Environmental Review Tribunal

Case Nos.: 13-102 to 13-104

Wrightman v. Director,
Ministry of the Environment

In the matter of appeals by Esther Wrightman, Harvey Wrightman, and Middlesex-Lambton Wind Action Group Inc. filed August 16, 2013 for a hearing before the Environmental Review Tribunal pursuant to section 142.1 of the *Environmental Protection Act*, R.S.O. 1990, c. E.19, as amended, with respect to Renewable Energy Approval No. 8980-95RSLP issued by the Director, Ministry of the Environment, on August 1, 2013 to Kerwood Wind Inc. under section 47.5 of the *Environmental Protection Act*, regarding the construction, installation, operation, use and retiring of a 37 wind turbine generator with a total name plate capacity of 60 megawatts at a site located at multiple addresses south of Townsend Line, west of Centre Road, north of Napperton Drive and east of Sexton Road, in the Township of Adelaide Metcalfe, County of Middlesex, Ontario; and

In the matter of a hearing held on October 15-18, 21-23, 25, 30-31 and November 8, 2013 at the Middlesex County Administrative Offices, 399 Ridout Street North, London, Ontario, and at the West Middlesex Memorial Centre, 334 Metcalfe Street, Strathroy, Ontario.

Before:		Dirk VanderBent, Panel Chair Maureen Carter-Whitney, Member
Appearances:		
Harvey Wrightman	-	Appellant, on his own behalf, and representative for the Appellant, Middlesex-Lambton Wind Action Group Inc.
Esther Wrightman	-	Appellant, on her own behalf
Andrew Weretelnyk and Katie Clements	-	Counsel for the Director, Ministry of the Environment
Dennis Mahony, John Terry, Arlen Sternberg and Justin Necpal	-	Counsel for the Approval Holder, Kerwood Wind Inc.

Kathryn Minten	-	Participant, on her own behalf
Robert Lewis	-	Presenter, on his own behalf
Kelly Dortmans	-	Presenter, on his own behalf
Stephana Johnston	-	Presenter, on her own behalf

Dated this **14th** day of **February, 2014**.

Table of Contents

REASONS FOR DECISION

Background

[1] On August 1, 2013, Vic Schroter, Director, Ministry of the Environment ("MOE"), issued Renewable Energy Approval No. 8980-95RSLP (the "REA") to Kerwood Wind Inc. (the "Approval Holder") for the construction, installation, operation, use and retiring of a Class 4 wind facility, known as the Adelaide Wind Energy Centre, with 37 wind turbine generators with a total name plate capacity of 60 megawatts ("MW"). The location is described in the REA as multiple addresses south of Townsend Line, west of Centre Road, north of Napperton Drive and east of Sexton Road, in the Township of Adelaide Metcalfe, County of Middlesex, Ontario (the "Project" or "Adelaide Project").

[2] The REA was issued pursuant to Part V.0.1, s. 47.5 of the *Environmental Protection Act* ("*EPA*").

[3] On August 16, 2013, Esther Wrightman, Harvey Wrightman, and Middlesex-Lambton Wind Action Group Inc. ("MLWAG") filed notices of appeal with the Environmental Review Tribunal (the "Tribunal") with respect to the REA. The Appellants raised issues related to both the health and natural environment grounds under s. 142.2 of the *EPA*.

[4] Also on August 16, 2013, the Appellant Harvey Wrightman served and filed a Notice of Constitutional Question, arguing that the renewable energy approval process violated his right to security of the person under s. 7 of the *Canadian Charter of Rights and Freedoms* (the "*Charter*"). Ms. Wrightman also raised the s. 7 *Charter* violation issue in her notice of appeal.

[5] Under s. 52 of the *Constitution Act, 1982*, the Appellants challenged the constitutional validity of s. 142.1 and s. 47.5 of the *EPA*. The parties reached an agreement during the hearing that the Appellants would not proceed with their challenge to the constitutional validity of s. 47.5 of the *EPA*, which included a challenge to s. 54 of Ontario Regulation ("O. Reg.") 359/09 made under the *EPA*. The parties also agreed that the Appellants would not proceed with a challenge to any conduct or actions of the Director under s. 47.5 of the *EPA*, including any consideration by the Director of s. 54 of O. Reg. 359/09, so as to give rise to a remedy under s. 24(1) of the *Charter*.

[6] On September 16, 2013, the Tribunal held the preliminary hearing in Strathroy, Ontario. At the preliminary hearing, presenter status was granted to Robert Lewis, Kelly Dortmans and Stephana Johnston. The Tribunal subsequently denied a request by

Kathryn Minten for party status, but granted her participant status. Further details can be found in the Tribunal's orders dated October 10, 2013 and January 9, 2014, which also granted a request to change the venue for the main hearing and denied a request to video record the proceeding.

