisms) All tracked (ES, rookeries - hibernacula variable)	Large & intact landscapes	Common and untracked spp., migratory stop-over spp.	One	Derived from early 1990s Landsat TM Imagery, visually interpreted by one TNC staff person and digitized into GIS data layer State DNRs, University biological survey, varies and ongoing	Source images from the early 1990s.	Data created in 2001.	
Natural Heritage Programs	NatureServe	Yes	Yes, but varies			State by state for USA (50 States)		Endangered plants, natural communities						Contact h
Platt/DOE/Local transmission councils	Current and Proposed Transmission	Maybe	Yes/Maybe			Tx (Platt), other states?	NA	All						Information councils, c (http://www Data may restricted.

Unknown	Current and Proposed Wind Farms	Current wind farm info for sale from Industrial info. Information on Proposed Wind Developments is likely to be state by state and involves conversations with all of the possible permitting agencies.						All		Data represents species records available to us. It is not a census and does not reflect areas where surveys may have been conducted with sufficient effort to infer absence. All available data is not included in this map. Many researchers, private consulting companies, and other entities may have occurrence records that are not included in this map. It is intended for general distribution information only, and it cannot be used to infer if a species absolutely does or does not occur at a given site. You can, however, assume that if the project site is well out of the general range of a species that it does not occur there. For example, you can assume you will not find an Indiana Myotis in Nevada.				existing w developm
National Atlas	Bat Distributions	Distribution maps available. Requesting info from BCI on sensitive areas maps	No	N/A	Raw data varies. Some of it is specific to a UTM location, specific lat/long or geographic site (like a cave). Other data is specific to county. All raw data is specific at least to the county level. This data can only be released in summary maps (general distribution - specific only to the county level) and cannot be shared in raw form.	US only, not Mexico	Bats	All			U.S. State Natural Heritage Programs, Canadian Conservation Data Centers, published literature, unpublished reports, museum collections, and personal communications from university, federal, state, and local biologists.	Collected from sources between 2000 and 2003.	Maps were produced in 2003, but they reflect available data from 1900 to current.	Distributio http://natio

National Audubon Society	Important Bird Areas	Yes	Yes	Variable; Generally 300 DPI or greater	Depends on site; varies from 2 acres to over 100,000 acres. 10-100 acres is common.	U.S. (data organized at state level and not all states are currently available ~50% U.S. covered)	Birds ETSC, significant rookeries and some biological "hotspots".	All	Focuses on breeding and wintering birds and bird in migration. No info on other taxa. Focuses on habitat and not on use of air column.	Central coordinates of IBA sites or boundaries of IBAs. Includes either point locations or boundaries.	Biological surveys of birds; includes data from Breeding Bird Survey and Audubon's Christmas Bird Count	BBS & CBC annually. States do not use data that is more than ten years old.	Ongoing; IBA program began in mid-1990s; sites re-evaluated every ten years.	icecil@au
Natural Resources Conservation Service	Natural Resources Inventory (NRI)	Yes				All states and territ.								Contact st
Fish and Wildlife Service	Environmental Conservation Online System (ECOS)	Yes, USA			Yes, publicly available but no system set up for distribution as yet. Access maps on internet first.	USA	ETSC designated critical habitat areas	ETSC designated critical habitat areas						http://ecos
Fish and Wildlife Service	Habitat and Population Evaluation Team (HAPET) modeling	Yes, some models and midwestern states.				Prairie Pothole Region (midwestern states). Region 3 out of Fergus Falls covers Minnesota, Iowa, Region 6 out of Bismark has Dakotas and ?	Grassland birds, specific models of some sparrows, prairie chickens, ducks , etc.							http://www http://www Address: Fergus Fa Phone: 21
Fish and Wildlife Service	National Wetlands Inventory													
The Nature Conservancy	Wind Energy Potential	Yes			NREL: NA (Polygons) TX: 750 m IA: 200m NY:200m	Varies, and not explicitly stated, but approx 1:100,000. Unknown. Some species locations may be randomly generalized to obscure exact locations. PHS data vary in spatial scale. Some data have precise coordinates such as caves, eagle nests, heron rookeries,	Most Lower 48 states, except LA, KY, TN, MI, AL, FL, GA, and SC.	N/A	All wind energy potential data require validation using local meteorological field measurements at potential and actual wind turbine sites.	One layer, 7 wind power classes.	NREL (US Dept of Energy); MN Dept of Commerce; AWS Truewind, LLC; IA Energy Center; West Texas A&M University	Varies, from 1990s to present		
The Nature Conservancy	Sensitive species	Yes			NA (Polygons)	Species ranges in North America			Absence of species occurrences does not mean the species is not present.	One per species PHS data are comprised of an attributed polygon layer, a point data layer, and two linear data layers (freshwater salmon	NatureServe, USFWS	Varies by species	The age of PHS data varies, but regional data are reviewed at least every 2-3 years for accuracy and completeness, and updated as necessary by regional biologists	The age of PHS data varies, but regional data are reviewed at least every 2-3 years for accuracy and completeness, and updated as necessary by regional biologists
Washington Department of Fish and Wildlife	Priority Habitats and Species	Yes	Yes	Variable.		Washington state wide.	Birds, fish, and wildlife.	All	PHS data do not identify what is not present.					

