

WCO | WIND CONCERNS ONTARIO

February 1, 2016

Dianne Saxe
Environmental Commissioner of Ontario
605 - 1075 Bay Street
Toronto, ON M5S 2B1, Canada

Dear Dr. Saxe:

Ontario's Inadequate Wind Turbine Noise Regulations

I am writing to you to bring health matters related to wind turbine noise emissions to your attention, including recent research results that suggest that a full review of Ontario Regulation 359/09 and related guidelines under Section 61 of the Environmental Bill of Rights Act is in order.

Wind Concerns Ontario is a citizens' advocacy coalition of grassroots community organizations and individuals. Our members and activities provide unique experiences and information that is useful for government officials formulating wind turbine policies going forward. Based on the information we are receiving, it is clear that the current regulations issued under this Act are not sufficient to protect the rights of many residents of rural Ontario to a healthful environment due to the sounds or pressure waves that are emitted by industrial wind turbines. The current regulation focuses solely on audible noise and needs to be amended to include standards for low frequency noise/infrasound to provide sufficient separation to protect residents.

The present regulation is built on the World Health Organization's night time noise limit for road, rail and airport noise of 40 dB(A). The noise standard generated the 550 metre setback used by Ontario. The effectiveness of that standard to wind turbines has always been questioned but the learning from the impact of existing projects in Ontario on residents that are living among the turbines suggest that the current setbacks are not sufficient to prevent serious health issues. We understand that the MOECC has received over 2,700 complaints about wind turbine noise but even with a Freedom of Information request, we have not been able to get even summary details on these complaints. No information is available on the follow-up that the MOECC has undertaken on these complaints or steps taken to address these real concerns.

In most organizations, that level of negative feedback on a program would trigger a serious review of the policy that is triggering them.

Significant health issues are being reported by people living among these turbines. Noise levels are sufficient to disrupt sleep which can lead to a large range of health effects. Of greater concern are the pulsing sensations reported by people within their homes. In project after project, the problems are so severe that people are being forced from their homes by these pulsing sensations. Some cases, people are actually being advised by physicians to leave their home to protect their health and/or the health of their family, including children.

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The health issues are illustrated by the 20 case studies from the Enbridge project located north and east of Kincardine in Bruce County. These were documented to support a presentation to Kincardine Municipal Council and to the Grey-Bruce Health Board. Kincardine was constrained in what it could do to assist these people. The Medical Officer of Health for this area, Dr. Hazel Lynn, who has been dealing with these issues since the Ripley wind project started operation in November 2007 told local media that we cannot pretend that this affected minority does not exist. Dr. Lynn undertook her own review of the situation which concluded that wind turbines can cause medical annoyance or distress for people who live among them.

The sensations described in these case studies are linked to inaudible low frequency and infrasound pressure waves that are being amplified inside their homes. The Ontario regulations do not consider noise below the audible range and do not set any standards for noise within homes.

Another concern is that the rating of wind turbines being installed in Ontario has increased considerably since the Ontario standards were established with no change in the regulations to ensure the protection of affected residents. With the newer 3+-megawatt (MW) wind turbines involved in the most recent projects, reports coming to us indicate that health issues are surfacing sooner and the symptoms are more severe. In this regard, we are closely monitoring the project in West Lincoln, Wainfleet and Haldimand where 77 3-MW turbines are currently being installed in an area with a resident population of 1,900 homes within two kilometers. Wind Concerns Ontario estimates that, using the most conservative figure possible from research, the health of almost 400 people in this area will be affected.

In summary, all the evidence being reported to us forces us to conclude that Ontario's current turbine regulations are not sufficient to protect human health. These concerns are backed up by recent research studies.

As you may know, Health Canada conducted a study of wind turbine noise from 2012 – 2014. The findings released in November 2014 reported two contradictory findings – first, there are no health effects linked to wind turbines and yes, there are health effects related to wind turbines. The design of this study was criticized by epidemiologists and health professionals before the project began. A review of the survey instrument design after the results were released revealed that the finding of “no problems” was based on questioning respondents about a narrowly-defined timeframe — in other words, participants were questioned about symptoms and events during a time when wind in Ontario is low and turbine noise emissions would be less. Responses to other questions that covered the whole year showed that problems existed. This second result was confirmed when physical samples from the people reporting complaints showed the physical indicators of stress.

Data specifically provided to Wind Concerns Ontario by Health Canada indicate that respondents to this study reported that wind turbine noise was worse than the road, rail and airport noise that, as indicated above, formed the basis of the current Ontario wind turbine standards. The study specifically showed that problems begin at 35 dB(A). This research data confirming that Ontario's noise standards are insufficient to protect human health.

Last month, the prestigious Acoustical Society of America published a peer-reviewed paper by acoustics professional Steven Cooper that reports on his findings from a detailed study of the Cape Bridgewater Wind Project in Australia (see attached). The study was funded by the owner of the wind project who

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was seeking to understand why residents living in the project were complaining about noise when the project was compliant with Australian standards.

