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**Delivered via Email**

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Dear Sirs/Madams:

**Re: Ministry of the Environment Media Release “Expert Report Confirms No Direct Health Effects from Wind Turbines”**

We are the solicitors for Wind Concerns Ontario (“WCO”). WCO has analysed the contents of the Ministry of Environment (“MOE”) December 16, 2011 media release “*Expert Report Confirms No Direct Health Effects From Wind Turbines*”<sup>1</sup> (the “MOE Media Release”): <http://news.ontario.ca/ene/en/2011/12/expert-report-confirms-no-direct-health-effects-from-wind-turbines.html>.

The apparent purpose of the MOE Media Release is to “educate” the public on matters related to wind turbine noise exposure and human health. As part of its mandate, government is responsible for providing citizens with accurate and appropriate information so they can protect themselves and/or their health.<sup>2</sup> Furthermore, the Renewable Energy Approval (“REA”) process requires full and accurate disclosure of any potential health effects of renewable energy projects. It appears the MOE Media Release does not fulfill these responsibilities.

For example the MOE Media Release contains a link to a MOE web page entitled “*Backgrounder: Low Frequency Sound and Infrasound Report*” (the “MOE Backgrounder”) which states:

Is wind turbine sound harmful?

The best available science shows there is no direct health risk from wind turbine noise.<sup>3</sup>

An uninformed member of the public could incorrectly interpret this MOE Backgrounder statement to mean wind turbine sound cannot harm human health.

<sup>1</sup> Ontario Ministry of Environment, Expert Report Confirms No Direct Health Effects From Wind Turbines, [cited December 19, 2011] Retrieved from <http://news.ontario.ca/ene/en/2011/12/expert-report-confirms-no-direct-health-effects-from-wind-turbines.html>

<sup>2</sup> Health Canada. (2004). Canadian handbook on health impact assessment: Vol.1. The basics. A report of the Federal/Provincial/Territorial Committee on Environmental and Occupational Health. Retrieved from <http://www.who.int/hia/tools/toolkit/whohia063/en/index.html>

<sup>3</sup> Ontario Ministry of Environment, Backgrounder: Low Frequency Sound and Infrasound Report [cited December 19, 2011] Retrieved from <http://news.ontario.ca/ene/en/2011/12/low-frequency-sound-and-infrasound-report.html>

As you should be aware the evidence and expert testimony provided during a 2011 Ontario Environmental Review Tribunal (“ERT”) confirmed wind turbines can harm human health. The July 18, 2011 ERT Decision states:

This case has successfully shown that the debate should not be simplified to one about whether wind turbines can cause harm to humans. The evidence presented to the Tribunal demonstrates that they can, if facilities are placed too close to residents. The debate has now evolved to one of degree.<sup>4</sup>

At the request of our client we are providing the following references to assist the MOE in fulfilling its responsibilities to fully and accurately describe any negative effects on health and safety. The references set out in this letter reflect generally accepted acoustical and psycho-acoustic principles. The references also include ERT evidence and/or testimony provided by witnesses for the Respondents at the ERT hearing (the Ministry of Environment, Suncor Energy Services Inc.).

The MOE Backgrounder statement “The best available science shows there is no direct health risk from wind turbine noise”<sup>5</sup> does not fulfill the responsibility to provide full and accurate disclosure of any potential health effects of renewable energy projects.

The 2011 ERT Decision states:

Findings on Direct Health Effects

*All Parties are in agreement* that direct impacts such as hearing loss will not be caused by the Project. The Tribunal finds that the evidence does not show that engaging in the Project will cause serious harm to human health with respect to direct impacts such as hearing loss.<sup>6</sup> [Emphasis added]

However the ERT Decision went on to state:

The Tribunal has found above that “serious harm to human health” includes both direct impacts (e.g., a passer-by being injured by a falling turbine blade or a person losing hearing) or indirect impacts (e.g., a person being exposed to noise and then exhibiting stress and developing other related symptoms). This approach is consistent with both the WHO definition of health and Canadian jurisprudence on the topic.<sup>7</sup>