distribution and nearshore spawning forage fish distribution).

etc. Some data are polygonal due to the nature of the data and may span across to hectares; for example, shorebird nesting colonies, elk winter range, herring spawning sites. Additionally, WDFW coarsens sensitive data, such as spotted owl nesting sites, to a section (1 sq mile) for ESA listed species that may be vulnerable to disturbance.

Federal, State, and Local land managed for wildlife conservation (NWR, State managed wildlife areas, State Parks, etc)

Forthcoming:

Western Governors Association	Wind-wildlife transmission maps		
Audubon/NRDC	Western resources maps		
North American Grouse Partnership	Prairie grouse habitats	Yes	
Am. Wind & Wildlife Institute	Wind & wildlife resource maps		US states & territ.?
Playa Lake Joint Venture	Playas	Yes	So. Plains & SW US
Prairie Pothole Joint Venture	Prairie Pothole habitats	Yes	Portions of ND,SD,MN,MT,IA

Note: Should there be a collaboration with national atlas? Seems a great resource built around exactly the idea of making maps available to the public.

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From: Mike Daulton

The Nature Conservancy Wind maps

Summary of Metadata for Data Layers mapped.
Full metadata documents (FGDC format) are available.

	TNC Great Plains Untilled Landscapes	TNC Ecoregional Portfolio Sites	Wind Energy Potential	Sensitive Species
What is the source of the landscape or biological data?	Derived from early 1990s Landsat TM Imagery, visually interpreted by one TNC staff person and digitized into GIS data layer	TNC Ecoregional Assessments conducted by TNC ecologist and outside agency experts.	NREL (US Dept. of Energy); MN Dept. of Commerce; AWS Truewind, LLC.; IA Energy Center; West Texas A&M University	NatureServe, USFWS
What is the age of the data?	Source Images date from early 1990s. Data created 2001	Varies from mid to late 1990s to 2008.	Varies, from 1990s to present	Varies by species
What is the pixel size (if applicable)?	NA (Polygons)	NA (Polygons)	NREL: NA (Polygons) TX: 750m IA: 200m NY: 200m	NA (Polygons)
How many layers are there (if applicable)?	One	One	One Layer, 7 wind power classes.	One per species
What is the scale of the data?	Nominal Scale 1:280,000	Varies, and not explicitly stated, but approx. 1:100,000	Varies, and not explicitly stated, but approx. 1:100,000	Unknown. Some species locations may be randomly generalized to obscure exact locations.
What is the geographic coverage?	Great Plains Bioregion	USA (50 States).	Most Lower 48 States, except LA KY, TN, MI, AL, FL, GA, SC.	Species ranges in North America.

