WINDPOWER GUIDANCE SUMMARY – NORTH AMERICA

Prepared by Washington Department of Fish and Wildlife – March 2008

The information in this document was assembled using current State, Federal and Provincial Windpower Guidance documents, as of March 20,2008. The exceptions are as follows, Kansas - Wind Power Position Paper prepared by the Kansas Department of Wildlife and Parks, Maryland – Recommendations from the Wind Energy Technical Advisory Group, Massachusetts – Model Amendment to a Zoning Ordinance or By-Law, Oregon – A Model Ordinance for Energy Projects, and Pennsylvania – Model Ordinance for Wind Energy Facilities.

Currently most countries, including the United States and Canada are providing guidance for wind power development proposals. For the purposes of this windpower guidance summary document, Canada, the U.S. Fish and Wildlife Service (USFW) and 25 U.S. States* will be discussed. 21 U.S. States have locally developed wind power guidance or use the Federal USFW Interim Guidance on Wind Power. New York and West Virginia are currently drafting guidance, Minnesota has Wind Siting Law, and Maine has Site Law for any project in excess of 20 acres, but not specific to the development impacts related to wind facilities, and Maine has proposed wildlife guidelines for wind power siting.

* **ARIZONA, CALIFORNIA, COLORADO, INDIANA, KANSAS, MAINE, MARYLAND, MASSACHUSETTS, MICHIGAN, MINNESOTA, MONTANA, NEVADA, NEW MEXICO, NEW YORK, NORTH DAKOTA, OHIO, OKLAHOMA, OREGON, PENNSYLVANIA, SOUTH DAKOTA, TEXAS, VERMONT, WASHINGTON, WEST VIRGINIA, WISCONSIN**

States with guidance and Canada are listed by the following categories:

- **Preliminary Assessment & Site Evaluation**
- **Pre-construction Wildlife Assessment**
- **Site Development (Micrositing)**
- **Retrofitting, Repowering & Decommission**
- **Research**
- **Mitigation**

Preliminary Assessment & Site Evaluation

Canada

Guidance Document alerts project proponents to important siting considerations that can affect birds and their habitat. Project proponents should consult the regional CWS or Environmental Assessment (EA) office for further information and guidance in identifying, assessing, and mitigating these risks. Canada asks the project proponent to collect data at the appropriate time of year, in most cases during several seasons over the whole year, to capture all habitats used by birds. Baseline surveys should include bird species lists, bird habitat impacts, quantifying breeding bird numbers, and quantifying use of the site by passage migrants or wintering birds. Project proponent should also note geographic context. The Guidance Document also contains survey recommendations for offshore wind power projects.

USFW

Pre-project review includes a construction method and design consideration, identifying seasonal bird concentrations of listed species, and collecting existing information on the proposed site for development. The intensity of this exercise is dependant upon the occurrence of listed species, availability of existing data, and what is known about species presence and use at the site.

Arizona

Voluntary guidelines recommend three-year baseline survey, at various times of the year, prior to construction.

California

Voluntary guidelines include recommendations on preliminary screening of proposed wind energy project sites; assessing direct, indirect, and cumulative impacts to birds and bats in accordance with state and federal laws; developing avoidance and minimization measures; establishing appropriate compensatory mitigation; facilitating completion of the permitting process; and operations monitoring, analysis and reporting methods. Provides a framework (Category 1-4 for proposed wind energy development sites) for determining bird and bat study effort to determine if there should be any deviation for standard one year pre-permitting and 2 years operation monitoring.

Colorado

Mandatory guidelines contained within PUC Rule require consultation with Colorado Division of Wildlife and U.S. Fish and Wildlife Service. Developers must provide certification of site-specific avian surveys conducted on facility site and verification that surveys are used in design, placement and management of facilities for state or federal listed species, sites shown to be local bird migration pathways and critical habitat and areas where birds or other wildlife are highly concentrated and are considered at risk.

Indiana

Wind power facilities are regulated at the local level through counties and siting requirements vary by location depending upon resource implications.

Kansas

Guidelines recommend developers contact appropriate agencies to assess impacts to potentially sensitive land uses and encourage avoidance of rare or disappearing ecosystems. Outlines biological and environmental assessment prior to development (encourages use of biological and environmental experts, including agency or university personnel. It is strongly recommended that resource management agencies be contacted early in process to conduct a careful review of legally protected species' use of area. Guidance includes specific recommendations including burying power lines, minimizing perching areas on turbines and siting away from known migratory routes.

Maryland

Before filing a CPCN application with the PSC, it is recommended that project developers contact, meet and discuss the project with the staff of the Maryland Power Plant Research Program (PPRP). In this pre-application phase of the CPCN process, the PPRP staff and the applicant scope out and identify any anticipated environmental and socioeconomic issues specific to the project and outline the steps to be conducted to address the identified issues.

