WCO | WIND CONCERNS ONTARIO

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RE: Comments on Amendments on Renewable Energy Approvals – Regulation 359/09
ERO # 013-3800

Dear Ms. De Sousa:

In response to posting 013-3800 on the EBR, Wind Concerns Ontario is pleased to provide comments on the proposed amendments to Regulation 359/09.

There are three subject areas in our comments.

The first relates to the new requirement for the project developer to show that there is demand for electricity that they will produce because of a renewable energy approval.

The second group of comments relates to the wider provisions of the regulation that do not align with the experience in Ontario and current research on the impact of wind turbines on communities forced to live near them. The conclusion of experience and research is that many aspects of the current regulation are **not sufficient to protect the health and safety** of residents living near the wind power projects. Significant changes are required before any new projects are approved, as well as to the procedures to assess environmental impacts of existing projects.

The third group of comments relates to the changes required to bring the regulation in line with the government's campaign commitments to respect citizens' views on their actions as a government. The current regulation puts minimal, if any, weight on the views of the host communities for renewable energy projects; as well, the onus to prove harm is on local residents through the appeal process, meeting an almost impossible "test" and while facing paid consultants/witnesses hired by well-financed project developers.

In our view, broad changes to Regulation 359/09 are needed as a result of the government's announced objective of returning planning powers relative to renewable energy projects to municipalities. To give meaningful authority back to the municipalities, the rules related to the siting of power projects must also change to allow municipalities the ability to set more effective zoning rules than are presently contained in Regulation 359/09.

While the new government is not responsible for creating this situation, it must acknowledge that there are problems and show that it is working toward resolution.

The intent in Bill 34 to repeal the Green Energy Act is a first step, but extensive revisions to Regulation 359/09 are needed to address the issues with operating projects.

Yours truly,

Jane Wilson,
President, Wind Concerns Ontario

cc.
Hon. Rod Phillips, Minister of Environment, Conservation and Parks
Hon. C. Elliott, Minister of Health and Long Term Care

WIND CONCERNS ONTARIO

Comments on EBR posting 013-3800

Wind Concerns Ontario is a coalition of more than 30 community groups, individuals and families, with concerns about the impact of the development of industrial-scale or utility-scale wind power on Ontario's environment, economy, and citizen health.

Proposed Amendments to Regulation 359/09

Demonstrating Demand for Electricity

According to the proposed amendments to Regulation 359/09, in future, renewable power project developers will be asked to demonstrate that there is demand for the electricity that their planned renewable energy project could generate.

Details on how power project developers would demonstrate demand are not provided in the EBR posting, but it is assumed that the overall demand and supply situation in the province will be an important consideration. Wind Concerns Ontario's monitoring of projects approved under the previous government raises five specific issues that need to be addressed in the process.

1. **Location of Supply Relative to Location of Demand**

Under the previous government, renewable energy projects were approved without consideration of the relative locations of the source of generation and demand for the power to be produced. An example is the Henvey Inlet wind power project, a large 300-MW facility north of Parry Sound. This site is located about 300 kilometres away from the growing demand for electricity in the Greater Toronto area. To deliver any power from the project, transmission line capacity needs to be developed — this is an expense that has been passed on to electricity consumers in Ontario paying for existing projects, rather than being absorbed by the project developer who is proposing an inappropriate location.

Given the intermittent nature of wind power, the utilization of transmission line capacity developed to accommodate wind power projects across rural Ontario is very low. Transmission capacity made available must support the nameplate capacity of the new project, even though, in the case of wind power, actual output is about 30% of nameplate capacity, or less. This increases the capacity cost considerably relative to the amount of electricity consumed.

The line losses related to the transmission of electricity across great distances is a second factor that needs to be considered and included in the cost analysis.

Recommendation: In providing an assessment of the need for electricity, project developers should be required to commit to absorbing these location-specific transmission costs as part of the pricing arrangements for the electricity produced, rather than leaving them to be borne by the general hydro user. This approach would focus projects in close proximity to locations where there is increasing demand for electricity, rather than on rural locations like Bruce County where needs are well satisfied by nuclear plants that they already host.

2. **Alignment of Supply with Demand**

In the assessment process, consideration should also be given to the extent to which the renewable energy technology used will actually increase the capacity available to meet demand, particularly at

peak periods. Nameplate capacity is meaningless if technology depends on an intermittent resource. While output from biogas generating systems, for example, can largely be controlled and activated when needed, wind turbines are the opposite as they only generate electricity when the wind resource is available.

Ontario has extensive experience with the problems created by wind turbines as part of the electrical generation system.

- Wind turbines are intermittent producers of electricity with output across a full year at 30% or less of nameplate capacity.
- Peak output is in the spring and fall periods rather than in the peak periods for electrical demand in the summer and winter.
- Similarly, daily output peaks are in evenings and overnight when electricity demand is also low.
- As a result of this pattern of availability, it is estimated that approximately 70% of the electricity generated by wind turbines is not required when it is produced (Brouillette, December 2016).

In her 2015 report, Ontario's Auditor General Bonnie Lysyk noted that intermittent output and high contract prices have contributed to higher electricity prices (Ontario Auditor General, 2015).

