

## NEW JERSEY AUDUBON SOCIETY'S POSITION PAPER ON WIND POWER ENERGY

### SYNOPSIS

New Jersey Audubon Society (NJAS) and its 20,000 members generally support environmentally-responsible renewable energy sources, such as wind power, photovoltaic cells, geothermal and hydro-fuel cells. Because traditional energy sources contribute to global climate change, habitat change and degradation, smog pollution, mercury contamination in our waterways, and radioactive waste, NJAS recognizes the importance of developing emission-free sources of energy. However, we are concerned about the potential impacts of these developing technologies on wildlife, and natural habitats.

### WIND POWER GENERATION

Among the currently available renewable energy technologies, wind power is developing most rapidly. It may, however, have the greatest potential for adversely affecting aerial wildlife (e.g., birds, bats) and the habitats they occupy. These adverse effects can manifest in several ways, such as habitat fragmentation, disturbance, or mortality through collisions with turbine blades or support structures.

Although several wind power generating facilities are currently operating in the U.S., almost all are west of the Mississippi, and none to date are sited in coastal or offshore waters, or along ridge tops. Furthermore, most of the existing wind farm sites do not occur along major bird or bat migration routes. To date, only one large-scale facility east of the Mississippi, in West Virginia, is being developed, and it is sited along a north/south oriented ridge top. The largest known single night songbird mortality event occurred at this site on a foggy night during this year's spring migration, providing some insight into potential wildlife impacts.

These points must be considered when interpreting both the results of previous bird mortality and disturbance studies, and how they may apply to proposed sites in the east. Birds occurring along the Atlantic Flyway are subject to meteorological conditions that are very different from conditions birds experience in the western U.S., and thus, may have inherently different flight strategies, and behavior.

In Europe, suitable inland wind generation sites are limited, thus the major thrust of development is in near and offshore areas (Soker et al. 2000). However, Soker et al. (2000) state that "there is a major gap in knowledge about the influence of offshore wind farms on birds, and no investigations about the collision risks." A study of bird mortality at a small coastal wind generating facility in the Netherlands recorded avian fatalities of 37 birds/turbine/year (Winkelman 1994). This is significantly greater than the mortality often reported from western U.S. facilities (~two birds/turbine/year). Winkelman (1994) concluded that this rate of mortality was consistent with rates recorded at high-risk power lines, and with vehicular collision mortality rates.

Avian migration behavior in the mid-Atlantic coastal region may be more similar to the Netherlands than the western U.S. As such, this may be a more appropriate mortality figure to consider. Even this figure may underestimate potential mortality along the Atlantic coast because Winkelman (1994) examined smaller turbines than are being proposed in New Jersey.

Generally, it is inappropriate and ill advised to extrapolate mortality figures from other regions when conducting risk assessments or characterizations of potential impacts for New Jersey sited projects. According to Erickson et al. (2002), "The amount and extent of ecological baseline data to collect at a wind project should be determined on a case-by-case basis."

### ESTABLISHMENT OF TRANSPARENT PROCESS WITH STANDARDS & BENCHMARKS

New Jersey regulating agencies, including the Board of Public Utilities and Department of Environmental Protection, must adopt clear policies articulating the permitting process for wind power, including definitions, benchmarks, standards, and public comment opportunities. Existing regulations fail to address the complex issues arising from this new, innovative technology.

These policies must be adopted quickly, as publicly funded projects are already in development. In particular, the state of New Jersey needs to articulate clear rules to assess potential impacts on natural resources (e.g., birds). This must include a technical review committee, macro and micro site selection standards, final site design standards, post construction monitoring and mitigation, and consultant hiring practices.

#### TECHNICAL REVIEW COMMITTEE

The state of New Jersey should assemble a committee of impartial wildlife experts to develop methods and protocols to measure potential wildlife mortality, displacement and disturbance. This committee also must establish clear benchmarks for acceptable levels of wildlife mortality, displacement and disturbance. These benchmark metrics must be based on cumulative population-level impacts that include effects from other sources (e.g. waterfowl hunting).

#### MACRO-SITE SELECTION CONSIDERATIONS

Per national siting recommendations, examining the potential locations of wind farms is important as they juxtapose with bird and bat migration flyways (Anderson et al. 1999). New Jersey Audubon Society and others can provide expertise in this regard. Wind farms sited outside these flyways might be expected to have the least impact on wildlife. However, even if they are sited peripheral to major flyways, they could have demonstrable impacts on local populations, and threatened and endangered species.

#### MICRO-SITE SELECTION EVALUATION

1. Since New Jersey falls within major spring and fall migration routes, and because little relevant work has been done in this region, site evaluation studies must include multiple seasons and perhaps multi year baseline data collection.

2. Site evaluation data collection should at a minimum include the following methodologies to measure potential wildlife mortality, displacement and disturbance:

a. Mobile Radar. This technique is perhaps the most powerful tool for conducting a risk assessment as it provides data on the abundance, spatial distribution and elevation of birds. Some east coast industry consultants have stated that this technology is substandard or too costly. However, it has been used extensively in the western United States. New Jersey Audubon has interviewed consultants using mobile radar and they assert the importance and cost efficacy of this technology.

b. Sound Recordings. This low cost technology uses microphones in an array that can provide information on species composition, abundance and altitude.

c. Visual Observations. Qualified observers should conduct surveys that provide data on abundance and behavior of birds on and around proposed sites.

d. Aerial Surveys. This method is chiefly employed in determining species composition, abundance, behavior and movement patterns in an offshore environment. Aerial surveys can be used to supplement visual observations.

3. We are not proposing how much effort is required per methods. This is likely site-specific, and

must be done at a level needed to achieve statistical validity.

4. Study plans should be peer-reviewed by non biased biometricians and ornithologists.
5. Site evaluations should include a formal risk assessment component. Final site design should seek to reduce all expected impacts. All plans must conform to the federal Endangered Species Act, Migratory Bird Treaty Act, federal marine fisheries acts, and NJ Endangered and Nongame Species Conservation Act.
6. Regulators reviewing final applications must evaluate the site assessment, including measures of potential wildlife mortality, displacement and disturbance, and compare it with a priori government adopted standards.

#### FINAL SITE DESIGN STANDARDS

Once a site has been selected as compliant with macro and micro site selection criteria, including benchmark metrics, the project should be designed to minimize its impacts. Design standards should include spatial configuration, lighting, density of turbines, tower visibility and tower design. The Board of Public Utilities and NJ Department of Environmental Protection should provide clear guidance to private industry on these standards.

#### POST-CONSTRUCTION MONITORING AND MITIGATION

1. A formal post construction monitoring plan must be created for each wind farm location. Funding must be committed to conduct these studies. This must be included in the permit process.
2. If analysis of post construction monitoring data indicates a need for mitigation, this should be required as part of any issued permits.

#### CONSULTANT RECOMMENDATIONS FOR PUBLICLY FUNDED PROJECTS

1. We would encourage the state of New Jersey to fund studies by non industry experts to create guidance documents on wind farm site selection and migration mapping directly
2. Currently, public funds are being allocated as an incentive for private industry to develop wind energy. Since public dollars are partially subsidizing private industrial development, the consultants hired should be contracted directly by BPU. Ideally, BPU would establish an escrow funding mechanism for all environmental assessments on any utility type.

#### LITERATURE CITED

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<http://www.njaudubon.org/conservation/opinions/07-03.html>