[7] On October 8 and 10, 2013, the Tribunal heard a motion to focus evidence, brought by the Approval Holder, and motions for disclosure and to exclude certain evidence, brought by the Director. On October 11, 2013, the Tribunal issued an order granting the motions in part, with written reasons issued on December 18, 2013.

[8] The Tribunal's order of January 9, 2014 refers, at para. 27, to the Approval Holder's submission during the preliminary hearing (on the issue of whether party status should be granted to Ms. Minten) that "the Appellants are not pursuing the second ground in s. 142.1(3) of the *EPA*, namely, whether the project will cause serious and irreversible harm to plant life, animal life or the natural environment." However, during the main hearing, this panel was not advised that this ground of the appeal had been formally withdrawn, and evidence in relation to this ground was adduced at the hearing. The Tribunal observes that this ground was not struck from the notices of appeal during the preliminary hearing.

[9] The hearing began on October 15, 2013. Ms. Wrightman appeared at the hearing on her own behalf. Mr. Wrightman and MLWAG were both represented by Eric K. Gillespie Professional Corporation. However, at the outset of the hearing, Mr. Wrightman advised the Tribunal that he appeared on his own behalf and on behalf of MLWAG, indicating that Mr. Gillespie would attend if required. It transpired that Mr. Gillespie did not attend at the hearing.

[10] The Tribunal heard evidence over ten days in October and November 2013, and conducted a site visit on October 18, 2013. The parties and the participant provided written closing submissions, as directed by the Tribunal, over November and December 2013.

[11] Numerous procedural rulings were made over the course of the hearing. They are found at Appendix A.

[12] For the reasons that follow, the Tribunal dismisses the appeals.

Relevant Legislation

[13] *Environmental Protection Act*

> 1. (1) "natural environment" means the air, land and water, or any combination or part thereof, of the Province of Ontario; ("environnement naturel")
>
> 145.2.1 (2) The Tribunal shall review the decision of the Director and shall consider only whether engaging in the renewable energy project in accordance with the renewable energy approval will cause,
>
> (a) serious harm to human health; or
> (b) serious and irreversible harm to plant life, animal life or the natural environment.
>
> (3) The person who required the hearing has the onus of proving that engaging in the renewable energy project in accordance with the renewable energy approval will cause harm referred to in clause (2) (a) or (b).
>
> (4) If the Tribunal determines that engaging in the renewable energy project in accordance with the renewable energy approval will cause harm referred to in clause (2) (a) or (b), the Tribunal may,
>
> (a) revoke the decision of the Director;
> (b) by order direct the Director to take such action as the Tribunal considers the Director should take in accordance with this Act and the regulations; or
> (c) alter the decision of the Director, and, for that purpose, the Tribunal may substitute its opinion for that of the Director.

Issues

[14] The issues are:

Issue No. 1: Whether engaging in the Project as approved will cause serious and irreversible harm to plant life, animal life or the natural environment.

Issue No. 2: Whether engaging in the Project as approved will cause serious harm to human health.

Issue No. 3: Whether the renewable energy approval process violated Mr. Wrightman's and Ms. Wrightman's rights to security of the person under s. 7 of the *Charter*.

Issue No. 1: Whether engaging in the Project as approved will cause serious and irreversible harm to plant life, animal life or the natural environment.

Bald Eagles

Evidence of the Appellants respecting Bald Eagles

[15] Ms. Wrightman provided evidence in relation to her allegation that the Project will cause harm to bald eagles. She also called Muriel Allingham as a witness. The Appellants did not tender expert opinion evidence in relation to bald eagles.

[16] Ms. Wrightman expressed concerns that a bald eagle nest located near the Project substation (also referred to as the Project switchyard) would be impacted by the construction of the Project or that the nesting tree might be cut down. She testified to her understanding that the Project substation would be 187 metres ("m") from the nest. While she noted the presence of wind turbines 634 m and 741 m from the bald eagle nest, she acknowledged under cross-examination that those turbines are part of the Bornish wind farm project (the "Bornish Project"), which is a different wind farm project in the area, and that the closest turbine in the Adelaide Project is approximately 12 kilometres ("km") away from the nest.

[17] Ms. Wrightman raised concerns that the Approval Holder would be permitted to destroy or remove the nest without an approval from the Ministry of Natural Resources ("MNR") based on a recent regulatory change under the *Endangered Species Act* ("*ESA*").

[18] Ms. Allingham, who lives in North Middlesex County, also testified to her belief that the Project substation would be located 187 m from the bald eagle nest, and to her concern that the nest would be destroyed.

