



LR 83 White Paper Topic 5

“The land use, including leases and contracts on public and private lands, and environmental impacts of developing wind energy, including transmission needs.”

Introduction

Wind projects produce energy without generating many of the pollutants associated with fuel combustion; however, wind energy development is not environmentally neutral. Wind energy facilities and construction activities have the potential to impact landscapes, viewscapes, and wildlife. They require infrastructure (e.g., roads, substations, transmission lines, and possibly maintenance buildings) and construction activities that can also impact the environment. This white paper identifies some environmental considerations with regard to developing wind energy in Nebraska.

Permits and Environmental Compliance

Currently, there are no federal or state environmental permits required for siting wind energy projects in the state of Nebraska. This does not, however, relieve developers of the need to comply with existing laws such as the Endangered Species Act, the Migratory Bird Treaty Act, and Nebraska Nongame and Endangered Species Conservation Act. The potential for development of large wind farms in Nebraska with no siting guidelines or process could result in adverse impacts to the environments of Nebraska. The options for dealing with these impacts range from the current status of not having a formal process, to establishing voluntary guidelines and consultation with environmental resource agencies, to requiring a permit or approval from an authorizing agency with siting standards and a requirement to consult with the environmental resource agencies. If guidelines or standards are developed, the NPA would like to be a participant in the development process.

Wildlife/Environmental

Impacts of wind energy facilities on wildlife can be direct (e.g. fatality) or indirect (e.g. habitat loss or behavioral displacement). Turbine and transmission line siting and other environmental factors (e.g., proximity to bird concentration areas, refuges, wetlands, threatened and endangered species, prairie dog towns, critical habitat, sensitive species, and others) are important factors determining environmental risk at wind energy facilities. Evaluating environmental impacts and taking into consideration all potential direct and indirect impacts should be the primary method of addressing environmental concerns.

Pre-construction assessments and evaluation of potential impacts should be considered during the planning stage of wind energy facilities. State and federal agencies and others should work together to determine what, if any, environmental risk would be posed by a planned wind facility.

Wind Farm and Turbine Siting Considerations

In addition to topographical and wind speed factors, there are numerous environmental factors that must be considered when siting a wind farm. Following is a discussion of some of those considerations.

- Documented locations of suitable habitat of any species of wildlife, fish, or plant protected under Federal Endangered Species Act and/or critical listed habitat (i.e. critical listed habitat for whooping cranes is the Platte River from Lexington to Denton). Information regarding location of state and federally listed species can be obtained by contacting the Nebraska Game and Parks Commission and the U. S. Fish and Wildlife Service. Evaluation of specific impacts to listed species may need to be evaluated prior to development (i.e. the American Burying Beetle).
- Recognized bird concentration areas. Examples of high concentration areas are lakes, wetlands, state or federal refuges, private duck clubs, staging areas, rookeries, and riparian areas along streams.
- Known bat hibernacula (i.e., caves, etc. where bats hibernate), breeding and maternity/nursery colonies, in known migration corridors, or in flight paths between colonies and feeding areas.
- Features of the landscape known to attract raptors, such as cliff/rim edges; setbacks from these edges may reduce mortality. Other examples include saddles (dips or passes) in ridges or prairie dog towns.
- Predominant bird movement direction.
- Turbine spacing and configurations.
- Fragmentation of large, contiguous tracts of wildlife habitat. Where practical, place turbines on lands already altered or cultivated.
- Prairie grouse leks (traditional courtship display grounds). Prairie grouse (greater prairie chicken and sharp-tailed grouse) are not a listed species in Nebraska. Studies suggest that prairie grouse avoid certain anthropogenic features (e.g. roads, buildings, powerlines) making habitat less suitable. Little is known in Nebraska regarding impacts of wind facilities on prairie grouse behavior and populations.
- Roads, fences, and other infrastructure.

- If taller turbines (top of rotor-swept area greater than 199 feet above ground level) require lights for aviation safety, the minimum amount of pilot warning and obstruction avoidance lighting specified by the Federal Aviation Administration (FAA) should be used. Unless otherwise requested by the FAA, only white strobe lights should be used at night, and these should be a minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. Solid red incandescent lights should not be used, as they appear to attract night-migrating birds at a much higher rate than white strobe lights.
- Where feasible, place electric collection system underground, thus avoiding the addition of perches for raptors in the vicinity of the wind facility.

