



1 June 2007

Wind Energy and Bats sub-committee report to The Mammal Technical Committee,
Pennsylvania Biological Survey

RE: Pennsylvania Game Commission Protocols to monitor Bat and Bird Mortality at
Industrial Wind Sites (Exhibit C of the Wind Energy Cooperative Agreement)

Preamble

The Pennsylvania Game Commission (PGC) has a responsibility to the Commonwealth of Pennsylvania and its citizens to manage and protect the wildlife of Pennsylvania using the best science and information available at the time management decisions are made. To that end, the PGC entered into a memo of understanding with the Mammal Technical Committee (MTC) of the Pennsylvania Biological Survey (PBS, a non-profit scientific, educational, and advisory organization of professional biologists, incorporated under the laws of the Commonwealth of Pennsylvania) to act in an advisory capacity to the PGC on all matters related to management and protection of mammals within the Commonwealth that fall under PGC jurisdiction. That memo of understanding had been in effect for well over a decade. While the PGC is not required to follow the scientific advice of the MTC, the existence of that memo of understanding between these two organizations implies a responsibility for the PGC to seek consultation with the MTC on such matters and so as to be provided with the best and most current scientific advice. This is particularly imperative when the issue is one as important, and can have such wide impact on Pennsylvania wildlife, as that of wind turbine development in the Commonwealth.

With the propagation of wind turbine sites throughout the northeastern United States in general, and within the Commonwealth of Pennsylvania in particular, the MTC recognized the need to provide the PGC with expert scientific advice on the subject. The US Government Accountability Office (2005) and US Fish and Wildlife (2003), among

others, have identified that wind turbines pose a risk of death to bats and that the highest levels of mortality recorded anywhere have occurred in this region of the country (Meyersdale wind site in Pennsylvania, Mountaineer wind site in West Virginia, Buffalo Mountain wind site in Tennessee). In order to provide the most current scientific advice possible, the MTC formed the “Wind Energy and Bats” (WEB) sub-committee in October of 2006. This sub-committee is composed of MTC bat experts throughout the Commonwealth who are familiar with the biology and ecology of bats and issues concerning how they are being affected by wind power development. The WEB sub-committee advised the PGC representatives on the MTC that it was ready to assist the PGC in reviewing material related to this topic and offering the most current scientific advice possible in designing guidelines for siting wind turbines in Pennsylvania with respect to protecting wildlife, and specifically bats.

In February of 2007, the PGC released a final draft of Voluntary Wind Energy Cooperative Agreement, which included guidelines for the siting of wind turbines in the Commonwealth of Pennsylvania. The MTC was not provided with draft formats of the guideline for review. The MTC actually saw the completed document because a member of a citizens group forwarded it to one of our members—after it was signed and completed. At the October 2006 meeting of the MTC, members of the PGC did tell the MTC that protocol guidelines were going to be completed and said that the executive director of the PGC, Carl Roe, would accept MTC input. However, since we were never provided with a draft of the protocol, we were unable to provide such input. Subsequent to the publication of the final draft of the siting guidelines, the PGC informed the chairs of the MTC that in this case the normal close consultation with the MTC did “break down” somewhat but was necessary due to the time pressure that the PGC was under to complete these guidelines.

Given the aforementioned events, the WEB sub-committee feels it is still imperative that we offer feedback to the PGC now, from experts in the Commonwealth, based on the most current science available, and in the spirit of the memo of understanding between the PGC and MTC.

Review of Pennsylvania Game Commission Protocols to monitor Bat and Bird Mortality at Industrial Wind Sites (Exhibit C of the Wind Energy Cooperative Agreement)

The Wind Energy and Bats sub-committee wishes to acknowledge that the PGC deserves credit for its attempt to institute a means for systematically monitoring the wildlife collision impact of industrial wind energy development in the Commonwealth, particularly since limited information currently exists on this. In addition, we have no doubt that the PGC protocol reflects the input of many competent and well-meaning biologists who work for the PGC. Nonetheless, it appears that the PGC's voluntary protocol is flawed, will not help avoid or effectively mitigate the harmful impacts to our natural heritage from the pending development of industrial wind energy in Pennsylvania, or even serve to adequately monitor the effects such development has on wildlife.

The greatest and most damaging flaw in the PGC protocol is a "loophole" which allows wind industry "cooperators" to block public access to research information collected under the auspices of this protocol if it is not "deemed to be in the[ir] best interest" (see section 13 of PGC protocol). This is entirely unacceptable if this protocol is to have any credibility among the scientific community and the public. It is imperative that information and research be freely available to the Citizens of the Commonwealth of Pennsylvania and shared with the scientific community. Any protocol that blocks the exchange of such information in any way is worthless.