[19] Both Ms. Wrightman and Ms. Allingham referred to the removal, in January 2013, of a bald eagle nest and tree in proximity to the Summerhaven Wind Energy Centre ("Summerhaven Project") located in Haldimand County. Ms. Wrightman described the circumstances concerning the removal of that nest and stated that the incident had raised concerns for her that the bald eagle population in the vicinity of the Adelaide Project would not be protected. Ms. Allingham also expressed concern about the removal of the Haldimand County nest.

Evidence of the Respondents respecting Bald Eagles

[20] The Approval Holder called the following witnesses to testify concerning bald eagles: Benjamin Greenhouse; Andrew Ryckman; and Dr. Paul Kerlinger. The Director called Joseph Halloran to testify in relation to bald eagles. Mr. Ryckman was qualified by the Tribunal to give opinion evidence as an expert terrestrial and wetland biologist, with expertise conducting environmental assessments of wind projects and assessing their impacts on wildlife and the natural environment. Dr. Kerlinger was qualified by the Tribunal as an expert on birds and the effects of wind energy on birds, including bald eagles and other species.

[21] Mr. Greenhouse, Director of Wind Development at NextEra Energy Canada, ULC ("NextEra") and the Adelaide Project Director, provided evidence concerning the Haldimand County bald eagle nest. He was also the Project Director responsible for the development of the Summerhaven Project. He stated that the bald eagle nest in the area of the Summerhaven Project appeared to be newly built, and was discovered after completion of the natural heritage assessment for that project. He testified that, after consultation with the MNR, NextEra removed the nest and implemented a plan for mitigation and compensation, which included the construction of three alternate nesting platforms in the area of the original nest. He indicated that, after the platforms were installed, a pair of eagles nested on one of them and two eaglets subsequently hatched.

[22] Mr. Greenhouse noted that the Project switchyard is co-owned by three different wind projects in the area, including the Adelaide Project. He testified that there is no intention to remove the bald eagle nest near the Project switchyard. He gave evidence that the Approval Holder has consulted with the MNR on the appropriate mitigation to ensure that the nest is not disturbed, and will not build any permanent infrastructure within 400 m of the nest. He said that temporary construction activity may take place within 200 to 400 m of the nest, but not during the "most critical period" as set out in the MNR's 1987 Bald Eagle Habitat Management Guidelines (the "Eagle Guidelines"), which were developed by the MNR, prior to the establishment of the renewable energy approval regime, to protect bald eagle habitat.

[23] To better understand this submission, the Tribunal notes, in overview, that the Eagle Guidelines set out four periods of sensitivity to disturbance identified for nesting areas: most critical period; moderately critical period; low critical period; and not critical period. The critical periods relevant in this case are described at pages 4 - 5 of the Eagle Guidelines. The most critical periods are prior to egg laying when bald eagles

engage in courtship activities and nest building, and during the incubation period, when they are most intolerant of external disturbances and may readily abandon the area. The moderately critical period includes approximately one month before the most critical period, and four weeks after hatching. Although disturbance can keep adults from the nest during this period, they are protective of the nest as long as one or more healthy chicks are present, so this period is less critical than during the pre-laying and incubation period.

[24] Mr. Greenhouse testified that, during the most critical period, there is a prohibition on any construction activity within 200 to 400 m of the nest.

[25] Mr. Halloran, who is employed as the acting Renewable Energy Program Coordinator with the MNR, provided evidence concerning the assessment of the bald eagle nest in an addendum report to the Project Natural Heritage Assessment ("NHA"). In addition to those mitigation measures outlined by Mr. Greenhouse above, he noted that deterrents to prevent perching and roosting would be installed on the transmission line, and there would be monitoring requirements during and after construction. Mr. Halloran also gave evidence regarding the MNR's involvement in the removal of the nest near the Summerhaven Project.

[26] Mr. Ryckman is a terrestrial and wetland biologist with Natural Resources Solutions Inc. ("NRSI"), an environmental consulting firm retained by the Approval Holder to conduct the NHA. He gave evidence concerning the identification of the bald eagle nest, noting that there was only one bald eagle nest habitat found in the Project area. He testified that, while the closest edge of the property on which the substation is located will be 187 m away from the nest, the Project substation itself will be further than 400 m away, at approximately 405 m from the nest. He testified that an assessment and behavioural study of bald eagle activity at the nest have been completed and a report is being prepared. He stated that an addendum report to the NHA (the "NHA Addendum II Report") was prepared following identification of the bald eagle nest.

