August 4, 2006

O. Ray Bourland, Executive Secretary
Maryland Public Service Commission
6 St. Paul Street
Baltimore, MD 21202

RE: Administrative Docket RM24 – proposed siting guidelines for windpower projects

Dear Mr. Bourland,

The proposed Maryland (MD) Siting Guidelines are woefully inadequate. They offer little more than regurgitations of the same inadequate mitigation and review procedures which the MD Department of Natural Resources (DNR) through its Power Plant Research Program (PPRP) has allowed for the 3 previous windplant cases considered by the MD Public Service Commission. The failure of the Technical Advisory Group to develop or recommend either a "threshold level" of impact above which mitigation is called for - or to suggest any specific "prescriptive mitigation actions" - is testament to the inadequacy of the proposed Siting Guidelines.

Incredibly, although the proposed MD Siting Guidelines only mention briefly the USFWS Wind Turbine Siting Guidelines, which have existed since May 2003, none of this federal guidance document's most germane recommendations were included in the proposed MD Guidelines - such as "avoid locating turbines...where birds (and bats) are highly concentrated" (e.g., where large numbers occur in "the rotor-swept area" of turbines) and avoid "areas with a high incidence of fog, mist, low cloud ceilings, and low visibility", "avoid fragmenting large, contiguous tracts of wildlife habitat", "develop a habitat restoration plan". The proposed MD Siting Guidelines should be modified to stipulate that the USFWS's recommended "practices protective of wildlife" should be followed by wind energy developers.

In addition, the proposed MD Siting Guidelines appear to be needlessly dismissive of the USFWS Guidelines because of their "interim" status. Since the "interim" USFWS Guidelines have not been updated for more than 3 years following their promulgation, it would be inaccurate to characterize this guidance policy as being in a "draft" or "proposed" condition of approval. The USFWS Guidelines point out on their first page that:

> "These guidelines are based on current science and will be updated as new information becomes available. They are voluntary, and interim in nature. They will be evaluated over a two-year period, and then modified as necessary based on their performance in the field, on comments from the public, and on the latest scientific and technical discoveries developed in coordination with industry, states, academic researchers, and other Federal agencies."

Consequently, the interim USFWS Guidelines should be considered as being authoritative and provide overall the best current recommendations for minimizing wildlife impacts due to siting and operation of wind energy facilities. Since the proposed MD Siting Guidelines refer 3 times to the USFWS Guidelines as being "interim", it is redundant, unnecessary and misleading to also include the sentence – "At this time final guidelines have not yet been published." In addition, this awkwardly worded sentence should be removed from the proposed MD Siting Guidelines since it conveys no meaningful information, and because the preceding sentence already indicated a final set of guidelines do not exist: i.e., "the US Fish and Wildlife Service has issued **interim guidelines**".

The proposed MD Siting Guidelines also failed to include any standards or recommendations to mitigate the serious impact of forest fragmentation resulting from the construction of the wind-energy generating facilities. This is an appalling oversight given that the MD DNR has helped issue a land-use policy document which describes the importance of protecting "forest interior" habitat and underscores the threat posed to birds by forest fragmentation due to degradation of forest habitat quality within at least 300 feet of created edges (i.e., the deleterious "edge" effects).[1] This policy document indicates that large blocks of contiguous forest are valuable as bird habitat, and that breaks in the forest canopy larger than 30-feet in width (e.g., for roads) are a major cause of forest fragmentation.

Based on analysis of aerial photographs of windplants in PA and WV taken before and after construction, it has been determined that the overall loss of forest due to windplant development averages about 3 acres per turbine, but the impact on ecologically important forest interior habitat averages nearly 20 acres per turbine.[2] Consequently, because wind energy development is expected to target the wind-rich but forested ridgetops of our region - which comprise the backbones of the largest remaining tracts of forest interior habitat - it represents one of the greatest threats to forest dwelling bird habitat due to the extensive impact resulting from fragmentation. The proposed MD Siting Guidelines should be revised to include standards to help avoid and mitigate the impact of forest fragmentation due to siting and construction of a windplant within large, contiguous forest tracts, as well as to identify the need to monitor forest fragmentation impacts following construction of a wind project.