***Recommendation*:** Proposals for new capacity need to be based on proven ability to make real contributions to electricity supply. Wind turbines did not provide the type of base capacity that facilitated the shut-down of coal-power plants; the restarting of Bruce Nuclear made that possible. **Wind power will not be able to replace the supply from the Pickering or Darlington nuclear plants.** Electricity capacity planning in Ontario needs to be fact-based, and employ cost-benefit analyses as recommended by the Auditor General twice, not ideology.

3. First to the Grid Rights

Wind power is only price-competitive if the government commits to buy the output from wind turbines whenever it is produced, whether or not it is required to meet Ontario's demand for electricity. The right of "first access to the grid" feature of the current Ontario wind power contracts essentially treats wind as a base load generator which is an incorrect assumption. It is a key driver of the escalating hydro costs in Ontario; it is as serious a factor in hardship and "energy poverty" as the high rates being paid for output. By committing to buy output from an intermittent source of electricity, whether or not it is required, the government took on the costs of displacing other suppliers and/or disposing of the surplus electricity to other jurisdictions.

In September 2013, the Ontario Power Authority (OPA, since dissolved and its responsibilities transferred to the IESO), concluded negotiations with the wind and solar generators that would allow the IESO to curtail these generators as needed. Despite significant curtailment, this led to only a minor reduction in costs because the OPA agreed to compensate the generators for curtailed power at around 90% - 95% of the contracted price. Despite the curtailment negotiated in 2013, there is still a significant amount of electricity generated above demand.

***Recommendation**:* Future contracts for renewable energy should not include the right of first access to the grid so that its true value as a supplier of intermittent power to the grid can be properly evaluated.

4. Pricing

The wind power lobby is making public statements that it is the "lowest cost" source of electrical generation available. (Canadian Wind Energy Association, October 2018) They claim that recent contracts in Alberta averaged 3.7 cents per kilowatt hour. However, the fact is this price excludes

payments to the generators under the Indexed Renewable Tax Credit funded from Alberta's carbon tax revenues.

Recommendation: Proposals for future renewable energy projects should stand on their own merits with pricing reflecting the full cost of the output, including the costs of integrating it into the grid, and excluding government subsidies. Steps should also be taken to ensure that, if the federal government succeeds in imposing a carbon tax on Ontario, any benefit earned by the existing wind turbines in Ontario be used to reduce general hydro costs rather than being another windfall for the wind power industry.

5. Storage/Back-up

The State of South Australia has been experiencing the problems associated with a heavy reliance on intermittent wind energy; the government took up an offer from Elon Musk (Tesla) to build an electricity storage facility to address the issues. The 100-MW facility built at a cost of $90 million (Australian) has the capability to supply 70 MW of the 100-MW capacity for only 10 minutes with the other 30 MW providing three hours of power. (Wolfson, 2017) While this capability is useful for managing short-term fluctuations in the electricity sent to the grid, it is not capable of storing power generated overnight by the nearby wind project and feeding it to the grid for extended periods during the daytime when the wind resource may not be available.

The intermittent nature of power output from wind turbines requires other generating capacity to back-up each MW of wind turbine capacity in the grid. Generally this requirement is supported with standby generating facilities which use gas or some other fossil fuel to run the generators. Almost all of the back-up in Ontario has been in the form of CCGT (combined cycle gas turbines) which are required to idle at load rates of over 30% or higher, therefore emitting CO_2. They must operate at these levels in the event the wind stops blowing but the grid needs the power. This allows them to be at the ready and available to ramp up in a 5- to 10-minute time-frame when needed. This in turn increases the carbon footprint of the generating system. The fact is, the electricity generation system in Ontario already emits very low levels of carbon emissions, estimated at 40 grams of CO_2/kWh. Adding wind and solar generation to the grid actually increases carbon emissions as the intermittent electricity from wind and solar sources, with gas back-up rated as emitting 200 grams of CO_2/kWh. (Ontario Society of Professional Engineers, 2015)

***Recommendation*:** Proposals to add intermittent wind power facilities should reflect the all-in cost of providing projected costs of back-up generation needed to maintain the grid when the wind resource is not available; any losses in the export of surplus generation storage; and any costs related to displaced energy.

Protecting Local Residents from Wind Turbine Emissions

The government's proposal to return planning authorities to local municipalities places a priority on changes to other aspects of Regulation 359/09 beyond the need to prove that added capacity is required. Because of problems with this regulation and in the absence of enforcement action by the province, residents have been turning to their municipalities for assistance. Without wider changes in Regulation 359/09, any attempts to reflect local concerns about the effects of wind turbines on residents who are forced to live among them will expose municipalities to legal challenges.

We offer comments based on the Ontario experience to date, together with recommendations for action.

Siting of Turbines

The previous government used Regulation 359/09 to set out protective setback distances between wind turbines and people's houses. The rules were not based on actual research, but rather on the European urban noise standards which did not include wind turbines and have not changed as the height and power levels of wind turbines have increased. More recent research has shown these standards are not appropriate for assessing wind turbine noise emissions.

The records of 4,562 complaints about turbine operations filed with the environment ministry between 2006 and 2014 (Ministry of Environment, 2006 - 2016)[1], also confirm that the siting rules are not protecting residents. Thirty-five per cent of these complaints referenced adverse health effects, as recorded by Provincial Officers with the environment ministry.