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<sup>4</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122. p. 207 Retrieved from <http://www.ert.gov.on.ca/english/decisions/index.htm>

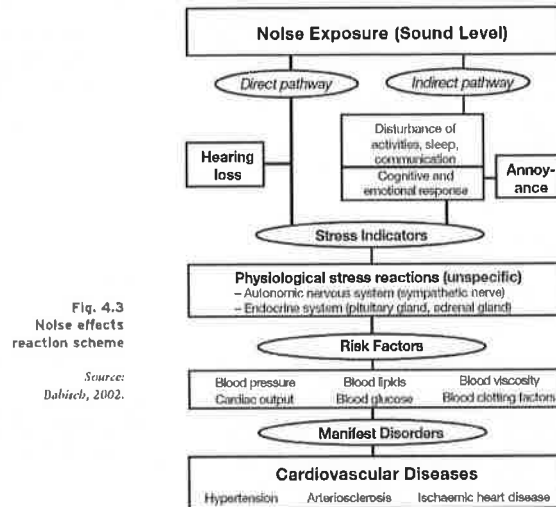
<sup>5</sup> Ontario Ministry of Environment, Backgrounder: Low Frequency Sound and Infrasound Report [cited December 19, 2011] Retrieved from <http://news.ontario.ca/ene/en/2011/12/low-frequency-sound-and-infrasound-report.html>

<sup>6</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122. p. 182 Retrieved from <http://www.ert.gov.on.ca/english/decisions/index.htm>

<sup>7</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122. p. 190 Retrieved from <http://www.ert.gov.on.ca/english/decisions/index.htm>

ERT witnesses for both the Respondents and the Appellants provided evidence and/or testimony which acknowledge the reported wind turbine symptoms can be expected to be created via *indirect* pathways.<sup>8, 9</sup>

At the ERT Dr. Robert McMurtry submitted into evidence the following peer reviewed noise effects reaction scheme which illustrates the “direct” and “indirect” pathways.<sup>10</sup>



Mr. Brian Howe, ERT witness for MOE testified under oath

... what I call the “indirect” and as Dr. McMurtry was showing in one of his figures, the audible sound and that perception and going to annoyance and cascading through that, that is still something that can occur.<sup>11</sup>

Mr. Howe PEng, signed the report “*Low frequency noise and infrasound associated with wind turbine generator systems: A literature review*” (HGC, 2010) which is referenced in the MOE Media Release and the MOE Backgrounder.

Dr. Gloria Rachamin, MOE witness and lead author of the Chief Medical Officer of Health of Ontario report “*The Potential Health Impact of Wind Turbines.*” (CMOH, 2010), testified she was familiar; and agreed in principle; with the noise effects reaction scheme.<sup>12</sup> Dr. Rachamin,

<sup>8</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Supplementary Witness Statement of William David Colby, MSc, MD, FRCP(C), Exhibit 52,

<sup>9</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Witness Statement of Dr. R. McMurtry, January 16, 2011

<sup>10</sup> World Health Organization, Night Noise Guidelines for Europe, 2009

<sup>11</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122. Transcript of Mr. B. Howe, March 30, 2011

<sup>12</sup> Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122. Transcript of Dr. G. Rachamin, Mar, 4, 2011

explicitly acknowledged under oath that CMOH (2010) looked *only* at direct links to human health.<sup>13</sup>

Based in part on the shortcomings of CMOH (2010), the ERT Decision expressed concern "...about the Director's apparent lack of consideration of indirect health effects and the need for further work on the MOE's practice of precaution..."<sup>14</sup>

ERT witnesses for both the Respondents and the Appellants provided evidence and/or testimony which acknowledges wind turbine sound, via indirect pathways, may cause annoyance which may result in sleep disturbance and stress which may have other consequences.

