Frequently Asked Questions about *California Guidelines for Reducing Bird and Bat Impacts from Wind Development*

The *California Guidelines for Reducing Impacts to Birds and Bats from Wind Energy Development* (*Guidelines*) was approved by the California Energy Commission in September 2007. To address the many questions that Energy Commission and California Department of Fish and Game (CDFG) staff have received since that time we have compiled these answers to the more frequently asked questions.

For more information on the *Guidelines,* or to download a copy, please go to: www.energy.ca.gov/renewables/06-OII-1/index.html.

1. What prompted development of the Guidelines, and what are they intended to accomplish?

The idea for the *Guidelines* originated in the California Energy Commission's 2005 Integrated Energy Policy Report (IEPR), a document which is produced every other year as an assessment and forecasting tool to help develop energy policy. The 2005 IEPR recognized that potential controversy about wind energy projects that harm raptors and other birds might slow renewable energy development in California.

The suggestion to create wind-energy/wildlife guidelines was further promoted at a workshop sponsored by Audubon California and the American Wind Energy Association (AWEA) in January of 2006. Many participants at the conference encouraged the Energy Commission and the CDFG to collaborate, with input from all interested parties, to establish voluntary statewide guidelines to address siting, operation, and mitigation of wind power to reduce its impacts on birds and bats.

The *Guidelines* were completed by the Energy Commission and CDFG in October 2007. The 18-month process of *Guidelines* development involved eight public workshops/hearings around the state (Sacramento, Bakersfield, Livermore, and Riverside) and public review of three drafts of the *Guidelines*.

The *Guidelines* provide consistent, scientifically sound recommendations for studying, siting, and operating wind energy facilities in the state, while at the same time avoiding, minimizing, and mitigating the impacts of that development on birds and bats.

2. Is use of the *Guidelines* for California wind energy development projects mandatory by law?

The *Guidelines* are advisory only, and their use is voluntary. The process of permitting a wind energy facility in California, however, is governed by a number of laws that are not voluntary. One of those laws is the California Environmental Quality Act (CEQA), which requires California public agency decision makers (like counties and cities) to document and consider the environmental impacts of their actions, such as approving a wind energy project. The other state and federal wildlife protection laws relevant to the permitting of a wind energy project are discussed in Chapter 2, pages 30-35 of the *Guidelines*. The methods recommended in the *Guidelines* will help wind energy developers secure information on impacts and mitigation that will apply to the CEQA review and permitting process and to state and federal wildlife protection laws.

3. What authority issues permits for wind energy development in California?

Counties, cities, federal agencies such as the Bureau of Land Management and the U.S. Forest Service (if federal lands are involved) and sometimes public utilities are the "lead agencies" that approve wind energy projects within their jurisdictions. For wind energy projects subject to the California Environmental Quality Act (CEQA), which would be the case for construction of most utility scale large wind turbines, lead agencies are required to consult with the CDFG before determining whether a negative declaration or environmental impact report is required for the project (i.e., "early consultation", Public Resources Code §21080.3). Furthermore, lead agencies must consult with trustee and responsible agencies and other public agencies that may have jurisdiction by law with respect to the project (Public Resources Code §21153).

The California Energy Commission and the CDFG do not license wind energy development, but the CDFG is a trustee agency with jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species and has authority to regulate activities that might affect those resources. CDFG uses its biological expertise to review and comment upon impacts to wildlife arising from the project and makes recommendations to the lead agencies regarding the protection of those resources (Fish and Game Code §1802). If the project could potentially "take" species listed as threatened or endangered, the applicant should consult with the CDFG regarding the need for an Incidental Take Permit and avoid, minimize, and compensate for any take (Fish and Game Code §2081(b)).

4. Aren't wind energy developments good for the environment? Why isn't that taken into consideration when requiring so many studies?

Wind energy has less environmental impacts compared to electricity generated by fossil fuels because it is renewable and does not contribute to

greenhouse gas emissions. The California Environmental Quality Act (CEQA) provides opportunities for lead agencies to consider those kinds of environmental benefits when they are deciding whether to approve a project. However, these lead agencies must also consider the impacts of any project before approving it. The *Guidelines* provide recommended study methods to gather the information required by lead agencies to assess the impacts to wildlife of a wind energy project, and as CEQA requires, to weigh those impacts against the environmental benefits. Other state and federal wildlife laws also require this type of impact assessment. Using the methods recommended in the *Guidelines* will help wind energy developers secure information on impacts and mitigation that will apply both to the CEQA permitting process and to wildlife protection laws.