Evidence that bird populations were reduced following construction of a windplant within a tract of forest habitat can be discerned from a research report published by the US DOE's National Renewable Energy Lab which involved the 11 wind turbines constructed near Searsburg, VT.[3] This report documented that species diversity and density was reduced following construction of the Searsburg windplant; following are some relevant excerpts from p. 22 and 25 of this report:

> "Overall, the disturbance, alteration, and clearing of the forest resulting from the construction of turbines at Searsburg appears to have reduced the abundance of several species of forest nesting birds that require large, unbroken tracts of land in which to nest."
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> "The Searsburg wind power station is the first such facility in the heavily forested eastern part of North America. Other projects will follow and the experience at Searsburg should be noted. Fragmentation of forests via wind turbine erection can impact interior nesting birds in a[n] adverse manner. The size and number of wind power developments in the future are also of concern with respect to habitat loss and fragmentation. This may become the primary ecological consideration in future wind power developments in these habitats."

The proposed MD Siting Guidelines are remiss in failing to identify any areas or conditions where utility-scale wind energy projects will not be allowed. Apparently, wind energy developers are free to continue to push for siting of their industrial facilities on forested ridgetops regardless of forest interior habitat considerations and despite recommendations by Bat Conservation

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[1] See especially p. 4, #4 on p. 23, and figure 5B on p. 25: http://www.dnr.state.md.us/education/envirothon/wildlife/criticalareareg_FIDS.pdf (available August 4, 2006)

[2] See: http://johnrsweet.com/Personal/Wind/windpix4.html (available August 4, 2006)

[3] See: http://www.nrel.gov/docs/fy02osti/28591.pdf (available August 4, 2006)

International that such locations "should be avoided" because they are "exceptionally high risk" for wildlife.[4] The proposed MD Siting Guidelines should be revised to incorporate “guidance” as to locations and types of areas where utility-scale wind energy facilities should not be sited.

Two key positive elements of the proposed Guidelines for MD are that one year of pre-construction studies and three years of post-construction monitoring data will be required for future wind energy facilities. Unfortunately, the protocols for pre- and post-construction wildlife studies are to be developed by DNR without any peer-review requirement or opportunity for public comment – and apparently with only the input of the developer. Essentially, this proposal side-steps the intent of these regulations by failing to elaborate on the information and evaluation needs which are intrinsic and necessary to good siting guidelines (i.e., pre-construction siting evaluation and post-construction monitoring studies of wildlife impact). By failing to provide substantive details about the study protocols the Technical Advisory Group has failed to fully comply with its tasked objective – i.e., “to develop recommendations on siting, operational, and monitoring criteria for wind-powered electricity generating facilities related to bat and avian issues”. Clearly this is unacceptable, and the Siting Guidelines should not be finalized without enumerating some basic details about these protocols (e.g., a framework and outline) and adding a review process which allows for public comments before the final versions of the study protocols are adopted.

Another positive element of the proposed MD Siting Guidelines involves restricting “permanently installed high intensity” sources of area lighting as part of windplant construction. This safeguard is important to have incorporated in the Siting Guidelines since bright sources of lighting are well-known to be major contributors to large mortality events of nocturnally-migrating birds since they attract and disorient individuals, thereby predisposing them to collide with nearby structures – especially during foggy or inclement weather conditions. However, the proposed MD Siting Guidelines should have extended this safeguard by requiring that no wind turbines or towers be installed next to existing sources of bright lighting (such as may occur on lands leased for windplant project). In addition, the Siting Guidelines should have recommended that developers include stipulations in their lease agreements with landowners which would prevent future installation of undesirable light sources near wind turbines or towers. The setback distance between a windplant’s turbines/towers and any bright light source should be a minimum of 250 meters, which represents the distance from bright light source that birds were reported to collide with wind turbines at the Mountaineer windplant in May 2003.[5]