<p>Does the data identify what is NOT there?</p>	<p>Areas were identified as untilled if they did not appear to have been converted from natural vegetation to agricultural, residential/urban, surficial mining, or other uses. Untilled landscapes do include small inclusions of converted areas and areas with varying degrees of impact from non-conversion land use activities, such as grazing, oil extraction, and shrub/tree removal (e.g., chaining). As such, this coverage represents a snapshot in time, circa 1990</p>	<p>Freshwater and marine Ecoregional portfolios; biodiversity conservation targets (species and ecosystems) and goals for their conservation.</p>	<p>All wind energy potential data require validation using local meteorological field measurements at potential and actual wind turbine sites.</p>	<p>Absence of species occurrences does not mean the species is not present.</p>
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From: Caitlin Coberly

The National Atlas Bat Distribution Maps. 9Note, these maps were obtained from Bat Conservation International. The newest maps may be obtained from Bat Conservation International (<http://www.batcon.org/home/default.asp>)

Note that maps are not available in GIS format.

	BCI bat distribution maps/National Atlas Bat Distribution maps
What is the source of the landscape or biological data?	U.S. STATE NATURAL HERITAGE PROGRAMS, CANADIAN CONSERVATION DATA CENTERS, PUBLISHED LITERATURE, UNPUBLISHED REPORTS, MUSEUM COLLECTIONS, AND PERSONAL COMMUNICATIONS FROM UNIVERSITY, FEDERAL, STATE, AND LOCAL BIOLOGISTS.
What is the age of the data?	WAS COLLECTED FROM THE ABOVE ENTITIES BETWEEN 2000 AND 2003. MAPS WERE PRODUCED IN 2003, BUT THEY REFLECT AVAILABLE DATA FROM 1900 TO CURRENT.
What is the pixel size (if applicable)?	NA (Polygons)
How many layers are there (if applicable)?	N/A
What is the scale of the data?	THE RAW DATA VARIES. SOME OF IT IS SPECIFIC TO A UTM LOCATION, SPECIFIC LAT/LONG OR GEOGRAPHIC SITE (LIKE A CAVE). OTHER DATA IS ONLY SPECIFIC TO COUNTY. ALL THE RAW DATA IS SPECIFIC AT LEAST TO THE COUNTY LEVEL. THIS DATA CAN ONLY BE RELEASE IN SUMMARIZED MAPS (GENERAL DISTRIBUTION - SPECIFIC ONLY TO THE COUNTY LEVEL) AND CANNOT BE SHARED IN IT'S RAW FORM.
What is the geographic coverage?	US DISTRIBUTION ONLY, NOT MEXICO.
Does the data identify what is NOT there?	NO - THE DATA ONLY REPRESENTS SPECIES RECORDS AVAILABLE TO US. IT IS NOT A CENSUS AND DOES NOT REFLECT AREAS WHERE SURVEYS MAY HAVE BEEN CONDUCTED WITH SUFFICIENT EFFORT TO INFER ABSENCE. ALL AVAILABLE DATA IS NOT INCLUDED IN THIS MAP. MANY RESEARCHERS, PRIVATE CONSULTING COMPANIES AND OTHER ENTITIES MAY HAVE OCCURANCE RECORDS THAT ARE NOT INCLUDED IN THIS MAP. IT IS

	<p>INTENDED FOR GENERAL DISTRIBUTION INFORMATION ONLY, AND IS CANNOT BE USED TO INFER IF A SPECIES ABSOLUTELY OCCURS OR DOES NOT OCCUR ON A PROJECT SITE. YOU CAN HOWEVER, PROBABLY ASSUME THAT IF THE PROJECT SITE IS WELL OUT OF THE GENERAL RANGE OF THE SPECIES THAT IT DOES NOT OCCUR THERE. FOR EXAMPLE, WE CAN ASSUME YOU WILL NOT FIND AN INDIANA MYOTIS IN NEVADA.</p>
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Author: Greg Hueckel