Land Disturbing Activities and Erosion Control Considerations

In addition to the wildlife considerations, there are considerations for land disturbance activities that deal with soil erosion and impacts to cultural resources. Disturbance activities could result from installation of foundations, development of temporary and permanent access roads, and construction of other site facilities such as maintenance buildings. Depending upon the extent of the disturbance, various permit requirements may become applicable. A few examples of such permits are identified below.

- Construction Storm Water Permit – Application with Nebraska Department of Environmental Quality includes Erosion Control Plan, monitoring requirements, reporting, and record keeping.
- Section 404 of Clean Water Act Permit Authorization – Required if any wetlands will be impacted by wind facility development. Permits administered by U.S. Army Corps of Engineers.
- Cultural and Paleontological Resources – Contact should be made with the Nebraska State Historical Preservation Office regarding known cultural and paleontological resources at or in the vicinity of the wind facility site and procedures should be in place in the event undiscovered finds are discovered during construction activities.
- Conditional Use Permit – Conditional use of property for industrial use (operation of wind generation facility). May or may not be required by local zoning authority (County Commissioners).

Mitigation Considerations

If wildlife habitat losses or fragmentation must be mitigated, develop a plan to protect, create and/or restore habitat away from the wind facility site. This will serve to attract birds, bats and other wildlife away from the development. Wherever possible, habitat mitigation sites should be coordinated with other public or private wildlife lands, to connect, enlarge or enhance those areas.

Questions regarding wind energy development and impacts to wildlife may require further investigation to advance understanding and/or fill information gaps. Developers may be provided the opportunity to conduct monitoring or research as part of a mitigation strategy. Developers of wind energy facilities should cooperate with scientists and natural resource agency specialists in developing and testing methods to minimize impacts to wildlife.

Transmission Considerations

Development of new wind projects may require the construction of new transmission or the expansion of existing transmission. The environmental impacts of the new or expanded transmission will need to be evaluated by the party constructing the line. Transmission projects are linear in nature and impacts may need to be evaluated over a greater geographical area. Transmission projects may also require coordination with additional governmental agencies or other entities.

If federal dollars are involved in future wind development, there could be a federal nexus and compliance with the National Environmental Protection Act (NEPA) may be required. The Department of Energy and/or other federal governing agency would have to consult with the U.S. Fish and Wildlife Service (USFWS) and possibly the Environmental Protection Agency to integrate environmental values into their decision making processes by considering the environmental impacts of their proposed actions and reasonable alternatives to those actions (i.e. impacts to endangered or threatened species). To meet NEPA requirements federal agencies prepare a detailed statement known as either an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) to make sure that their own actions comply with NEPA. Included in the scope of an EA or an EIS will also be evaluation and discussion of cultural resources and socio-economic impacts. The evaluation of these impacts will require additional time and monies in project planning. Under NEPA, the impacts associated with the development of transmission lines to support wind projects could be considered “secondary” impacts of the wind project and need to be evaluated as such.

Whooping Crane Habitat Conservation Plan

Currently there is an ongoing effort between the USFWS and interested parties to develop a means of protecting the Aransas/Wood Buffalo population of the federally-listed endangered whooping crane, while allowing wind energy development. A programmatic Habitat Conservation Plan (HCP) may represent the best solution to providing Endangered Species Act compliance for wind energy development within the migration corridor.

A HCP is required before an applicant could apply for an Incidental Take Permit (ITP). The plan would specify, among other things, the impacts that are likely to result from the taking and the measures the applicant will undertake to minimize and mitigate such impacts. The applicants for the ITP would be the individual operators or project proponents who have signed on to the whooping crane HCP. The development of the HCP is an involved process that includes several states, two USFWS regions, and multiple wind development interests. Since Nebraska has areas in the whooping crane migration corridor, the NPA recognizes potential benefits of an HCP. The NPA also recognizes, however, that obtaining consensus between the diverse interest groups involved will be difficult and that the process will be a multi-year effort.

Summary

While wind farms are not free from environmental concerns, most concerns can be lessened by proper planning and design and by the involvement of affected stakeholders. This paper identifies many of the environmental considerations that may need to be addressed with significant wind energy development in the state.

Leaders of Nebraska's public power industry formed the Nebraska Power Association in 1980 to address industry-wide concerns and interests. This voluntary association represents all segments of the public power industry in Nebraska: municipalities, public power districts, public power and irrigation districts, rural public power districts and rural electric cooperatives engaged in generation, transmission or distribution of electric energy in the state.