

Wind energy in California

A Handbook for Audubon chapters

March 2009



The important role of wind energy

The science is clear that global warming from greenhouse gases and the resultant climate change poses the greatest threat to wildlife and habitat in our lifetime.

California leads the United States and the world in including wind, solar and geothermal energy in an aggressive Renewable Energy Standard to reduce greenhouse gases.

- Assembly Bill 32, passed in 2006, requires California to reduce greenhouse gas levels to 1990 levels by 2010.
- Senate Bill 107, passed in September, 2006, mandates that 20 percent of the state's energy be provided by renewable energy resources by 2010.
- Governor Schwarzenegger issued executive order S-1408 on November 17, 2008 mandating a reduction in greenhouse gases of 30 percent through renewable energy sources, and called for agencies to create a "one stop" permitting process to speed up development of wind, solar and geothermal energy.
- The federal stimulus package passed in February 2009 added additional economic stimulus to the production of renewable energies including wind, solar and geothermal through "green jobs" in those industries.

Advantages of wind power include:

- It forestalls or replaces the need to build potentially more polluting conventional power plants.
- It produces virtually no pollution of air, water or soil.
- It is renewable (non-depletable). There is enough potential wind energy in the U.S. to power the entire country.
- Because of its modular nature, it is easy to add capacity as needed.
- Installing wind turbines is relatively quick.
- While the power is currently more expensive than that produced by natural gas-fired plants, the price of wind power is not affected by fuel price increases or supply disruptions.
- There is currently an attractive federal tax credit for wind generation.

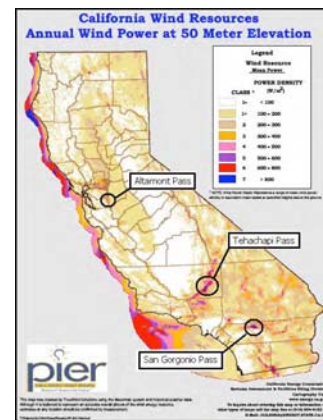
A brief history of wind energy in California

The OPEC oil embargo of the early 1970s, and the high oil and gas prices that followed it, sparked a rebirth of interest in wind power, as well as other renewable energy sources in the United States. During this period, the U.S. Department of Energy increased funding for wind power research and development, and a series of megawatt- and multi-megawatt prototype wind turbines were installed in research and demonstration projects throughout the country. These machines turned out to be ahead of their time, and suffered through numerous mechanical and structural failures before the DOE program, as well as the wind “industry” (to the extent one existed), gravitated towards development of smaller (50 to 300 kW) machines in the latter part of the decade. But it was California’s “Wind Rush” of the early 1980s that remains universally acknowledged as the beginning of the modern commercial wind industry.¹

The overwhelming majority of this wind capacity was installed in the three geographic areas: (Figure below): the Altamont Pass in eastern Alameda and Contra Costa Counties, the Tehachapi Pass in Kern County, and the San Geronio Pass in Riverside County.

These three major areas of development had had two factors in common that attracted project developers. Each had a good and predictable wind resource driven primarily by thermally-induced winds resulting from cool coastal air being drawing through the pass as warm air heated the floor of the valleys and deserts. Also, each location was traversed by existing high voltage transmission lines which, at least at that time, were underutilized to one degree or another.

The wind rush came to an end in the late 1980s, being brought to a conclusion by the phasing out of the tax credits between 1984 and 1986, and the prohibition on new SO4 contracts in 1988. Wind development in the state has been largely stalled for nearly two decades as a result of both state and federal regulatory changes.



¹ California Energy Commission, “Past Present and Future Turbine Technologies on Transmission System Operation and Performance, May 2006, p.3

Wind energy conflicts with birds and other wildlife

Wind energy facilities can have detrimental impacts on birds, bats, and other wildlife in four fundamental ways:

- loss, degradation, and/or fragmentation of habitat
- disturbance and subsequent displacement from habitat
- collision mortality
- disruption of ecological links

Loss, degradation, and/or fragmentation of habitat

The development of wind power facilities degrades and fragments habitat with the construction of support roads, storage and maintenance yards, turbine towers, and associated infrastructure. These changes, coupled with blasting and excavation to bury power lines, fragment contiguous blocks of habitat, leading to increased abundance of predators, parasites, and invasive species. Habitats such as agricultural areas that are currently disturbed will suffer less conservation impact from wind energy facilities than will areas of pristine or rare native habitats. The cumulative effects of dozens of poorly sited projects proposed in an area of pristine native habitat could cause significant declines in bird and bat populations.

