

Sierra Club Wind Development Guidelines

1. PREAMBLE

Sierra Club policy supporting wind was established three decades ago -- in 1973 -- and remains apt today. Whether the Club supports wind in practice depends on whether local Club groups endorse specific industry proposals. This question is becoming important as wind becomes increasingly competitive with other energy forms, leading many companies to make specific proposals.

This document raises key issues Sierra Club members should think about as they consider these proposals. It was prepared by the Club's Global Warming and Energy Committee (GW&E) under the leadership of Ned Ford, Debbie Boger, Steve Crowley and Fred Heutte, beginning in 2002. The Committee's intent to develop a paper on wind energy was widely circulated within the Club according to Club policy on the development of new Club statements. A list of interested parties was developed and over 50 activists worked through many drafts. In addition, significant input has been received from members of the Sustainable Planet and Environmental Quality Strategy Teams.

Because wind projects tend to be large industrial developments with inevitable adverse impacts, the choices are complex. All new energy supply carries with it environmental risk. A balance needs to be struck between risks today, and risks - e.g. from global warming - in the future. The risk of NOT proceeding with large-scale development of wind power is great. Today, as wind becomes increasingly economical, commercial enterprises are proposing specific projects. The time is ripe for the Club to face the tensions directly and substantively.

This document is not binding on Club entities. However, it is important for the Club to speak with a unified, clear voice in its reaction to wind energy projects. It will not be good for the Club if one chapter is focusing totally on concerns about impacts on birds while the chapter in the next state is urging the public to support wind projects as a crucial element in reversing the impacts of global warming.

The Sierra Club's 1978 policy on Energy Facilities Siting (EFS) urges constraints on facilities siting, in part so as not to "preclude small-scale renewable energy alternatives." While the policy is clearly directed at non-renewable facilities such as coal plants, most of its provisions are compatible with the careful evaluation of wind sites advocated in this document. Since the Club favors shifting as soon as possible to renewable energy sources, the needs assessment of Section 2 of the EFS policy should be considered in the context of fossil fuel avoidance, and the land and equipment acquisition provisions of Sec. 10 are not required for wind projects. The Club is trying to promote wind energy in general, and most wind projects are on leased land in any case.

Wind is a fast-changing area. Accordingly, this Document will be regularly updated as experience is acquired. We urge Club leaders at all levels to share their experiences and views regarding both wind power and this document with the GW&E committee. If you're unsure about whether this version is most current, please send an e-mail to Ned Ford Ned.Ford@fuse.net or Paul Craig Paul.Craig@sierraclub.org requesting the most recent version.

The GW&E Committee plans to issue similar documents in other areas. These will be available on the Club's web-site. We encourage interested Members to participate in the process and to suggest ideas.

2. PRINCIPLES

The Sierra Club strongly supports the development of substantial wind resources for electricity generation. Wind power is a reliable, clean, renewable resource that can help reduce our dependence on polluting fossil fuels (coal, oil, and natural gas) and nuclear power for electricity. The consequences of our continued dependence on burning fossil fuels for electricity include global warming, acid rain, smog, increased incidence of asthma and other respiratory diseases, and other forms of pollution and natural resource damage, including mountaintop removal and strip mining.

We present the Club's perspective on wind energy development and siting. The intent is to help Chapters and Groups consider a range of issues relevant to siting wind turbines. Wind development proposals should be evaluated on a case-by-case basis. Decisions on specific projects and facilities are generally subject to the determinations of the local Group or Chapter.

Wind development is desirable for many reasons. Most importantly, as mentioned above, wind energy can play an important role in decreasing our dependence on fossil fuels. Wind power does not require harmful extractive processes like mountaintop removal or uranium mining. Increasing wind production will diversify our electricity sources and improve both grid reliability and energy security. In addition, wind turbines are easier to dismantle and their sites are easier to restore than fossil and nuclear facilities.

