

RESPONSE TO WIND TURBINE NOISE COMPLAINTS

by the Ontario Ministry of the Environment and Climate Change

Second report: complaints 2015-2016

February 2018

SECOND REPORT ON WIND TURBINE NOISE COMPLAINTS TO MOECC 2015–2016

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INTRODUCTION

This is the second of two reports prepared by Wind Concerns Ontario (WCO), related to how the Ministry of the Environment and Climate Change (MOECC) handles wind turbine noise complaints. The first report was published in May 2017 and was based on noise complaints from 2006 to the end of 2014, released to WCO in early 2017. This current report provides an update to the earlier report as it covers noise complaints in the 2015–2016 period, along with other information provided by the MOECC over the past year.

In April 2017, Lisa Thompson, Huron-Bruce MPP, asked a question in the Ontario Legislature regarding resolution of one set of complaints about the wind turbine noise emissions experienced by two resident families. In response, then Minister of the Environment and Climate Change, Glen Murray assured members of the Legislature that:

The challenge here is that the law works. There are standards. When people call, I'm very proud of the officials. They respond quickly and they enforce the law. The law is being enforced here. If wind turbines or any other type of technology exceeds sound levels, we enforce the law.

I am happy to meet with the member opposite to review this case to make sure that the ministry is being diligent. No one should have to suffer noise or noise pollution from any source, and certainly not wind turbines in their community.¹

In the main, both WCO documents point to the same disturbing conclusion: despite the Minister's confident words, his Ministry didn't respond to residents' complaints.

Summary of Initial Report

In 2015, Wind Concerns Ontario requested copies of all noise complaints filed with the Ministry of the Environment (later Ministry of Environment and Climate Change) for the period 2006 to end of 2014. After two years, and several appeals, WCO received documents that were probably not the full story. Nevertheless, the information that was provided told an interesting tale of how Ontario's government responded to citizen complaints about wind turbines.

The records showed that in more than 50% of the more than 3,000 formal complaints, there was no ministry response. Another 30 % were noted as "deferred" response — with no definition or criteria as to what that means. In fact, only 1% of the reports received a "priority" response.

Wind Concerns Ontario published a report on the 2006–2014 documents, which became the basis for a series of news stories by Global News in June, 2017.

THE FINDINGS 2015–2016

Almost immediately after receiving the 2006–2014 documents, Wind Concerns Ontario requested² the same type of records for the period 2015–2016. The request was fulfilled after nine months.

The documents provided by the Ministry of the Environment and Climate Change (MOECC) were 1,394 Pollution Incident Reports (IRs), and 61 Master files. The Master files contained 1,301 Incident Reports.

¹Hansard, Ontario Legislature, Oral Questions, Session: 41:2 Date: Wednesday, April 12, 2017

² Freedom of Information request A-2017-00734

The table below indicates the apparent response to citizen reports of noise, vibration, shadow flicker and other effects associated with the wind turbines.

MOECC action	No. of IRs	As %
“Y” - ? YES (unconfirmed)	34	2.4%
Some action taken	63	4.5%
No field response but follow-up completed	29	2.1%
No field response	4	0.3%
“N” - ? No field response (unconfirmed)	1,143	82.0%
Blank	183	13.1%
TOTAL	1,394	100.0%

For the 2015–2016 documents, the response rate is apparently 4.5% for “some” action taken, and 2.4% for “Y” which one might presume to be “yes” for a total of 6.9 %. (At the time of writing, WCO has yet to receive a reply to an inquiry of the MOECC as to what the Y and N symbols might mean on the Incident Reports.³)

This is a *decline* from the findings for the 2006–2014 documents which showed at least some response for over 40%, though a “Priority” response in only 1% of the Incident Reports.

Limitations in the data

There are insufficiencies in the documents provided which may constitute a failure to respond fully to the information request:

- 19 records do not name the project for which the citizen complaint was made;
- 754 pages were deemed “not relevant” without explanation;
- In one master file, eight of ten pages including the project name were deemed “not relevant” without explanation.