Noise limit of 40 dB(A)

The noise limit for wind turbine noise was established based on the World Health Organization urban night-time noise limit in urban centres for road, rail and airport noise (but which did not include wind turbines). This noise level was then applied to rural Ontario without any research or field studies to assess whether this standard was applicable to wind turbines, a unique noise source, in a very different environment. Based on a recommendation by the wind power lobbyist and trade association CanWEA (Canadian Wind Energy Association, July 24, 2009), only *audible* noise emissions were assessed. So, today, no consideration is given in the existing regulation to low-frequency noise or infrasound sound pressure waves that also come from the turbines.

Substantial credible research is now critical of this approach. For example, the Health Canada study indicated that participants began to experience problems with wind turbine noise at 35 dB(A) (Health Canada, 2014) and that the characteristics of wind turbine noise resulted in adverse effects for people at lower levels than road, rail and airport noise.

In October 2018, the World Health Organization (WHO) issued new noise guidelines that confirmed that a separate noise standard was required for wind turbines. The WHO now recommends average noise exposures below 45 dB (L_{den})[2] as wind turbine noise above this level is associated with adverse health effects. (World Health Organization - Europe, 2018) The research supporting the WHO standards was unable to conclusively support an equivalent night-time standard for wind turbines.

When converted to this measurement technique, the current Ontario allowed noise standard in Regulation 359/09 *exceeds* this new WHO standard, and is clearly not adequate to protect health.

The 2014 Canadian Council of Academies (Council of Canadian Academies, 2015) literature review reported that the dB(A), the measure used in Regulation 359/09 and the dB (L_{den}) used by the WHO, is not the most appropriate measure for assessing the impact of wind turbine noise as it does not adequately reflect the full range of emissions including low-frequency sound and infrasound pressure waves that wind turbines generate.

This finding was confirmed by acoustician Steven Cooper's study of the Cape Bridgewater wind project conducted for the owner/operator of the project. (Pacific Hydro, 2015) Cooper was not able to statistically connect resident complaints with audible noise measured in dB (A) but found that other methods of assessing wind turbine noise emissions were better matches with the periods of severe adverse effects identified by nearby residents.

[1] Based on information on complaints provided by Ministry of Environment in response to a request under the Freedom of Information Act by Wind Concerns Ontario. 2017 data has also been requested

[2] A measurement of audible environmental noise that combines day, evening and night- time components.

Information from complaints to the Ontario environment ministry about turbine operations includes many references to vibrations affecting furniture and buildings, as well as pulsing sensations felt in the head or other parts of the body. These symptoms are not linked to audible noise assessed by dB(A) measures. This information is confirmed by independent measurement of sound pressure waves found in problem homes. Testing confirms the presence of elevated levels of infrasound below frequencies of 1 Hz with the sound wave pattern matching the blade pass frequency of nearby wind turbines. The noise monitoring equipment used by the Ontario environment ministry to respond to complaints is not capable of measuring sound pressure waves below 20 Hz, so the field work is not technically capable of identifying what appears to be the source of the problem.

The conclusion is that people living in houses near wind turbines are being exposed to low frequency noise and infrasound, a situation that is ignored in the current Regulation 359/09. These unique sound pressure waves are linked to sleep disturbance, pressure in the ears, tinnitus, headache, nausea and dizziness, also reported in the complaints.

Extended disturbance of sleep is recognized as a serious health risk linked to a wider array of other health effects. Studies also report that long-term exposure to low frequency noise and infrasound have cumulative negative health effects. These concerns align with the findings of the Australian Senate Report on Wind Turbine Noise which recommended that standards be developed for low frequency noise and infrasound for Australia. (Senate Select Committee on Wind Turbines, 2015)

The complaint records from residents affected by Ontario wind turbines also include descriptions of the sound of blades swishing or "swooshing" as well as an impulsive thumping sound. These descriptions point to the amplitude modulation characteristics of wind turbine noise which makes it more annoying[3] than road, rail and airport noise. These characteristics are also not captured by the averaging techniques used in creating dB(A) assessments of noise levels.

Recommendation: Based on this information, Ontario regulations related to assessing noise emissions from wind turbines must consider the full range of emissions from wind turbines. Any noise levels established for wind turbine noise should include penalties for amplitude modulation as well as the cyclical and tonal characteristics of the emissions.

Setback of 550 Metres

The specific setback between wind turbines and residents was developed using computer modeling rather than actual noise measurements. This modeling indicated that 550 metres was needed to limit audible noise outside the home to the 40 dB(A) level.

The noise modeling software used to prepare these assessments was designed to model noise from stationary noise sources no more than 30 metres from the ground.

The reality that wind turbines operate with rotating blades positioned on 100-metre towers is not consistent with either of these requirements.

The model also required various assumptions regarding weather conditions, the ability of the ground to absorb sound, and so on. No provisions were made for differences in elevation between the turbine and homes, nor was the potential for noise to be amplified when reflected at the home from ancillary buildings on the property considered. Independent studies show that these conditions contribute to some complaints of excess noise.

[3] "Annoyance" is a medical term used in describing environmental noise, and denotes stress or distress.

In the approval process in Ontario, these predicted noise levels were treated as if the models were an exact science. There was no provision for any statistical errors that are standard in statistical modeling. Turbines were approved at 551 metres from the centre of a house even though that could mean residents' bedrooms located on the side of the home were closer to the turbine and therefore subject to excessive noise.