[27] Mr. Ryckman testified that the current status of the bald eagle under the *ESA* in Ontario has changed from "endangered" to "special concern", which suggests that the population is increasing in Ontario. He noted that the Eagle Guidelines set out three buffer zones to protect a nest habitat: the primary zone is the first 100 m from the nest; the secondary zone is 100 to 200 m from the nest; and the tertiary zone is 200 to 400 m from the nest, and may extend up to 800 m from the nest depending on topography, vegetation and potential activities within this area. He stated that human activities and

habitat alterations are restricted to varying degrees in these buffer zones, ranging from the greatest restrictions in the primary zone to the least restrictions in the tertiary zone. He gave further evidence concerning the mitigation measures described by Mr. Halloran.

[28] Mr. Ryckman also stated that the ”most critical period” is from about March to mid-May, and the “moderately critical period” includes approximately one month prior to the above period and four weeks after hatching, and occurs in February and from mid-May to mid-June.

[29] Mr. Ryckman provided his opinion that the Project would not cause any significant impact to bald eagles or their habitat. Mr. Ryckman testified that the bald eagle nest is on the west side of the woodland, providing a buffer from construction activities and eliminating any sight line from the nest to the substation. Mr. Ryckman acknowledged, under cross-examination, that the tertiary zone would be extended to 800 m if there was a sight line from the nest, but maintained that there is no sight line in this case. He also stated, in cross-examination, that the risk to bald eagles from the cumulative effects of the three proposed wind farms in the Adelaide Metcalfe area is very low because they fly above the turbines.

[30] Dr. Kerlinger holds a PhD in biology, with specialization in bird behaviour, ecology and research design/statistics. It is his opinion that, because eagles fly between different areas, the geographic scope of the relevant bald eagle population in relation to the Project is the Great Lakes population in Ontario and parts of Michigan, New York and possibly Ohio.

[31] Dr. Kerlinger stated that this bald eagle population has been increasing dramatically over the past two decades into a robust and healthy population, and its size over the Great Lakes region is estimated to be several thousand individuals. He estimates that there are as many as 300 bald eagles in Southern Ontario. He said that, while formerly an endangered species, the bald eagle is now listed as a species of “special concern” under the *ESA*, and noted that the increase in population results from the discontinuation of the use of DDT and other toxins, and protection from shooting.

[32] Dr. Kerlinger noted that bald eagles are generally at very low mortality risk from wind projects because they can see turbines and are good at avoiding them while flying. He also stated that bald eagles are habituating to human activities and infrastructure, including wind turbines. When asked, in cross-examination, about the cumulative impacts of the wind farm projects in the Adelaide Metcalfe area on bald eagles, he

responded that he did not expect any bald eagle mortality. In Dr. Kerlinger's opinion, there is no possibility that the Project could have any population level impact to bald eagles.

[33] Dr. Kerlinger also testified that he did not expect the Project to adversely affect the bald eagle nest located near the Project substation, or the eagles using it because: the nest is located 12 km from the closest turbines for this Project; no infrastructure will be constructed within 400 m of the nest; substations and transmission lines pose little risk to eagles; and it is unlikely that there will be nest abandonment or reduced nest productivity because there is evidence that eagles are adapting quickly to human activities. Dr. Kerlinger testified that there is low likelihood that the bald eagles would abandon their nest because of noise disturbance due to construction, given that there can be no construction in the tertiary zone during the primary season for nesting, which is when the eagles would be most sensitive.

[34] Dr. Kerlinger testified that the mitigation measures required for the Project are appropriate, noting as follows at para. 32 of his Witness Statement:

> With respect to the bald eagle nest, the [Environmental Effects Monitoring Plan ("EEMP")] (April 2013) stipulates that all construction activity be done outside a 200 metres buffer surrounding next locations, as well as "primary and secondary habitat zones". In addition, I understand that all infrastructure will be set back from the nest a minimum of 400 meters and no construction will occur within the "tertiary zone" between March 1 and May 15. Other measures outlined in the EEMP for the existing bald eagle nest are also appropriate, including an activity assessment and a behavioural study during construction. Finally, mitigation measures for the transmission line, including perch-guarding the transmission poles and marking the lines within 800 metres of a nest, are appropriate for reducing potential impacts to these birds. The mitigation measures in place will therefore minimize the risk of any impact.

[35] Dr. Kerlinger commented on the mitigation measures in the REA conditions, noting that, in his opinion, it was highly unlikely that the operational mitigation measures for birds would be needed at the Project because the mortality thresholds established in the REA will not be exceeded, based on his opinion that any level of bird fatalities is likely to be minimal. He stated that mitigation measures in the REA would be appropriate if, by some remote possibility, mortality thresholds were reached or exceeded. He concluded in his Witness Statement that the Project "will cause no impact of any significance to bald eagles or their habitat, and certainly no population level impact".