Massachusetts

Preliminary assessment and site evaluation is voluntary. The construction and operation of all such proposed wind facilities shall be consistent with all applicable local, state and federal requirements, including but not limited to all applicable safety, construction, environmental, electrical, communications and aviation requirements.

Michigan

Prior to construction of a utility grid wind energy system, a wind site assessment is conducted to determine the wind resource and the feasibility of using the site.

Minnesota

Much of the wind resource and potential for windpower development potential is in the southwest portion of the state. Because of the regional availability of wind resources, the state conducted one large 4-year avian impact study and a 2-year bat impact study in the area. Based upon these study results, state and local agencies in Minnesota are not requiring post-construction studies for wind power development in this portion of the state.

Montana

Voluntary recommendations reference the U.S. Fish & Wildlife Service's Interim Guidance and provide information on the Service's recommended ranking system, developed in Montana, that focuses on pre-development evaluation of proposed sites based on the potential impacts to wildlife.

Nevada

Uses USFWS interim Guidelines as well as OR and WA

New Hampshire

Preliminary draft guidelines are being developed and New Hampshire currently uses Vermont's as basis. Initial scoping meeting of project is focused upon resource assessment proponent, proposed project location, and an evaluation of whether project is likely or less likely to have major resource impacts. Projects are placed into categories. Pre- and post-monitoring studies are outlined for wildlife.

New Mexico

Voluntary guidelines based on the U.S. Fish & Wildlife Service's Interim Guidance, the New Mexico Game & Fish Department's focus on Site Development recommendations and Turbine Design and Operation recommendations.

New York

New York State Department of Environmental Conservation is in the process of developing voluntary guidelines for conducting pre-and post-construction bird and bat studies at proposed and operating wind projects.

North Dakota

Uses USFWS interim Guidelines

Ohio

The Ohio Dept. of Natural Resources Authorities & Guidance for the Siting & Operation of Wind Power Generating Facilities in Ohio provides guidance on how each division/office might be involved in reviewing permits and environmental assessments for each project and provides the codes and authorities that relate to specific areas of concern.

Oklahoma

Uses USFWS interim Guidelines

Oregon

Applicants are encouraged to consult with ODFW and to begin relevant biological surveys, if necessary, before submitting a notice of intent. The Energy Siting Council must determine whether the applicant has done appropriate site-specific studies to characterize the fish and wildlife habitat at the site and nearby.

Pennsylvania

The Pennsylvania Game Commission developed voluntary standardized procedures for site assessment and monitoring of birds and bats at wind facilities. The recommendations were developed to accomplish two main goals: to standardize the process of documenting the wildlife impacts at wind farms so they may be comparable and to collect data before construction in an attempt to determine site assessment for future use. The Game Commission has also outlined steps for appropriate post-construction mortality studies

South Dakota

Consideration is made for the affected ecosystem early in project evaluation and planning. Use of local biological and environmental experts to conduct a preliminary biological reconnaissance of the likely site area occurs as part of the pre-project impact evaluation. Communication with personnel from wildlife agencies (e.g., South Dakota Game, Fish and Parks (SDGFP), U. S. Fish and Wildlife Service, U. S. Geological Survey, and Natural Resources Conservation Service. Avoid unnecessary ecological impacts of wind power development through proper planning.

Examination of the key wildlife habitats, migration corridors, staging/concentration area, and breeding/brood-rearing areas at the landscape scale is conducted to help develop general siting strategies. The siting of wind turbines is determined in such a manner as to not interfere with important wildlife movement corridors and staging areas.

Vermont

Preliminary assessment and site evaluation consists of scoping meetings with proponent on the conceptual project location, which in turn focuses upon the components of the initial resource assessment.

Washington

It is recommended that proper pre-project assessment is implemented and good project design and management practices are established. This approach will ultimately reduce significant and in some cases even eliminate impacts to wildlife at most wind projects.

Pre-construction Wildlife Assessment

Canada

Guidance is based on the level of environmental analysis on a matrix that takes site sensitivity and facility size into account and then classifies the project within one of four categories. The project proponent is requested to conduct one to two year of baseline, basic surveys for birds for the least sensitive categories. The second most sensitive category asks for at least one year of baseline studies along with behavioral and other targeted studies. The most sensitive studies require one or two years of intensive studies including targeted studies with issues of concern. However, the CWS may require more years of baseline studies and other studies after the EA decision. Depending on the findings of baseline studies, CWS will encourage or even require project proponents, whose project falls into the most sensitive category, to seek alternative locations if the EA determines the project causes significant adverse effects on birds

USFW

USFW has developed a Potential Impact Index (PII) tool intended to rank locations proposed for development. The PII is a ranking tool that gives a proposed site a high, medium or low ranking of a proposal based upon species impact. However, this is not the only consideration for making a determination to proceed or abandon a proposal. Other site-specific mitigation alternatives may be considered. When USFW evaluates a project for resource impacts, the mitigation decisions are guided by the Fish and Wildlife Service Mitigation Policy (Federal Register 46 (15), January 1981). In general terms it is the policy of the Service to seek to mitigate losses of fish, wildlife, and their habitats, and uses thereof, from land and water developments.