Testing after the turbine projects were constructed indicated that noise levels were in excess of the predicted levels, and a new set of assumptions was set out in April 2016. These new assumptions increased the estimates of noise levels at affected homes by about 2 dB(A) even though there is still no requirement to test noise levels with an assumption that the ground is a frozen, hard surface which would reflect normal winter conditions in Ontario.

Despite the significant changes in estimated noise levels, the five projects issued contracts in 2016 under the IESO's Request for Proposal process were allowed to use the old assumptions for the noise modeling used in the approval process, even though the ministry knew that they were flawed. Three of these projects have been cancelled but two others — Nation Rise in North Stormont (under appeal at the time of writing before the Environmental Review Tribunal) and the Romney Wind project — are apparently proceeding.

The setbacks used in Ontario projects have not changed since they were first issued in 2009 even though the turbines have increased in power level and height since that point. Setbacks in other jurisdictions have been increasing in response to new research and to allow for the impact of low frequency noise and infrasound. The State of Bavaria in Germany instituted setbacks equal to ten times the height of the turbine. (Clean Energy Wire, 2017) Applying the Bavarian rule to turbines proposed for the Nation Rise project would mean a setback of 2,000 metres rather the 550 metres currently required in Ontario.

The Polish Health Institute (National Institute of Public Health, 2016) reviewed reports of a range of impacts of wind turbines on nearby residents and identified setbacks required to address each type of impact. It concluded that 500 to 700 metres was required to protect against audible noise but setbacks of 1,500 to 3,000 metres were required to protect against low-frequency noise and infrasound.

Recommendation: There is substantial evidence from the Ontario experience that the current 550-metre setback from residences is not sufficient to protect residences. The complaint records also confirm that low-frequency noise and infrasound must be considered in establishing protective setbacks. Health research related to wind turbine noise emissions is still evolving, but in determining setbacks for turbines, it is important that the Precautionary Principle, normally used in public health to establish protective standards, be applied in the case of wind turbines as well. Leveraging the experience of Bavaria would be a good interim step knowing that the Polish report suggests it is a not an overly conservative limit. Research should then be undertaken on the transmission of low-frequency noise and infrasound to confirm if the more restrictive Polish setbacks are appropriate.

In the case of most locations in Southern Ontario, the density of settlement patterns mean that few turbines could be built in most areas using a setback of 750 metres or more. The refined measures would only impact the more sparsely settled areas of northern Ontario.

Noise Inside Homes

No standards have been set for wind turbine noise levels inside of homes. The rules were established on the assumption that only audible noise was important and since noise levels in the audible frequency ranges are absorbed by the walls of the homes, the noise levels experienced inside the home would be lower than outside the home.

This assumption is not supported by the complaints filed by people living among wind turbines. Residents are reporting that the noise experienced inside the house is worse than outside. Some residents found relief from noise inside their home by sleeping in tents or trailers outside. The problem appears to be the low-frequency noise and infrasound components whose longer wave lengths pass through the walls of buildings and can actually be amplified by the shape of rooms inside the house.

Recommendation: Assessments of noise levels from wind turbines needs to consider sound both inside and outside of houses. While obtaining readings inside a home may not always be practical, the set-backs between residences and turbines must be established so that consideration is given to expected noise levels inside the homes. A session at the joint conference of the Acoustical Society of America and Canadian Acoustical Association being held in Victoria from November 5 – 9 includes a session related to findings on this issue.

Application of Setbacks

Currently, Regulation 359/09 only applies the specified setback to "non-participating receptors" (people who have not signed contracts for wind turbines) and vacant lot receptors. Based on a recommendation from the wind power trade association CanWEA (Canadian Wind Energy Association, July 6, 2009), no protection is provided for participating receptors (i.e., the people with turbines on their own property) or for occupational settings. In a letter to Minister of the then environment minister John Gerretsen, CanWEA stated it was "concerned that the original setback rules would jeopardize over three-quarters of all construction ready wind turbine projects … calling into question the potential of [the GEA] to reach its objectives". (Canadian Wind Energy Association, July 6, 2009)

Based on experiences reported in Ontario since 2006, coverage should be extended to both situations. A case can be made for excluding people who actually signed a lease, but the current rules allow these individuals to also expose their children to noise emissions that have been shown to have long-term health effects. Reports from communities with turbines confirm that some participating families are making arrangements to leave their regular home when the wind is from a direction affecting this location. There are also anecdotal reports of children of leaseholders being absent from school more frequently complaining of headaches and other health conditions associated with exposure to wind turbine noise.

Education facilities, particularly schools for children with special needs, and long-term care facilities for seniors also require protection. People in each of these groups may have heightened sensitivity to the noise emissions from wind turbines and require special protection; this was identified by the Council of Canadian Academies as a gap in research and action.

Homes in which autistic children reside have also been raised as special concerns in appeals before the Environmental Review Tribunal and other public consultations about wind turbine placement.

***Recommendation*:** Regulation 359/09 should be amended so that setbacks from wind turbines should apply to all types of locations where people live or work on a regular basis.

Noise Testing Protocol

The protocol used for assessing wind turbine noise emissions is derived from the flawed standards set out in Regulation 359/09. Even though it was just implemented in 2017, it does not reflect any learning from the problems created by wind turbine projects operating in Ontario. Key elements in the protocol seem to be designed to narrowly focus on certain assumptions about wind turbine noise emissions while ignoring situations that people living among the turbines find particularly problematic. It is focused on average assessments of noise emissions that seem to be designed to mask any non-compliant turbine

emissions. Most important, the protocol excludes low frequency noise and infrasound from the assessments of wind turbine emissions.