Disturbance and subsequent displacement from habitat

The impacts of wind energy facilities extend well beyond the footprints of the roads, power lines, and other structures. Disturbance from human activity and turbines may displace animals from the habitat. While this is seldom lethal, birds and other animals are likely to abandon preferred habitat and seek lower-quality habitat elsewhere, where disturbance is less. Displacement can cause population decline through reduced breeding productivity and survival.

Some birds appear to avoid places with tall structures and may be disturbed by the shadows caused by moving turbine blades. For example, some ornithologists believe prey species, such as sage grouse (*Tympanucus*) and prairie chickens, are behaviorally programmed to perceive tall structures as a threat, and therefore avoid using habitats where tall structures exist. Further, these species are adapted to open habitats where raptor predation is a major source of mortality. Since tall structures in such habitats serve as perching sites, the turbines may create an advantage for raptors by allowing them to survey the landscape in search of prey. In cases where the birds affected are already in decline, the turbines could push them closer to extinction.

Collision mortality

Mortality occurs when animals collide with the moving turbine blades, with the turbine tower, or with associated infrastructure such as overhead power lines. Impacts vary

depending upon region, topography, weather, time of day, and other factors. Several recent publications have reported that collision mortality is relatively low (*e.g.*, a 2005 Government Accountability Office report concluded, “it does not appear that wind power is responsible for a significant number of bird deaths.”). However, that same report noted that mortality can be alarmingly high in some locations. It also pointed out that there are substantial gaps in the mortality data, and that the record may be biased because most of the information collected thus far has come from the West, where collision mortality appears to be lower than in other regions, such as the Appalachians. Currently, collision mortality is being assessed at only a few wind energy facilities in the country. In some regions, it has not been assessed at all. Collision mortality is a particularly significant concern in major migration corridors, proposed sites on or near habitat for special-status species, areas with high concentrations of wintering and/or breeding raptors, and sites near or contiguous to other wind projects that have experienced high mortality.

Alteration of Flight Patterns

Large wind energy facilities may interfere with the ability of birds and other wildlife to travel between feeding, wintering, and nesting sites. Alternatively, they may cause birds to make longer or higher flights between such areas. This results in higher metabolic costs, and therefore may reduce survival and reproduction.

Research gaps

There are significant gaps in the literature that make it difficult for scientists to draw conclusions about wind power's impact on birds and other wildlife. There is a shortage of information on migratory bird routes, bird and bat behavior, as well as the ways in which topography, weather, time of day, and other factors affect bird and bat mortality. Studies conducted at one location can rarely be extrapolated to another location due to differences in site-specific conditions such as topography, types and densities of species present, types of wind turbines present, and use of different monitoring and surveying protocols. Mortality studies and monitoring conducted by industry is considered proprietary information and often is not openly shared with the public or with government agencies. Finally, there are few comprehensive studies testing the effectiveness of various mitigation strategies.²

² National Audubon Society, Wind Energy Policy: A Resource for Audubon State Offices, April, 2008

A history of wind energy conflicts with birds and Audubon in California

In August 2004, the California Energy Commission released a study of the Altamont Pass Wind Resource Area. The study estimated that between 881 and 1,300 raptors are killed annually in the APWRA. For all birds combined, that number is estimated at between 1,766 and 4,721. These estimates translate to 1.5 to 2.2 raptor fatalities/MW/year and 3.0 to 8.1 bird fatalities/MW/year. Over 40 different bird species are represented in the fatalities. Among these, researchers estimate that the APWRA wind turbines are annually killing 75 to 116 golden eagles, 209 to 300 red-tailed hawks, 73 to 333 American kestrels, and 99 to 380 burrowing owls.”³ The study was widely criticized by the wind industry and widely covered in the media.