Unfortunately, the PGC has set the bar very low in terms of their expectations for cooperation from the wind industry. The wildlife research and mitigation strategy in the PGC protocol is very constrained and exceedingly weak. The PGC protocol requires wind "cooperators" to fund only a minimal amount of research without much chance that the results of any studies will be used in a project's approval and ultimate construction. In doing so the PGC sacrificed many important wildlife considerations and protections.

However by doing so it allows wind energy developers to claim cooperation with the Commonwealth on wildlife matters involving their development of wind turbine sites.

There is widespread dissatisfaction among our sub-committee over the lack of meaningful pre-construction research, which the PGC protocol largely fails to require. Incredibly, there is no requirement that any pre-construction monitoring efforts be evaluated or otherwise used to determine whether a proposed wind energy project should go forward or be halted. No thresholds or standards for evaluating the acceptability of pre-construction study results are included in the PGC protocol. It seems that all a wind energy developer needs to do is complete whatever research the PGC protocol stipulates be done to receive a go ahead for the project, by the PGC, regardless of what study results might indicate in terms of risk to resource.

For post-construction mortality studies, only 2 years of searching for bird and bat carcasses is expected, and this monitoring stipulation applies to all "cooperating" wind energy projects. However, the monitoring of wildlife killed by wind turbines that is called for in the PGC protocol is a year less in duration than what the USFWS (2003) recommends in wind turbine siting guidelines. Sadly, there appears to be no mitigation requirements in the PGC protocol for impacts to bats or birds.

The November 29, 2006 draft of the PGC protocol allowed for the possibility of an operational "curtailment if needed" of a wind energy project (e.g., a shutdown) should the post-construction mortality results indicate an unacceptable "severity of impacts" to bats - but only at those wind energy development sites which were formerly identified as being Moderate or High Priority for bats. However, the "curtailment" mitigation language was dropped after the Commission's Dec. 18, 2006 meeting with wind industry representatives.

Also dropped from the Nov. 2006 draft was #8 under the list of actions which "should generally be followed in order to meet the PGC protocol", i.e., "Additional silvicultural recommendations and other Best Management Practices (BMPs) may be suggested." The

lack of BMPs is a major flaw in the PGC protocol and its ability to safeguard the Commonwealth's wildlife.

The PGC protocol provides very little real protection for wildlife and may help shelter the wind industry from growing criticism of environmental and wildlife impacts that can result from the development of wind energy facilities. In the Commonwealth, this development will primarily be targeting forested ridgetops. By signing this voluntary protocol with the PGC and funding some limited studies, which are weak at best, wind energy "cooperators" will be able to claim that they are fully cooperating with the State's lead agency for the protection of wildlife and habitats.

Conclusions and Recommendations

The scientists on the "WEB" sub-committee of the MTC recognize that the development of new energy sources is imperative in the US, however we also recognize that such development needs to consider how it will impact wildlife. The effects of energy development on wildlife and the environment must be a major point of deliberation in the development of any viable energy sources of alternative energy. Whereas wind turbines were once thought to have no adverse environmental impacts, they are now recognized to have negative impacts on wildlife and most significantly on bats and birds (USFWS 2003, US Government Accountability Office 2005, National Research Council 2007). The Government Accountability Report (2005) specifically cites Pennsylvania as one of the states in the Appalachia region of the United States where bats are being killed in the largest numbers, and populations are at greatest risk. Moreover, as bats are the primary predators of nocturnal insects in the Commonwealth, and many of these insects are considered human and crop pests, bats are considered ecological keystone species. Widespread and cumulative effects from wind development on the bat populations within the Commonwealth is likely to have a negative effect on our bat populations and thus on their ecological keystone role as insect control agents.

As such, after careful study of the PGC voluntary protocol, and based on the needs of the Commonwealth to protect its wildlife and study the effects of wind turbine development

on birds, bats and other wildlife, the Wind Energy and Bats sub-committee urges the PGC to abandon the current Protocol to monitor Bat and Bird Mortality at Industrial Wind Sites (Exhibit C of the Wind Energy Cooperative Agreement) and develop a more realistic, more meaningful, and more scientifically sound protocol, that will evaluate wind turbine impact, and protect the wildlife and other resources of the Commonwealth of Pennsylvania. The current PGC protocol is not based on the “best science available” and is not in keeping with recommendations and/or does not address concerns of the US Fish and Wildlife Service (2003), The US Government Accountability Office (2005), the National Research Council Report (2007), the position held by the Mammal Technical Committee in a previous communication to the PGC (appendix I), the position of Bat Conservation International (appendix II), recent expert testimony before the US Congress (Committee on Natural Resources, 2007) and numerous government and independent bat experts and scientists in the US and Canada. To continue to promote and use such a protocol would be to put the interest of the wind industry before the interest of the Commonwealth.

It is our hope that the scientists of the Wind Energy and Bats sub-committee of the Mammal Technical Committee of the Pennsylvania Biological Survey will be consulted on future protocol development and our input and review be considered in constructing such protocols that have a real effect on protecting the wildlife of the Commonwealth while allowing for the responsible development of wind energy. This committee stands ready to assist the PGC in this and in the review of any studies submitted to the PGC on this subject.

