Deputation
to the Standing Committee on General Government
Regarding Bill C-150
April 22 2009

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

My presentation is in four parts:

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

Regulations in Canada

Quite simply national regulations do not exist in Canada. According to a November 2008 letter from Morel Oprisan, (Deputy Director S&T, Renewable Energy Technologies, Government of Canada) in an 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 regarding this regulatory uncertainty is the fact that this Provincial Ministry of the Environment has regulations with many flaws. One of these is the failure to measure for low frequency noise (LFN). Instead regulations are stated measure in A Weighted decibels or dBA only. To measure for LFN it is necessary to screen with C Weighted decibels or dBC.

It is not possible to develop authoritative guidelines for set-backs and monitoring of industrial wind turbines specifically if LFN is not taken into account.

Low Frequency Noise

Human auditory range is from 20 – 20,000 HZ. LFN is about 20-200 HZ. (1) It is an area of growing interest and for example there are 15,400,000 hits on Google (accessed April 20 2009) for "Low Frequency Noise". However there appears to be a variance of opinion

in recognizing its significance. For example the wind developer IPC Energy contracted Avalon Consulting to do Environmental Screening. I contacted Avalon who indicated to me on 2 occasions that it is “not necessary” to monitor for LFN. The wind industry at large agrees as they also deny the need 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. dBA however is adequate for higher frequency noises such as the characteristic “swoosh, swoosh, swoosh” of turbine blades which are in the mid-frequency range.

How important is LFN?
The World Health Organization in a 2000 publication (“Community Noise” by Berglund et al) made the following observations:

- "Since A-weighting underestimates the sound pressure level of noise with low frequency components, a better assessment of health effects would e 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" (2)

The answer is clear – LFN is very important.
However there is a crucial difference of opinion.
The author of the foregoing paper (H.G. Leventhall) who quoted the WHO denies that wind turbines generate LFN. He is the prime expert on the subject on behalf of the wind energy industry.

Others disagree.

For example Styles et al 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 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 C-weighted (dBC) criteria should be used.

Adverse Health Events

There have been many reports of adverse health events. 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. Secondly there is no epidemiological study has been conducted that establishes either the safety or harmfulness of Industrial Wind Turbines. In short there is an absence of evidence. Accordingly until more authoritative information is available it is important to consider the growing number of reports of cases and case series of adverse health effects that are emerging.

Dr. Amanda Harry reported on 39 cases of people whose health and quality of life were compromised.

She concluded that "…..people living near turbines are genuinely suffering." (5)

Dr. David Manley a Chartered Physicist, Acoustician and Engineer who worked with Dr. Harry stated: "Much work has been done by me near windfarms to evaluate the acoustic effects. It is found that people living within five miles of a windfarm cluster can be affected and if they are sensitive to low frequencies, they may be disturbed."

"It has been found that an extensive seismic signal passes through the earth and may well at night time affect peoples sleep. It is admitted by fellow acousticians that much more research in this subject is needed and that none has been done since 1996 by the DTI. At many inquiries windfarm promoters will not accept there is an acoustic problem."(6)

Todd et al recently found that the human ear is more sensitive to seismic vibration than to hearing. (7) In other words what you can't hear can otherwise be perceived.

Dr. Nina Pierpont has had a substantial experience with wind turbines She too has gathered cases (38 from 10 families) and plans to publish a book this year. (8)

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.

Of course the industry denies any problem and cite more than 20 years experience and at least 68,000 wind turbines in place without adverse health effects.

The European Platform Against Windfarms begs to differ. They currently have 319 organizations from 18 nations opposing windfarms. To quote from their web page

- that hundreds of associations, local initiatives and other groups are totally dissatisfied with wind farms;

- that intermittent, uncontrollable energy does not solve any of humanity's problems, even in part;
- that the only thing wind turbines do is cause considerable harm to people, the economy, national budgets and the environment.(9)

Closer to home those sentiments are clearly arising as this committee heard from Wind Concerns Ontario.

Let me be clear however as to my deepest concern : adverse health effects are occurring as we speak. Many victims have joined us today in the hope of being heard. There is no quetion that they are genuinely suffering and more people are at risk if the rules are not changes substantially.

The victims, lead by Carmen Krogh and Lorrie Gillis organized a survey of people living near wind installatons. (The methodology and detailed results are attached as part of the submission) Seventy-six people responded.Twenty-three denied any problem.Fifty-three indicated that they had experiencesd at least one symptom/complaint and on average had 5 complaints.

The findings are remarkably similar to other work quoted above and to the just released study by Dr. Michael Nissenbaum in Maine who reports on 15 further cases. Virtually always the commonest complaint is sleep disturbance (34). Already thirty-nine individuals indicate that their health has been affected as a consequence of what they are experiencing. One person has had to be admitted to hospital with an acute hypertensive episode, another experinced a cardiac arrythmia (atrial fibrillation), 15 experienced heart palpitations. Further details are in your packages.

Most disturbing of all are the comments describing the sheer anguish and sense of betrayal that many feel. Noone seems to care, noone appears to be listening to their plight. They feel they are losing their homes and their lives.

The situation has been exacerbated for many who have experienced denial, and abusive behaviour by Wind Turbine representatives and on occasion from Ministry of the Environment officials. All this victimizes them a second time.

These findings and victim accounts are new in Ontario but not elsewhere. They have been described too often in other countries.

A Proposal

There clearly are competing claims about LFN and health risks - those who are living the claims and those who deny them

There is a way out of this dilemma. Authoritative guidelines must be established based on sound science. A well-designed epidemiological study conducted by arms-length

investigators, mutually agreeable to all sides, must be done. In addition and far more simply is to engage sound engineers, (again mutually agreeable) to determine the presence or absence of LFN near existing wind farms in Ontario.

In the meantime listen to and help the victims.

Anything less would be an abandonment of responsibility by the government.

Summary

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 the Province of Ontario ought not to proceed with the development of Industrial Wind Turbines any further.

The development of these guidelines must be based on a rigorous epidemiological evaluation of health effects of these turbines.

Respectfully Submitted

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1. www.defra.gov.uk/environment/noise/research/lowfrequency/pdf/lowfreqnoise.pdf

2 ibid

3. “Microseismic and Infrasound Monitoring of Low Frequency Noise and Vibrations from Windfarms” 2005. Styles et al.

4. Kamperman and James “Simple guidelines for siting wind turbines to prevent health risks” July 2008

5. www.flat-group.co.uk/pdf/wtnoise_health_2007_a_harry.pdf.39

6. David Michael Manley PhD BSc(Hons) MIEE MIOA F Inst P C.Dip AF FICDDS C.Eng Chartered Acoustician, Physicist and Engineer http://www.socme.org/acoustic.html

7. http://www.windturbinesyndrome.com

8. Todd, Rosengren and Colebatch. “Tuning and sensitivity of the human vestibular system to low-frequency vibration” Neuroscience Letters 444 (2008) 36–41.

9. http://www.epaw.org/

10. Michael Nissenbaum MD. Presentation to the Maine Medical Association March 2009 [Slides from presentation attached]