Dr. Kenneth Mundt, ERT witness for Suncor Energy Services Inc., testified under oath that based on his interpretation of the synthesized evidence and the scientific publications the literature suggests the reported wind turbine health effects, such as sleeplessness and headache, are related to *audible low frequency noise*.<sup>15</sup>

Annoyance and stress from low frequency noise, in general, can cause "...immense suffering to those who are unfortunate to be sensitive to low frequency noise ...".<sup>16</sup> Chronic psycho-physiological damage may result from long-term exposure to low-level low frequency noise.<sup>17</sup> Research confirms low frequency noise, in general, does not need to be considered "loud" for it to cause annoyance and irritation.<sup>18</sup>

HGC (2010) states:

Low frequency noise, and infrasound at amplitudes *sufficient to allow perception by humans*, can cause annoyance. *Relatively modest levels of low frequency noise can cause annoyance* in some individuals. Noise annoyance is a potential stressor, and in some individuals may contribute to stress-related health effects.<sup>19</sup> [Emphasis added]

Research confirms modern wind turbines do produce low frequency noise at amplitudes sufficient to allow perception by humans. HGC (2010) states in its conclusions wind turbine "...

<sup>13</sup> Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122. Transcript of Dr. G. Rachamin, Mar, 4, 2011

<sup>14</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122. Retrieved from <http://www.ert.gov.on.ca/english/decisions/index.htm>

<sup>15</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Transcript of Dr. K. Mundt, Mar, 22, 2011

<sup>16</sup> A Review of Published research on Low Frequency Noise and Its Effects, Dr. Geoff Leventhall et.al., May 2003,

<sup>17</sup> Leventhall HG. Low frequency noise and annoyance. Noise Health [serial online] 2004 [cited 2009 Dec 31];6:59-72. Available from: <http://www.noiseandhealth.org/text.asp?2004/6/23/59/31663>:

<sup>18</sup> DeGagne *et al.*, Incorporating Low Frequency Noise Legislation for the Energy Industry in Alberta, Canada Source: Journal of Low Frequency Noise, Vibration and Active Control, Volume 27, Number 2, September 2008 , pp. 105-120(16)

<sup>19</sup> Howe Gastmeier Chapnik Limited. (2010, December 10). Low frequency noise and infrasound associated with wind turbine generator systems: A literature review (Rfp No. Oss-078696). Mississauga, Ontario, Canada: Ministry of the Environment.

low frequency sound due to aerodynamic sources *will routinely be an audible component of the acoustic impact.*"<sup>20</sup> [Emphasis added]

A 2011 peer reviewed article on wind turbine low frequency noise states "It is thus *beyond any doubt* that the low-frequency part of the spectrum *plays an important role in the noise at the neighbors.*"<sup>21</sup> [Emphasis added]

It is acknowledged modern wind turbine do produce low frequency noise at amplitudes sufficient to cause noise annoyance even indoors.<sup>22, 23, 24</sup>

Counsel for Suncor Energy Services Inc. submitted into evidence a reference authored by its ERT witness, Dr. Geoff Leventhall. The reference lists wind turbine symptoms documented by Dr. Nina Pierpont. Dr. Leventhall states:

... Pierpont defined the symptoms of the Wind Turbine Syndrome as: "... sleep disturbance, headache, tinnitus, ear pressure, dizziness, vertigo, nausea, visual blurring, tachycardia, irritability, problems with concentration and memory, and panic episodes associated with sensations of internal pulsation or quivering when awake or asleep."

*I am happy to accept these symptoms*, as they have been known to me for many years as the symptoms of extreme psychological stress from environmental noise, *particularly low frequency noise ...*

what Pierpont describes is effects of annoyance by noise – a stress effect ...<sup>25</sup> [Emphasis added]

A report (coauthored by Respondent witnesses, Drs. David Colby, Geoff Leventhall, and Robert McCunney) attributes the above wind turbine symptoms documented by Dr. Nina Pierpont to be the "well-known stress effects of exposure to noise."<sup>26</sup>

<sup>20</sup> Howe Gastmeier Chapnik Limited. (2010, December 10). Low frequency noise and infrasound associated with wind turbine generator systems: A literature review (Rfp No. Oss-078696). Mississauga, Ontario, Canada: Ministry of the Environment.

<sup>21</sup> Møller, H., & Pedersen, C. S. (2011). Low-frequency noise from large wind turbines. *Journal of the Acoustical Society of America*, 129, 3727-3744.