The total number of IRs provided for 2006–2014 was 3,180 but it is almost certainly not complete. Several offices did not give out tracking numbers, for example, so their records would not have been provided in our request. Wind Concerns Ontario also conferred with people who had made reports to the Spills Action Centre and received IR numbers — in some cases these were not represented in the documents provided. So, the total number of IRs for two years, 2015–2016 is about one-third as many as for eight years, but two factors are at play: first, there are now more wind power projects operating, and second, there is probably significant complainant fatigue, which is understandable given the lack of action. This latter fatigue effect has been seen in other countries, notably Australia, and was commented on by a special Senate Committee in that country.

The apparent total of Incident Reports for 2006–2015 then is 4,574 — again, this is probably not complete as we know people were routinely not give Incident Report numbers at the time of filing a complaint, so that their reports cannot therefore be tracked.

³ The MOECC was queried as to the meaning of the short forms, and WCO was referred to the Manager for the Owen Sound Office, Rick Chappell. Mr. Chappell has not responded to the inquiry.

RESPONSIBILITIES OF THE MOECC

Under the Environmental Protection Act (EPA), the MOECC is given several mandates to protect the residents of Ontario from negative environmental conditions.

► Compliance with Audible Noise Limits

The MOECC has the power to prevent operations taking place that are outside of the terms of the environmental approval:

9 (1) No person shall, except under and in accordance with an environmental compliance approval,

(a) use, operate, construct, alter, extend or replace any plant, structure, equipment, apparatus, mechanism or thing that may discharge or from which may be discharged a contaminant into any part of the natural environment other than water;⁴

Renewable Energy Approvals (REAs) for wind power projects set out audible noise standards for emissions from wind turbines. A protocol for auditing compliance with these audible noise standards is in place, and was revised in April 2017.

► Ensure Resolution of Complaints

The REAs also require the wind power operators to act to address complaints about the adverse effects created by the wind turbines adjacent to their homes. This REA clause expands the scope of the MOECC enforcement responsibilities as the protocol set out by the Ministry to assess compliance with the noise standards is seriously flawed — it ignores many situations that are causing the adverse effects that local residents experience.

For example, the Renewable Energy Approval for the K2 project makes the project proponent responsible for addressing complaints it receives, with three specific requirements:

- *O 1 (3) Maintain records of any complaint alleging Adverse Effect caused by the operation of the facility*
- *O 2 (3) Descriptions of measures taken to address the cause of each incident to which the complaint relates and to prevent a similar occurrence in the future*
- *P 2 Provide the District Manager with written records created in response to complaints within 8 business days of the receipt of the complaint⁵*

Similar wording regarding the handling of complaints has been included in all REAs (as well as earlier Certificates of Approval) meaning that these requirements for action should apply to all the 4,475 complaints that the MOECC acknowledges as having received about wind turbine operations between 2006 and 2016. The repetitive nature of the various complaints about adverse effects provided to wind power companies and the MOECC suggests that wind power developers/operators have failed to live up to the terms of their approvals by allowing conditions that are triggering our complaints to continue.

⁴ Section 9 (1), Environmental Protection Act, R.S.O. 1990, c. E.19

⁵ MOECC Renewable Energy Approval, # 3259-98EQ3G issued to K2 Wind Ontario Inc., July 23, 2013

Under Section 9, this lack of response to these complaints warrants an enforcement response from the MOECC.

► **Address All “Adverse Effects”**

The term “adverse effect” that is used in the REAs is broadly defined in the Environmental Protection Act.

“adverse effect” means one or more of,

- (a) impairment of the quality of the natural environment for any use that can be made of it,*
- (b) injury or damage to property or to plant or animal life,*
- (c) harm or material discomfort to any person,*
- (d) an adverse effect on the health of any person,*
- (e) impairment of the safety of any person,*
- (f) rendering any property or plant or animal life unfit for human use,*
- (g) loss of enjoyment of normal use of property, and*
- (h) interference with the normal conduct of business⁶*

This definition covers the full range of situations documented at various times in the complaints filed by residents since the program began operation in 2006. These complaints extend beyond audible noise issues that would be covered in the compliance testing to include low frequency noise, infrasound and shadow flicker.

Based on the reporting requirements in the REA, the MOECC must be aware that the wind companies have not properly addressed these complaints. When a regulated entity fails to live up to the terms of the approval for a project, it is the responsibility of the Ministry to take regulatory action. Simply ordering a compliance audit is not sufficient as so many of the situations identified will not be addressed by the audit.