In the event the site is identified as a high bird concentration site, it is recommended that an average of **three years monitoring data** is collected and used to identify seasonal peaks of bird presence. It is further recommended that turbines in these areas be shut down during these peak times. Similarly, USFW recommends that all sites be monitored for post construction impacts for a period

up to three years. This monitoring is recommended to help identify any potential impacts that were not realized in the pre-project monitoring phase.

Arizona

Voluntary guidelines three-year baseline survey, at various times of the year, prior to construction

California

Voluntary guidelines include recommendations on preliminary screening of proposed wind energy project sites; assessing direct, indirect, and cumulative impacts to birds and bats in accordance with state and federal laws; developing avoidance and minimization measures; establishing appropriate compensatory mitigation; facilitating completion of the permitting process; and operations monitoring, analysis and reporting methods.

Guidelines provide a framework (Category 1-4 for proposed wind energy development sites) for determining bird and bat study effort to determine if there should be any deviation for standard one year pre-permitting and 2 years operation monitoring.

Colorado

Mandatory guidelines contained within PUC Rule require consultation with Colorado Division of Wildlife and U.S. Fish and Wildlife Service. Developers must provide certification of site-specific avian surveys conducted on facility site and verification that surveys are used in design, placement and management of facilities for state or federal listed species, sites shown to be local bird migration pathways and critical habitat and areas where birds or other wildlife are highly concentrated and are considered at risk.

Kansas

Recommends developers contact appropriate agencies to assess impacts to potentially sensitive land uses and encourages avoidance of rare or disappearing ecosystems. Outlines biological and environmental assessment prior to development (encourages use of biological and environmental experts, including agency or university personnel. Recommends requiring resource management agency be contacted early in process and careful review of legally protected species' use of area. Provides specific recommendations including burying power lines, minimizing perching areas on turbines and siting away from known migratory routes.

Maine

Department of Inland Fisheries & Wildlife typically asks for studies of bird migration including radar studies of night migrants and daytime counts of raptors.

Radar and acoustic surveys for migrating bats are conducted. If appropriate, surveys for rare small mammals have been conducted. Rare community and rare plant surveys are commonly conducted as well as full work up for wetlands.

Maryland

Guidelines are comprehensive for pre-siting evaluation, design and construction recommendations, lighting issues, etc. The applicant is required to get an Environmental Review from the State's Wildlife and Heritage Service to assess species and habitats of concern. A consultation with DNR Natural Heritage biologists is required to minimize seasonal (e.g. avian and bat breeding seasons) disturbance during construction and to outline pre-construction studies (one year of monitoring, additional monitoring of species of special concern) that must be undertaken. Studies will continue during development and the developer is required to do three years of monitoring post-construction.

At the earliest possible stage in the planning process, the Applicant shall submit a request for Environmental Review from the State's Wildlife and Heritage Service. An environmental review request should include a cover letter describing the entire project and the full nature of the request, along with a map of the project location with site boundaries clearly delineated. The state's review will apprise the applicant of any species of concern occurring in the project area and provide recommendations to avoid impacts to them. More detailed identification of areas of concern will be developed by PPRP, NHP and other biologists during site visits associated with the State's environmental impact assessment. Standard protocols for all preconstruction monitoring and assessment studies required by these guidelines will be provided by NHP. In filing for a CPCN, the Applicant shall include: The results of one year of monitoring on the proposed site for birds and bats.

The monitoring shall be seasonally and spatially appropriate and may include radar monitoring for migrating birds and acoustic monitoring for migrating bats, an assessment of potential bat habitat on the site, the results of a Phase 1 avian risk assessment. The applicant shall include the results of a survey of breeding birds for the area encompassed in the proposed project.

Additional emphasis may be required for species of concern known to nest within or near the project area. Additional monitoring needs for NHP biologists or

experts may identify rare, threatened and endangered species employed by PPRP during the preparation of the State's environmental impact assessment. Unless deemed inappropriate by NHP, the results from all the prescribed studies will be considered public information and can be shared with the state, interveners, and the public at large.

Michigan

Requirement to have a third party, qualified professional conduct an analysis to identify and assess any potential impacts on the natural environment including, but not limited to wetlands and other fragile ecosystems, historical and cultural sites, and identify and assess any potential impacts on wildlife and endangered species.