The Sierra Club recognizes that all forms of power generation entail environmental tradeoffs, and that there are drawbacks to wind development. The most contentious issues include visual and wildlife impacts. It is very clear that some early wind projects caused severe wildlife impacts. The development of wind raises strong concerns among Sierra Club members, particularly with regard to avian impacts, a host of issues related to offshore wind development, and other wildlife concerns. The process of developing this document involved extensive discussion of these concerns, communication with individuals and groups who work on relevant issues and careful consideration of what the Club itself could authoritatively state.

We are confident that changes in technology (most importantly the elimination of the strutted tower, which provides bird perching area), and siting practices, can assure future wind development without significant wildlife impact. Several important perspectives on these issues come from other organizations, whose contributions are identified in Section 7 [Other Resources]. These and other issues are discussed below.

The Sierra Club believes that in most instances many of the negative impacts of wind can be managed. The most important management measures are site selection and careful site evaluation. We believe that with adequate site planning the benefits of wind power in reducing the threat of global warming and pollution will substantially outweigh wind's negative impacts. We believe there are locations in every region in the country where wind power can be responsibly sited and generated.

Wind power alone cannot solve global warming. We need significant efficiency gains in our buildings, appliances, industries, and transportation; we also need to develop other clean, renewable energy sources and conservation. But wind is an available and important part of the solution and its development needs to begin sooner rather than later. Today wind is the only renewable, sustainable energy resource which is being seriously proposed for immediate development on a major scale. It is therefore extremely important for the Club to support responsible wind development proposals where the sites are appropriate.

It is critical that we begin now to implement solutions to global warming. The Sierra Club encourages activists to evaluate potential wind projects as practical alternatives to fossil and nuclear energy -- alternatives which offer important environmental advantages. No wind project

should be considered in the absence of either the implications for added pressure for fossil or nuclear development, or the full potential of energy efficiency options to reduce the need for new electric generation capacity.

The wind industry has come a long way in the last thirty years and will continue to mature. Wind generation capacity is increasing rapidly and will continue to increase. As we gain experience with wind power generation the Sierra Club will review its successes, failures and problems. This document will be reviewed as necessary by the Club's Global Warming and Energy Committee.

3. Wind Power Siting Issues

a. Land Use

Much of our already-developed public and private land is suitable for wind production. The Sierra Club supports the development of wind projects where appropriate siting criteria are met, meaningful public participation is offered, and any site-specific and substantial environmental concerns are addressed or remedied in a responsible manner.

We support wind production on public and private land where specific and substantial reasons to oppose it do not exist. We particularly support the development of wind power on agricultural land where wind production complements existing land use. The Sierra Club opposes development in protected areas such as national and state parks, national monuments, wilderness areas, wildlife refuges, designated roadless areas, critical habitat and designated habitat recovery areas for wildlife, and areas of cultural significance, sacred lands, and other areas that have special scenic, natural or environmental value. In these areas, it is inappropriate to build wind turbines, roads, transmission lines, or any other structure related to wind development. Very limited exceptions may be appropriate when a more damaging impact from an alternative approach can be avoided or mitigated. For example, a carefully placed on-site wind turbine would minimize and might even eliminate the need for building roads and transmission lines into a service facility in a park.

b. Avian and Wildlife Impacts

The Sierra Club believes that data and observations from wind facilities at locations worldwide indicate that proper siting and design of wind turbines can greatly reduce harmful impacts on birds, animals and plants. Further, the Club believes that there should be appropriate sites for wind power in most general regions of the United States. However, specific sites may prove to have unacceptably high risks for wildlife. In these cases, the Sierra Club should oppose any siting of turbines.