► **Stop Orders**

MOECC Directors have authority under the EPA to issue stop orders when people’s health is at risk:

8 (1) When the Director, upon reasonable and probable grounds, is of the opinion that a source of contaminant is discharging into the natural environment any contaminant that constitutes, or the amount, concentration or level of which constitutes, an immediate danger to human life, the health of any persons, or to property, the Director may issue a stop order.⁷

ADVERSE HEALTH EFFECTS REPORTED

The people of Ontario who are forced to live within wind power generation facilities continue to report adverse health effects. These effects were noted by Provincial Environment Officers and Spills Action Centre staff in various Master files. Documented health effects include headache, sleep deprivation,

⁶ Section 1 (1), Environmental Protection Act, R.S.O. 1990, c. E.19

⁷ Section 8 (1), Environmental Protection Act, R.S.O. 1990, c. E.19

annoyance, and ringing or pressure sensation in the head and ears. Most disturbing was the fact these health effects were reported many times, and also among children.

Some excerpts from Spills Action Centre staff notes:

- “[noise occurs] *same time around 0300 every day ... waken up with a headache*” Source: IR 3172-A4JBGA File status: closed
- “*Caller states that she wakes up every morning between the hours of 0300-0400 with a headache and earache*” Source: IR 6238-A3W7SJ File status: No response, closed.
- “*whooshing and thumping so loud right into the house ... could not sleep*” Source: IR 6805-A3YUSF. File status: no response, closed.
- “*Again last night it was terrible in our house. We were still awake at 1:30 a.m. and awake many times after. We are so tired we just want to sleep. Please tell us how to do that. Please respond.*” Source: IR 6868-ACPNBQ. File status: no response, closed “by the ADM”
- “*After a week of east wind and no sleep in our house this has become intolerable ... it is up to you to address this ... sleep deprivation is recognized as a form of torture...*” Source: IR 7463-AA9M9A. File status: In progress
- “*... extreme headache, fatigue, ringing pressure in ears ...*” Source: IR 6788-AGCRHD. File status: no response. Master file contains 17 separate IRs recorded
- In response to reported health effects, the MOECC staff noted that the caller was told “We recommend you go and consult with your physician.” Source: IR 1564-9GJPA4. No note that this was reported elsewhere in the MOECC.

Sleep deprivation is well known as a factor contributing to illness and also a safety risk for people operating heavy equipment, such as farm machinery, for example. According to one medical journal article,

“... epidemiological studies suggest that sleep complaints and sleep restriction may be important risk factors for a variety of diseases that are often linked to stress, including cardiovascular diseases and mood disorders.”⁸ Long-term sleep disturbance is associated with elevated blood pressure, heart attack and heart failure, obesity, diabetes, mental impairment, and increased risk of injury from accidents.⁹

We reviewed the staff notes in both batches of Master Incident Reports for explicit notations of sleep disturbance. *We did not assume* that if people called in the night to report excessive noise that also meant sleep disturbance, though that could be a reasonable assumption. So, the percentage of reports in the 2006–2014 containing staff notes with explicit reference to sleep disturbance was 39%; for the reports provided for the period 2015-2016, the percentage with staff notes referring explicitly to sleep disturbance was 31%. The average rate, then, of express references to sleep disturbances by MOECC staff in the notes made by Provincial Officers was 35%.

⁸ Meerlo P, Sgoifo A, and Suchecki D. 2008. Restricted and disrupted sleep: Effects on autonomic function, neuroendocrine stress systems and stress responsivity. *Sleep Medicine Reviews*. <https://doi.org/10.1016/j.smr.2007.07.007>

⁹ U.S. National Institutes of Health. Available at: <https://www.nichd.nih.gov/health/topics/sleep/conditioninfo/sleep-deprivation>

Again, this is almost certainly only a fraction of the true prevalence of sleep disturbance among the formal reports provided by the public to the MOECC, as most reports provided only scant details about the reasons for the reports. As an example, in one Master Incident Report pertaining to the Unifor turbine in Port Elgin, the staff officer made 52 notes about “health complaints” without being specific or providing any detail about what those complaints were, despite the number of times the person had called.¹⁰

WHAT MOECC STAFF KNOW

In a separate Freedom of Information request, Wind Concerns Ontario asked to see documents and presentations used for MOECC field staff training, and any documents used in the development of the training materials.¹¹ This information is important in understanding why staff made the responses they did to complaints in the documents provided by the MOECC. It also indicates a possible disconnect between what field staff are observing and how they may be directed to respond.