The applicant shall identify and evaluate the significance of any net effects or concerns that will remain after mitigation efforts. Sites requiring special scrutiny include wildlife refuges, other areas where birds are highly concentrated, bat hibernacula, wooded ridge tops that attract wildlife, sites that are frequented by federally and/or state listed endangered species of birds and bats, significant bird migration pathways, and areas that have landscape features known to attract large numbers of raptors. At a minimum, the analysis shall include a thorough review of existing information regarding species and potential habitats in the vicinity of the project area.

Where appropriate, surveys for bats, raptors, and general avian use should be conducted. The analysis shall include the potential effects on species listed under the federal Endangered Species Act and Michigan's Endangered Species Protection Law. The analysis shall indicate whether a post construction wildlife mortality study will be conducted and, if not, the reasons why such a study does not need to be conducted. Power lines should be placed underground, when feasible, to prevent avian collisions and electrocutions. All aboveground lines, transformers, or conductors should comply with the Avian Power Line Interaction Committee (APLIC, http://www.aplic.org/) published standards to prevent avian mortality.

Minnesota

Much of the wind resource and potential for windpower development potential is in the southwest portion of the state. Because of the regional availability of wind resources, the state conducted one large 4-year avian impact study and a 2-year bat impact study in the area. Based upon these study results, state and local agencies in Minnesota are not requiring post-construction studies for wind power development in this portion of the state.

Montana

Voluntary recommendations reference the U.S. Fish & Wildlife Service's Interim Guidance and provide information on the Service's recommended ranking system, developed in Montana, that focuses on pre-development evaluation of proposed sites based on the potential impacts to wildlife.

Nevada

Uses USFWS interim Guidelines as well as OR and WA

New Hampshire

Preliminary draft guidelines are currently being developed. New Hampshire uses Vermont's Windpower Guidance as basis. Preliminary assessment and site evaluation consists of scoping meetings with proponent on the conceptual project location, which in turn focuses upon the components of the initial resource assessment. Evaluation of whether project is likely or less likely to have major impacts. Projects are placed into categories. For wildlife, pre- and post-monitoring studies are outlined.

New York

New York State Department of Environmental Conservation is in the process of developing voluntary guidelines for conducting pre-and post-construction bird and bat studies at proposed and operating wind projects.

North Dakota

Uses USFWS interim Guidelines

Ohio

The Ohio Dept. of Natural Resources Authorities & Guidance for the Siting & Operation of Wind Power Generating Facilities in Ohio provides guidance on how each division/office might be involved in reviewing permits and environmental assessments for each project and provides the codes and authorities that relate to specific areas of concern.

Oklahoma

Uses USFWS interim Guidelines.

Oregon

Applicants are encouraged to consult with ODFW and to begin relevant biological surveys, if necessary, before submitting a notice of intent. The Energy Siting Council must determine whether the applicant has done appropriate site-specific studies to characterize the fish and wildlife habitat at the site and nearby.

Pennsylvania

The Pennsylvania Game Commission developed voluntary standardized procedures for site assessment and monitoring of birds and bats at wind facilities. The recommendations were developed to accomplish two main goals: to standardize the process of documenting the wildlife impacts at wind farms so they may be comparable and to collect data before construction in an attempt to determine site assessment for future use. The Game Commission has also outlined steps for appropriate post-construction mortality studies

South Dakota

Bird and bat collision mortality and behavioral avoidance associated with wind energy facilities have been a controversial siting consideration. Typically, bats have a higher incidence of mortalities at wind energy sites than birds, though this depends on the site. Biological resource surveys at each potential wind power site in the early stages of planning can help determine whether serious conflicts are likely to occur at a particular site, but cumulative effects with multiple sites in a particular region/area must also be acknowledged and/or investigated and minimized/avoided. In some instances, the impact wind turbines have on birds, bats, and other sensitive biological resources can be adequately mitigated. However, wind development may be inappropriate in certain areas in South Dakota.

Texas

Current draft recommends pre- and post-construction surveys, with a step down method. This would require 3 years pre-construction surveys (birds and bats) in an area where no wind development has occurred, 2 years where there have been other wind farms and preconstruction surveys performed, 1 year where the preconstruction surveys and post construction surveys support little or no use of the area and minimal mortality. Asking for a minimum of 2 years post-construction surveys for both species.

Vermont

Preliminary assessment and site evaluation consists of scoping meetings with proponent on the conceptual project location, which in turn focuses upon the components of the initial resource assessment., as well as pre-construction bird and bat surveys. Identification surveys big game wintering areas and wildlife corridors are also conducted at this stage of project impact evaluation.

Washington

Pre-project assessment studies are conducted to 1) collect information suitable for predicting the potential impacts of the project on wildlife and plants and 2) design the project layout (e.g., turbine locations) so that impacts on biological resources are avoided and minimized. To the extent possible, this pre-project assessment may utilize existing information from projects in comparable habitat types in locations close to the proposed project.