	Priority Habitats and Species (PHS) – State Agencies
What is the source of the landscape or biological data?	PHS data are stored and maintained by Washington Department of Fish and Wildlife (WDFW) in Olympia, WA. Data are most often supplied by WDFW professional biologists, but may include local government biologists or tribal biologists.
What is the age of the data?	The age of PHS data varies, but regional data are reviewed at least every 2 - 3 years for accuracy and completeness, and updated as necessary by regional biologists
What is the pixel size (if applicable)?	Pixel size - see question 5.
How many layers are there (if applicable)?	PHS data are comprised of an attributed polygon layer, a point data layer, and two linear data layers (freshwater salmon distribution and nearshore spawning forage fish distribution)
What is the scale of the data?	PHS data vary in spatial scale. Some data have precise coordinates such as caves, eagle nests, heron rookeries, etc. Some data are polygonal due to the nature of the data and may span acres to hectares; for example, shorebird-nesting colonies, elk winter range, herring spawning sites. Additionally, WDFW coarsens sensitive data, such as spotted owl nesting sites, to a section (1 sq mile) for ESA listed species that may be vulnerable to disturbance.
What is the geographic coverage?	PHS data are Washington State wide
Does the data identify what is NOT there?	PHS data do not identify what is not present.

PROVIDING ECOLOGICAL OFFSETS FOR WIND ENERGY DEVELOPMENT IN NORTHCENTRAL KANSAS

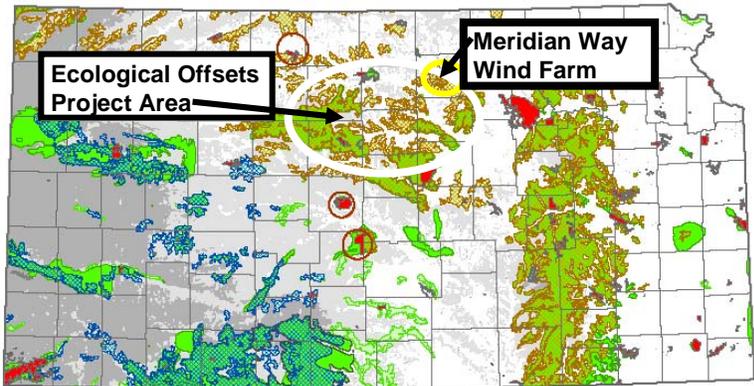


a partnership
between
HORIZON WIND,

RANGLAND TRUST OF KANSAS

& **THE NATURE CONSERVANCY**

Kansas Natural Resources:
Wind, Wildlife, Untilled Landscapes, and Protected Areas



- Whopping Crane stopover sites
- Riparian bird habitat
- Protected natural resource areas
- Greater prairie chicken distribution in untilled landscapes
- Lesser prairie chicken distribution in untilled landscapes
- TRB areas of conservation significance
- Untilled landscapes
- Wind resource at 50m
- Class 4 > 15.7 mph
- Class 5 > 16.8 mph
- Class 6 > 17.9 mph

Greater and Lesser Prairie Chicken distributions
Kansas Applied Wildlife Services program
November 2004

Untilled landscapes
Calkin, Wayne. 2003. Untilled Landscapes of the Great Plains.
The Nature Conservancy, Midwest Science Center

Protected natural resource areas
State parks, wildlife management areas,
National parks, Game Quads, wildlife refuges,
Nature Conservancy preserves, and conservation easements.
The Nature Conservancy, Chisholm Chapter GIS
February 2008

Whopping Crane stopover areas
Modified from U.S. Fish and Wildlife Service
Whopping Crane sightings, 1940-1999
The Nature Conservancy, Chisholm Chapter GIS,
February 2008

Project data provided
Army Corps of Engineers, Fort Hays State University
provided information to Brian Chisholm, TNC
February 2, 2008

Wind resource at 50 meters
Digitized from
"Kansas Wind Resource Map"
Central Air Services & Energy
http://www.casenergy.com/kansasmap/
January 2005

Goals & Strategies

- at least 20,000 acres of grassland bird habitat restoration, including
- 13,100 acres under permanent conservation easements
- long-term habitat improvements-
 - Prescribed burning
 - Tree and shrub removal
 - Grazing modifications
 - Unwanted fence removal
 - Noxious weed control