Additionally, the proposed MD Siting Guidelines should include a requirement that the called-for pre- and post-construction research be performed by qualified experts who do not have a long-standing financial relationship with the wind industry. This recommendation is also mirrored in the USFWS Wind Turbine Siting Guidelines. Also, the proposed MD Siting Guidelines - as they pertain to pre-construction studies - should not leave as optional the critical "radar monitoring for migrating birds" and "acoustic monitoring for migratory bats" (i.e., the proposed MD Guidelines indicate that the Applicant "may include" these technologies as part of the required "one year of monitoring").

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[4] See: http://www.vawind.org/Assets/Docs/Key%20Issues%2001-06-06.pdf and http://www.vawind.org/Assets/Docs/BCI_ridgetop_advisory.pdf (both available August 4, 2006)

[5] See Kerns, J. and P. Kerlinger. 2004. A study of bird and bat collision fatalities at Mountaineer Wind Energy Center, Tucker County, WV: annual report for 2003. Technical report prepared by Curry and Kerlinger, LLC for FPL Energy and Mountaineer Wind Energy Center Technical Review Committee.

Furthermore, the proposed MD PSC windplant siting guidelines are unacceptable since they leave the bulk of the effective components of a "guideline" to be determined in the future by DNR, which apparently will have no oversight or accountability in its development of both pre- and post-construction study protocols . The requirement that DNR be blindly trusted to develop effective and unbiased study protocols for both pre- and post-construction studies exceeds credulity...especially since there is no requirement that the protocols obtain independent peer review or be open to public review and comment.

The proposed Guidelines are in error in equating the "Phase 1 avian risk assessment" to the National Wind Coordinating Committee's (NWCC) "Guidance Document" via its footnote # 7. The NWCC Guidance Document contains no reference to a "Phase 1 Avian Risk Assessment" methodology (in fact, the term “Phase 1” is not present). Although this publication does recommend and briefly describe a "Reconnaissance Study" as part of a suggested "Site Evaluation" process, it does not recommend this technique for risk assessment. According to this NWCC publication (p. 13), "Reconnaissance studies are on-site surveys used by a biologist to get a **general feel** for the site, topography, habitat, bird use and potential use, and for species that may use the site" (emphasis added). However, the NWCC Guidance Document does recommend a "Level 1 Study" and observes on p. 24 that:

> "Level 1 studies include pre-permitting baseline studies, risk assessment studies, and monitoring studies designed to detect the relatively large effects of operating wind plants. Studies to determine the relative risk of wind plants to species and communities, as well as monitoring studies, normally would be Level 1 studies."

Consequently, the proposed MD Siting Guidelines needs clarification and proper citation of methodology for its required "Phase 1 avian risk assessment" (i.e., do they recommend a Level 1 Study?). Furthermore, since the proposed MD Guidelines stipulate that a "Phase 1 avian risk assessment" must be included as part of the pre-construction studies, it should also have a similar requirement for bats.

The proposed MD Siting Guidelines perpetuate inaccurate and misleading information by suggesting that tubular wind turbine towers are safer for birds compared to lattice-based turbine towers (since tubular towers offer no "perch sites" to lure birds into proximity of deadly turbine blades). However, no utility-scale wind turbines have been built using a lattice tower for nearly 10 years in the US, and their abandonment in favor of tubular towers had nothing to do with bird safety since it was cost and engineering reasons (better support of increasing weight of nacelle) which necessitated this switch. In addition, the results of two peer-reviewed research publications have dispelled the notion that bird mortality was lessened due to tubular compared with lattice towers of wind turbines.[6] Furthermore, although “guy wires” are indeed a collision hazard for birds and therefore it is appropriate to disallow aerially-suspended cables in wind energy facilities, there is no scientific or popular literature source which indicates that installing such structures to support the towers in a windplant is undesirable because they are used by birds or bats as “perch sites”. The proposed MD Siting Guidelines should be modified to delete reference to the false information regarding purportedly safer tubular towers and also corrected to accurately describe the reason why towers supported by “guy wires” pose a threat to wildlife.