The site-specific components and the duration of the assessment 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 species at the site.

Site Development (Micrositing)

Canada

Guidance alerts project proponents to lighting options and basic project characteristics that can affect birds. The project proponent examines the site to determine if an elevated level of concern exists that may require special considerations. If the site has elevated concerns, the proponent may wish to choose another site that presents less risk to birds, before initiating the Environmental Assessment (EA). The guidance document encourages project proponents to consider the relative suitability of different locations for a given facility, early in the planning process. By comparing site sensitivity at different sites, the project proponent may select the site presenting the least risk to birds and simplify the ensuing EA.

The Guidance Document lists many, very detailed, and excellent BMP's for construction and operation for turbines, especially in considering the number and size of the turbines on site. The listed BMP's goes beyond those listed in the Washington guidelines, but like the Washington guidelines gives no opportunities to update the BMP's for future operation, maintenance, and electrical equipment replacement.

Arizona

Voluntary guidelines outline considerations for site placement, habitat fragmentation, power transmission, tower configuration, and tower design that should be addressed in the pre-construction phase describes steps to undertake during construction to reduce disturbance to habitats and wildlife including siting on previously disturbed areas, avoiding building during breeding periods, etc.

Recommendations include the maximize use of flat land and gentle slopes and avoidance of ridges, steep slopes, valleys, canyons, cliffs, and fissures which are known areas of concentrated wildlife, generally birds and bats. When ridges, canyons, cliffs, and fissures are within the project vicinity, it is recommended that turbine installations be offset at least 50 meters from the geologic features. Avoid placing strings or clusters of towers close to prairie dog colonies.

California

Voluntary guidelines include recommendations on preliminary screening of proposed wind energy project sites; assessing direct, indirect, and cumulative impacts to birds and bats in accordance with state and federal laws; developing avoidance and minimization measures; establishing appropriate compensatory mitigation; facilitating completion of the permitting process; and operations monitoring, analysis and reporting methods.

Colorado

Mandatory guidelines contained within PUC Rule require consultation with Colorado Division of Wildlife and U.S. Fish and Wildlife Service. Developers must provide certification of site-specific avian surveys conducted on facility site and verification that surveys are used in design, placement and management of facilities for state or federal listed species, sites shown to be local bird migration pathways and critical habitat and areas where birds or other wildlife are highly concentrated and are considered at risk.

Kansas

Voluntary guidelines in the Wind Siting Handbook provide information on all aspects of wind power siting based on existing regulations in four counties (land use regulation is solely under the purview of local government in Kansas) and recommends requiring environmental assessment in siting decisions.

Wind power facilities should be sited on previously altered landscapes, such as areas of extensive cultivation or urban and industrial development, and away from extensive areas of intact native prairie, important wildlife migration corridors, and

migratory staging areas. That mitigation is appropriate only if significant ecological harm from wind power facilities cannot be adequately addressed through proper siting.

Maryland

The guidelines are comprehensive for pre-siting evaluation, design and construction recommendations, lighting issues, etc. The applicant is required to get an Environmental Review from the State's Wildlife and Heritage Service to assess species and habitats of concern. A consultation with DNR Natural Heritage biologists is required to minimize seasonal (e.g. avian and bat breeding seasons) disturbance during construction and to outline pre-construction studies (one year of monitoring, additional monitoring of species of special concern) that must be undertaken. Studies will continue during development and the developer is required to do three years of monitoring post-construction. At the earliest possible stage in the planning process, the Applicant shall submit a request for Environmental Review from the State's Wildlife and Heritage Service.

An environmental review request should include a cover letter describing the entire project and the full nature of the request, along with a map of the project location with site boundaries clearly delineated. The state's review will apprise the applicant of any species of concern occurring in the project area and provide recommendations to avoid impacts to them. PPRP, NHP and other biologists will develop more detailed identification of areas of concern during site visits associated with the State's environmental impact assessment.

Massachusetts

Only height and setbacks addressed in siting of wind turbines. All wind energy facilities shall be constructed and operated in a manner that minimizes any adverse visual, safety, and environmental impacts. No special permit shall be granted unless the special permit granting authority finds in writing that the specific site is an appropriate location for such use.

Minnesota

Much of the wind power development potential is in the southwest portion of the state, so the state conducted one large 4-year avian impact study and a 2-year bat impact study in the area. On the basis of the results of the state-required studies, state and local agencies in Minnesota are not requiring post-construction studies for wind power development in this portion of the state. Not sure about preconstruction studies. Other siting criteria are specific to wind resource such as direction, seasonality and speeds.

Montana

Voluntary recommendations reference the U.S. Fish & Wildlife Service's Interim Guidance and provide information on the Service's recommended ranking system, developed in Montana, that focuses on pre-development evaluation of proposed sites based on the potential impacts to wildlife. Directs industry to NWCC Siting Group web page.