In June 2010, for example, information on wind shear and its role in calculating or estimating wind turbine noise emissions was presented to staff of the (then) MOE West Central Region. Wind shear, it was noted, is a critical element in the noise modeling process, which the government as regulator and the wind industry use.

The next set of statements MOECC staff are particularly disturbing.

*The use of under-estimated wind sheer [sic] appears to have influenced the WTG placement process such that they have been located too close to (non-participating), off-site sensitive receptors [ministry code for people’s homes] to be operated at their full sound power outputs during certain atmospheric conditions.*¹²

*Initial wind shear values utilized for approvals purposes were taken to be on the order of 0.15. Field work undertaken by GDO and WCR TSU indicated that wind shear value was in fact more on the order of 0.3 to 0.4.*¹³

*A re-modeling of the wind turbines utilizing the 2008 guidance document and the more realistic wind shear indicates the requirement to operate approximately 35 of the 133 turbines in the turbine field in the highest possible noise reduction mode in order to meet the 40 d BA under a number of wind shear conditions.*¹⁴

Another factor that is important in assessing noise complaints is the question as to whether the noise perceived is “tonal” or “cyclic.” This refers to the fact that sound may be emitted, usually by rotating machinery, in high frequencies in a narrow part of the sound spectrum; tonal or cyclic noise is linked to “annoyance” which is a documented adverse health effect.¹⁵ If tonal noise is detected in wind turbine

¹⁰ Master Incident Report 5833-9AZJJK. Officer signing the report was Kimberly Pietz of the Owen Sound office.

¹¹ Freedom of Information request A-2017-01697.

¹² WTG Complaint Response and Management, Special Considerations. June 2010, page 7.

¹³ Ibid, page 9.

¹⁴ Ibid, page 10. GDO and WCR are Guelph District Office and West Central Region, respectively. The “turbine field” referenced is likely the Melancthon project.

¹⁵ US Environmental Protection Agency, Clean Air Act, Title IV: Noise Pollution.

noise emissions, a 5 d BA penalty is supposed to be applied in evaluating the turbine noise, according to section 359.09 of the Regulations. However, according to this staff document:

*Long term GDO staff observations of the operation of wind turbines have led Staff to the conclusion that the operation of the turbines is both tonal and cyclic, and as such should be subject to the 5 dB penalty specified in NPC-104. The guidance provided in the October 2008 “Noise Guidelines for Wind Farms” [government document] indicates **that the wind turbines are not to be treated as tonal or cyclic in nature.**¹⁶*

Another area in which the staff training presentation appeared to differ from MOECC policy was found in a complaint response document from 2011, and dealt with the capacity to measure noise in situations where there are multiple wind turbines (as is a common situation in Ontario). The presentation stated:

MOE EAAB [Branch] has indicated previously (and continues to insist), that there is no “scientifically supportable” methodology to measure field noise emissions from multiple turbine sources at complainant’s locations. [sic]

EAAB has retained a consultant to develop a methodology for field measurement of multiple turbine noise sources.

Again, this statement is made five years after the first major wind power project began commercial operation, and two years after the Green Energy Act. In some cases, as for example Cultus-Clear Creek-Frogmore and the Melancthon project, people were exposed to, and complained about, wind turbine noise for years.

Other details covered in the staff training materials included the fact that Ontario’s noise regulations were not the strictest in the world, as the Ontario government claims. This provides support for the position many have taken, which is that Ontario’s 550-metre setback to protect health and safety is not adequate.¹⁷

The following statement was surprising; coming in 2011 which was five years after the first wind power project began operation, and two years after the passage of the Green Energy Act which enabled more wind power projects to be developed:

There is currently no accepted or recognized provincial procedure for measuring audible wind turbine noise.

That June 2011 presentation went on to outline problems with measuring noise such as the fact that the protocol at the time called for conditions of no wind, or calm wind, only.¹⁸

Another presentation, delivered to staff in the fall of 2016, noted that “If the turbines are not audible in any of the recordings, then additional analysis is not required.” This direction would mean staff had no foundation for checking for Low Frequency Noise or infrasound, despite indications from citizens that this type of sound was present.¹⁹

¹⁶ WTG Complaint Response and Management, page 14.

¹⁷ Wind Turbines, GDO Interim Protocol, February 2011.