Submissions of the Appellants respecting Bald Eagles

[36] Ms. Wrightman refers to the Tribunal's decision in *Lewis v. Ontario (Ministry of the Environment)*, [2013] O.E.R.T.D. No. 40 ("*Lewis*") which addressed the same bald eagle nest in the context of the Bornish Project. She notes that the Tribunal in *Lewis* stated, at para. 23, that "the fact that the bald eagle is a species at risk is an important factor in assessing serious and irreversible harm."

[37] Ms. Wrightman submits that the bald eagle population in the Project area could be eliminated by one or more of the following threats: the potential removal of the nest; disruption from construction activities; and the potential for bald eagles to collide with Project components. She asserts that the bald eagle nest should not be removed, and notes that the Tribunal in *Lewis* agreed, at para. 21, with the approach of leaving the nest intact.

[38] Ms. Wrightman submits that there could be cumulative impacts on the bald eagles in the future due to the various proposed and developed wind farm projects in Southern Ontario, including destruction of the bald eagle's habitat, breeding and foraging areas as a result of hundreds of turbines in the area, and hundreds of kilometres of transmission lines threatening flight paths and roosting areas. She urges the Tribunal to consider the impacts on the eagles at the local scale, citing *Lewis* as follows, at para. 42:

> Serious and irreversible harm, especially at a local ecosystem level … can occur well before the overall viability of a larger population is put at risk. Numerous individual local decisions may appear to be relatively insignificant at a provincial scale but over time may accumulate to create very severe consequences.

[39] Ms. Wrightman argues that the death of one bald eagle in the area of the Project would constitute serious and irreversible harm.

[40] Ms. Wrightman submits that the Approval Holder is not following the Eagle Guidelines properly. She states that protecting the bald eagles from disturbance only during the "most critical period" under the Eagle Guidelines is inadequate, and that protection during the "moderately critical period" is also required. She also asserts that construction should not be permitted in the tertiary zone because there is a direct line of sight from the nest to the field.

[41] Ms. Wrightman further submits that there has not been adequate study of the bald eagle pair in the Project area, and cites the recommendation of the Tribunal in

Lewis, at para. 79, in relation to the two turbines in the Bornish Project proposed to be located near the nest:

> Relocating or postponing construction of these two turbines would also allow more behavioural studies to be undertaken within the context of the rest of the Project being in place as well as other nearby projects. Further study could provide better information in determining the tertiary habitat zone and deciding whether to build the two turbines in question.

Submissions of the Respondents respecting Bald Eagles

[42] The Approval Holder submits that the evidence shows that the bald eagle nest in the vicinity of the Adelaide Project substation will not be removed. The Approval Holder further submits that the nest is outside the Project location and far from any turbines in the Project, the closest being 12 km away. The Approval Holder notes that the nest is closer to the turbines in the Bornish Project, and that the Tribunal dismissed the Bornish Project appeal in the *Lewis* decision, finding that it had not been established that serious and irreversible harm would be caused. The Tribunal concluded in *Lewis* that the nest is not directly in harm's way from the Bornish Project (para. 19 to 20).

[43] The Approval Holder submits that a number of mitigation measures, approved by the MNR, have been put in place to ensure the protection of the bald eagles and their nest. The Approval Holder further submits that these mitigation measures comply with the Eagle Guidelines.

[44] The Approval Holder asserts that the risk of either direct or indirect harm to the bald eagles is very low. The Approval Holder also asserts that the relevant population scale is the Great Lakes region, and that there is no risk to this population from the Project.

[45] The Approval Holder argues that the removal of the bald eagle nest in the vicinity of the Summerhaven Project is irrelevant to this appeal. The Approval Holder further argues that there is no evidence that there is a risk of potential cumulative impacts to bald eagles from the wind farm projects in the region. The Approval Holder submits that the Appellants have not demonstrated that the Project will cause serious and irreversible harm to bald eagles.

[46] The Director's submissions support those of the Approval Holder. The Director asserts that the Appellants' concerns are based on uninformed speculation, and submits that Dr. Kerlinger and Mr. Ryckman provided un-contradicted opinion evidence that the Project would not cause any significant impact to bald eagles or their habitat.

