European Commission
DG Environment, DG Transport and Energy
Ad hoc working group on wind energy and nature conservation

Your reference
Our reference
IN.A.2005.60.

Appendix
references with links, bat situation in the US

Date
29/06/2005

Ad Hoc Working Group on wind energy and nature conservation.
Position statement, points to discuss, and further information.

The Institute of Nature Conservation (IN) – a scientific institute of the Flemish government in Belgium – currently performs a long-term independent project to study the impact of wind turbines on birds (nature) and to act as a consultancy for proposed wind farms in Flanders (Belgium). The project started in 2000, under the authority of the government. The results of the study until 2001 were published in the report (in Dutch) ‘Wind turbines and birds in Flanders. Preliminary study results in a European context’ (Everaert et al. 2002). A summary of the report with some additional new results was published as an article in the ornithological magazine Natuur.Oriolus (Everaert 2003). A bird atlas with important bird areas and migration routes in Flanders (with suggested buffers) was also made in this context (Everaert et al. 2003). An article with more recent results (probable significant collision problem for breeding terns) from the wind farm in the port of Zeebrugge, is currently in preparation (Everaert 2005 in prep.). See the references for more information.

1. Outline of measures/legislation/guidelines concerning wind turbines in Flanders (Belgium).

In September 2000 the circular letter EME/2000.01 of the Flemish government was published (Ministerie van de Vlaamse Gemeenschap 2000) in which certain criteria and preconditions for the construction of wind turbines are mentioned. Based on the circular letter, a “wind plan” was made for the Flemish part of Belgium (Dewilde et al. 2000). This wind plan can produce useful information on spatial and windtechnical feasibility of concrete projects. Additionally the bird atlas can also be used to evaluate the proposed (potential) wind farm areas (Everaert et al. 2003).

The authorities have the obligation by official order to strictly apply the current circular letter. Some criteria and preconditions concerning ‘nature conservation’ are summarised below.

- Wind turbines need an ‘urban development permission’ and an ‘environmental permission’ from the local and/or regional authorities.
- It is currently not allowed to build wind turbines in European Natura 2000 sites and other protected areas like nature reserves, protected landscapes, nature areas (regional zoning plan) etc.
- Around nature areas, a buffer of minimum 250 meter has to be applied. Around Natura 2000 sites, nature reserves, and areas with specific important birds, a buffer of minimum 500-700 meter is necessary [Note. Possibly, in a future version of the circular letter, no distances will be mentioned concerning the buffers. In that case, a local study will have to determine what buffer is necessary.
In case of uncertainty or too little information, a buffer will be applied taking into account the precautionary principle.

- Breeding and roosting areas and migration routes of protected, endangered or vulnerable species, and areas with high densities of birds and/or bats, have to be avoided.
- Before the construction approval of the wind farm, all necessary information on the presence of birds/bats must be studied and the possible negative impact has to be determined (in case of Natura 2000 sites and other important bird areas, an “appropriate assessment” has to be made (within or outside of an Environmental Impact Assessment (EIA)).
- In case of a plan with a minimum capacity of 20 MW or 20 turbines, or minimum 3 wind turbines with a possible impact on a protected area, an EIA always has to be made.
- The precautionary principle must be applied, certainly around Natura 2000 sites.

Concerning off-shore wind energy in Belgium (federal responsibility). On 31 May 2005, the designation of Natura 2000 zones in the Belgian part of the North Sea (3 under the Birds Directive and 2 under the Habitats Directive) was presented by the government (Vande Lanotte, 2005). There will be no wind farms in these protected areas. The government designated a special area for wind farms more than 22 km from the coast. In that area there is currently one approved large wind farm of which the first turbines will be constructed at the end of 2005. An environmental monitoring plan was made, and pre-construction monitoring is already started.

2. Position statement, points to discuss and further information.

Previously, the IN gave some comments and advice on the realisation of the literature review and guidelines in the Birdlife report (Langston & Pullan 2003), from which the Draft Recommendation of the Bern Convention was made up (Council of Europe 2004).