Site studies should evaluate data on wildlife from at least a one-year period prior to construction to evaluate potential wildlife impacts. Each site of concern should be evaluated for potential avian and other biological and habitat effects. Consideration should be given to habitat important for the restoration or reinstatement of species. Effort should be made to identify and reduce adverse wildlife impact, and to ensure the continued viability of ecologically important species. Particular emphasis should be given to Federal and state threatened and endangered species, candidate species, and other species of special concern. In addition to measures involving site selection and hardware design, mitigation measures to avoid turbine operation during peak migration periods and/or peak daily flight periods for sensitive species should also be employed as applicable. If a decision is made to go ahead, appropriate mitigation measures should be deployed, and each selected site should be systematically monitored. Methodologies used for wildlife studies should be carefully recorded so that siting procedures resulting in problem sites can be accurately identified and study methodology can be modified in the future.

c. Visual/Scenic and Noise Impacts

Visual impacts are highly subjective. The best way for Club activists to ensure minimal visual

impact is to develop regional recommendations for places that wind should and should not be sited.

Federal aviation rules require specific lighting on turbines of certain heights. This lighting should always be minimized for aesthetic reasons, unless specific lighting is shown to reduce bird or bat mortality. Evidence suggests that lighting increases rather than reduces bird mortality. As more study is done, it may be appropriate to seek modification of the Federal rules for the wind industry, in particular to reduce or eliminate the need for strobing, bright colors, and lights visible from the ground. Wind turbines might be assigned a unique warning light color which signals aviators, but also changes impact on bird behavior.

We suggest that wind developers restrict their impact on involuntary neighbors to near-ambient noise levels at the closest residence. Legally binding mechanisms to guarantee sustained noise control should be considered.

d. Safety

Windmills have the potential to throw blades. Under storm conditions turbine blades can throw ice to considerable distances. Siting should take account of risks to humans as well as to biota.

4. General Guidance for Chapters

a. Work with developers early

It is important to begin working with the wind development company as early as possible to maximize public input and minimize impacts of the project. Start working with the wind developer as early as you can - hopefully while they're still at the stage of choosing an appropriate site.

Chapters should encourage local developers to abide by the following principles:

Wind developers who acquire access to rights for public or private property for wind development should respect the rights of neighbors, especially regarding noise impacts;

Wind developers should discuss any proposed project proposal with local communities. This should be done early on;

Wind developers should embrace minimal impact practices;

Wind developers should be obligated to meet site restoration and financial assurance criteria set by regulation. When such criteria do not exist they should be developed.

Developers should carefully record the methodology used for wildlife studies, so that procedures resulting in problem sites can be accurately identified and modified in the future.

Regulation regarding these issues may be appropriate. At an early stage in any project Chapters should identify organizations with regulatory authority and should work with them to assure close coordination with developers and implementation of enforceable constraints.

The wind industry and appropriate government agencies can and should play a major role in addressing many issues regarding wind development. These issues include mitigation efforts such as turbine and tower design that minimize perching, reflection and unnecessary light, and minimizing land impact before, during and after the presence of the turbine. Wind developers have a responsibility to be good neighbors, and by working collectively to solve some of the problems they can help ensure that the public will work with them, and not against them. The

wind industry should make the results of their research openly available to facilitate rapid development of a core set of best practices for the industry.

b. Draw on local experience and regulations; be sensitive to local issues;

Regulatory procedures for wind siting are rapidly evolving. Some states and local areas have significant experience with wind siting, and it is important to draw on that experience while adjusting regulatory approaches to the situation in each jurisdiction or locality.

The public should be involved early and continuously. Public participation should be encouraged at every stage in each siting process. Meaningful public participation often requires funding. As you develop your participation process, make sure mechanisms to support it exist. This includes funding for research (including its' peer review) you deem essential.

Above all, processes should be perceived as - and actually be -- fair, inclusive and transparent.

c. Hierarchy of Development Preferences

The following hierarchy generally ranks places where wind development is appropriate. This hierarchy refers primarily to large wind projects. Small wind projects (1-2 turbines) may necessitate less scrutiny, as they will usually have lesser impacts on the environment. (They may have serious consequences in limited areas. We do not believe there is a minimum threshold for careful site evaluation, just that smaller projects may need less rigorous evaluation than larger ones).