His findings again confirm that the Ontario's regulations for siting wind turbines are not sufficient to protect human health. Most critical is his finding that the acoustic environment of the wind project was "simply not addressed by the overall A-weighted values' that form the basis of the Ontario regulations. The sound pressure waves produced by wind turbines are far more complex than can be reflected if the averaging techniques involved in the A-weighted measures are used to assess the impact on people. His study showed that residents' complaints had no direct relationship with A-weighted measure of noise.

Cooper does note that investigations into the complaints of residents have identified noise signatures in the area of wind farms that are based on the blade pass frequency (i.e., the number of revolutions per minute for the turbine shaft times the number of blades divided by 60). He reports that the discreet patterns in the infrasound region can be more evident inside a dwelling. Sounds in the audible range are filtered by the structure but sound below the audible range continues to be present. He concludes that the presence of special frequency characteristics (including infrasound and low frequency) are not a normal everyday concept in environmental acoustics, but are issues that require a different approach and more detailed assessment. These comments apply directly to the current Ontario regulations.

Cooper's findings regarding the use of A-weighting procedures was confirmed in Canada by the Canadian Council of Academies which conducted a thorough review and concluded that using A-weighted measurement only does not provide a complete picture.

The Cooper study is also important as it started with residents' complaints about actual elevated noise levels, rather than working from computer models that predict noise. In the study, residents compiled detailed diaries of the changing symptoms that they were experiencing. As these residents has no way of knowing actual turbine operations, these diaries were independent of actual operations. The comparison of these diaries to actual operations of the wind turbines showed that the certain wind speeds and changes in the operations of the turbines did give rise to the disturbances reported by the individuals. This finding is critical as it shows a link between wind turbine operations and health affects reported by nearby residents. Again this conclusion applies directly the MOECC process which is solely based on computer-generated noise models with no apparent response to residents' complaints about the noise that they are actually experiencing.

I would also direct your attention to the testimony in late 2015 at the ERT review of the MOECC's decision to proceed with the White Pines project in Prince Edward County despite the potential to affect human health. Dr. Paul Schomer, a former Standards Director of the Acoustical Society of America with 48 years' experience in noise measurement, was qualified by the ERT panel as an expert in acoustics. He told the Tribunal that *all residents* in the White Pines project area will be affected by audible and inaudible sound and a number of residents will be seriously affected.

He noted that the effects reported by people living near wind projects are similar in nature to the effects experienced by participants in a 1985 University of Toronto study on infrasound. At lower levels and at higher levels of pure tone some participants experienced nausea and dizziness. However, when overtones were added at higher levels, participants experienced headaches and fatigue.

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It was Dr. Schomer's testimony that internationally-accepted noise standards and protocols are being flouted in Ontario. For example, A-weighting is not supposed to be relied on when sounds have low-frequency content such as those emitted by industrial wind turbines. Canada is one of the countries that voted for this rule. He also called for changes in current Ontario regulations to adjust up to 10 dB(A) for wind turbine noise in rural areas. Other suggested adjustments include up to 3 dB(A) for weather conditions and 3 to 4 dB(A) for locations downwind of turbines.

Dr. Schomer also pointed to the findings in the Health Canada report discussed above. Only 1% of people are shown to be highly annoyed at 30 – 35 dB(A) sound levels. However, at 35 – 40 dB(A) the number jumps to 40%. Dr. Schomer sees this as evidence of a community response to wind turbine noise, and that what Health Canada says, what independent acoustic experts say, and what communities say should carry weight in Ontario.

These two recent studies plus Dr. Schomer's testimony collaborates the reports we are receiving from people living among wind turbines in Ontario. This confirms our conclusion that the MOECC's current regulations dealing with turbine siting are not sufficient to protect human health.

This conclusion is more serious when considered in the context of an assessment made last year by the Ontario Society of Professional Engineers indicated that these policies actually can *increase* the carbon emissions from Ontario's electric power generation system. Intermittent wind power cannot be used as a supplier of base-load power as it is only available when the wind is blowing. Other forms of generation are required. In Ontario's case this means that wind either displaces low cost and green hydro or nuclear power when the wind is blowing or requires gas generation facilities that can be quickly activated when the wind is not blowing. The Ontario Society of Professional Engineers estimated that wind, with natural gas backup produces base-load electricity at about 200 grams of CO2 emissions/kWh compared with the current Ontario system average level of 40 grams CO2 emissions/kWh.

We expect that none of this information is new to Ministry officials. We have provided most of the information to the attention of Ministry officials over the past year. We are writing to your office as we have received no indication that the Ministry is making any changes to their policy direction, despite clear scientific evidence that wind turbines, as currently sited, are causing serious harm to the health of nearby residents. New noise regulations are apparently under review but all indications are that they will only incorporate minor tweaking of the current dB(A) regulations, rather than the fresh approach suggested by the developing scientific base suggesting that the MOECC is not properly fulfilling its mandate to promote a healthy environment.

Given the rapid development of wind turbine projects in rural Ontario and the government's apparent intention to continue to issue FIT contracts for more wind generation capacity, addressing these concerns with the current regulations governing the siting of wind turbines should be an urgent priority.

Yours truly,

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