[6] See: http://www.vawind.org/Assets/Docs/myth.pdf (available August 4, 2006)

It is also disconcerting that these proposed guidelines recommend wind energy developers "meet and discuss the project" with DNR before submitting an application to Public Service Commission (PSC). This is apparently proposed by DNR in order to "scope out and identify any anticipated environmental and socioeconomic issues specific to the [developer's] project and outline the steps to be conducted to address the identified issues". Such a relationship begs questioning if it occurs prior to an administrative proceeding (i.e., application for a Certificate of Public Convenience and Necessity – aka CPCN or operating permit) in which DNR is supposedly providing neutral advice and recommendations. There needs to be some public involvement or accountability during this "pre-application" interaction in order to ensure that this relationship is informational and does not evolve into a collaboration to obtain approval for a project.

Public accountability and oversight of DNR during its desired "pre-application" interaction with wind energy developer may be especially needed if a planned wind energy project involves only public lands within a State Forest – for which DNR has total management responsibility. There could be a huge conflict of interest in having DNR assist developers by helping to resolve issues of concern prior to the developer submitting an application to the PSC. It also is very troubling that these proposed Guidelines overtly claim DNR could withhold the "results from all the prescribed studies". This section of the proposed MD Siting Guidelines should be rewritten to indicate that only sensitive location information from the Applicant's wildlife studies may be redacted.

Although the proposed MD Siting Guidelines do mention that wind energy developers "should avoid locations identified to have the potential for high risk to birds or bats", they fail to identify what constitutes "high risk" or how it is to be determined. This appears to be an attempt to avoid using the long-standing practice of evaluating collision risk based on the numbers of birds and bats that pre-construction studies determined would be within the rotor-swept area of a proposed windplant (as is recommended in the USFWS Guidelines and likewise implied in the NWCC "Guidance Document" – see p. 67: "…it may be assumed that the more time a species spends flying at heights encompassed by the rotor swept area of turbines, the more risk the species faces in a wind plant."). The MD Siting Guidelines need to be revised to specify that "the potential for high risk" of collision with wind turbines is directly related to whether large numbers of low-flying birds and bats occur within the project area of a proposed windplant.

The wind industry and their consultants repeatedly claim now that risk should no longer be based on the numbers of birds/bats that may fly through the rotor-swept area of the wind turbine, but instead should be determined by the proportion that would likely be killed due to collision with turbine's blades or tower. While that approach may seem reasonable, it presents a "catch-22" situation for nocturnal migrants - and migrating hawks along Appalachian ridges - since no one knows what the relationship is between the numbers of bird and bats that would be "at risk" of collision (because they are present before wind turbines are built) and how many of these would likely die due to collision after the wind energy facility is constructed. There have been no studies to date which have collected sufficient information about - let alone evaluated - this relationship.

Unfortunately, the wind industry's solution is to build windplants first and then study the relationship afterwards based on the numbers of dead birds and bats found compared with whatever pre-construction study data was collected (at best two seasons of radar and/or acoustic monitoring). This approach would ignore the variability in patterns and flux of bird/bat migration between years, and thus would be of limited value in determining the needed relationship between the numbers present and the ensuing mortality level determined by post-construction monitoring. However, it has the self-serving advantage of getting their project built.