<sup>22</sup> Møller, H., & Pedersen, C. S. (2011). Low-frequency noise from large wind turbines. *Journal of the Acoustical Society of America*, 129, 3727-3744.

<sup>23</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Transcript of Mr. B. Howe, March 30, 2011

<sup>24</sup> Howe Gastmeier Chapnik Limited. (2010, December 10). Low frequency noise and infrasound associated with wind turbine generator systems: A literature review (Rfp No. Oss-078696). Mississauga, Ontario, Canada: Ministry of the Environment.

<sup>25</sup> Dr. Leventhall, (2009), "Wind Turbine Syndrome, an Appraisal," Erickson v. Director, Ministry of the Environment (10-121 and 10-122) Exhibit 55 submitted by Suncor Energy Services Inc.

<sup>26</sup> Colby, W. D., Dobie, R., Leventhall, G., Lipscomb, D. M., McCunney, R. J., Seilo, M. T., & Søndergaard, B. (2009, December). Wind turbine sound and health effects: An expert panel review. Washington, DC: American Wind Energy Association and Canadian Wind Energy Association. [p. 4-3, 4-9, 4-10, 5-3] Ontario Ministry of Environment Disclosure Document # 23 - Erickson v. Director, Ministry of the Environment (10-121 and 10-122)

Internal MOE correspondence obtained through a Freedom of Information request; describe low frequency noise from wind turbine projects in Ontario resulting in annoyance, uninhabitable living conditions, “sleep deprivation” and in some cases individuals abandoning their homes. Some individuals in Ontario reporting adverse health effects have reached financial agreements with the wind energy developer.

The MOE Backgrounder states:

What kind of noise do wind turbines produce?

Wind turbines produce sound over a wide range of frequencies including the entire audible range of human hearing, low frequency sound, and infrasound.<sup>27</sup>

This MOE Backgrounder statement identifies some of the sound characteristics produced by wind turbines however it does not fully describe the kind of “noise” wind turbines produce.

Noise is defined as “unwanted sound”<sup>28</sup> as perceived by humans.

The MOE Backgrounder statement omits disclosure that wind turbines produce “noise” (i.e. unwanted sound) which is perceived by humans to be annoying at relatively low sound pressure levels.

ERT witnesses for both the Respondents and the Appellants provided evidence and/or testimony, including evidence from peer-reviewed published journals,<sup>29</sup> which acknowledge wind turbine noise is perceived to be *more annoying* than transportation noise or industrial noise at comparable sound pressure levels. [Emphasis added]

ERT witnesses for both the Respondents and/or the Appellants provided evidence and/or testimony which indicate, in addition to audible low frequency sound, plausible causes of wind turbine health effects include sound characteristics such as: amplitude modulation and/or impulse noise and/or infrasound and/or tonality and/or lack of night-time abatement.<sup>30 31 32 33 34 35 36</sup>

<sup>27</sup> Ontario Ministry of Environment, Backgrounder: Low Frequency Sound and Infrasound Report [cited December 19, 2011] Retrieved from <http://news.ontario.ca/ene/en/2011/12/low-frequency-sound-and-infrasound-report.html>

<sup>28</sup> World Health Organization, Guidelines for Community Noise, 1999, Page vii, Paragraph 4

<sup>29</sup> Pedersen, E., Bakker, R., Bouma, J., & van den Berg, F. (2009), Response to noise from modern wind farms in the Netherlands, Journal of the Acoustical Society of America, 126, 634-643.