The IN has the opinion that these guidelines (for birds) are already of good quality, and therefore can serve as a perfect starting point for the ad-hoc working group on wind farms and nature conservation. Some important points to discuss are:

- **Proper site selection** plays a very important role in limiting the impact of wind farms on nature. In general, current knowledge indicates that there should be ‘precautionary avoidance’ of locating wind farms in regional or international important bird or bat areas and/or migration routes. Locations with high bird or bat use are not suitable for wind farms (see also guidelines on p. 56 in Langston & Pullan 2003, and Draft Recommendation T-PVS (2004) 4 of the Bern Convention). Developing mitigation measures and advocating temporary shutdowns of wind farms where (probable) significant impacts occur, are very difficult issues and could take years of study. Such situations must be prevented. A number of EIA’s sometimes also have important shortcomings because of the lack of data and time. When important factors remain unclear and an indication exists for an important negative impact, the precautionary principle must be applied. A constructive working method is to map potential and no-go locations for wind energy in a certain country or region, based on all available information.

- The real impact of wind farms depends on the involved species and the number of wind turbines. The numbers of (calculated) collision victims have to be regarded as strict minima because of the fact that more intensive research with daily searches needs to be done to have a better picture of the real number of small (migrating) birds and bats that collide with wind turbines. Furthermore, searching carcasses on the ground (as with most studies), although necessary when possible, doesn’t always give a complete image of the impact, even with the use of correction factors. Overall, mortality events of great magnitude are seldom recorded, but with more and bigger wind turbines planned (certainly offshore), it is still unclear if this will only be a rare phenomenon. The collision research should include the use of **new techniques** like the full automatic sound- and image detection system with contact microphones on the turbine mast in combination with web cams (Verhoef et al. 2002), and/or the Thermal Animal Detection System (TADS) for estimating collision frequency of migrating birds and bats at wind turbines (Desholm 2003). The problem is
that these new techniques haven’t been tested sufficiently in wind farms with regular bird and/or bat collision victims (on land). Certainly given the current worldwide offshore wind energy plans, a reliable well tested technique for general use is urgently needed.

- The number of collision victims of birds on the Flemish locations seems to be particularly dependent on the number of passing birds in flight and quite probably in much less degree on the type of wind turbine. However, more data on large wind turbines (≥ 1.500 kW) are urgently necessary.

- Questions remain about the impact of facility lighting (warning lights for aviation) on night migrating birds and bats. There are indications from some first tests with birds that most collision problems (most attraction) can be expected with non-pulsating and slow pulsating red (and possibly white) lights. Less problems would occur with (white) strobe lights (Gauthreau & Belser, 1999).

- Criteria and possible mitigation techniques concerning collision risk and disturbance of birds and bats are urgently needed. In practice, the necessary research cannot always be performed due to lack of funds and cooperation of the wind industry. An example of this last one happened recently in the US where urgent research on collision risk of bats was blocked (see appendix).

- We also have to take into account that the cumulative negative impact will get worse with an increasing amount of wind turbines (Langston & Pullan 2003). More wind farms mean also an extra pressure above the already existing sources of disturbance. In a dense populated region, this degrades the total suitability for ecological functions as the presence of bird and bat populations and guarantee for regional or international migration routes. For the offshore situation, international cooperation will be necessary to determine the possible cumulative impact.

- It is very important that EIA’s are made independently or are at least evaluated independently. In Flanders (Belgium) for onshore sites, evaluation and control of EIA’s is performed by the Nature Department (AMINAL administration). For offshore (= federal) sites the evaluation and control of EIA is done by the Management Unit of the North Sea Mathematical Models (MUMM) in an exhaustive ‘environmental impact appraisal’ similar to EIA.

- During the first meeting of the ad-hoc working group on wind farms and nature conservation (31 May 2005), concerning the last point in nr. 6 of the Draft agenda (how to take into account the environmental benefits of wind energy), there was a remark about Article 6(4), of the ‘Habitats’ Directive 92/43/EEC. Article 6(4) says: “If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.”

Following the article 6(4), it is clear that if a wind farm could have an important negative impact on wildlife, landscape, etc., we are obliged to look for alternatives first. We believe that there will always be alternative locations or other alternatives for these wind farms. To evaluate alternative locations or other alternatives, a multicriteria analysis (MCA) is preferable. This complex decision-making tool resembles cost-benefit analysis although it does not reduce the disparate phenomena to a common unitary (monetary) base. It permits the inclusion of qualitative as well as quantitative data. Several environmental impacts (positive or negative) cannot be readily assigned a monetary value (for example collision mortality and disturbance for wildlife (birds/bats), impact
on landscape, etc.). The current lack of sufficient knowledge concerning positive and negative effects of wind energy however remains a problem at the implementation of such analysis.