5. Why focus on the wind energy industry when other types of development projects kill more birds and may not have to mitigate avian impacts? Is wind energy development being held to a different standard regarding the amount of information needed during the permitting process?

The California Environmental Quality Act and California's wildlife protection laws generally apply to all proposed projects in the state, with a few exceptions. All large scale energy projects, including development of gas-fired power plants, thermal solar energy, and hydroelectric power, are subject to an environmental review and approval process. The recommended methods in the *Guidelines* are consistent with the environmental review requirements of other utility scale energy development and do not reflect any different standard.

6. Why are bird and bat studies needed for projects that use the new generation turbines, which are much taller and have slower rotor speeds? Don't these new turbines have much lower impacts to birds?

During California's early wind energy development, turbines were relatively small, spaced closely together, with the rotors spinning at high speeds. Wind turbines installed at the Altamont Pass Wind Resource Area, San Gorgonio, and Tehachapi during the 1980s generally had an installed capacity of around 100 kilowatts, reached heights of approximately 50 feet from the ground to the tip of the extended rotor, with blades spinning around 30 revolutions per minute (rpm). The new generation turbines (installed capacity around 1.5 megawatts) can be as tall as 450 feet from ground to rotor tip, with lower rotational speeds ranging from 15-27 rpm and tip speeds of approximately 200 feet/second.

A number of researchers hypothesized that these new-generation, taller turbines would reduce wildlife impacts, in part because birds would be better able to see and avoid the slower-spinning blades. As studies have been conducted on "repowered" sites, where old turbines were replaced with the

new, large turbines, it appears that impacts to some species such as golden eagle are reduced. However, impacts to raptors such as red-tailed hawks and American kestrels do not seem to have declined. Other researchers have analyzed bat fatality data as a function of turbine height and found that as turbine height increases more bats are killed, possibly because the taller turbines reach into the airspace used by migratory bats.

Many factors affect the collision risk to birds and bats at a wind resource area, including turbine variables (size, rotational speed, operational time, rotor swept area, spacing, tower type), habitat, and bird/bat use. Research is currently underway to clarify which of those factors might be consistent predictors of bird and bat fatalities, but it will probably never be possible to assume that a particular turbine type is so risk free that no studies are needed to assess that risk.

7. The Guidelines recommend categorizing projects into one of four groups based on information from a preliminary site assessment. These categories are supposed to provide a general framework to assist in determining the level of study effort needed to make an impact assessment. How are the four project categories intended to be used?

The four categories encompass a range of sites, from those for which little or no additional information is needed to estimate impacts (Category 1) to areas that are off-limits to wind energy development because existing information indicates the site is very sensitive and potential for impacts is very high (Category 4). The categories were designed to assist wind energy developers and other stakeholders in identifying the types and level of monitoring needed to estimate impacts from a wind energy project and to develop mitigation measures. The categories incorporate two concepts: 1) the sensitivity of the site or the potential risk of bird and bat collision fatalities or potential for impacts, and 2) the level of uncertainty (available information) regarding the use of the site by birds and bats. These are two different concepts that must be combined to determine the level of monitoring needed at a site. For example, a site may appear to have low risk; but if there is little information about the site, and therefore a high level of uncertainty, a standard level of monitoring may be in order despite the apparent low risk. If a site has the potential for a high level of impact and there is a lot of information available for the site, the uncertainty level is low because of that available information. This can mean that little monitoring is needed, or that special-situation monitoring is needed in an attempt to identify ways of reducing impacts.

Remember that each site is unique. Do not get bogged down trying to fit every project into one of the categories. The monitoring requirements for each site must be considered in light of its own set of species, habitats, and existing information. Make use of the categories to the extent they are

helpful and consult with the California Department of Fish and Game, the permitting agency, other agencies and stakeholders as appropriate to make the final determination regarding what level of monitoring is appropriate for the site.

8. Do the Guidelines allow for variation in the level of study effort at a proposed project site? What circumstances might warrant more or less pre-permitting study at a proposed wind energy project site?

