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Ms. Agatha Garcia-Wright, Director,
Environmental Assessment and Approvals Branch,
Ministry of the Environment,
2, St. Clair Ave. W, Floor 12A,
Toronto, ON M4V1L5

Dear Ms. Garcia-Wright,

I had corresponded with you during your previous term as Director of EAAB and have continued a dialogue with your successor, Ms. Doris Dumais. My credentials for writing on noise regulations are outlined at the end of this letter. I would like to make one last plea before the regulations to accompany the Green Energy Act are set in stone. It is now clear, based upon a large number of health problems already showing up in Ontario, that the present noise regulations are inadequate and that the response of MOE to health complaints is inadequate.

I am sure that you will be aware of the interim results of the health survey that is being coordinated by Wind Concerns Ontario and that were presented by Dr. Roy McMurtry to the Green Energy Act Legislative Committee. I would like to complement these statistics with three specific cases, two from Ontario and one from Wisconsin. The first concerns Barbara Ashbee-Lormand and Dennis Lormand who live among the Melancthon turbines. Barbara's presentation to the Legislative Committee is attached as Appendix A. Please take the time to read it. When she was first told that the noise at her house was judged by MOE (Guelph Office) to be within the MOE guidelines, she sent the MOE response to me. The response was just plain wrong and I now have an e-mail admission to confirm that the throw-away response to Barbara from MOE was wrong. Since then, a noise audit was performed at their house. The auditor presented noise measurements as part of a report that down-played the high sound pressure levels. Luckily, Barbara forwarded the audit results to me and I was able to assure her that the audit results showed that the noise was far in excess of MOE regulations. I am sure that your office will have a copy of the audit (if not please let me know). My brief report to Barbara on the audit is included as Appendix B of this letter. That wind development is far from compliant and should have been shut down by MOE months ago.

The second case concerns Ms. Niki Horton from Blenheim (Chatham-Kent). Again, bravely, she has come forward with her story. I say bravely because coming forward precludes a buy-out from the wind developer and no hope of selling the house. Ms Horton has expressed her situation in the form of a blog, attached as Appendix C. Again, I urge you to read it. These are real people who had no idea what living near a group of turbines was going to be like. Can you imagine the anxiety of wondering about the impact of the turbines on the health and well-being of their two children, aged 3 and 5.

The third case concerns the Wirtz family in Wisconsin. Their story is told in the third person and is attached as Appendix D. Can you imagine how distraught the family is to suffer the

health problems, to see their farming enterprise brought to its knees and then to have to abandon their un-saleable family home and farm. Note that the nearest turbine is 400 metres from the family home.

World-wide, based upon many, many cases such as the topical ones noted above, health authorities are recommending setbacks from homes of about 1.5 km. As you will know, Ontario is allowing setbacks from a single turbine about one third of this and from clusters about one half. The insufficiency of the allowed setbacks arises from several deficiencies in the MOE guidelines:

Cyclic Noise

Wind turbine noise is periodic in the blade passage frequency, about 1 Hz. Nobody that I know denies this. It is clear Dr. van den Berg's thesis. It is clearly stated in the Salford report published by the British Wind Energy Association. It is clear from the acoustic data presented by Brian Howe at the Technical Workshop on Renewable Energy Technologies (Workshop) held on March 11th in Toronto. The MOE in "Noise Guidelines for Wind Farms (October, 2008)", the clarification document, acknowledges that turbine noise is cyclic. We see: "variation in wind turbine sound level"; "swishing sound"; "temporal characteristic". There is a general Ontario noise guideline NPC-104. This guideline is quite general. Until October 2008, MOE neglected to enforce this regulation. In the clarification document, we read that NPC-104 does not apply to wind turbines; yet nowhere in NPC-104 does it say to what cyclic noises the regulation does and does not apply. **In this respect, the clarification document is indefensible and needs immediate revision.** I note that under section 5.4.4 of its draft wind turbine noise regulations, New Zealand is introducing a 5 dBA penalty for amplitude modulation.

Recommendation #1: Add a 5 dBA penalty for the cyclic character of turbine noise.