Nevada

Uses USFWS interim Guidelines as well as OR and WA

New Hampshire

The state is currently going through their first wind power siting evaluation but uses Vermont's guidance as basis

New Mexico

The siting recommendations focus on avoiding important wildlife habitat including bird migration pathways, bat hibernacula, etc. The guidelines specifically recommend avoiding known Lesser Prairie Chicken habitat recommending a 5-mile buffer from known leks.

New York

New York State Department of Environmental Conservation is in the process of developing voluntary guidelines for conducting pre-and post-construction bird and bat studies at proposed and operating wind projects.

North Dakota

Uses USFWS interim Guidelines

Ohio

The Siting New Energy Infrastructure in Ohio - A Guidance Document (General Siting Manual) outlines the process including application, review, hearings etc. for receiving approval to develop a major utility facility but does not provide details on wildlife or environmental concerns, but lists the Ohio Dept. of Natural Resources (ODNR) divisions that might review siting proposals. The Authorities & Guidance for the Siting & Operation of Wind Power Generating Facilities in Ohio provides guidance on how each division/office might be involved in

reviewing permits and environmental assessments for each project and provides the codes and authorities that relate to specific areas of concern.

Oklahoma

Uses USFWS interim Guidelines

Oregon

Applicants are encouraged to consult with ODFW and to begin relevant biological surveys, if necessary, before submitting a notice of intent. The Energy Siting Council must determine whether the applicant has done appropriate site-specific studies to characterize the fish and wildlife habitat at the site and nearby.

South Dakota

Bird and bat collision mortality and behavioral avoidance associated with wind energy facilities have been a controversial siting consideration. Typically, bats have a higher incidence of mortalities at wind energy sites than birds, though this depends on the site.

Vermont

Likely through ongoing consultation with agency during pre-construction establishment and review of wildlife/habitat studies and inventories, as well as during review of Land Management Plan

Washington

It is recommended that proper pre-project assessment is implemented and good project design and management practices are established. This approach will ultimately reduce significant and in some cases even eliminate impacts to wildlife at most wind projects.

Retrofitting, Repowering & Decommission

Canada

Guidance recommends adopting a decommissioning plan that would require removal of the turbines and infrastructure when the facility is no longer operational, including restoration of the site to approximate pre-project

conditions. If appropriate, the Guidance Document asks the project proponent to remove turbine platforms to a reasonable depth and soil replaced over any remaining concrete. If the project proponent developed the wind power project on a former natural area, the guidance document suggests they revegetate all roads and disturbed areas using native vegetation or standard seed mixes to help the site return to its original state as quickly as possible.

USFW

USFW provides reference appendices to use to complete the PII exercise to include information on specific bird species affected by wind power development, recommended studies to consider for gathering more information on a site for species impact, decommissioning alternatives and applicable law references (Migratory Bird Act, Endangered Species Act, etc.)

California

Voluntary guidelines provide information to help reduce impacts to birds and bats from new development or repowering of wind energy projects in California.

Kansas

Anticipate and require provisions for future site decommissioning and restoration.

Massachusetts

Through a by-law pertaining to the removal requirements, abandonment, and financial surety, a special permit is used to provide for the construction and operation of wind facilities. This special permit also provides standards for the placement, design, construction, monitoring, modification and removal of wind facilities that address public safety, minimize impacts on scenic, natural and historic resources of the city or town and provide adequate financial assurance for decommissioning.

Michigan

Applicant s required to submit a decommissioning plan. The plan must include: 1) the anticipated life of the project, 2) the estimated decommissioning costs net of salvage value in current dollars, 3) the method of ensuring that funds will be available for decommissioning and restoration, and 4) the anticipated manner in which the project will be decommissioned and the site restored.

Minnesota

Applicant s required to submit a decommissioning plan including the following information regarding decommissioning of the project and restoring the site: the anticipated life of the project; the estimated decommissioning costs in current dollars; the method and schedule for updating the costs of decommissioning and restoration; the method of ensuring that funds will be available for decommissioning and restoration; and the anticipated manner in which the project will be decommissioned and the site restored.

Oregon

The applicant must explain how it proposes to restore the site. The Energy Siting Council recognizes the risk that construction of an energy facility could stop in a partially completed state or and operating facility could cease operating, leaving the community with unusable property and no funds for site restoration. This

standard protects against that risk by requiring financial assurance to pay for site restoration.

The applicant does not have to show adequate funding to complete the facility but needs only show adequate funding to restore the site in case of early termination of the project. The Council includes a mandatory condition in every site certificate requiring a bond or letter of credit to be in place before construction begins to provide funds for site restoration.