The first thing to do is **protect our remaining nature values** in an appropriate manner. We should never undervalue the importance of our wilderness, not only for nature itself but also for the long-term psychological health of an increasingly-urban world. If we create a new problem while trying to solve another one, the results could be even more worse.

In the references below (see highlighted green in reference list), you can find some more information on wind energy and birds/bats.

**Some usable recent reports on the birds-issue are:**
- The NABU report (Germany) concerning the impact on birds and bats (Hötker, Thomsen & Köster 2004).
- The publications available on [http://www.nationalwind.org/publications/avian.htm](http://www.nationalwind.org/publications/avian.htm)

**Some usable reports on the bat-issue are:**
- A large report prepared for the Bats and Wind Energy Cooperative in the US (Arnett, Erickson, Horn & Kems 2005). See also the appendix for a current discussion.
- The NABU report (Germany) concerning the impact on birds and bats (Hötker, Thomsen & Köster 2004).

For those who are interested in a discussion forum about wind turbines and birds/bats, see [http://groups.yahoo.com/group/wind_turbines_birds/](http://groups.yahoo.com/group/wind_turbines_birds/) (some web tools (files, photos) are only for members)

Yours sincerely,

Joris Everaert (M.Sc. Biologist).
Institute of Nature Conservation.
Project: Effects of wind turbines on habitat-suitability concerning bird-populations, long term monitoring and counseling.
References


An English translation of this article is available on request.

Everaert, J., 2005 in prep. Impact of wind turbines on birds at the Eastern port dam in Zeebrugge (Belgium). Probable significant effect on breeding colony of Common Tern, Sandwich Tern and Little Tern. Institute of Nature Conservation, Brussels. A preliminary version is available on request.


Appendix (bat situation in the US)

FPL Energy veto stymies bat study, group says

By Jim Balow, Staff writer - Charleston Gazette [Charleston, WV] - June 8, 2005

A high-ranking official at FPL Energy has prevented follow-up bat research at the company's West Virginia wind farm, the head of Bat Conservation International said Tuesday.

Scientists with the Bats and Wind Energy Cooperative, a group formed in late 2003 to study why electricity-generating wind turbines at FPL's Mountaineer Wind Energy Center in Tucker County are killing thousands of bats, conducted a variety of tests last summer at Mountaineer and another FPL site in Pennsylvania.

After finding large bat kills at both sites, the group proposed follow-up research this spring and summer, starting in April.

"But at the last minute, Michael Leighton, COO of FPL Energy, decided he didn't want to do the research," said Merlin Tuttle, director of Bat Conservation International in Austin, Texas. Ed Arnett, a scientist who works with Tuttle, led the six-week research project last summer in West Virginia.

Leighton also vetoed plans for Bat Conservation scientists to do research at another FPL Energy wind farm in Oklahoma, at no cost to the company, and cut off access to all FPL sites across the country to Tuttle and Arnett, Tuttle said.

BWEC scientists released the 187-page report of their 2004 research on Sunday. It was the first comprehensive study of bat-turbine interactions. They found the 66 turbines at the two sites killed as many as 2,900 bats during the six-week study period.

The delay in research is especially significant because wind companies are scrambling to build more projects before the end of this year, when lucrative federal tax credits for wind power are set to expire. The BWEC scientists say wind projects on forested ridgetops — like those in the Appalachians — are particularly hazardous for bats.

"If the 900 or so turbines proposed are built in a 70-mile radius [of Mountaineer] prior to finding solutions, it's very easy to extrapolate from this data to close to 60,000 bats killed a year," Tuttle said.

"That's very likely not an ecologically sustainable kill rate. It's urgent to find a solution.

"We advanced the state of knowledge pretty dramatically last summer," Tuttle said. "We were quite excited to find the kills are pretty predictable, happening on nights when the wind speed is low.

"The test we want to do is take every other turbine and feather them. To the average public, you essentially turn them off. The other turbines would keep running."

Every morning, scientists would check for dead bats under all the turbines, both feathered and normal. "By comparing mortality, we could see how much mortality could be saved by not powering up and we could measure how much it would cost the company in lost power generation.