<sup>30</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Transcript of Dr. G. Rachamin, Mar, 4, 2011

<sup>31</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Dr. Colby's presentation to Nova Scotia Department of Energy on March 4, 2010, Exhibit 90, p.9 p. 18 and p. 29

<sup>32</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Transcript of Dr. K. Mundt, Mar, 22, 2011

<sup>33</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Transcript of Dr. C. Ollson, Mar, 22, 2011

<sup>34</sup> Howe Gastmeier Chapnik Limited. (2010, December). Low frequency noise and infrasound associated with wind turbine generator systems: A literature review (Final draft, Rfp No. Oss-078696). Mississauga, Ontario, Canada: Ministry of the Environment. Ontario Ministry of Environment Disclosure Document # 34 - Erickson v. Director, Ministry of the Environment (10-121 and 10-122)

<sup>35</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Witness Statement of Dr. R. McMurtry, January 16, 2011

For example Dr. Christopher Ollson, on Suncor's behalf, provided evidence stating:

What is clear is that some people living near wind turbines experience annoyance due to wind turbines. Swishing, whistling, resounding and pulsating/throbbing were the sound characteristics that were most highly correlated with annoyance by wind turbine noise among respondents who noticed the noise outside their dwellings. Some people are also disturbed in their sleep by wind turbines.<sup>37</sup>

Respondent witnesses Drs. Leventhall, McCunney, Colby and Rachamin, provided evidence which identified wind turbine amplitude modulation (i.e. fluctuating swish) as a cause of noise annoyance and/or stress.<sup>38, 39, 40</sup>

Dr. Leventhall, on the proponent Suncor's behalf, provided evidence in which he specifically discusses wind turbine amplitude modulation (i.e. fluctuating swish) and states:

Attention should be focused on the audio frequency fluctuating swish, *which some people may well find to be very disturbing and stressful, depending on its level.* The usual equivalent level measurements and analyses are incomplete, as these measurements are taken over a time period which is much longer than the fluctuation period and information on the fluctuations is lost. *A time varying sound is more annoying than a steady sound of the same average level and this is accounted for by reducing the permitted level of wind turbine noise.*<sup>41</sup> [Emphasis added]

Under oath Dr. Leventhall reaffirmed the contents of this reference.<sup>42</sup>

For other forms of industrial noise Ontario regulations specify a +5 dB adjustment for a project that contains an audible cyclic variation in sound level such as beating *or other amplitude modulation.*<sup>43</sup> [Emphasis added] The 5 dB adjustment for amplitude modulation is not applied to Ontario wind farms despite the acknowledgement, by Suncor Energy Services Inc. and MOE witnesses, that wind turbine amplitude modulation is the cause of noise induced stress effects.

<sup>36</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Transcript of Dr. R. Thorne Feb. 9, 2011

<sup>37</sup> Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122, Witness Statement of Dr. Christopher Ollson, January 17, 2011

<sup>38</sup> Colby, W. D., Dobie, R., Leventhall, G., Lipscomb, D. M., McCunney, R. J., Seilo, M. T., & Søndergaard, B. (2009, December). Wind turbine sound and health effects: An expert panel review. Washington, DC: American Wind Energy Association and Canadian Wind Energy Association. [p. 5-1, 5-3] Ontario Ministry of Environment Disclosure Document # 23 - Erickson v. Director, Ministry of the Environment (10-121 and 10-122)

<sup>39</sup> Chief Medical Officer of Health. (2010, May). Report: The potential health impact of wind turbines. Ontario Ministry of Environment Disclosure Document # 22 - Erickson v. Director, Ministry of the Environment (10-121 and 10-122)

<sup>40</sup> Dr. Colby's presentation to Nova Scotia Department of Energy on March 4, 2010, Exhibit 90, p. 18 and p. 29

<sup>41</sup> "Infrasound from Wind Turbines: Fact, Fiction or Deception?" by Dr. Leventhall, Exhibit 54, p. 34, para. 4

<sup>42</sup> Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122, Transcript of Dr. G. Leventhall, Mar, 11, 2011, p. 30, l. 9 to l. 15

<sup>43</sup> Ministry of the Environment, Ontario. (n.d.). Publication NPC-104: Sound level adjustments. Toronto, Ontario, Canada:



The MOE Backgrounder states:

Are Ontario's rules to control wind turbine sound stringent enough?

In Ontario, wind turbines must be set back from people's homes by at least 550 metres. At this distance, much of the sound they produce lies outside the range that people can hear. This aligns with setbacks recommended by the World Health Organization.