The *Guidelines* allow for variation in the type and extent of pre-permitting and operational monitoring. Remember that each project site is unique with varying species, habitats, use of the site by birds and bats, topography and other variables. The information gathered at each site should be sufficient to make informed decisions about impacts and mitigation. Ideally, information gathering would use methods recommended in the *Guidelines* because using standardized consistent methods allows us to apply lessons learned from other projects that used similar methods. However, other methods not recommended in the *Guidelines* can be used as long as they can be supported or justified and their use is approved by reviewing and permitting agencies and other stakeholders as appropriate.

Certain circumstances may warrant more or less pre-permitting study effort at a proposed wind energy project site. For example, more pre-permitting study might be needed at a site known to support high raptor densities, but which has never been consistently or scientifically studied. Such an area would need raptor use studies so that the '30-minutes bird use count' could be compared to other previously monitored sites that have similarly collected data as well as raptor fatality data. If it is determined that a very high number of raptors were using the site, additional study may be appropriate to identify locations that should be avoided to reduce collisions. These types of decisions should be discussed and agreed on by reviewing and permitting agencies and other stakeholders as appropriate. An example of when less study may be appropriate would be a site that has been studied previously for wind energy development so that there is information available regarding bird use per 30-minute counts and stakeholders can agree that no additional monitoring is needed.

9. The Guidelines recommend a 14-day interval between carcass searches for operations monitoring at wind resource areas, but I see other intervals used in other studies. How frequently should carcass searches be conducted?

While the *Guidelines* recommend carcass searches approximately every two weeks for two years, search frequency may need to be adjusted depending on rates of carcass removal, target species, terrain, and other site-specific factors. A two-week interval might be too long at a site where most of the carcasses are removed in two or three days, or might be

unnecessarily frequent if dead birds or bats remain untouched for weeks at a time. Establish the frequency of carcass searches after analyzing the results of pilot scavenging trials and in consultation with U.S. Fish and Wildlife Service (USFWS), CDFG, and other knowledgeable scientists and appropriate stakeholders.

10. Do the Guidelines recommend an Environmental Impact Report be prepared for every project?

No, the *Guidelines* simply provide the tools for lead agencies like cities and counties to make informed decisions about the level of environmental review needed for a project. The *Guidelines* do not suggest that lead agencies should require the preparation of an Environmental Impact Report for all wind projects. The appropriate level of CEQA review should be made on a project-by-project basis by the lead agency. For example, if pre-permitting assessments have convincingly demonstrated that the project will have less than significant impacts to birds, bats, and other resources, with mitigation, then lead agencies may consider using a Mitigated Negative Declaration.

11. Why don't the Guidelines provide for a "categorical exemption" or some way to quickly permit relatively small wind energy projects, or those that are near existing projects?

A "categorical exemption" is an exemption from the environmental impact analysis process required by the CEQA. It is normally used when impacts are understood to be minor and routine, such as repaving a city street or building a single-family residence. Utility scale wind energy projects are diverse and could have too many impacts, not only birds and bats, to routinely consider exempting an entire class of wind energy projects from the thorough environmental review required by CEQA. The lead agency makes decisions regarding the level of environmental review. It would be inappropriate to recommend CEQA determinations in the *Guidelines*.

12. Do the *Guidelines* address small-scale wind energy systems, such as those for use at single-family residences?

The *Guidelines* are focused on the development of large, utility scale wind resource areas (for example, a project that would build 75, 1.5 megawatt, 200-foot tall turbines over 2,000 acres) rather than installation of a small-scale turbines (for example, a single 50 kW, 75-foot turbine built near a residence). Some of the measures recommended in the *Guidelines* to reduce impacts to wildlife, however, may also be applicable to small-scale wind development. These measures include but may not be limited to:

- Minimize use of guy wires to support the towers because birds can be killed by collisions with the wires, especially at night or under low-visibility conditions.
- Avoid installing wind turbines near areas that might attract wildlife, such as near riparian habitat or ponds.

13. Are four seasons of bird use information needed for all proposed wind energy sites, as recommended in the *Guidelines*? Couldn't information from the literature or models be used to extrapolate bird and bat use, rather than conducting expensive studies for every project area?

California has a variable climate and variable bird and bat use, and that site-by-site variation usually cannot be adequately captured with information from the literature or models. The *Guidelines* recommend monitoring during all seasons of the year because the species and number of birds and bats change with the seasons in California. Most parts of California have mild winters and many birds and bats remain year-round, and many species from northern climes overwinter here. High elevation areas with snowy winters may have low bird or bat use in the winter and may have increased spring and summer breeding populations.