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Appendix I



31 January 2006

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The Mammal Technical Committee (MTC) of the Pennsylvania Biological Survey recognizes the need and desire to promote a clean renewable source of energy for the future. Wind energy offers such promise, and is being widely considered within the commonwealth of Pennsylvania. However, the development of this industry also has been shown to be extremely hazardous to wildlife, especially bats.

Bats are the major predators of night flying insects in Pennsylvania and throughout the United States. As such, they are keystone species whose impact on the environment is strongly linked to many other plants and animals. These include humans both in biological and economic terms. It is estimated that the value of the insect control that bats provide in the U.S. is in the billions of dollars annually. Bats are already declining throughout the U.S. With their exceptionally low reproductive rates, further declines in bat numbers should be a point of deep concern for all.

After reviewing the growing evidence from locations in Pennsylvania, West Virginia, and Tennessee, the MTC strongly concurs with the position of Bat Conservation International (BCI) that the impact of wind power facilities on wildlife is severe. Even by the most conservative estimates, tens of thousands of bats are being killed by wind turbines in these states each year.

The cumulative effect on bats from such sites could be devastating. Further development of wind power facilities can not be condoned until solutions are found to minimize the effect of these turbines on bats. We fully support the need to develop research and the appropriate monitoring of mortality of bats at existing sites for this purpose. Minimally, the environmental impact on bats should be examined and included as a factor in any site selection being considered for future wind turbine construction.

Specifically, we recommend the commonwealth of Pennsylvania require companies to have adequate pre-construction monitoring of bat activity levels for at least 2-3 years prior to construction, follow-up studies during construction, and monitoring of bat kills for a minimum of 2-3 years after construction. Because of carcass scavenging, these surveys need to be done on a regular basis and are especially critical during the migration season. In addition, the development of a standardized methodology for these surveys would allow for between-site comparisons.

With commitment from the wind energy industry to work with the scientific community to find solutions to the bat kill problems associated with wind turbines, the impact of wind farms on wildlife can be minimized. This commitment would only strengthen the development of wind power as a safe, renewable source of energy for the future.

Sincerely,

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Appendix II



MEMO TO: Wind Energy Production and Wildlife Conservation Planners
FROM: Merlin Tuttle, President, Bat Conservation International
SUBJECT: Caution Regarding Placement of Wind Turbines on Wooded Ridge Tops
DATE: 4 January 2005

Wind power offers a remarkable source of renewable, pollution free energy. However, it also can be extremely hazardous to bats. In the eastern U.S., only three wind farms on wooded ridge tops have been investigated for bat kills (in Pennsylvania, Tennessee and West Virginia), but all have killed alarming numbers. Because bats are essential to the balance of nature and human economies, are already in decline and have exceptionally low reproductive rates, we are deeply concerned.

There is a rapidly growing body of evidence indicating that bat fatalities at wind power facilities are considerably higher than previously estimated. We anticipate that, unless solutions are soon developed, high kill rates can be expected wherever wind power plants are built on wooded ridges. More than 600 turbines have already been proposed for construction at such sites within a 70-mile radius of the Mountaineer, West Virginia and Meyersdale, Pennsylvania sites where large numbers of bats are already being killed. Based on an extremely conservative estimate of 48 bats per turbine per year killed at Mountaineer (Kerns and Kurlinger, 2003), completion of already proposed turbines in just this one small area could kill close to 29,000 bats annually. My best personal estimate is closer to double this number (Tuttle, 2004). Clearly, further construction of wind farms on wooded ridge tops, prior to finding solutions to prevent or minimize bat kills, poses potentially devastating cumulative threats to bats and to ecosystems that rely on them. Prudence suggests great caution until solutions are found. Failure to act immediately to conduct research needed to protect bats and find solutions for industry could prove extremely costly for all concerned.

Because Bat Conservation International recognizes the need to develop clean energy, it has partnered with the American Wind Energy Association, the U.S. Department of Energy National Renewable Energy Research Laboratory, and the U.S. Fish and Wildlife Service to launch the Bats and Wind Energy Cooperative to conduct research needed to identify causes and develop solutions to prevent or minimize bat fatality at wind farms. The Cooperative made excellent progress toward identifying causes and possible solutions during the summer of 2004 and possible methods for reducing fatalities will be tested in 2005.

Although Bat Conservation International cannot condone further turbine construction until solutions are found to minimize or prevent bat kills, we urge that all future permits, at least on wooded ridges, require clear commitments to support both the research needed to develop solutions and appropriate monitoring of mortality impacts.

For more information on the Bats and Wind Energy Cooperative, contact: Ed Arnett, Project Coordinator, Bats and Wind Energy Cooperative, at 512-327-9721 or earnett@batcon.org.

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