

## **Deputation to the Municipality of Prince Edward County November 23 2008**

### **Industrial Wind Turbines – safe or sound?**

First permit me to express my appreciation to the Council for permitting me to speak and submit this deputation.

My presentation is in four parts:

- \* Regulations in Canada
- \* Low Frequency Noise and Wind Turbines
- \* Reports of Adverse Health Events
- \* A Proposal

### **Regulations in Canada**

Quite simply national regulations do not exist in Canada, at least according to a November 2008 letter from Morel Oprisan, (Deputy Director S&T, Renewable Energy Technologies, Government of Canada). In the electronic mail to Professor John Harrison (Queens University) he stated:

“As you correctly noted in your letter, the issue of the wind turbine set-back from a residence, is regulated locally (municipally or provincially).”

“As part of the work done by the federal government in this area, we have worked together with CSA and, internationally with IEC, to bring international standards to Canada. However, these standards, at this time, are not mandatory and their use is voluntary.”

To add to my concern is the fact that the Ministry of the Environment of Ontario has regulations which are flawed as they fail to measure for low frequency noise (LFN). As I will point out later, this stance continues in spite of publications by experts and the World Health Organization which stress the importance of monitoring for LFN. It is not possible to develop authoritative guidelines for set-backs if LFN is not taken into account.

### **Low Frequency Noise**

Humans auditory range is from 20 – 20,000 HZ. Some authorities place the lower end at 10 HZ but most consider that to be in the range of infrasound. LFN is about 20-200 HZ. ([www.defra.gov.uk/environment/noise/research/lowfrequency/pdf/lowfreqnoise.pdf](http://www.defra.gov.uk/environment/noise/research/lowfrequency/pdf/lowfreqnoise.pdf)). It is an area of growing interest and for example there are 936,000 hits on Google for “Low Frequency Noise”. However there appears to be a variance in recognizing its significance. For example the Avalon consultant representing IPC indicated to me on 2

occasions that it is “not necessary” to monitor for LFN. The Ministry of the Environment of Ontario concurs as all its regulations are based on dBA (Decibels with A weighting) which is relatively insensitive to LFN.

This is in contrast to the World Health Organization which in a 2000 publication (“Community Noise” by Berglund et al) made the following observations:

- "For noise with a large proportion of low frequency sounds a still lower guideline (than 30dBA) is recommended"
- " When prominent low frequency components are present, noise measures based on A-weighting are inappropriate"
- "Since A-weighting underestimates the sound pressure level of noise with low frequency components, a better assessment of health effects would be to use C-weighting"
- "It should be noted that a large proportion of low frequency components in a noise may increase considerably the adverse effects on health"
- "The evidence on low frequency noise is sufficiently strong to warrant immediate concern" (as quoted at [www.defra.gov.uk/environment/noise/research/lowfrequency/pdf/lowfreqnoise.pdf](http://www.defra.gov.uk/environment/noise/research/lowfrequency/pdf/lowfreqnoise.pdf))

Others such as Styles et al (“Microseismic and Infrasound Monitoring of Low Frequency Noise and Vibrations from Windfarms” 2005) observed that there is “..clear evidence that wind turbines generate low frequency sound (infrasound) and acoustic signals which can be detected at considerable distances (many kilometres) from wind farms on infrasound detectors and low-frequency microphones.”

Kamperman and James (“Simple guidelines for siting wind turbines to prevent health risks” July 2008) have commented “Some residents living as far as 3 km (two miles) from a wind farm complain of sleep disturbance from the noise. Many residents living one-tenth this distance (300 m. or 1000 feet) from a wind farm are experiencing major sleep disruption and other serious medical problems from nighttime wind turbine noise”.

They further comment that “the single A-weighted (dBA) noise descriptor used in most jurisdictions for siting turbines is not adequate”. Clearly as they conclude dBC criteria should be used.

## **Adverse Health Events**

There have been many reports of adverse health events which I will describe below. At the outset it must be made clear that there has not been any systematic epidemiological field study that could yield authoritative guidelines for the siting of wind turbines. In short there is an absence of evidence. Conversely no evidence of an absence of adverse health effects exists either. Absence of evidence is a lower order of proof than evidence of absence. It is only with the latter that evidence has been systematically sought and definitive conclusions reached.

Accordingly until more authoritative information is available it is important to consider the growing number of reports of cases and series of cases that are emerging.

Dr. Amanda Harry ([www.flat-group.co.uk/pdf/wtnoise\\_health\\_2007\\_a\\_barry.pdf](http://www.flat-group.co.uk/pdf/wtnoise_health_2007_a_barry.pdf))<sup>39</sup> reported on 39 cases of people whose health and quality of life were compromised. She concluded that “.....people living near turbines are genuinely suffering.” It is interesting that upon reviewing the well-documented effects on their health how there is a common vocabulary among them and reports of other people living in other countries and continents.

Dr. Nina Pierpont has had a substantial experience with wind turbines. ([www.windturbinesyndrome.com](http://www.windturbinesyndrome.com)). She encountered cases with neurological symptoms in 2004. Two years later she noted a number of patients complained of vibration in the chest. She too has gathered cases (38-10 families) and plans to publish a book before the end of this year. Her recommendation is for a set-back of industrial wind turbines is 2 kilometers.

The National Academy of Medicine of France has taken note of adverse health events in their report “Repercussions of the Operation of Wind Turbines on the Health of Man” (March 2006). Their recommendation is for a set-back of 1.5 kilometers for 2.5 MW wind turbines from dwellings. They also recommended an epidemiological investigation into the possible medical effects of wind turbines.

Finally and most compellingly is the work on Vibroacoustic Disease (VAD) by scientists Nuno Castelo Branco and Mariana Alves-Pereira. (Vibroacoustic Disease. Noise and Health 2004;6(23):3-20.) They have been conducting research on VAD for 27 years.

Vibroacoustic disease (VAD) is a whole-body, systemic pathology, characterized by the abnormal proliferation of extra-cellular matrices, and caused by excessive exposure to low frequency noise (LFN). VAD has been observed in LFN-exposed professionals, such as aircraft technicians, commercial and military pilots and cabin crewmembers, ship machinists, restaurant workers, and disk-jockeys.

Those comments were written in 2004. Within 3 years they had investigated wind turbines and in 2007 published “Industrial Wind Turbines, Infrasound and Vibroacoustic Disease (VAD)”. Their conclusion – “These results irrefutably demonstrate that wind turbines in the proximity of residential areas produce acoustical environments that can lead to the development of VAD in nearby home-dwellers.”

These reports are concerning and to some alarming. No one in authority, whether they are elected officials, regulators, health professionals or people in the business of industrial wind turbines can take them lightly.

## **Proposal**

When uncertainty exists and the health and well-being of people are potentially at risk, assuredly it is appropriate to invoke the precautionary principle. Until and unless there are authoritative guidelines in place based on the best available evidence Prince Edward County ought not to proceed with the development of Industrial Wind Turbines. The development of these guidelines must be based on a rigorous epidemiological evaluation of health effects of these turbines. It is time that the Prince Edward County Council in concert with the Provincial Government take action.

Respectfully Submitted

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Addendum: Please consider By-Law # 900-2002, Sections 2a-b dated July 22 2002 as a possible tool for Council.