¹⁸ Ibid.

¹⁹ Compliance training, Fall 2016.

CURRENT MOECC RESPONSE TO COMPLAINTS

In late 2017, the MOECC's Owen Sound District Manager Rick Chappell was invited to provide updates to the Kincardine Municipal Council and the Multi-Municipal Wind Turbine Working Group on the Ministry's handling of complaints about wind turbine noise.

In his presentations, Chappell indicated that the current MOECC focus is on compliance. Once testing is initiated under the Compliance Audit Protocol, the Ministry does not conduct further testing of wind turbine noise in response to complaints from these projects until the compliance process has reached its conclusion.

The problem with this approach is that *few, if any, projects in Ontario* are known to have successfully completed the compliance audit process to the satisfaction of the MOECC. Enbridge has been engaged in testing and retesting for over eight years and, at the time of Chappell's presentation, the Ministry had not confirmed that their submissions had met the requirements set out in the audit protocol.

The problem with the process is that the old protocol required a large number of readings at various wind speeds and wind companies reported that it was virtually impossible to meet the data capture targets for time periods to be analyzed. The new protocol released in April 2017 relaxed these requirements; many operators of projects in Ontario have rushed to file audit submissions using the new protocol. As a result, according to Chappell, speaking to Council for the Municipality of Kincardine in December 2017, there is a large backlog of audit reports to be assessed in the MOECC department responsible for this process. Chappell told Kincardine Council that the Arnow project in the municipality had been submitted in August, but he was unable to advise Council on the status of the review, or even when a decision on its completeness could be expected.

This selective focus on compliance testing is a serious concern as the protocol only covers audible noise and a narrow range of meteorological and turbine operating conditions. The protocol focuses on wind speeds of 4 to 7 metres/second and when the turbines are operating full capacity. This ignores many complaints of excessive noise when wind speeds are outside of these ranges (particularly below 4 m/s) and the noise emissions reported when the wind turbine is ramping up or down.

Complaint response requirements in the approvals issued to wind turbine projects clearly set out requirements for complaint resolution that are *completely separate* from the compliance requirements for audit noise emissions. The MOECC has an obligation to enforce the complaint response requirements of the approval authorities held by the wind power developers/operators.

COMPLAINT FATIGUE

Though the number of formal reports filed with the government remains significant for the 2015–2016 period, it is almost certainly just the “tip of the iceberg” with many people not bothering to complain at all due to lack of trust in the process, or people who have reported noise and other effects in the past but gave up due to the continuing lack of response.

Anecdotal reports to Wind Concerns Ontario revealed several issues:

- In some cases, the people owning the land where turbines are situated were (sometimes formerly) friends, neighbours, even family of those affected by noise emissions, and people did

not want to report on them, even though the reporting process is supposed to be confidential and anonymous²⁰

- The MOECC staff in district offices often told people “You’re the only one” even though that was not the case, which actively served to discourage further reports.

In the main though, “fatigue” with reporting showed up in many of the Master reports received from the government, and paint a picture of frustration and even desperation on the part of Ontario families. The decline in reporting is clearly linked to MOECC inaction.

In one example, a Master file contained 282 separate Incident Reports, yet had only a single note that staff had called back and left a message. There was no record of further follow-up, or action taken. The report says there was no field response. (IR 7685-9Z4MF8)

A few excerpts of staff notes from Master files:

- *“When a complaint is filed, the noise is allowed to continue ... is there any resolution forthcoming? Is the noise protocol set up to actually protect the people?”* MOECC response: “We will not be responding to [complaints] as they do not meet our criteria.” This family filed another report 10 months later: *“...we have not recorded a complaint since April due to a lack of action from the MOE to address our concerns though the same issues as reported are still ongoing.”* Source IR 1564-9GJPA4
- *“[it’s the] same all the time, but if they don’t call in everyone will think it is fine but no one does anything”*. Staff response is a single boilerplate note to say “night-time modeling shows that noise emissions from the WTGs will be less than 40 dBA at wind speeds less than 6 m/s.”
- *“So far you have done nothing to help myself or my family. How many times do complaints have to go into your database before the MOECC will do something about it?”* Response: boilerplate paragraph about lack of resources, file closed, no field response noted. Source: IR 4743-9UVL5M
- *“Another week has passed with no response from you. It has been terrible here off and on the past week ... continue to be unable to get a good night sleep ...”* And another call: *“When will you reopen our file and help us?”* The caller notes that children are being affected. File marked “closed by ADM” in 2013. File appears to have been reopened but closed again in 2015.