Findings respecting Bald Eagles

[47] As noted above, the Appellants bear the onus, under s. 145.2.1 of the *EPA*, of proving that engaging in the Project in accordance with the REA will cause serious and irreversible harm to plant life, animal life or the natural environment. The recent Tribunal decision in *Alliance to Protect Prince Edward County v. Ontario (Ministry of the Environment)* (2013), 76 C.E.L.R. (3d) 171 ("*APPEC*") summarized the applicable guidance from previous Tribunal decisions on this test at paras. 185-186 (citations omitted):

> *Previous decisions of the Tribunal*
>
> Previous decisions of the Tribunal have considered some aspects of the second branch of the renewable energy approval test.
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> - An appellant is required to show such harm on the civil standard of a balance of probabilities.
> - Regarding the phrase "in accordance with" the terms of the REA, the Tribunal has held: "Any harm that may be caused by exceedances will not be relevant to the Tribunal's decision."
> - Evidence that only raises the potential for harm does not meet the onus of proof.
> - "Will cause" must be proved on a balance of probabilities.
> - The Tribunal can consider whether both "direct" and "indirect" effects will be caused.
> - The word "serious" should be interpreted in a way that suits both branches of the test.
>
> *Serious and irreversible harm*
>
> The phrase of the test that the parties focus on in their submissions is "serious and irreversible harm". Previous decisions of the Tribunal have not considered this phrase in depth, but have found that:
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> - the word "serious", and the phrase "serious and irreversible", must be interpreted on a case-by-case assessment according to all relevant factors.
> - one bird or bat mortality will not always constitute "serious and irreversible harm to plant life, animal life or the natural environment", but may be sufficient in certain circumstances.
> - the test would be meaningless if it were to be interpreted to always be met or to never be met.

[48] The Tribunal in *APPEC* noted the principle of an ecosystem approach, and found that, "in determining serious and irreversible harm to plant life, animal life or the natural environment, the relevant factors, and their respective importance and weight, must be assessed on a case by case basis" (para. 206). The Tribunal in *Lewis* further noted, at

paras. 10-11, that an ecosystem approach does not carry with it an automatic scale but can be used at many different scales, and the Tribunal will sometimes be called on to determine the most appropriate scale in respect of an individual species, group of species, ecosystem or habitat. The Tribunal in *Lewis* stated, at para. 12, that, "[u]nder s. 145.2.1(2)(b) of the *EPA*, the Tribunal utilizes a relevant factor-based analysis conducted within the context of the circumstances and evidence of each case."

[49] The Tribunal's decision in *Lewis* made findings with respect to the bald eagle nest that is at issue in this proceeding. The bald eagle nest is located in proximity to two wind turbines in the Bornish Project, which was under appeal in the *Lewis* matter. In *Lewis*, as in the appeal of the Adelaide Project before this Tribunal panel, Mr. Greenhouse and Mr. Ryckman testified that the approval holder was not seeking to remove the nest (paras. 19-20). The Tribunal in *Lewis* also heard testimony from Dr. Kerlinger that was very similar to the evidence before this Tribunal panel.

[50] The Tribunal in *Lewis* observed, at para. 23, that the risk status of a species is "highly relevant in assessing serious and irreversible harm under the *EPA*". As noted at para. 23 in *Lewis*, the bald eagle is listed as a species of "special concern" under the *ESA* and does not receive the same high level of protection that threatened or endangered species receive, but is a regulated species subject to management guidelines developed by the MNR. The Tribunal in *Lewis* determined, at para. 29, that the Tribunal's central role in a renewable energy approval appeal is to look at the potential harm to the listed species at risk in question, including harm to its habitat, according to the s. 145.2.1(2)(b) test.

[51] Given that the Approval Holder does not seek to remove the nest, the issue before this Tribunal panel, as in *Lewis*, is whether construction or disturbance from the proposed development of the Adelaide Project would cause serious and irreversible harm. Ms. Wrightman submitted that there will be harm to the bald eagle population in the Project area through either disturbance from the construction of the Project, or mortality due to contact with Project components. She further submitted that the death of one bald eagle would constitute serious and irreversible harm.

[52] The Approval Holder submitted, based on Dr. Kerlinger's expert opinion evidence, that the relevant population scale for the bald eagle is the Great Lakes region, which he estimates to have a population of several thousand individuals. He estimates that there are approximately 300 bald eagles in Southern Ontario.

[53] This Tribunal panel adopts the reasoning of the Tribunal in *Lewis*, set out in detail at paras. 35-49, regarding the question of the appropriate scale in respect of the bald eagles at this nest. The Tribunal in *Lewis* noted, at para. 38, that a provincial or regional scale is not necessarily the appropriate scale to automatically use in assessing serious and irreversible harm. The Tribunal in *Lewis* went on to point out several implications of such a narrow interpretation: the argument in favour of an automatic provincial scale for harm appears to be predicated on the "serious", rather than the "irreversible" element of the test (para. 39); an automatic provincial scale for harm to animal life would likely lead to an absurd result in that the test would be impossible to meet in virtually any case, even where there was an extensive loss of animal life in the vicinity of a project (para. 40); and the Legislature could have indicated that the provincial scale must be applied, had that been its intent (para. 41).