The wind industry wishes to abandon the precautionary principle and ignore the USFWS Guidelines (and the industry's own tradition of assessing risk) in the hope that by moving the goal posts farther away they can avoid dealing with the mounting radar research evidence which documents very high numbers of low-flying birds and bats are present over Appalachian ridgetops. The letter sent today to the PSC by Chandler Robbins and Don Meritt makes reference to the lack of mention in the MD Siting Guidelines about the radar study near Mt. Storm - the results of which were used by a wind industry consultant (WEST, Inc.) to estimate that 300,000 nocturnal migrants were flying over project site below turbine height (< 125 m) during just the fall migration period in 2003.[7] Since then, other proposed ridgetop windplant locations have been studied using radar and found to have equally high to greater low-flying passage rates of nocturnally-migrating birds and bats (compared to Mt. Storm) – and very high rates during Spring migration period have also been documented at proposed windplants in our region.[8]

The MD DNR cannot be relied upon to develop or implement effective wildlife mitigation plans for wind energy facilities based upon their recent recommended conditions for an operating permit (i.e., CPCN) for the Synergics windplant project – which is still before the MD PSC (case #9008) and proposed for Backbone Mountain just to the north of the Mountaineer windplant. This wind energy facility located nearby in WV is now infamous for having perhaps the highest rate of wildlife mortality of any wind energy facility in the world.[9] My rationale follows.

Although the efficacy of "curtailment" - shutting down of wind turbines to minimize rotation of blades and thereby reduce bat collisions - has yet to be studied to determine whether it would be an effective mitigation strategy, the MD DNR nonetheless recommended this strategy to the MD PSC. However, the MD DNR's curtailment recommendations were not very strong since they put a potentially inadequate limit on how long (# hours) the turbines can be shut down per year, and further limited the curtailment to when wind speeds are below 4 meters/second (which is barely above the cut-in speed for a turbine).

According to DNR's specific mitigation recommendations to the MD Public Service Commission for this windplant (see Appendix A, which contains 2 of DNR's recommended CPCN conditions – #18 and #19), the curtailment of wind turbine operation would be instituted only during the fall bat migration period (July through November). In addition, curtailment is supposed to only "occur when the wind speed falls below 4 m/s". I understand this to mean that the windplant owner/operator would be allowed to operate the turbines when wind speeds exceed 4 m/s.

However, upon examining Table 3-3 of the final report[10] by the Bat and Wind Energy Cooperative (June 2005 – Relationships between Bats and Wind Turbines in Pennsylvania and West Virginia), I noted that 7 of the 8 observed bat collisions with wind turbines at Mountaineer occurred when wind speeds were between 4.3 to 9.4 m/s (average = 7.5 m/s). In addition, Fig. 3-5d of this report

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[7] See p. 27-28 in: http://www.west-inc.com/reports/mount_storm_final.pdf (available August 4, 2006)

[8] See: http://www.vawind.org/Assets/Pictures/migrant%20numbers%20by%20altitude.pdf (available August 4, 2006)

[9] In 2003, the annual wildlife mortality rate was estimate to range from over 50 to more than 100+ birds and bats (mostly bats) killed per turbine at the Mountaineer wind energy facility in WV; see note in May 13, 2004 issue of Renewable Energy Today (http://www.findarticles.com/p/articles/mi_m0OXD/is_2004_May_13/ai_n6027168) and Kerns, J. and P. Kerlinger. 2004 – op. cit.

[10] The Bat and Wind Energy Cooperative final report is available for download via Bat Conservation International's website – see: http://www.batcon.org/wind/BWEC2004finalreport.pdf (available August 4, 2006).

shows the relationship between bat presence and wind speed which indicates that on average over 100 bat passes were detected when wind speeds were 4 m/s, compared with 150 bats at 2 m/s winds, 50 bats at 7.5 m/s, and no bats were detected when wind speeds reached or exceeded 10 m/s. Furthermore, Tables 2-16 and 2-17 clearly indicate that 6 m/s wind speeds would have been a far more effective curtailment threshold for MD DNR to have recommended in order to significantly reduce the collision risk of bats at this windplant.

Consequently, it is difficult to understand why MD DNR recommended such a low wind speed threshold to curtail operation of the turbines at the windplant proposed by Synergics. It sets a bad precedent since it appears to promote a minimally effective strategy for reducing bat collision mortality. Worse, the MD DNR's curtailment strategy (recommended condition # 18) will only be in effect during the first 3 years of the windplant's operation; after that, there would be no way to extend or strengthen restrictions on the operation of this windplant so that impacts to migratory bats could be reduced over the lifespan of the turbines (which could be 20+ years).