BARRIERS TO RESPONSE

While the general lack of ministry response is telling, so too are some “boilerplate” responses related to why Ministry staff could not act.

Reliance on modeling, not actual noise measurement

“This is an ongoing issue relative to nighttime wind turbine noise. Area complainants are of the opinion that noise emissions from the various close proximity wind turbines are excessive particularly (and almost exclusively) during the nighttime reduced ambient/background noise

²⁰ There is a now infamous YouTube video depicting an elderly couple enduring significant shadow flicker so severe it is like strobe lights; their son, who posted the video, added that they will never complain because the turbines affecting them are on their neighbours’ land. “My parents have never been complainers,” [Matt] Metzgar said. “And they don’t wish to be seen as such. They don’t have any hope that complaining will get them any results.” <http://www.chathamdailynews.ca/2017/05/05/dashwood-couples-problem-with-shadow-flicker-raises-ire>

periods in the area. Modeling provided to MOECC during the approvals process indicates that noise emissions from the WTGs will be less than 40 dBA at wind speeds less than 6 m/s.”

Lack of resources

“Subsequent to February of 2015 no resources have been made available for any additional after hour WTG compliance monitoring/observation/measurements. Additionally emission and immission audits required by the facility REA despite indicating compliance with the REA have been found to be incomplete at the time of submission. No further action this IR. Suggest close this IR.”

Effectively, the MOECC instructed staff not to go to complainants’ locations at the time of day the complaint is being made about or at least at nighttime, when many complaints about noise are made. Further, the wind power developers’ noise emission audits — required by their Renewable Energy Approvals — were not completed or available, so staff could not check new measurements against prior audits. This situation is a clear violation of the approvals that the Ministry seemed in no hurry to correct.

Focus only on audible noise

The noise protocol contains many flaws, one of which is the fact it focuses only on audible noise, although many of the reports of excessive noise and other effects indicate vibration and sensation. In one case, the caller noted that the vibration had been present for almost a year and was so significant she could see “waves” in her water glass, and she was concerned about cracks in the walls of her house. The Ministry response was: “We can measure sound but no standard is available for vibration.” (Source: IR 2721-9U2LR7)

Files closed by supervisors?

Two files in the documents provided for 2015–2016 contained the staff note that the file had been “closed by ADM”: there is no explanation of the acronym ADM, which typically means Assistant Deputy Minister.

ONTARIO’S FLAWED NOISE REGULATIONS

Though the Ontario government claims its regulations offer residents the best protection of any jurisdiction in the world, information provided in resident’s complaints and assessment by MOECC staff indicate that this is not a valid statement. Gaps in both the tools used to predict the impact of new projects in the approval process and the protocol used to assess the actual noise being experienced by residents were evident; some changes were made over the past two years.

The MOECC was aware that its noise protocol was not adequate as a means of protection for people and the environment. It published a revised version in April 2017, but the protocol for wind turbine noise remains deeply flawed.

In April 2016, new guidelines for evaluating future projects were announced. Most important was revised guidance on the inputs into noise models in response to the findings reported by MOECC field staff when they followed up on the initial complaints. These changes are expected to *increase* the predicted project noise levels at nearby residences by about 2 dBA. The result could be that for many nearby homes, where noise was estimated at 38.1 to 40 dBA under the old rules, the turbines will be out of compliance with the new assessment requirements.

This essentially confirms that many homes in existing projects are exposed to noise above the 40 dBA standard, and provides validation to resident complaints and reports of excessive noise and vibration. So, rather than measuring actual noise levels, the MOECC has continued to dismiss complaints with statements that noise modeling, now acknowledged as flawed, shows that there cannot be excess noise levels experienced at that location.