The *Guidelines* accommodate reductions and adjustments to the standardized monitoring levels if the available information provides adequate information regarding bird and bat use throughout the year. Information from literature and models could be used if the CDFG, the permitting agency and other appropriate stakeholders believed it provided credible, relevant and adequate information.

14. Why do the Guidelines recommend the same type of studies at all proposed wind energy projects in California? Wouldn't it be better to apply the best study method in each case?

The *Guidelines* are specific on many of the recommended study methods because delays and conflicts will be reduced if all parties have a common understanding of what constitutes a reasonable level of effort to gather sufficient information to avoid and minimize potential impacts to birds and bats. In addition, consistency in survey techniques will facilitate comparisons at wind energy projects throughout California by using similar methods and metrics. The suggested study protocols in the *Guidelines* are sufficiently flexible to accommodate the unique features of each site, and throughout the document there are many suggestions to consider existing data and local conditions in developing study design for pre-permitting and operations studies.

15. There are no species of bats listed as threatened or endangered in California, so why do we care about the impacts of wind energy projects to bats?

While no bat species in California are currently listed as threatened or endangered, several are considered 'species of special concern' because they are known to be experiencing population declines. These bat species of concern include the western red bat, which has been recorded as a fatality at wind resource areas in California. CEQA requires that potentially significant impacts be evaluated individually and cumulatively. A project may significantly impact a species, whether it is listed or not, depending on the scale of the project. Fish and Game codes require that the CDFG develop standards and procedures to conserve and protect all wildlife populations, not just special status species. Bats are long-lived mammals with few predators, low reproductive rates, and slow population growth. Bat experts have therefore expressed concerns that sustained, high fatality rates from collisions with wind turbines could have potentially significant impacts to bat populations.

16. There is no evidence that acoustic detection data on bat activity provides any indication of operations impacts to bats. Why do the Guidelines recommend collecting such data?

According to bat experts, passive acoustic surveys like those recommended in the *Guidelines* provide useful pre-permitting information by establishing baseline patterns of seasonal bat activity at proposed wind energy sites. Studies are currently underway in California and throughout the country to further investigate the correlation between acoustic monitoring and bat fatalities at proposed wind turbine sites. When the *Guidelines* are eventually revised, the results of this research will be incorporated as needed into the pre-permitting recommendations for assessing potential risk to bats.

17. The Guidelines do not recommend the use of radar for every project to determine potential for impacts to nocturnal birds and bats. Why not use this tool for all wind energy projects?

Radar surveys can be useful for counting nocturnal migrants passing through a proposed project area and for identifying the height, direction, and location of flight paths. However, such surveys are relatively expensive, and cannot identify birds to the species level or reliably distinguish birds from bats, so their use is not warranted on every project. For projects where preliminary site surveys indicate potential risk to nocturnal migrants, the *Guidelines* recommend seeking the advice of experts familiar with the operation and limitations of radar and with the particular questions at issue about potential impacts of the project to nocturnal flying animals.

18. What constitutes a significant impact to birds and bats?

According to the California Environmental Quality Act (CEQA), impacts to biological resources are considered "significant" if, among other things, a proposed project will:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFG or USFWS
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by CDFG or USFWS
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Determining whether a project may have a significant effect on the environment calls for careful judgment on the part of the lead agency involved, based to the extent possible on scientific and factual data.

CEQA also requires a cumulative impact analysis to determine whether or not a project's incremental impacts combined with the impacts of other projects are cumulatively significant. If the analysis finds a particular project's incremental impacts to be significant, then the project developer is responsible for mitigating its portion of the cumulative effect.

The goal of the *Guidelines* is to help lead agencies and wind energy developers conduct studies that will address the requirements of CEQA and state and federal wildlife laws. The *Guidelines* recommend specific protocols to obtain standardized baseline information that evaluates potential impacts to birds and bats according to CEQA. Evaluations and judgments about impact levels that require mitigation are the domain of the lead agency. The *Guidelines* provide science-based tools that provide this information to lead agencies.