[54] The Tribunal in *Lewis* was not persuaded that the renewable energy approval appeal test can only apply at a very large scale and did not limit its application of that section of the *EPA*, instead adopting a fact-specific, case by case approach to serious and irreversible harm, consistent with prior Tribunal decisions (para. 43). This Tribunal panel, which has heard very similar evidence and argument in relation to the same bald eagles and their habitat as in the *Lewis* matter, agrees and takes the same approach as the Tribunal in *Lewis*.

[55] As in *Lewis*, at para. 47, this Tribunal panel adopts the finding in *APPEC* that assessing serious and irreversible harm involves a multi-factor case by case analysis in which the extent of harm, in the sense of a factor such as the scale of population being affected where appropriate, is just one factor among many.

[56] This Tribunal panel also finds, as the Tribunal did in *Lewis* (para. 48), that it is most appropriate to use the local scale to assess serious and irreversible harm to bald eagles in this case, particularly given the evidence that: this is the only known bald eagle's nest in the vicinity of the Project; at 300, the number of bald eagles in Southern Ontario is low relative to the several thousand over the Great Lakes region; and the bald eagle is listed as a species of special concern under the *ESA*. As indicated in *Lewis*, at para. 48, "the death or displacement of this pair would constitute a loss of bald eagles from the immediate area, as there was no evidence of any other documented nest near this site".

[57] The Tribunal turns now to the evidence concerning the potential for harm to the bald eagles in the vicinity of the Project. As stated in *Lewis*, at para. 63, "it is important for the Tribunal to examine the mitigation measures being proposed with specific

reference to their impact on the serious and irreversible harm test at the appropriate scale, which in this case is the local level".

[58] Ms. Wrightman submitted that there will be harm to the bald eagles present in the Project area as a result of disturbance from the construction of the Project. However, she did not provide any expert evidence to demonstrate that the construction of the Project will cause serious and irreversible harm to the bald eagles or their habitat. The Tribunal heard expert opinion evidence from Mr. Ryckman that the substation would be approximately 405 m away from the nest, and that a tertiary zone extending to 400 m around the nest was adequate, given that there is a buffer and no sight line from the nest to the substation. Mr. Greenhouse stated that the Approval Holder will not build permanent infrastructure within 400 m of the nest. The Tribunal finds that this proposed mitigation is appropriate to ensure that the bald eagles and their nest will not be disturbed.

[59] Ms. Wrightman also asserted that there will be harm to the bald eagles if they are not protected from disturbance during the "moderately critical period" in addition to the "most critical period". Again, Ms. Wrightman did not provide any expert evidence to show that construction during the moderately critical period will cause serious and irreversible harm to the bald eagles or their habitat.

[60] Mr. Ryckman noted the degree to which activity is restricted in the different buffer zones and provided his opinion that, given the mitigation measures in place, the Project would not cause any significant adverse impact on bald eagles or their habitat. Dr. Kerlinger also testified that these mitigation measures would minimize the risk of any impact.

[61] Ms. Wrightman submitted that the bald eagles may have contact with Project components, resulting in death. She is also concerned that adequate study has not been done concerning the bald eagles and their habitat. Beyond raising these concerns, she did not provide opinion evidence (and, in fact, no evidence other than her views and the views of Ms. Allingham) to demonstrate that the Project will cause serious and irreversible harm.

[62] The Adelaide Project components closest to the bald eagle's nest are the switchyard and transmission lines. Mr. Halloran and Mr. Ryckman reviewed mitigation measures to address these concerns, such as deterrents that would be installed on the transmission line to prevent perching and roosting, which are included in the NHA Addendum II Report. Dr. Kerlinger noted mitigation measures in the EEMP, including

those addressing perching on the transmission line, and provided his opinion that they would be appropriate for reducing potential impacts to the bald eagles and would minimize the risk of any impact. The Tribunal notes that the mitigation measures in the NHA Addendum II Report and the EEMP are incorporated into conditions in the REA.

[63] In addition to the mitigation measures in the EEMP, the REA contains detailed conditions and requirements addressing the bald eagles, with respect to pre-construction and post-construction monitoring of habitat, mortality thresholds and mitigation, and reporting and review of results. These conditions include the preconstruction requirement of baseline survey of a bald eagle nesting, foraging and perching habitat. Dr. Kerlinger provided his opinion that it was highly unlikely that the operational mitigation measures for birds would be needed at the Project because, in his opinion, mortality thresholds established in the REA will not be exceeded.