The current protocol has no credibility in communities living with wind power projects as the turbines can be found to be operating "in compliance" with standards, even though residents continue to experience problems with the emissions, and are reporting significant detrimental effects on their lives and health. Municipalities have noise enforcement powers, but are limited in the scope of their enforcement actions by flawed provincial assessment rules and decisions that the project is operating in compliance with all standards.

Recommendation: All wind turbine approvals contain requirements that the proponent identify the source causing each complaint made and correct the cause so that the problem is not repeated. Testing procedures need to be refocused on enforcing the approval terms for the wind projects. This would require that testing be designed to respond to the complaints that have been registered with the government or new complaints received. The focus would be on identifying the source of the issue using a broad assessment of wind turbine emissions and ensuring that the project operator makes the changes needed to prevent recurrence as required by the approval terms. Compliance with flawed standards is not relevant in the enforcement of the terms of the approval.

Other Setbacks

Since Regulation 359/09 was originally published, Ontario has experienced a number of turbine failures that indicate a review of setbacks to protect other properties against these failures of this equipment is necessary. Currently, turbines are required to be set back from roads and the boundaries of land controlled by the proponent by a distance equal to the blade length (generally 50 to 100 metres) plus 10 metres. In some projects, relaxation of these setback requirements has been approved.

The current rules were set out in response to concerns about the original setbacks of tower height plus blade length expressed by CanWEA in the letter to Minister Gerretsen (Canadian Wind Energy Association, July 6, 2009). The concern was not safety but rather that a more stringent requirement could affect the ability of power developers to propose the maximum number of turbine istes.

Reports from the turbine fire in Ashfield-Colborne-Wawanosh in Huron County showed that the debris field extended up to 1,200 metres from the turbine; the blade failure event in rural Kincardine in Bruce County had a debris field of up to 560 metres. (Palmer, 2018) In both cases, this extends well beyond the limit allowed in the regulation. In one Essex project, approval was given to site a turbine well within this distance of a greenhouse where employees would be exposed to ice and debris throw.

Ice thrown from blades is a danger in all wind turbine projects. Engineering analysis of the risk shows that it can extend up to 300 metres from the wind turbine. (Harrison, 2012) Approvals of early projects in the Municipality of Kincardine require the project operators to post signs along roadways warning of the risk of ice throw. The Unifor turbine in Saugeen Shores is located in the parking lot of the Unifor Recreation Centre. Use of large portions of this parking lot is restricted in winter months.

Other failures point to problems with blade delamination, a risk that will likely increase as turbine projects age. This is a particular concern for large projects located along major traffic arteries like Highway 401 and 402 in southwestern Ontario. As an example, along Highway 402 travelers will pass nine wind turbines in a 3.3-km section of the highway, all located within the possible ice throw zone at about 240 metres. (Palmer, 2018)

Shadow flicker (strobe-like effect created by sun-turbine blade interactions) is another serious problem created by wind turbines. This effect is well-known in aviation as a hazard to safety. The most serious effect is when the moving shadows affect bedrooms in the early morning because it disturbs the sleep of

the residents. It is also a concern if these moving shadows cross roadways and momentarily distract drivers. The same problem can also affect operators of large farm machinery used in fields in rural Ontario.

***Recommendation*:** Revisions to the regulation should be made to only allow turbines to be placed where the impacts of debris scattered by a blade failure and ice throw are restricted to land controlled by the project operator through lease arrangements. In a recent paper, engineer William Palmer says that based on his review of information on incidents, setbacks should be at least 560 metres. (Palmer, 2018)

Similarly, the regulation should be changed to prohibit projects casting moving shadows beyond the lands that they control. This is straight-forward as the existence of shadow flicker can be easily predicted and the turbines shut down when shadows would extend beyond the boundaries of the controlled property.

Assessment of Project Proposals

With Bill 34, the government announced its intention to return planning powers related to wind turbines to municipal government, ending a period in which municipalities essentially had no effective input into the siting of a development that would have a major impact on the municipality and its residents. Regulation 359/09 on the other hand, appears to have been written to limit opportunities for municipalities, communities and individuals to comment on or otherwise influence decisions related to these projects. All decision-making was centralized in a single ministry where approvals could be expedited. As a result of these exclusions, many mistakes were made that now need to be corrected. The following sections outline changes needed to the address these process issues and bring Regulation 359/09 into line with the government's stated objective of empowering municipalities.

Regulation 359/09 sets out an approval process that on the surface appears to be comprehensive but in fact it is a highly centralized process that has been manipulated by wind power developers to exclude input from municipalities and residents. The process is overly dependent on documentation provided by the proponent. Most of the documents created under this process are largely boilerplate reports and have little substantive analysis of the actual situation in each unique project area. The list of requirements seems to have been treated as a check list of required documents with little or no assessment of the overall quality of documents.

It is also noted that this process was designed for southern Ontario where municipalities exist to represent residents. An alternate process is needed for residents of other parts of the province where municipalities do not exist.

The process assumes that the wind industry can be self-regulating. The abuse of the process by the wind industry over the past eight years shows that the wind companies cannot be trusted, and extensive, expert over-sight of the process is necessary. The following section highlights some key changes to the process.