The independent study confirmed that the ministry's rules to control wind turbine noise are appropriate.<sup>44</sup>

An uninformed member of the public could incorrectly interpret this MOE Backgrounder statement to mean wind turbine sound will not typically be heard/audible and/or cannot harm human health if Ontario's rules to control wind turbine noise are used (i.e. setback distances and sound pressure levels).

HGC (2010) states in its conclusions:

The audible sound from wind turbines, at the levels experienced at typical receptor distances in Ontario, is nonetheless expected to result in a nontrivial percentage of persons being highly annoyed. As with sounds from many sources, research has shown that annoyance associated with sound from wind turbines can be expected to contribute to stress related health impacts in some persons.<sup>45</sup>

HGC (2010) also states:

Stress symptoms associated with noise annoyance, and in particular low frequency annoyance, include sleep interference, headaches, poor concentration, mood swings...

ERT witnesses for both the Respondents and the Appellants provided evidence and/or testimony which acknowledged wind turbine sound in Ontario "will" cause annoyance, which is expected to result in stress related health impacts in some individuals.

For example Dr. Geoff Leventhall, ERT witness for Suncor Energy Services Inc., testified that some people *will be* annoyed by the sound of wind turbines at sound pressure levels permitted in Ontario wind turbine projects.<sup>46</sup> [Emphasis added]

Dr. Ollson, witness for Suncor, testified under oath that he agreed "annoyance is a health effect."<sup>47</sup> In reference to people who subjectively evaluated themselves as disturbed by noise Dr. Ollson

<sup>44</sup> Ontario Ministry of Environment, Backgrounder: Low Frequency Sound and Infrasound Report [cited December 19, 2011] Retrieved from <http://news.ontario.ca/ene/en/2011/12/low-frequency-sound-and-infrasound-report.html>

<sup>45</sup> Howe Gastmeier Chapnik Limited. (2010, December 10). Low frequency noise and infrasound associated with wind turbine generator systems: A literature review (Rfp No. Oss-078696). Mississauga, Ontario, Canada: Ministry of the Environment.

<sup>46</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Transcript of Dr. G. Leventhall, Mar, 11, 2011

<sup>47</sup> Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122, Transcript of Dr. C. Ollson, Mar, 22, 2011

provided evidence which stated “Regardless of whether the perceived impacts by affected individuals are physiological or psychological in nature, they are a serious matter and are considered as adverse health effects.”<sup>48, 49</sup> Under oath Dr. Ollson reaffirmed these statements in his testimony.<sup>50</sup>

Currently Ontario does not have regulations to protect individuals from the effects of wind turbine amplitude modulation and/or low frequency noise.

Consultants for the MOE, Aercoustics Engineering Limited, state:

Sound emissions from operating wind farms frequently give rise to noise complaints. Most compliance-based noise audits measure hourly “A”-weighted Leq, thereby removing the low-frequency contents of the wind turbine sound. The metric is also insensitive to amplitude modulation and is unsatisfactory when sensitive receptor are annoyed by the low frequency sound and amplitude modulation.<sup>51</sup>

Current Ontario guidelines are based on the A-Weighted Leq metric<sup>52</sup> and consequently can be considered unsatisfactory to protect individuals from the health impacts of wind turbine amplitude modulation and/or low frequency noise.

The MOE Backgrounder statement “This aligns with setbacks recommended by the World Health Organization.”<sup>53</sup> appears to infer the World Health Organization (“WHO”) accepts a wind turbine setback of at least 550 metres is protective of human health.

The MOE Backgrounder does not provide a reference to support its statement. Our client is not aware of any wind turbine specific setback distances recommended and/or endorsed by the WHO.