Even more disconcerting was MD DNR's recommended condition #19 for the operating permit (CPCN) of Synergics proposed wind energy facility, which applies only to species of bats protected under MD's endangered species law - this includes only two species: Indiana and Small-footed. Sadly, MD DNR excluded all the species of migratory bats when they defined the term "significant mortalities" – indicating they don't have jurisdiction or concern for impacts to non-listed bat species. This occurred despite the wide-spread knowledge that thousands of migratory bats are being killed annually due to collision with huge wind turbines at the Mountaineer wind energy facility located on the same ridge and only a few miles to the south of the windplant proposed by Synergics.

Finally, the proposed MD Siting Guidelines call for establishment of a "peer review group external to the State Agencies" that will "assess monitoring data plans and data". However, in order for a "peer review group" on this issue to be viewed as credible there needs to be more independence and transparency as to how its members are selected. Consequently, the proposed Siting Guidelines should be revised to specify that membership of the "peer review group" will be nominated by selected wildlife groups, organizations and academic institutions/agencies. These entities should be allowed to independently nominate representatives to the peer review group – wildlife groups (e.g., Maryland Ornithological Society, Audubon Naturalist Society, etc.), professional wildlife organizations (e.g., The Wildlife Society and Society of Conservation Biology), and academic institutions and agencies (e.g., Center for Estuarine and Environmental Studies).

Sincerely,

D. Daniel Boone
8111 Chestnut Avenue
Bowie, MD 20715

Attachment: Appendix A

Appendix A – MD DNR's "Recommended Conditions" #18 and #19 to be placed on the Certificate of Public Convenience and Necessity (i.e., operating permit) for the proposed Synergics Wind Energy Facility (MD PSC Case #9008). Submitted on April 20, 2005.

18. To minimize the potential for long-term harm to bat populations and as part of post construction mortality studies in the first three years of operation, the applicant will conduct bat mortality studies during the period of fall migration from July 1 through November 30 using a DNR Natural Heritage Program approved protocol. If on two occasions five or more bat fatalities are observed at the site then the Applicant will adopt the following operational curtailment:

a) The curtailment will occur at the entire facility during the period July 1 through November 30 and between the hours of 8 pm to 6 am,
b) Curtailment will occur when the wind speed falls below 4m/s
c) The number of hours per year of curtailed operation for the facility as a whole will not exceed 400.
d) A record of this feathering activity will be provided to PPRP each December as long as this condition is in force.

For purposes of this condition, curtailment means feathering the blades and reducing the rate of rotation of all the turbines that comprise the project to zero or the minimum that may be necessary to provide bearing lubrication for the turbines.

This condition may be reviewed if and when the high bat mortality observed at eastern windpower facilities is understood and determined to be manageable.

19. DNR, based on monitoring and other scientific information, and after consultation with the Applicant and other interested parties, may make a determination that one or more wind turbines are collectively causing significant bird or bat mortalities. DNR shall submit any such determination to the PSC. The PSC shall direct the Applicant to prepare and submit to DNR for approval a plan for reducing the mortality to an acceptable level. The plan may include such actions as moving or restricting the operation of one or more towers. The level of restriction in hours per calendar year will not exceed 54 times the number of turbines constructed. The plan may also include provisions for a period, not to exceed two years, during which tests may be conducted, such as varying the operating parameters of one or more towers, changing the tower lighting scheme, or other measures, to determine how best to reduce the mortality. Following approval of the plan by DNR, the PSC shall direct the company to implement the plan. For purposes of this condition, the term "significant mortalities" means a number or rate of mortalities that could result in an ecologically significant population decline in federal or state rare, threatened or endangered species, or bird species protected by the Migratory Bird Treaty Act.