Independent Management of Public Meetings

Two public meetings are listed as a requirement of the process. Public meetings are a common tool used by municipalities to obtain public input on initiatives that have a broad impact. Normal municipal meetings, however, differ from the meetings related to wind turbine projects because the municipality has an incentive to gather input from the public and incorporate it into the proposal. Frequently there are second meetings to confirm that the changes made to the project respond to the input from the first meeting.

In contrast, the goal of the wind companies in organizing these public meetings seems to be simply to comply with the requirement of holding the events rather than actually engaging the community in a fulsome discussion of the project and responding to community concerns. In many communities, the format requested was a "town hall" so that everyone could hear the same information and the same answers to questions; this was rejected in most cases, with the power developers saying they didn't have to do things that way. Often, the disdain for public views was actively displayed by representatives of the power developers at these public meetings, and the evasive answers provided to questions were important factors in fostering community opposition to the projects. Many residents came to these public meetings with an open mind to learn about the project and left opposing it.

***Recommendations*:** Going forward, public meetings related to wind turbine projects should be managed independently from the project proponent. They could be run by the local municipality or an independent facilitator approved by the municipality. The meeting should be in a town hall format where the proponent has the opportunity to present highlights of the project and then respond publicly to questions raised so that all people attending can hear all of the answers. The two meetings should have two separate purposes. The first meeting should outline the project, including presenting the draft site plan with a view to identifying issues and concerns. The second meeting should be more focused on the changes made in the project in response to the concerns raised in the first meeting.

Community Liaison Meetings

Project approvals require a second set of public meetings after the approval to provide information to the public. Again, rather than leveraging this forum as a tool to communicate with the community and to respond to concerns, these meetings have become another set of required steps to be completed with the minimal effort required.

***Recommendation*:** In addition to providing updates to the community, the mandate for the community liaison meetings should centre on complaint resolution. Steps taken to resolve complaints received and prevent their recurrence, as required by the REA, should be reported to this forum. It would not be a place to make new complaints — that would be handled in a separate channel — but rather a place where the proponent can easily confirm whether the steps taken have actually addressed the issues raised. They would also provide a forum where the ministry could monitor first-hand the activities by the power developer to comply with its approval requirements around complaints. The meetings would continue until all complaints are resolved based on feedback from the individual making the complaint. Like the project public meetings, experience suggests that independent management of these meetings are important for them to be meaningful tools to address concerns.

Municipal Role

The current wording for Regulation 359/09 limits the municipal role in the project approval process to providing comments to the proponent via a municipal consultation form specific to municipal or local infrastructure and servicing. There is no provision for the municipality to have direct input to the ministry group reviewing the proposal; all comments are routed through the proponent for submission with the approval package.

***Recommendations*:** Municipalities should have direct input into and be consulted during all stages of the review process. This would include being involved in assessment of changes to the project that take place during the Technical Review phase. The specific role would include:

- Municipal Support for the Project – municipal support for the project should be a mandatory requirement for the awarding of any new renewable energy contracts. Without this support, the

project will not proceed. A total of 117 municipalities endorsed resolutions supporting this change in 2016.

- Preparation of the municipal consultation report – Municipalities should be responsible for preparation of this report which would be amended to cover all aspects of the project. These comments would be provided in preliminary form to the proponent who could provide feedback to the municipality on changes it is making in project proposal in response to concerns raised. The final municipal consultation report would be provided to the ministry by the municipality affected.
- In addition, the municipality would be given an opportunity to comment directly to the ministry on the economic impact of the project. This would allow an assessment of the actual employment being created in the municipality as well as the impact on other economic activities in the municipality (e.g., tourism, etc.).
- The proponent would be required to prepare an assessment of the project's impact on the farm drainage infrastructure in the areas affected by project construction. Remedial plans would be required to maintain the current drainage patterns and to immediately repair any tile drainage systems damaged during construction.
- The role of the municipality in undertaking a detailed engineering assessment of the construction plans for the elements of project would be confirmed. Proponents would be prohibited from using lawsuits or threats of lawsuits to limit the activities of the municipality in exercising this authority under the Ontario Building Code.
- In addition, the municipality would have an opportunity to provide an assessment of the costs of supporting the project either before or during construction and/or ongoing support (i.e., new requirements for fire services) and obtain compensation from the proponent as part of the approval process.
- As the government jurisdiction responsible for maintaining most of the road and bridge infrastructure used in construction of the project, the municipality, not the province, should have the final approval authority for the road use agreement.
- Similarly, the municipality should be designated as the final approval authority for siting of project elements in road allowances without the potential for appeal of municipal decisions to the Ontario Energy Board.

Define Responsibility for Supervising Implementation

Currently, projects are approved at provincial level with very limited involvement of the municipality. Approvals are issued that do not provide clarity on who is responsible for supervising implementation. The Ministry does not have the trained staff on the ground and there is no clear authority to act. Problems have occurred in many projects with reports of contractors rushing to meet deadlines and taking shortcuts to cut costs, endangering residents and damaging roads. Examples include roads being reduced to one lane without proper flagmen in place, roads being closed at short notice by heavy equipment and school buses being prevented from delivering children to their normal drop off locations leaving them to navigate their way home through heavy construction equipment. The most recent example is the Parry Sound 33 fire linked by contractor staff comments to the continued construction activity during a period of extreme fire hazard without adequate fire protection equipment available on the construction site. And in the Amherst Island project, residents appealed to the environment ministry for help in addressing problems of road closures and road damage without satisfactory response.

