



## Wind and Wildlife: Learning from the Past, Changing for the Future

The wind industry is committed to, and has demonstrated, continual innovations leading to greater protection of the environment and wildlife. All current research shows that wind's impacts on wildlife are generally small. Modern wind turbines are far less harmful to birds than radio towers, tall buildings, airplanes, vehicles, pesticides and even house cats, and their effect on bats is also modest in most parts of the U.S.. Unlike fossil fuel power plants and other industrial processes, wind energy power plants do not release any harmful emissions that contribute to acid rain, global warming, mercury poisoning or other environmental effects that threaten wildlife.

Despite the minimal impact wind development has on bird populations generally, the industry takes potential impacts seriously and continues to assess ways in which wildlife impacts can be lessened. Since the first concerns about wind energy and wildlife were raised, the wind industry has taken numerous steps to address legitimate concerns and ensure problems are not repeated at other wind projects.

### Learning the Lessons of Altamont Pass

- In 1994, shortly after raptor deaths in the Altamont Pass became a general concern, the wind energy industry joined with other stakeholders (government officials, environmental groups, utilities) to form the National Wind Coordinating Committee (NWCC), a multi-stakeholder collaborative aimed at addressing the wind/avian issue and other issues affecting the industry's future. NWCC has sponsored numerous meetings and academic papers to better understand wind energy's wildlife impacts, including updates to the environmental community about the latest wind-related research; events related to the biological significance of wind's impacts; and a wind project permitting handbook. More information on NWCC activities is available at <http://www.nationalwind.org>.
- In Altamont Pass—one of the oldest wind projects with many smaller turbines spaced relatively closely together—a number of studies were conducted to determine how avian and raptor impacts could be reduced, and these lessons were incorporated into later wind projects. Industry and government researchers looked at a wide variety of options, from painting turbine blades for increased visibility to better understanding raptor hearing and avoidance of wind turbines. Studies continue today to better understand how to reduce collisions in this region. One area of success was in sharply reducing raptor electrocutions. Information in the late 1990s led to a number of actions including insulating wires, covering some exposed infrastructure on poles, and installing overhead powerlines specifically designed to protect raptors. When new projects are built today, virtually all powerlines within the project area are buried.
- Recently, project owners in the Altamont Pass announced an "aggressive adaptive management" plan to cut raptor mortality by 35%. Project owners will shut down some

turbines in the winter, relocate or permanently remove about 100 of the highest risk turbines, remove some of the older non-operating infrastructure, and continue their commitment to repowering.

- Modern wind projects simply do not exhibit the raptor mortality that is seen in the Altamont. The Altamont Pass is a unique situation with distinct topography, raptor usage patterns, and older technology. Even later projects with high raptor use can be safe for birds. At Foote Creek Rim in Wyoming, pre-construction surveys found that golden eagles frequently used the mesa's edge for hunting. The wind farm developer voluntarily redesigned the site to move the planned turbines 50 meters away from the rim, and the subsequent number of eagle deaths at the site has been so small that the Technical Advisory Committee has been discontinued.

### **Establishing Consistent Survey Methods**

- The next generation of wind projects after the California projects in the mid-1980s was built in Minnesota. Extensive wildlife surveys were conducted on Buffalo Ridge near Lake Benton, Minnesota, to determine the presence of avian species prior to construction. Additionally, as the three phases of the Buffalo Ridge wind project were completed, a Before/After Control/Impact (BACI) study was conducted, over a four-year period. This method allowed for comparison of bird fatalities and changes in bird use between a distinct control area without wind development and the Buffalo Ridge project areas. The Buffalo Ridge experience provided the basis for the wind industry's current study approaches. The full four-year report can be downloaded here: [http://www.west-inc.com/reports/avian\\_buffalo\\_ridge.pdf](http://www.west-inc.com/reports/avian_buffalo_ridge.pdf)

### **Conducting Impact Surveys**

- Modern wind projects undergo a significant amount of review and study for a variety of factors before construction begins. In addition to measurements of the wind resource and the distance to sufficient electric transmission lines and roads, the industry also conducts surveys of wildlife in the area. Typically a wildlife consultant is retained, and efforts are made to contact state and federal fish and wildlife agencies and local wildlife groups (e.g., Audubon chapters, Izaak Walton League chapters) to identify any issues of possible

### **Building a Modern Wind Project**

At a project built in 2003 in Benton County, Washington, pre-construction surveys conducted included aerial surveys for raptor nests, point counts to determine species present, fall and spring migration studies to determine area use, a literature review and outreach to local wildlife organizations such as the Audubon Society to understand any species of concern. Using these tools, wildlife biologists predicted relatively low avian impacts in the project area. Once the facility was constructed, operational monitoring included standardized fatality searches every two weeks in the fall, spring and summer, and once each month in the winter for one year. Results were adjusted for searcher efficiency and scavenging rates to get an accurate picture of mortality rates although some fatalities that may not have been turbine related were conservatively included. In addition to these efforts, a Technical Advisory Committee was formed to review the operating monitoring protocols and to recommend any mitigation efforts needed, which in this case, consisted of \$75 per turbine every year for the life of the project to be given to a state fund for shrub-steppe habitat conservation. The number of raptor and other bird fatalities at the site has been very low. In its minimal impact on birds, the Benton County site is typical of modern wind projects around the U.S.

concern. The consultant examines the proposed site and prepares a detailed report on impacts for review by the developer. If the expected impacts are acceptable, the project goes forward. Post-construction monitoring is often required under terms of the permit. This is done to validate that a wind project's impacts are not significantly greater than expected.

### **Mitigating Habitat Impacts**

- Following a collaborative process with the wind industry, the environmental community, wildlife biologists and other interested parties, Washington State's Department of Fish and Wildlife developed guidelines to address wildlife impacts in general and impacts to habitat of specific concern in the state. The voluntary framework assigns a higher value to intact shrub-steppe habitat than to fragmented or already disturbed lands. A wind project developer is then expected to acquire and protect, through a conservation easement, land to mitigate the habitat loss associated with the project. This approach both encourages developers to build in more fragmented landscapes and provides the conservation community with an opportunity to preserve the most pristine areas of habitat for wildlife.

### **Responding to Issues as They Arise**

- When an unexpected number of dead bats were found at one Eastern project in 2003, the wind industry immediately joined with Bat Conservation International (BCI), the U.S. Fish & Wildlife Service, and the National Renewable Energy Laboratory in what is planned as a three-year research effort to identify and quantify the problem and to explore ways to lessen impacts to bats. Several wind-energy companies are providing matching funds for the cooperative effort. BCI used some of that money to hire a full-time biologist who is coordinating the research work and ensuring that planned studies are formally peer-reviewed. Additional funds are raised for comprehensive field research and the distribution of those results. By working with BCI, the wind industry seeks to avoid the sometimes-adversarial relationships of industry and conservationists while also finding solutions acceptable to all sides as quickly as possible.

<http://www.awea.org/news/news040303bat.html>

Following the realization that a problem existed with raptor kills in Altamont Pass, the wind industry has gone on to build a record that now spans more than a decade, of building projects across the U.S. that are safe for birds, and it has now responded rapidly to the discovery of a similar problem with bats in Appalachia. Given wind energy's very low environmental impact (no air or water pollution, no global warming pollutants, no waste) compared with other energy sources, it should remain the energy source of choice for anyone concerned about preserving the natural environment.