In a recent example, French wind power developer Boralex just posted the results of a compliance audit, completed for the company by Aercoustics. (Aercoustics is a provider of choice to the wind power industry, regularly preparing noise assessment reports and modeling for applications.) In the Port Ryerse wind power project, an assessment was done on half the turbines operating there, to verify that the noise inputs provided by the turbine manufacturer align with the actual noise generated by the transmission. Aercoustics reported that "... the results of the IEC test at T02 *exceed the maximum sound power level* specified in the Acoustic Assessment Report." The operator "intends to demonstrate compliance," the letter concludes.²¹

It is significant, that the Ministry did not apply its new rules to five projects²² that had been issued FIT contracts in March 2016 but had not yet submitted their applications, including the noise measurement reports, for review by the Ministry. On January 25, 2018, a community group concerned about one of these projects, supported by three other citizens' groups, announced an application for a judicial review of the decision to not enforce the new standards when the Ministry knows that the old standards were not sufficient to protect nearby residents.²³

In April 2017, the Compliance Protocol For Wind Turbine Noise was also adjusted. This document sets out the procedures to be used by wind companies when doing self-assessment of operating wind turbine projects. While the new protocol acknowledges that wind turbines noise emissions can have a tonal quality continues to focus solely on audible noise, in spite of the fact that acoustics specialists say that is just a part of the spectrum of wind turbine noise emissions. The Council of Canadian Academies, for example, in its report "Understanding the Evidence," noted that current methods of testing wind turbine noise exclude high and low frequencies. "Although A-weighted measurement is an essential method, it may fail to capture the low-frequency components of wind turbine sound."²⁴

The Council went on to address another flaw in assessment procedures, which also applies to the Ontario situation: "...measurement is often averaged over time which does not convey changes in sound pressure levels occurring in short periods ... time-averaged measurements may thus fail to capture amplitude modulation."²⁵

As noted in the documents provided to Wind Concerns Ontario, time and again, people report the sensations of "vibration" and "pressure" which are indications of sound pressure and noise emissions outside the range of audible noise.

²¹ Aercoustics letter to Boralex, January 10, 2018. http://www.boralex.com/cms/uploads/library/files/PRWF%20-%20Emission%20Audit%20Submission%20Cover%20-%202018_01_10.pdf

²² Eastern Breeze in Nation Township, Nation Rise in North Stormont, Otter Creek in Chatham-Kent and Strong Breeze in Dutton-Dunwich, and Romney Wind in Chatham-Kent.

²³ <http://www.cbc.ca/news/canada/ottawa/wind-turbines-ontario-nation-north-stormont-lawsuit-1.4507448>

²⁴ Council of Canadian Academies. 2015. Understanding the Evidence: wind turbine noise, Ottawa. Page xiv.

²⁵ Ibid.

Also problematic is the fact the new protocol continues to stipulate measurements of wind turbine noise in conditions when speeds are between 4 metres per second (m/s) and 7 m/s. However, the MOECC testing conducted at many properties where complaints originate indicates that the problem turbine noises began when wind speeds were *below* 3 m/s.

In addition, the testing continues to focus on the noise emissions when the turbines are operating at 90% of its maximum sound power level or greater. This requirement remains despite numerous complaints about noise emissions when the turbine is operating at lower power levels or when powering up or powering down.

Clearly, the scope of the conditions covered under the audit tests needs to be expanded, based on real-life experiences being reported by those living among with existing wind turbine projects and expert advice beyond the small group of acousticians employed by the wind industry to conduct these audits. These serious gaps in the protocol caused a Kincardine Councillor to dismiss the whole audit process and requesting that the MOECC focus on address complaints rather than using a flawed process to assess compliance.

ENBRIDGE PROJECT: NINE YEARS OF CITIZEN COMPLAINTS, ZERO RESPONSE

The Enbridge project is particularly noteworthy as an example of MOECC response: the data suggests that the MOECC did not follow up on *any* of the 74 complaints in the two-year period related to the Enbridge project. Taken together with the 442 complaints between 2006 and 2014 reported in the previous FOI request, there have now been more than 500 complaints about that one project.

HURON COUNTY

Huron County saw numerous new wind power projects commence commercial operation during the 2015–2016 period; noise complaints and reports of adverse health effects from residents mounted to the extent that the local health unit launched a public health investigation in the fall of 2017.

In the documents provided, there were 646 formal reports filed with the MOECC for 2015–2016. Again, members of the communities in this area have told Wind Concerns Ontario that they were not given Incident Report numbers, therefore, the records of their reports of excessive noise, vibration and adverse health effects would not have been surrendered in this FOI request.

DEVELOPER/OPERATOR RESPONSE

It is a key requirement of the Renewable Energy Approval or Certificate of Approval that any wind power developer receiving complaints must investigate, take action, and report to the MOECC so that a repeat of the incident causing the report does not happen.