Recommendation: As owner of the road and bridge infrastructure being used for implementation, municipalities should be given clear powers to supervise construction with appropriate funding provided for the additional staff necessary. This would include the power to direct the proponent to take all steps necessary to ensure safe construction practices and the authority to shut down the project if that is not taking place.

Indigenous Input

Indigenous input into the project is an important aspect as this program moves forward. Currently, responsibility for obtaining input from the affected Indigenous communities rests with the proponent, but this approach has resulted in a failure to consult with local Indigenous communities while support is sought from communities based in distant parts of the province. The intent of encouraging indigenous participation is being ignored in favour of simply contacting any indigenous community anywhere, to get points on the proposal process.

***Recommendation*:** The ministry should be responsible for identifying and contacting the Indigenous communities that will be affected by the project and seeking their input into the process.

Technical Review

To properly assess proposals for renewable energy projects, extensive, independent on-site reviews of proposals are required. There are too many examples of technical reports from "experts" submitted in support of project that prove to be inaccurate or incomplete when the project is actually constructed.

An example is the engineering report commissioned by the proponent and presented at the appeal hearing for the North Kent project. It was based on modeling of the impact of the proposed pile driving involved with the project. This report indicated that the construction activity would not affect adjacent wells. Nevertheless construction activities coincided with disturbance and failure of more than 20 water wells. (A public health investigation was announced by the Ford government in October, 2018.)

Another example is the unstable Leda Clay ("quick" clay) present in many sites proposed for wind turbines in the Nation Rise project. The environment ministry's technical expert, who reviewed the application for this project, testified at the citizen-funded appeal that his assessment of the soil conditions was limited to a two-hour visit to quarries *outside* of the project area rather than an actual investigation of the sites where the turbines are proposed. He also testified at the hearing that he was not aware of the Leda Clay issue at all until after he had signed off on the application and completed his witness statements for the appeal before the Environmental Review Tribunal.

***Recommendation*:** Expanding the municipal role in the approval process will partially address these gaps in the Technical Review process, but if the Ministry retains a central approval process, it will need to develop a capability for undertaking local reviews of project proposals that extend beyond the two-hour site visit described in testimony for the Nation Rise appeal. The gaps in the approval documentation submitted by proponents also suggest a need for an independent, expert review of the all technical reports.

Appeal Process

The appeal process outlined in the current Regulation 359/09 also appears to be designed to restrict appeals rather than create a process that can be used to address flawed decisions. The tests for reversal or alteration of an approval are, in the opinion of environmental specialist lawyers, almost impossible to meet. For example, an obviously incorrect decision was evident in the approval of the Fairview Wind power project with turbines positioned in the approach paths to the Collingwood and Clearview airports. While a decision to refuse the approval appeared the obvious choice to most observers, an

approval was nonetheless awarded and then overturned in the appeal process. The appeal to the Environmental Review Tribunal reportedly cost the County of Simcoe, the Town of Collingwood and the Township of Clearview a combined total of $1.5 million in legal fees, to be borne by the taxpayers in those communities.

Recommendations: To make the appeal process more equitable, the following changes are recommended:

- The period to file an appeal should be extended beyond the current deadline of 15 days. Notices of approval come with no advance warning; a 30-day window to prepare and file an appeal seems more reasonable.
- Currently, appeals are limited to serious harm to human health or serious and irreversible harm to the environment. These need to be open ended so that a wider range of issues including economic impact on the municipality, need for the electricity, etc. can be covered.
- The current rules set the threshold for successful appeal at a ridiculously high level. The requirement to prove serious harm to human health, for example, is being so restrictively interpreted that the project would have to be constructed and be operating before the harm can be sufficiently proven. The threshold should be made less stringent to allow for the Precautionary Principle, normally relied upon in public health matters, to apply.
- The burden of proof in the process should be reversed. Currently the appellant is required to prove harm. This is very difficult for a community group with minimal financial resources to successfully counteract a wind company with the financial resources to purchase whatever expertise is required to oppose the volunteer witness available to a community group who need to depend on resources that they can raise locally.
- Funding for community groups should be provided. In many appeals, important issues related to risks to the environment and human health were raised by citizens, not the ministry or the proponent--- citizens should not have to bear the cost of this important part of the process. We note that in Alberta, funding is provided by government for appeals.

Alignment with Principles of the PC Government

The current PC government ran on a platform of changing the way that the Ontario government works — making it more open and transparent and committing to create a government that works ”For the People”. Many aspects of the process set out in Regulation 359/09 seem to conflict with these core principles, designed instead to create a process for the benefit of insiders. Some additional changes are required to align with stated principles of the PC government.

Openness and Transparency

Many aspects of the process are not consistent with government commitment to be open and transparent with the following changes required:

***Recommendations*:** Each step of the process needs to be reviewed to ensure that information is disclosed at all aspects. This includes:

- Requiring that the draft site plan be released before the first public meeting. Even though this information is the first step in developing the project, proponents indicate at the first public

meeting that the sites have not been determined. Only when this information is disclosed can local residents assess and understand the impact of the project on their location.