On June 1, 2005, Los Angeles Audubon and Kerncrest Audubon filed a CEQA lawsuit against the Los Angeles Department of Water & Power for certifying an EIR that the chapters claimed contained inadequate surveys on nocturnal migratory songbirds at the new Pine Tree Wind Project near Butterbrecht Springs, a popular migratory hotspot in Kern County.

In September, 2005, the Board of Supervisors of Alameda County approved renewal permits for the almost 4,000 turbines in the Altamont Pass. On October 31, Golden Gate Audubon, Californians for Renewable Energy, Ohlone Audubon, Marin Audubon, Mt. Diablo Audubon, and Santa Clara Valley Audubon filed a CEQA lawsuit against the County for not conducting an environmental review before renewing the permits. On January 11, 2006, the Board of Supervisors approved a settlement with the litigants that would require the wind industry to commit to a 50percent reduction in raptor mortality by November 2009, along with removing the deadliest turbines for birds and continue winter shutdowns of the turbines. One of the most important aspects of the agreement is if the wind companies fail to achieve the mortality reduction goal within three years, an adaptive management plan will kick in that would force the companies to take further action to get to those levels. The agreement also commits the wind industry to taking part in a long-term conservation planning process to minimize ongoing bird kills.

³Smallwood, K.S. and C.G. Thelander. 2004. Developing methods to reduce bird mortality in the Altamont Pass Wind Resource Area. Final Report by BioResource Consultants to the California Energy Commission, Public Interest Energy Research-Environmental Area, Contract No. 500-01-019: L. Spiegel, Program Manager
http://www.energy.ca.gov/reports/500-04-052/500-04-052_00_EXEC_SUM.PDF

In response to the concerns of chapters in both Northern and Southern California, Audubon California partnered with American Wind Energy Association on a workshop entitled Understanding and Resolving Bird and Bat Impacts on January 10-11, 2006, at the Audubon Center at Debs Park with sixty-four invited participants including wind developers, Audubon chapters, wildlife agencies, government officials, bat experts, researchers and conservation organizations, and other experts. The conference ended with a commitment from California Energy Commission to dedicate a budget of \$5 million for research on birds and bats and wind energy, and to begin a process to create statewide voluntary guidelines for the siting of wind energy projects in California. On September 26, 2007, the Commission adopted California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development.



<http://www.energy.ca.gov/windguidelines/>

On March 3, 2006, Audubon California adopted the following policy on wind power:

Audubon California supports the role of wind power as an alternative source of energy if it is sited, operated, and mitigation steps are taken to minimize its impacts on birds and other wildlife.

In April 2008 National Audubon adopted the following policy on wind power:

Audubon strongly supports properly-sited wind power as a clean alternative energy source that reduces the threat of global warming. Wind power facilities should be planned, sited and operated to minimize negative impacts on bird and wildlife populations.



Ten steps for effective advocacy for birds at wind farm project sites

1. Know the laws that protect our birds and your right to protect them.

Birds are protected by federal and state laws including the Migratory Bird Treaty Act of 1918, Endangered Species Act of 1973, Bald and Golden Eagle Protection Act, and California Fish & Game codes. Know them and cite them in your public and written comments. California Environmental Quality Act of 1970 and National Environmental Policy Act of 1970 protect the public process of disclosure and mitigation of environmental impacts of projects.

Planning and Conservation League Foundation has published **Community Guide to the California Environmental Quality Act** by Attorney Bill Yeates, Jr. who is representing Audubon chapters in the Altamont settlement. The guide is available on <http://www.pclfoundation.org/> under “Publications”.

2. Develop a Chapter policy on wind energy with your Board.

This policy can be stated in public meetings, in written comments or documents, and posted on your website to let everyone know what principles guide your specific actions on a wind farm site.

3. Contact your county, local Bureau of Land Management agency, U.S. military base, U.S. Forest Service, local utility or other permitting agency and ask to be notified of wind energy applications.

Unlike other energy, wind is not regulated by a California state agency, mainly because the 1974 Warren-Alquist State Energy Resources Conservation and Development Act considered wind energy “too experimental” to regulate. Permitting of wind development was left by default to local county planning commissions, and federal land holders like Bureau of Land Management or U.S. military.