The Partnership

- RTK is the lead cooperater with the wind developer
- Horizon is main easement funder
- Provides funding for RTK to hire staff
- RTK will hold the conservation easements
- TNC plays a key role
- Other partners for non-mitigation habitat improvements – US Fish & Wildlife Service, KS Dept. of Wildlife & Parks, Pheasants Forever, USDA-NRCS
- All landowner participation is voluntary

The Agreement

- 10-yr. implementation for easements
- 20-yr. monitoring and reporting by RTK
- TNC easement acquisition loan
- TNC and other partners to make in-kind contributions
- Horizon provides easement acquisition funds

Outcomes and Benefits

- Sets a high standard for ecological responsibility in wind energy development
- Industry formally recognizes ecological offsets as a component of wind energy development
- Establishes TNC's and RTK's first project in the Smoky Hills region
- Strengthens the conservation partnerships between all parties
- Significant improvements in grassland bird habitat

PRESENTATION FROM MICHEL FRY – AMERICAN BIRD CONSERVANCY

Comments on FWS Advisory Committee on Wind and Wildlife October 22, 2008

The current installed capacity of wind projects (17 GW) is only about 5% of the total 350 Giga Watts anticipated to be installed by 2030. American Bird Conservancy (ABC), the Joint Ventures, and many States and NGOs have identified important bird areas (IBAs) across the US. The important bird areas and migratory bottlenecks conservatively total to about 8% of the land area of the lower 48 states and HI, but most of these have not been evaluated for wind-wildlife risk to date.

ABC believes that the most sensitive areas should be placed in a moratorium until: 1) they have been evaluated for wind-wildlife risk; and 2) better siting and operational techniques are developed in the next few years. Parts of many of the sensitive areas will undoubtedly be identified as sufficiently low risk to support wind power, both through habitat evaluation and through improved technologies to reduce risk in the near future, but some may not. We believe the current frenzy to develop the Texas Coast and much of the Dakotas, for example, without adequate siting and mitigation techniques appears to be inappropriate, and invites greater regulatory oversight.

Placing all of these Important bird areas on a moratorium list now, and providing funding to construct a dynamic wind risk map in the next 5 years will still allow planned build-out of wind projects over the next 20 years.

Today's discussion of avian and bat protection plans reveals plans with very good preconstruction and construction monitoring procedures to evaluate wind project siting in light of resident and migrant populations of birds and bats. Good faith efforts made at this stage will probably reduce take of both groups, especially for resident birds and bats identified during preconstruction studies. However, in our opinion, recent wind project activity along the Texas coast, for example, indicates that some current preconstruction evaluations are not being taken seriously by developers.

None of the Avian and Bat Protection Plans presented thus far have adequately addressed operational management of wind projects that have take. The Iberdrola policy clearly states that operational management is a "last resort" action, to be considered in "extreme cases of documented mortality". We praise Iberdrola for considering permanent onsite radar to detect major migration events, and we would like to see such techniques clearly delineated in any recommendations put forward by this committee and in permits requiring site specific protection plans.

There are additional operational techniques that should also be included in this committee's recommendations, including, but not limited to:

- Permit driven short-term shutdowns during weather events that may force migrating flocks of birds down to rotor heights.
- For projects sited in identified migratory bottlenecks, in spite of preconstruction studies that failed to identify risks, regulators should write permits to include

sunrise and sunset shutdowns during the period when birds are approaching roosts and leaving roost sites. Eliminating risks may only require shutdowns for 2-3 hours each day during the migration period, and power production could continue both during the day and night with little additional risk, providing flocks diurnally migrating raptors are not also at risk.

- Whooping crane mitigation may require permits that specify both 1) careful siting by orienting turbines to minimize perceived or actual barriers to migration, and 2) diurnal shutdowns during periods of local feeding by cranes in the prairie pothole regions of the Dakotas.
- Transmission lines must also be carefully sited, and incidental take permits should consider offsite mitigation to compensate for take or to provide feeding habitat away from wind projects to avoid take.