Recently published peer reviewed articles document individuals living in the environs (i.e. within 2km) of wind turbines report lower quality of life and/or reduced sleep quality and/or sleep disturbance.<sup>54, 55, 56</sup>

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<sup>48</sup> Jacques Whitford Stantec Limited, Byran Wind Project Environmental Review Report, Prepared for SkyPower Corp., August 25, 2009, Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122 Exhibit 74 p. 7-68

<sup>49</sup> Stantec Consulting Ltd., Ostrander Point Wind Energy Design and Operations Report, Prepared for: Gilead Power Corporation, September 2010, Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122 Exhibit 75 p. 5.18

<sup>50</sup> Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122, Transcript of Dr. C. Ollson, Mar, 22, 2011

<sup>51</sup> Richarz, W., Richarz, H., and Gambino, T., (2011), Correlating very low frequency sound pulse to audible wind turbine sound, Aercoustics Engineering Limited, Ontario, Canada, Rome Conference Fourth International Meeting on Wind Turbine Noise Rome Italy 12-14 April 2011

<sup>52</sup> Ministry of the Environment, Ontario, Noise Guidelines 2008,

<sup>53</sup> Ontario Ministry of Environment, Backgrounder: Low Frequency Sound and Infrasound Report [cited December 19, 2011] Retrieved from <http://news.ontario.ca/ene/en/2011/12/low-frequency-sound-and-infrasound-report.html>

<sup>54</sup> Krogh, CME, (2011), Industrial Wind Turbine Development and Loss of Social Justice? Bulletin of Science Technology & Society 2011 31: 321, DOI: 10.1177/0270467611412550, <http://bst.sagepub.com/content/31/4/321>

The MOE Media Release indicates the Ontario 550 metre minimum setback is "... based on a 40 decibel limit. These requirements align with the limits set by the World Health Organization."<sup>57</sup>

As you should be aware, Ontario wind turbine noise guideline limits permit,<sup>58</sup> and projects are being approved for,<sup>59</sup> noise levels of up to 51 dBA at a defined noise receptor.

Furthermore during the ERT hearings expert witnesses, including the lead author of the Chief Medical Officer of Health 2010 report,<sup>60</sup> agreed that the WHO 40 dBA noise limit was not established based on research related to wind turbine noise but rather road, rail and aircraft noise.  
61 62 63 64

A review and search of the WHO 2009 Night Noise Guidelines<sup>65</sup> (WHO, 2009) revealed no evidence which supports the position that WHO (2009) considered wind turbine noise. For example, the word "wind" only appears once in WHO (2009) and not in the context of wind turbines.<sup>66, 67</sup> Furthermore none of the leading peer reviewed articles on wind turbine noise and health is referenced in WHO (2009).<sup>68</sup>

HGC (2010) also acknowledges WHO 1999 and 2009 noise guidelines do not provide guidance for wind turbine noise.<sup>69</sup>

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<sup>55</sup> Krogh, CME, Gillis, L, Kouwen, N, and Aramini, J, (2011), WindVOiCe, a Self-Reporting Survey: Adverse Health Effects, Industrial Wind Turbines, and the Need for Vigilance Monitoring, *Bulletin of Science Technology & Society* 2011 31: 334, DOI: 10.1177/0270467611412551, <http://bst.sagepub.com/content/31/4/334>

<sup>56</sup> Shepherd D, McBride D, Welch D, Dirks KN, Hill EM. Evaluating the impact of wind turbine noise on health-related quality of life. *Noise Health* 2011;13:333-9.

<sup>57</sup> Ontario Ministry of Environment, Expert Report Confirms No Direct Health Effects From Wind Turbines, [cited December 19, 2011] Retrieved from <http://news.ontario.ca/ene/en/2011/12/expert-report-confirms-no-direct-health-effects-from-wind-turbines.html>

<sup>58</sup> Noise Guidelines for Wind Farms, Interpretation for Applying MOE NPC Publications to Wind Power Generation Facilities, Ministry of the Environment, October 2008

<sup>59</sup> Renewable Energy Approval Number 7988-8AVKM5 Issue Date: November 10 2010,

<sup>60</sup> Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122, Transcript of Dr. G. Rachamin, Mar, 4, 2011,

<sup>61</sup> Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122, Transcript of Dr. D. Shepherd, Feb, 9, 2011,

<sup>62</sup> Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122, Transcript of Dr. Christopher Hanning, Feb, 11, 2011

<sup>63</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Transcript of Dr. R. McMurtry, Feb, 16, 2011,