"By not allowing this research to proceed, we have been set back one to two years in the most promising solution we have identified to date," Tuttle said.
"We don’t know if it’s a 50 percent solution or 80 percent or 95 percent if adjusted. We can’t tell until another company builds a facility and starts killing bats."

FPL Energy spokesmen told the Gazette in April the company was planning to focus its research efforts this year on finding deterrents, and would not support all research proposals.

"FPL’s position is for us to make money, we have to have the turbines turning," spokeswoman Mary Wells said Tuesday. "We feel research has to be focused on a deterrent, not on turning off turbines.

Spokesman Steve Stengel said FPL believes a deterrent, some sort of acoustical device to keep bats away from turbines, is the best way to allow bats and turbines to coexist. Deterrent testing is one of the types of research proposed by BWEC this year, he said.

"We offered the Mountaineer site for deterrent testing. BWEC said it could be done in a lab or in a cave. Hopefully the research is done this year," he said.

Tuttle questioned the sincerity of the company. "I have to ask: If a company doesn’t want to test this simple procedure — it doesn’t cost them any money, they just have to reprogram their computer — I have to ask if you would be willing to do something that will cost them money. They say they want to test deterrents, but deterrents will cost money."

BWEC is trying to find other sites for its research, he said.

"We’re not going to start up research at a site where the rug is going to be pulled out from under us halfway through. We had such good data at Mountaineer and Meyersdale. It would have been great to follow up."

Tuttle said Leighton’s decisions have hurt his group’s fundraising efforts. "It’s a terribly embarrassing waste of time to go out and raise a couple hundred thousand dollars, say it is urgent, then go back and say we can’t do the research after all; can we do something else with your money?

"I don’t want to attack the company. I think this is a bad decision by one person. It’s just sad we’ve had this setback in what we’re able to do. There are a lot of people who aren’t going to want to step up and say as much, but I can tell you there are a lot of people in BWEC that are chafing at the bit at this decision by FPL Energy.

"I personally like wind power," Tuttle said. "But I can tell you if we start killing these thousands of bats these data predict, that’s going to put a heck of a dent in the green image of the wind power. We need to get out ahead to prevent this."

To contact staff writer Jim Balow, use e-mail or call 348-5102.

Some e-mail messages concerning the bat situation in the US, see next page.
Further research wasn't blocked. FPL refocused the research towards developing a deterrent; a solution beneficial to both parties, unlike the BCI proposal, which seems to focus on limiting turbine production capacity. A deterrent would be "best" for the bats in Mountaineer and Meyersdale projects if it reduced their fatalities, it would also be "best" for developers. Seems like a more productive focus....

Chris Bergen

From: wind_turbines_birds@yahoogroups.com on behalf of Dan Boone
[mailto:wind_turbines_birds@yahoogroups.com]
Sent: Thursday, June 16, 2005 13:16
To: wind_turbines_birds@yahoogroups.com
Subject: RE: [wind_turbines_birds] FPL Energy's "veto" stymies bat study

Hi Chris,

The amount of wind energy generated from wind turbines during July to September is very low in the Mid-Atlantic region (kWh/s produced during these 3 months in 2004 total only about 13% of annual amount of electricity generated from both Mountaineer and Meyersdale windplants). July through September is when the peak bat migration occurs. Only after sunset and only for some days in this period would wind energy production be curtailed in order to reduce potential impact to bats - and it need not be curtailed for entire nighttime.

The leading bat experts AND their industry collaborative (the Bat and Wind Energy Cooperative) believe that the most likely EFFECTIVE mitigation "solution" to bat collisions with wind turbines was to investigate whether reduction in operation of turbines (by "feathering" the blades) during certain days within this period would significantly reduced bat mortality. Apparently FPL Energy (FPL) believes it knows more about bat research than the recognized experts in this field.

FPL owns ALL of the operating wind energy facilities in the Mid-Atlantic Region and has withdrawn its permission to allow Bat Conservation International (BCI) access to its windplants except for the Mountaineer, WV facility - and there it only will allow BCI to undertake research that focusses on acoustic deterrents.

To say that FPL did not "block" further research fundamentally misconstrues what is happening...

Dan Boone
(biologist)