19. What type of mitigation/compensation is typically required for wind energy development in California?

CDFG recommends a wind energy developer try to avoid and minimize project impacts to wildlife during a project's planning, construction, and operation phases. Chapter 4 of the *Guidelines* provides some suggestions for ways to minimize the impacts of a proposed wind energy project on birds and bats. If the project still results in impacts to birds and bats despite efforts to reduce them, compensation such as habitat acquisition or enhancement can be used to mitigate or offset such impacts.

Any permitted project that could have an impact to animals listed as threatened or endangered under the California Endangered Species Act are required to "fully mitigate" the impacts of the project. Mitigation measures may include the establishment of conservation easements or habitat restoration to enhance habitat for those species that are impacted by the

project. The goal of such compensatory mitigation is to replace the anticipated loss. For example, if pre-permitting studies indicate that an average of one Swainson's hawk (state listed as threatened) per year could be killed by a proposed wind energy project, the compensatory mitigation required by the CDFG might be acquisition, protection, and enhancement of enough foraging/nesting habitat to produce an additional two Swainson's hawk chicks per year.

To comply with the California Environmental Quality Act, feasible compensatory mitigation is required if a project will have significant impacts to wildlife. Even if a wind energy project does not by itself result in significant impacts to bird or bat populations, compensatory mitigation may be needed to offset a project's contribution to a significant cumulative impact.

Strict liability take laws such as the Fully Protected Species Act and Migratory Bird Treaty Act prohibit take and do not explicitly require minimization or impact mitigation and they do not explicitly discourage avoidance and minimization measures. The *Guidelines* recommend a process by which all project impacts are identified, evaluated, and mitigated (if necessary) to satisfy the requirements of multiple laws. It is the CDFG's intent to recommend proactive measures to reduce and offset impacts to bird and bat species affected by wind energy projects based on their biological needs.

20. Even with implementation of all feasible avoidance and minimization measures, some birds are likely to be killed at wind resource areas, which is a violation of state and federal laws like the Fully Protected Species Act and the Migratory Bird Treaty Act. How can the California Department of Fish and Game approve projects that violate the law?

CDFG does not have the authority to "approve" wind energy projects, but instead provides expert advice to lead agencies that have such permitting authority. The CDFG makes recommendations that will help avoid, minimize, or compensate for impacts of the project to Fully Protected Species and those that are protected by the Migratory Bird Treaty Act (which covers most bird species in California). Wind energy developers who implement the methods recommended in the *Guidelines* during the permitting process demonstrate a good faith effort to develop and operate projects in a fashion that is consistent with the intent of these state and federal wildlife protection laws. The CDFG is committed to working with project proponents in a cooperative manner, addressing project impacts to avoid conflict with "no take" laws.

21. Why do the Guidelines recommend conducting monitoring studies at wind resource areas after a project is permitted and operating? What are the monitoring data used for?

Operations monitoring at wind turbine sites is needed to evaluate, verify, and report on compliance and effectiveness of California Environmental Quality Act avoidance and minimization measures and to document compliance with other applicable permit requirements. These data are used to determine if estimated fatality rates described in pre-permitting assessments were reasonably accurate, and whether the impact avoidance, minimization, and mitigation measures implemented for the project were adequate or if additional corrective action or compensatory mitigation is necessary.

22. What circumstances might require long-term monitoring at a wind resource area?

For most projects, the *Guidelines* recommend two years of operations monitoring. Long-term monitoring on a periodic basis (for example, every five years) for the life of the project might need to occur if new information suggests that project operation is likely to result in fatalities to birds or bats that were unanticipated and unmitigated during permitting of the project. Long-term monitoring would be triggered only if the permit conditions did not include a mechanism for adequately mitigating unanticipated fatalities. This monitoring would gather information to develop impact avoidance, minimization, and mitigation measures and to verify whether these measures were effective in reducing fatalities. Factors to consider in assessing the potential for unanticipated impacts include changes in bird and bat use of a site due to changes in habitat conditions or shifts in migratory and movement patterns that might affect collision risk.

23. When will the *Guidelines* be revised?

The *Guidelines* reflect the current state of knowledge about the interactions of wind turbines with birds and bats. Ongoing and future research and actual experience in applying the recommendations in the *Guidelines* will refine, expand, and change that knowledge. The Energy Commission and the CDFG will update and revise portions of the document as new research findings and feedback from users of the *Guidelines* indicate that changes are needed. The entire document will be reviewed and revised, if necessary, approximately every five years. Interested parties will have the opportunity to participate in the update and revision process.