MOST APPROPRIATE SITES The Sierra Club will usually support wind development in places that are Most Appropriate:

- Agricultural land - farms, ranches, grazing lands (considering impacts on rare grassland birds, if any)
- Land that has been substantially disturbed, or where transmission lines exist already

MORE APPROPRIATE SITES The Sierra Club should support wind development with appropriate mitigation techniques in places that are More Appropriate:

- Sites near population and electricity consumption centers.
- Sites where credible environmental review concludes siting will result in acceptable wildlife/habitat impacts. Sites with extremely good wind potential, without strong negative concerns

LESS APPROPRIATE SITES The Sierra Club may oppose wind development in places that are Less Appropriate, unless mitigation techniques can adequately minimize environmental impacts:

- Natural areas where damaging road and/or transmission capacity must be installed
- Projects located so as to significantly impair important scenic values

NOT APPROPRIATE SITES The Sierra Club will usually oppose wind development in areas that are Not Appropriate (all the categories below include prior-designated or prior-proposed areas):

- National parks
- Marine preserves or parks
- State parks
- National monuments
- Wilderness areas

- Wildlife refuges
- Federally-designated roadless areas
- Critical habitat for Rare, Threatened or Endangered Species or habitat for indigenous species critical to a region or state's biodiversity

5. OFFSHORE WIND DEVELOPMENT It is likely that offshore development of wind will be an important component of reversing global warming. The Club hopes to work toward a reasonable balance between environmental and aesthetic concerns and the need for clean energy. Offshore site analysis should include a determination of significant habitat for non-endangered species.

The Club will not generically oppose offshore projects. However, offshore projects have their own set of sensitive issues which must be considered. As with land projects, it is crucial that meaningful public participation be offered and that site-specific and substantial environmental concerns be addressed and remedied.

Studies of all significant aspects of offshore wind development, including the effects of underwater structures on habitat, bird mortality, impacts on marine mammals and shoreline, proximity to sensitive and protected areas, and other issues should be performed as significant issues are identified.

6. CASE STUDIES As wind systems are installed it is important to develop and maintain a Club record of the process, and of lessons learned in each case, with the goal of helping future processes proceed more smoothly and helping us learn from experience. Mechanisms to assure this need to be developed.

7. OTHER RESOURCES The following references were selected from a larger body of materials because they are both superior in clarity and breadth of discussion, and because they reinforce the perspective which the Sierra Club's Global Warming and Energy Committee offers. The internet URLs are functional, but they do change from time to time.

[American Bird Conservancy](#): "ABC Believes that with Proper Siting, Operation, and Monitoring, Wind Energy Can Provide Clean, Renewable Energy For America's Future with Minimal Impacts to Birds and Bats".

[National Wind Coordinating Committee](#): Avian Collisions with Wind Turbines; August 2001: This document is a meta-analysis of studies available at the time. Although the NWCC is a wind promotion group, the report offers substantial insights and clearly reviews the available literature to place wind-tower bird mortality in a functional perspective that does not condemn further wind development. The Sierra Club's Global Warming and Energy Committee was unable to identify any references that significantly contradicted this report.

[National Wind Coordinating Committee](#): Studying Wind Energy/Bird Interactions: A Guidance Document. December 1999.

[United States Fish and Wildlife Service: Wind Energy Advisory](#) In tandem with an advisory on cell phone and microwave towers, the USFWS "Interim Guidance on Avoiding and Minimizing Wildlife Impacts From Wind Turbines" details the entire regulatory policy environment for public lands. It includes a useful collection of references, impact checklist materials, site assessment tools, and a list of recommended research needs.

[American Bird Conservancy](#): A brief statement, consistent with the ideas in this document.

[Wildlife Management Institute](#): WMI provides some useful insights and cites a number of useful areas of concerns when assessing impacts.

International Resources

Two international reports are exceptionally well done. The Australian guide covers all the key issues in a slightly different style. The British guide has a helpful discussion of reducing conflict in identifying potential wind sites.

[Best Practice Guidelines for Implementation of Wind Energy Projects in Australia](#). March, 2002. 101 pages.

[Best Practice Guidelines for Wind Energy Development](#). London: British Wind Energy Association. November, 1994. ISBN 870054216, 24 pages.