- The Review for Completeness and, more important, the Technical Review needs to be opened up. The Ministry website was designed to provide information on the status of projects in this review process, but it was not an accurate, up-to-date source of information even when a large number of projects were under review. At a minimum, this process needs to be kept current.
- As the Technical Review of the proposal proceeds in the current process, the Ministry communicates with the proponent to obtain additional information on the project and/or receive proposals to make substantive changes in the project. To this point, none of the details of these discussions are disclosed until the Renewable Energy Approval is issued. All aspects of this process need to be disclosed publicly.
- The Municipality of Dutton-Dunwich and the local community both tried to obtain confirmation of the 75% adjoining landowner support for the project claimed by the proponent in its application. Based on this stated support, the project was awarded a contract to construct wind turbine in the community, despite the lack of municipal support and a referendum demonstrating opposition. The concern was that the process did not properly exclude individuals and companies that had a financial interest in the project. The community was denied access to information that would confirm the claim of adjacent landowner support, and even using the access process under the Freedom of Information Act have not been able to obtain information confirming this situation. Any procedures used to evaluate proposals for any future renewable energy projects need to be fully transparent so that the municipality and the community affected can understand how the final decision was reached.
- The Ministry Protocol for Noise Testing specifically requires that audit reports prepared by project operators be posted on the project's website within 10 days of submission to the Ministry. This rule is not currently enforced. Often, this report is posted only after approval by the Ministry and, in some cases, only summaries of the report are posted. These posting requirement in the protocol need to be enforced.
- The approvals for most wind power projects require the project operator to file a series of noise audits to confirm that the project is operating in compliance with audible noise standards within a specified time frame which varies by project. Project operators encountered difficulties in complying with the requirements of the protocol that set out requirements for this testing. A new protocol was released in April 2017 and there has since been movement to complete this compliance process. In late 2017, the Manager of the Owen Sound District office told the Kincardine Municipal Council that a substantial backlog of compliance reports to be reviewed existed. There is no central source that residents can access to confirm the status of compliance testing for their project.

A Process that Works for Affected Residents

The key guiding principle for this government is that it is a government that works for the people. The whole of Regulation 359/09 needs to be reviewed in the context of this key objective. The Incident Reports released to Wind Concerns in response to a request under the Freedom of Information Act showed that, at least to end of 2016, the environment ministry listed its "client" as the project operator, not the ordinary citizen making the complaint as is their right in the prescribed process. This attitude is more than just wording on a form, it reflected the attitude of the environment ministry in both the approval of projects and the response to issues with operating projects.

More examples include:

- Close working relationships in the ERT process between ministry lawyers defending projects against community appeals. It appears that the ministry is defending the proponent rather than the residents of the community.
- One complaint record included an email from ministry enforcement staff to the operator of the wind project apologizing that they had actually received a complaint about the project and that procedures required her to forward this complaint to the project operator.
- Internal documents from the environment ministry show that the ministry has known about problem with the project since even before Regulation 359/09 was issued. Staff recommendations for changes to the regulation or enforcement action were not supported by the senior staff in the ministry as it would mean that they would have to take action against their "client".

This type of behaviour is no longer appropriate for a government agency charged with protecting the citizens against adverse effects by companies operating in the area. It also does not align with the statements of principle articulated during the last campaign by the Party that is now the government.

Works Cited

Brouillette, M. (December 2016). *Ontario Emissions and Long Term Energy Plan - Submission to IESO.*

Canadian Wind Energy Association. (July 24, 2009). *EBR Posting 010-6516 - Regulations to Implement the GEA - CanWEA's Supplemental Submission.* Retrieved from Ontario - Environmental Registry.

Canadian Wind Energy Association. (July 6, 2009). *EBR Posting 010-6516 - Regulations to Implement the GEA - Letter to Minister Gerretsen.* Retrieved from Ontario - Environmental Registry.

Canadian Wind Energy Association. (October 2018). Submission to the Ontario Legislature Standing Committee on Social Policy.

Clean Energy Wire. (2017). *From Survey to Harvest: How to Build a Wind Farm in Germany.*

Council of Canadian Academies. (2015). *Understanding the Evidence: Wind Turbine Noise.*

Harrison, D. J. (2012). Considerations from Amherst Island - Ice Throw. *Wind Concerns Annual General Meeting.*

Health Canada. (2014). *Stakeholder Report on Wind Turbine Noise Study.*

Ministry of Environment. (2006 - 2016). Released to WCO under Freedom of Information Request. *Incident Reports plus Complaint Tracking Data*.

National Institute of Public Health. (2016). *Position on Wind Turbines.* Warsaw, Poland.

Ontario Auditor General. (2015). *2015 Annual Report.*

Ontario Society of Professional Engineers. (2015, April). *Energy Task Force.*

Pacific Hydro. (2015). *Cape Bridgewater Farm Accoustic Study.* Pacific Hydro.

Palmer, W. (2018). Wind Turbine Public Safety Risk, Direct and Indirect Health Impacts. *Journal of Energy Conservation, 1*(1), 41-78.

Senate Select Committee on Wind Turbines. (2015). *Final Report.* Canberra: Parliament of Australia.

Wolfson, E. (2017, December). Tesla's record-breaking battery is the world's best—but still needs to be bailed out by fossil fuels, eventually. *Quartz*. Retrieved from https://qz.com/1165314/elon-musks-giant-tesla-battery-in-australia-proves-it-can-power-the-grid-when-coal-plants-fail/

World Health Organization - Europe. (2018). *Environmental Noise Guidelines for European Region.*