Pennsylvania

The Facility Owner and Operator shall, at its expense, complete decommissioning of the Wind Energy Facility, or individual Wind Turbines, within (12) twelve months after the end of the useful life of the Facility or individual Wind Turbines. The Wind Energy Facility or individual Wind Turbines will presume to be at the end of its useful life if no electricity is generated for a continuous period of twelve (12) months.

Decommissioning shall include removal of Wind Turbines, buildings, cabling, electrical components, roads, foundations to a depth of 36 inches, and any other associated facilities. Disturbed earth shall be graded and re-seeded, unless the landowner requests in writing that the access roads or other land surface areas not be restored. An independent and certified Professional Engineer shall be retained to estimate the total cost of decommissioning ("Decommissioning Costs") without regard to salvage value of the equipment, and the cost of decommissioning net salvage value of the equipment ("Net Decommissioning Costs").

Said estimates shall be submitted to the [*municipality*] after the first year of operation and every fifth year thereafter. The Facility Owner or Operator shall post and maintain Decommissioning Funds in an amount equal to Net Decommissioning Costs; Provided, that at no point shall Decommissioning Funds be less than twenty five percent (25%) of Decommissioning Costs. The Decommissioning Funds shall be posted and maintained with a bonding company or Federal or Commonwealth chartered lending institution chosen by the Facility Owner or Operator and participating landowner posting the financial security, provided that the bonding company or lending institution is authorized to conduct such business within the Commonwealth and is approved by the [*municipality*]. Decommissioning Funds may be in the form of a performance bond, surety bond, letter of credit, corporate guarantee or other form of financial assurance as may be acceptable to the [*municipality*]. If the Facility Owner or Operator fails to complete decommissioning within the period prescribed by Paragraph 17(A), then the landowner shall have six (6) months to complete decommissioning. If neither the Facility Owner or Operator, nor the landowner complete decommissioning within the periods prescribed by Paragraphs 17(A) and 17(G), then the [*municipality*] may take such measures as necessary to complete decommissioning.

The entry into and submission of evidence of a Participating Landowner agreement to the municipality shall constitute agreement and consent of the parties to the agreement, their respective heirs, successors and assigns that the said municipality may take such action as necessary to implement the decommissioning plan. The escrow agent shall release the Decommissioning Funds when the Facility Owner or Operator has demonstrated and the municipality concurs that decommissioning has been satisfactorily completed, or upon written

South Dakota

Guidance has provisions for future site decommissioning and restoration.

Vermont

Land Management Plan should include a Habitat Restoration Management plan and Reclamation Plan

Washington

Encourage a decommissioning condition that would require removal of the turbines and infrastructure when it ceases operation, and restoration of the site to approximate pre-project conditions.

Research

Arizona

Post-construction recommendations include conducting a three-year monitoring plan to assess movement, mortality, behavior changes, and abundance of local species for potential future facility design modifications to reduce impacts.

California

Through the Energy Commission's Public Interest Energy Research (PIER) Program and through long-term monitoring (greater that the recommended 2 year operation monitoring) to gather information to develop impact avoidance, minimization, and mitigation measures and to verify whether these measures were effective in reducing fatalities.

Kansas

Requirement to conduct wildlife studies, as it is recognized that other seriously declining or vulnerable species that have no legal protection may also be present.

Requiring that wildlife issues be researched at each site will help the understanding of how a wind energy project might impact individual species of concern. The resultant improvement in available knowledge of wind power and wildlife interactions obtained through research and monitoring should be used to periodically update guidelines regarding the siting of wind power facilities.

Maryland

Any additional research related studies identified by the State would not be the responsibility of the Applicant

Washington

At some project sites, additional studies that utilize pre-construction data may be conducted to test specific research hypotheses about impacts to a particular species or group of species. Rather than being necessary for pre-permit assessment, such studies are often more research-oriented and often are focused on indirect impacts, such as displacement, that provide information for future projects.

Mitigation

Canada

Guidance Document mentions replacement land for the habitat lost or disturbed by the wind power project, once. CWS will only require habitat replacement mitigation only if all other mitigation (reduction of impacts) measures fail. For example, if the wind power project affects birds or their habitat more than anticipated and various mitigation strategies to avoid or reduce the adverse effects prove unsuccessful, then the project proponent should consider land purchase and protection. The project proponent would only mitigate at a ratio of 1:1.

Other than the one reference in the Guidance Document, "mitigation" refers to reducing impacts during the design, construction, and operation stages. The Guidance Document's biggest weakness is mitigation, when mitigation means habitat replacement through land or easement purchase.

USFW

When projects are evaluated for resource impacts, mitigation decisions are guided by the Fish and Wildlife Service Mitigation Policy (Federal Register 46 (15), January 1981). In general terms it is the policy of the Service to seek to mitigate losses of fish, wildlife, and their habitats, and uses thereof, from land and water developments.

Arizona

Provisions for project specific recommendations but Arizona does not have the authority to require mitigation.