Under California Environmental Quality Act (counties) and National Environmental Policy Act (BLM and U.S. military), the lead agency for a project must notify the public of preparation of an Environmental Impact Report (EIR) or Environmental Impact Statement (EIS). These notices usually appear in local papers or posted in libraries. You can get written notices of permit applications, and notices of preparation of environmental impact reports, or the actual documents themselves if you notify permitting agencies that you would like to be on the notification list. They must comply with this request.

3. Contact the wind developer and lead agency and offer your data on birds in the area.

When you receive notification of an application for a wind project contact the developer, the lead agency or environmental consultants working for the developer to let them know what kinds of species have been recorded on or near a site. Review Christmas Bird Counts, Bird-a-thons, trip reports, field trip stories in newsletters for sightings. Compile the data and mail it to the developer with copies to the lead agency for the public record. Enter the data in e-Bird. In some cases, weather radar from military installations can be delimited and analyzed at little expense for magnitude and timing of nocturnal migrations over a site. Audubon's 100 year reputation in citizen science is an asset.

4. Use good science.

Make sure that all your comments and claims are backed by peer-reviewed published science, if possible, and that your data is organized and verified. Always cite references in your comments.

5. Survey potential wind farm sites to the extent possible.

If you can get access, survey the potential wind farm site to assess the habitat and enter your sightings on e-Bird. Ask the developer for a tour early in the process. Actually experiencing the habitat is 1,000 times more effective for your understanding than the descriptions of habitat contained in a document.

6. Attend public scoping meetings.

Lead agencies for wind projects are required to conduct public meetings before preparing the draft EIR or EIS. If you are on their list to receive notices you will be notified. All comments at the meetings are recorded for the public record. If you have an issue you need to address such as a Golden Eagle nest location or migratory bird pathway, or if the site is an Important Bird Area, bring it up at these meetings early in the process.

7. Comment on the Draft Environmental Impact Report (DEIR) or Draft Environmental Impact Statement (DEIS).

Your written comments on the adequacy of the DEIR are the most important document you can file in the wind energy approval process.

- Use the California Energy Commission guidelines to compare the effort recommended in that document to the effort by the wind developer, and cite the guidelines in your letter.
- Challenge any statement by the wind developer or lead agency that you feel is not substantiated by good science, and refute the statement with good science
- Cite peer-reviewed scientific studies whenever possible

- Cite for the record if the area is an Important Bird Area or of conservation priority due to importance for endangered, threatened or sensitive species.

The lead agency must address each and every one of your comments on the adequacy of the DEIR or DEIS. In some cases, your comments may inspire the lead agency to open a dialogue between you and the wind developer in a way that may strengthen your position.

8. Attend the meetings

Lead agency will vote to certify the final EIR. Typically, the Planning Commission votes to recommend certification of the FIER to the County Board of Supervisors if the lead agency is a county. In a subsequent meeting the Board of Supervisors votes to certify the document. Both meetings are public and accommodate comments. Ask for help from the Chapter Network and other chapters that have attended meetings about strategy for these meetings.

Once the document is certified you have little or no options to participate any further in the process unless you litigate. Litigation is always a last resort and requires a great deal of resources including financial and staff or volunteer resources, even if an attorney may work on a contingent or pro bono basis.

9. Stay engaged

Ask the lead agency or wildlife agencies for the results of any monitoring or mitigation efforts. These documents should be available, although sometimes they may require a Public Records Act.

10. Ask for help from the Chapter Network

The chapters that are facing or have faced wind industry challenges are a tremendous resource as well as Audubon California. Ask for and review copies of their comment letters on projects, review the data they have submitted, find out about the issues they resolved, and who helped them resolve them, and how they strategized for public meetings, and what changes they were able to get in projects to protect birds.

Get referrals for biologists, scientific studies, or lawyers.

Audubon California can provide key documents such as CEC guidelines, DFG FAQ on using the guidelines, Wind resource area studies, etc.

The following California chapters are currently engaged or have been engaged in wind power siting issues.

- Golden Gate Audubon Society
- Marin Audubon

- Santa Clara Valley Audubon Society
- Ohlone Audubon Society
- Mt. Diablo Audubon Society
- Napa/Solano Audubon Society
- Wintu Audubon Society
- Los Angeles Audubon
- Kerncrest Audubon Society
- San Bernardino Valley Audubon Society
- Santa Barbara Audubon Society
- La Purisima Audubon Society