In this group of documents provided, there were comments by residents to the MOECC that the power developers were unresponsive. This is clearly a breach of the terms of the Certificate of Approval.

- *“I tried calling but did not reach anyone ... the website for WPD advised to contact SAC [Spills Action Centre]”*. Source: IR 6442-ACJLSG

There is also the continuing issue of the failure to produce post-operational emission audit reports that are complete. Again, to the best of our knowledge, at the time of writing, there are few, if any, wind power projects in Ontario with a valid, complete compliance audit, including the Enbridge project near Kincardine, which has been operating for more than eight years.

Staff notes repeatedly refer to this omission, in this group of documents, and in the documents from 2006–2014, in which staff say there are no compliance data to refer to, if noise measurements are taken post-noise complaints. Clearly, the lack of audit reports is being used now by the ministry as an excuse for not following up on noise reports, forcing people into a bizarre hamster-wheel process where nothing is ever resolved.

In the 2015–2016 group of documents, the K2 Wind power project and the Unifor turbine at Port Elgin featured strongly both as a source of resident complaints, but MOECC staff also notes the lack of documentation required as part of the project approval.

“MOECC continues to receive regular, ongoing complaints since operations began in June 2015. Complaints include shadow flicker, turbine and substation transformer noise, infrasound and health. Additional monitoring of residences is planned for the fall. Also, I & E audits required under REA to be submitted due *December 2016...*” Source: 0807-9XKRVJ Status: in progress. Note: there is no complete audit for this project at the time of writing (February 2018)

RECOMMENDATIONS

Based on our analysis of the information released to Wind Concerns Ontario, we present the following recommendations for action.

1. Stop issuing approvals and ‘Notices to Proceed’ for wind turbine projects.
 - Given the thousands of unresolved noise complaints and the occurrence of “regular, ongoing” reports, **no further projects** should receive Renewable Energy Approval, or be allowed to commence commercial operation. Contracts for projects not yet in operation should be cancelled.
2. Address testing and protocol gaps.
 - Create standards for infrasound and low frequency noise, create usable test procedures to confirm compliance, and equip MOECC staff with proper testing equipment and training
 - Cover the full range of adverse effects generated by wind turbines as demonstrated by the complaints filed with the MOECC
3. Revise incident process to recognize the complainant as MOECC’s client and the project operator as the regulated entity.
 - Measure success in terms of complaints resolved, not simply REA compliance; make enforcement process transparent to affected residents and the wider community; and publish annual reports on wind turbine noise complaints with documentation of responses
4. Enforce Approval Terms Related to Complaint Resolution
 - Follow up with project operators to ensure compliance with the approval terms related to resolution of complaints related to adverse effects caused by wind turbines.
 - If operators continue to fail to address complaints, initiate regulatory actions to address the situation.

5. Enforce stronger noise standards using EPA Section 14.
 - Evaluate the full range of noise emissions from wind turbines, move beyond verifying compliance audible noise standards to finding causes of complaints, and address infrasound and low frequency noise complaints;
6. Place an immediate focus on addressing complaints about health issues related to turbine noise
 - The MOECC is the government agency charged with protecting citizens from activities that create environment impacts that have potential to adversely affect health.
 - The large number of independent complaints documented by the Ministry is sufficient to warrant immediate action.

CONCLUSION

Wind Concerns Ontario's position remains that while the government may rely on "modeling" and noise assessments, and contents itself with the unfounded claim that Ontario's setbacks are among the most stringent in the world (which they aren't), the fact is, Ontario citizens continue to report excessive noise, vibration and shadow flicker (strobe effect) together with adverse health effects associated with noise and vibration.

It is time for the government to re-evaluate its policies and guidelines in light of the real-world experiences of Ontario families and make the changes necessary to fulfill the Ministry of the Environment and Climate Change mandate to protect the environment and human health.

Prepared by Wind Concerns Ontario © 2018

*This report is dedicated to the memory of **Stephana Johnston**, a pioneer member of Wind Concerns Ontario, who lived among 18 wind turbines in southwestern Ontario, and who spent her last years sharing her experiences with others and developing learning about health impacts from industrial-scale wind turbine noise emissions, until she was forced from her home. She passed away in January, 2018.*