California

Guidelines establish appropriate compensatory mitigation

Colorado

State can require mitigation for wildlife (game, non-game and threatened, endangered, and species of concern).

Indiana

Department of Natural Resources can require mitigation under certain circumstances through regulations that apply to all construction projects but are

not specific to wind power. The Flood Control Act regulates construction in a floodway and allows for mitigation.

Kansas

Guidelines outline mitigation options for unavoidable impacts, which may include ecological restoration, conservation easements, and long-term management agreements. Mitigation is only appropriate if significant ecological harm from wind power facilities cannot be adequately addressed through proper siting.

Maine

State has the authority to require mitigation.

Maryland

Efforts to avoid or minimize impacts should be explored before seeking mitigation actions. Any mitigation plan should reasonably reflect the level of the observed impact and the probability of successful mitigation. Furthermore, the plan should define and bound the operational limitations or costs associated with the mitigation action. A mitigation plan may involve either onsite and/or offsite activities. Offsite mitigation may not be appropriate for species identified by the State as Rare, Threatened, Endangered or In Need of Conservation. Any nesting/maternity areas disturbed through the construction of the wind project shall be reestablished as feasible. Mitigation plans may be identified during both the licensing and operational phases of a project. During the preparation of the State's environmental impact assessment, the need for potential minimization or mitigation plans for the project as a whole or for specific turbines may be identified.

The triggers to implement the plans and the plans themselves will become part of the conditions filed in the CPCN proceeding. Unforeseen adverse impacts to bird and bat populations may occur once the project is operational. In such a case, the State shall seek corrective actions from the Applicant to avoid, minimize or mitigate the adverse impact. A corrective action plan based on an adaptive management approach will need to be developed.

In the event that an agreement between the State and Applicant cannot be reached as to the corrective action plan, then an adjudicatory proceeding before a Hearing Examiner of the PSC will be constituted to resolve the need for or extent of the corrective action plan. No mitigation action undertaken under the directives in this section of the Guidelines can shield an Applicant from the requirements of Federal law relating to the protection of birds or endangered species. There are no prescriptive mitigation actions specified in these guidelines. The Applicant

should have a sense of the extent of mitigation/adaptation that a project may need during the pre-application discussions with the State. Impacts should be avoided or minimized before seeking mitigation; the guidelines outline mitigation options and adaptive management for unforeseen impacts.

Massachusetts

No special permit shall be granted unless the special permit granting authority determines it is appropriate. Such permits may also impose reasonable conditions, safeguards and limitations on time and use and may require the applicant to implement all reasonable mitigation.

Michigan

Michigan has the authority to require mitigation when Threatened or Endangered Species are involved or on Department of Natural Resource State lands. Must document plans to minimize, eliminate or mitigate for identified impacts.

Minnesota

Minnesota Public Utility Commission requires, among other things, an analysis of the proposed facility's potential environmental and wildlife impacts, proposed mitigation measures, and any adverse environmental effects that cannot be avoided.

Nevada

Uses USFWS interim Guidelines as well as OR and WA

New Mexico

Voluntary guidelines based on the U.S. Fish & Wildlife Service's Interim Guidance, the New Mexico Game & Fish Department's focus on Site Development recommendations and Turbine Design and Operation recommendations.

New York

New York State Department of Environmental Conservation is in the process of developing voluntary guidelines for conducting pre-and post-construction bird and bat studies at proposed and operating wind projects.

North Dakota

The PSC can require mitigation as part of the permitting process for facilities greater than 100 MW.

Ohio

Compensatory mitigation may be required if project impacts rare or endangered animals, aquatic or terrestrial, in the state; compensation may be required if wildlife species are killed.

Oklahoma

State has the authority to require mitigation.

Oregon

The Energy Siting Council Standards, codified in OAR Chapter 345, Division 22, are mandatory and require that the proposed facility comply with the habitat mitigation goals and standards of the Oregon Department of Fish and Wildlife (ODFW). If a potential risk to the survival or recovery of a threatened or endangered species exists, the applicant must redesign or relocate the facility to avoid that risk or propose appropriate mitigation measures.

South Dakota

Mitigation is required for habitat loss in areas where there is ecological damage in the siting of a wind power facility. Appropriate actions include but are not limited to ecological restoration, long-term management agreements, conservation easements, or fee title acquisitions to protect lands with similar or higher ecological quality as that of the wind power site.

Texas

There is consideration of voluntary mitigation, based on level and type of habitat impacts.

Vermont

Review of all surveys, studies and inventories to determine if mitigation is required

Washington

No mitigation if development on existing agricultural lands. Mitigation required in ratios of 0.5:1 up to 2:1 for temporary impacts up to impacts to native shrub-steppe habitat. A pilot project evaluating monetary compensation alone or in conjunction with other types of mitigation is an option for project proponents.