<sup>64</sup> Erickson v. Director, Ministry of the Environment, Case Nos. 10-121 and 10-122, Transcript of Dr. W. Colby, Mar, 29, 2011,

<sup>65</sup> World Health Organization, Night Noise Guidelines for Europe, 2009

<sup>66</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Transcript of Dr. C. Ollson, Mar, 22, 2011, p. 109 l. 6 to l. 14

<sup>67</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Transcript of Dr. C. Ollson, Mar, 22, 2011, p. 112 l. 2 to l. 5

<sup>68</sup> Erickson v. Director, Ministry of the Environment, Environmental Decision Case Nos. 10-121 and 10-122, Transcript of Dr. C. Ollson, Mar, 22, 2011, p. 109, l. 6 to p. 113, l. 15

<sup>69</sup> Howe Gastmeier Chapnik Limited. (2010, December 10). Low frequency noise and infrasound associated with wind turbine generator systems: A literature review (Rfp No. Oss-078696). Mississauga, Ontario, Canada: Ministry of the Environment.

ERT witnesses including Dr. Christopher Ollson, witness for Suncor Energy Services Inc., provided evidence and/or testimony that wind turbine induced annoyance and sleep disturbance occur at sound pressure levels above and below 40 dBA.<sup>70</sup>

The MOE Backgrounder states:

About the study

Howe Gastmeier Chapnik Limited (HGC), a consulting firm with an expertise in noise, vibration and acoustics, reviewed the latest science and government regulations for wind turbines.<sup>71</sup>

It appears HGC (2010) was released to the general public on December 16, 2011. This is over a year after the HGC (2010) signoff date of December 10, 2010.

Subsequent to December 10, 2010 a number of relevant references have been published. Examples include the proceedings from the Fourth International Meeting on Wind Turbine Noise held in Rome, Italy from April 12-14, 2011 and peer reviewed articles specific to wind turbine low frequency noise and/or infrasound and/or health effects.

Furthermore subsequent to December 10, 2010 other jurisdictions have recommended or adopted minimum wind turbine setbacks greater than 550 m.

Subsequent to December 10, 2010 some jurisdictions have recommended and/or are in the process of developing low frequency noise guidelines for wind turbines.

Consequently the December 16, 2011 MOE Backgrounder announcement indicating HGC (2010) "... reviewed the latest science and government regulations for wind turbines ..." <sup>72</sup> does not appear to be appropriate.

In closing, now that MOE is in possession of this information, as part of its responsibility to fully and accurately describe health issues related to renewable energy projects in Ontario, our client respectfully requests content contained in the MOE Media Release be updated. This update should include full and accurate disclosure of any potential "indirect" adverse health effects identified by ERT witnesses called by MOE, Suncor Energy Services Inc. and the Appellants.

In addition we trust the foregoing information will be provided whenever you are communicating with members of the public on health matters during the Renewable Energy Approval(s) process. In our respectful view, amongst other things, MOE's failure to include such information could be viewed as negligent misrepresentation and be actionable.

<sup>70</sup> Erickson v. Director, Ministry of the Environment, Environmental Case Nos. 10-121 and 10-122, Witness Statement of Dr. Christopher Ollson, January 17, 2011

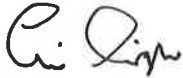
<sup>71</sup> Ontario Ministry of Environment, Backgrounder: Low Frequency Sound and Infrasound Report [cited December 19, 2011] Retrieved from <http://news.ontario.ca/ene/en/2011/12/low-frequency-sound-and-infrasound-report.html>

<sup>72</sup> Ontario Ministry of Environment, Backgrounder: Low Frequency Sound and Infrasound Report [cited December 19, 2011] Retrieved from <http://news.ontario.ca/ene/en/2011/12/low-frequency-sound-and-infrasound-report.html>

Should you have any questions or require additional information please advise.

Yours very truly,

**ERIC K. GILLESPIE**  
**PROFESSIONAL CORPORATION**

A handwritten signature in black ink, appearing to read "Eric Gillespie". The signature is written in a cursive style with a large initial "E" and "G".

**Eric K. Gillespie**  
EKG/am