Intrusion

Wind turbine noise causes far more annoyance than industrial or road noise at the same 40 dBA level. Pedersen & Persson Waye make clear that at the noise level corresponding to the Ontario regulation for a residence, 50% of people are suffering annoyance. Note that this was not a laboratory study; this was a field study conducted in the neighbourhood of a wind generating development. This compares with 2 - 4% annoyance for industrial/traffic noise at the same level.

Rural Ontario is very quiet, probably below 25 dBA at night. This means that the guidelines are allowing a 15 dBA intrusion above background and, given the annoying characteristic of turbine noise, this is too much. There is no need to allow this large an intrusion. For instance, Germany with a population density 20 times larger than our own has a night-time noise limit of 35 dBA. As is well known, Germany has a well-developed wind energy generation system, supplying 6.4% of its electrical energy. In another instance, New Zealand, in section 5.3.1 of its draft regulations, is introducing a secondary noise limit of 35 dBA for evening and night-time in low background environments.

Recommendation #2: Reduce the noise limit to 35 dBA in rural regions.

Masking Noise

The clarification document went some way towards coming to terms with the myth of masking noise. The initial idea was that wind blowing through vegetation will mask the noise from the turbine, allowing a higher noise limit in high winds. This idea has become unsustainable in view of very many measurements that show, for much of night-time, the wind speed at ground level is significantly lower than the wind speed at the height of the blades; the turbine makes its noise but there is no masking noise. As things now stand, the developer must justify the use of masking noise with measurements of wind speed gradient. However, these measurements may not necessarily be available to the public for scrutiny.

Recommendation #3: Follow the rest of the world (NZ excepted) and drop the masking noise allowance.

Uncertainty

No prediction of noise is going to be 100% correct. The turbine manufacturer quotes uncertainty in its specifications. The algorithm used to predict noise at a residence, ISO-9613, has uncertainty. This is clearly stated in the code. Together these amount to 4 dBA. The wind industry ignores this uncertainty and MOE does not enforce it. No reputable and responsible engineer would make a prediction without considering the uncertainty in the outcome.

Recommendation #4: The allowance for uncertainty needs to be incorporated into the regulations.

Turbulence

Many noise complaints liken the noise to a washing machine, a jet that never takes off or a passing train that never passes. I would hazard a guess that these are observations of the aerodynamic noise from blades turning in turbulent air. Work done with the NREL research turbine has proven that turbulent air causes a dramatic increase in low frequency noise (low frequency audible noise, not infrasound, I emphasize). This turbulence could come from neighbouring turbines. There will be considerable turbulence down-wind of a rotating turbine. Ontario continues to allow the siting of turbines close to each other as well as close to homes.

Recommendation #5: Include turbulence from the atmosphere and neighbouring turbines in all wind turbine noise prediction.

Result

With the lower intrusion level, the penalty for the very real amplitude modulation and acknowledgement that there is uncertainty in the predictions, the setback is pushed out to 1250 metres from a single turbine and 1400 metres from a cluster of 3. This is now approaching the setbacks recommended by a variety of health authorities.

Although these numbers are given by way of illustration, it is emphasized that setbacks need to be based upon a 35 dBA noise limit with associated penalties for uncertainty in the noise prediction determination, for tonal contribution in the case of transformers and for periodic or cyclic contribution in the case of turbines. One fixed setback will not suit a variety of layouts and topographies.

As you will know, the Green Energy Act is removing municipal and public input from the siting of wind turbines. All that the people and communities of rural Ontario have to protect them from the public health problems becoming all too familiar across Ontario is the Provincial Environmental Protection Act. Your Ministry is charged with the responsibility to maintain the health and well-being of the residents of Ontario. I urge you to bear this in mind as you come forward with the regulations to accompany the Green Energy Act. To date, the public pronouncements from the Minister of Energy and Infrastructure and from the Premier have shown that they have no interest at all in the concerns and the health and well-being of the rural population.

Yours sincerely,

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C: Hon. John Gerretsen; Hon. Dalton McGuinty; Hon. George Smitherman

Editor's note. The original letter from Dr. Harrison included 4 appendices, lettered A through D. In order to make this shorter, I have separated them and linked to them from the "Harrison Papers" page, at: amherstislandwindinfo.com/harrison_papers.htm. Assuming you didn't come straight to this page from an external reference, you should be able to just go "back" to get there.