[64] In *Monture v. Ontario (Director, Ministry of the Environment),* 2012 CarswellOnt 12208 ("*Monture*"), the Tribunal addressed whether one bird kill would constitute serious and irreversible harm. The Tribunal in that case found, at paras. 73-75:

> The purpose of the threshold is to establish a standard to delineate when the Tribunal may act, and when it may not. No one disputes that the construction and operation of a wind energy project, of necessity, will cause the death of some individual plants or animals. …
>
> The fact that section 23.1 of the Regulation [O.Reg. 359/09] adopts the Bird Guideline and the Bat Guideline, both of which prescribe mortality thresholds, is an indication that it is anticipated that wind energy projects can be approved notwithstanding that some mortalities will occur. …
>
> With respect to section 145.2.1(2) in particular, the Tribunal finds that it is intended to act as a filter that determines whether the Tribunal will then exercise its discretion under section 145.2.1(4). It follows, therefore, that interpretations that automatically result either in screening out no appeals, or screening out all appeals, do not accord with the Legislature's intention.

[65] The Tribunal in that case then went on to find, at paras. 80-81:

> Accordingly, the Tribunal finds that the threshold respecting "serious and irreversible harm to plant life, animal life or the natural environment", as set out in section 145.2.1(2)(b) of the *EPA*, is not automatically satisfied by demonstrating that one bird or bat mortality will occur. This finding does not preclude the possibility that a single mortality in some circumstances could constitute "serious and irreversible harm". Whether the threshold has been met must be determined on the individual circumstances of each case.
>
> The Tribunal also observes that the test under section 145.2.1 of *EPA* is not whether a proponent's application has satisfied the requirements of the Regulation, or is within the bounds of the Guidelines. Accordingly, it remains open to an Appellant to adduce evidence to establish that

> serious and irreversible harm will occur, even where a proponent has demonstrated compliance with the requirements of the Regulation.

[66] Although the Tribunal, in this case, is not bound by the above findings, the Tribunal finds this analysis is persuasive, and adopts these conclusions. It follows, therefore, that the question the Tribunal must address is whether the test has been met in the circumstances of this case. In this regard, the Tribunal has considered Dr. Kerlinger's evidence that:

- the bald eagle population is growing in Ontario;
- there is only a remote possibility that the bald eagle mortality threshold, as set out in Part K7 of the REA would be reached or exceeded;
- bald eagles are generally at very low mortality risk from wind projects because they can see turbines and are good at avoiding them while flying;
- substations and transmission lines pose little risk to eagles, and that it is unlikely that there will be nest abandonment or reduced nest productivity, because there is evidence that eagles are adapting quickly to human activities;
- there is low likelihood that the bald eagles would abandon their nest because of noise disturbance due to construction, given that there can be no construction in the tertiary zone during the primary season for nesting, which is when the eagles would be most sensitive; and
- the mitigation measures required for the Project are appropriate.

[67] The Tribunal notes that, although the Appellants disagree with Dr. Kerlinger's opinions, they adduced no opinion evidence to contradict his evidence. The Tribunal also finds that they adduced no other probative evidence to counter his opinions. Consequently, the Tribunal accepts the opinion evidence of Dr. Kerlinger. This evidence establishes that the risk to the bald eagle population, considered either in the local or regional context, is low. Furthermore, there is no evidence to suggest that a single mortality could constitute serious and irreversible harm in the circumstances of this case. Based on this evidence, the Tribunal concludes that the Appellants have adduced insufficient evidence to establish that engaging in the Project in accordance with the REA will cause serious and irreversible harm to bald eagles.

[68] In reaching this conclusion, the Tribunal has considered Ms. Wrightman's submission that there will be cumulative impacts on the bald eagles in the future due to

the various proposed and developed wind farm projects in Southern Ontario that could lead to the destruction of the bald eagle's habitat, breeding and foraging areas. However, Ms. Wrightman did not provide any evidence, expert or otherwise, to support this concern. When questioned by Ms. Wrightman about cumulative impacts, neither Mr. Ryckman nor Dr. Kerlinger had concerns about the cumulative effects of the various wind farm projects in the Adelaide Metcalfe area.

[69] The Tribunal has also considered that the MNR has detailed Eagle Guidelines in place. As noted in *Lewis*, at para. 57, the Eagle Guidelines were developed when the bald eagle was listed as an endangered species, a higher category of risk. However, the Tribunal adopts the finding in *Lewis* that the Eagle Guidelines "remain a useful source of guidance for protecting bald eagles as a special concern species" (para. 57). The purpose of the Eagle Guidelines is to provide criteria for the protection and maintenance of bald eagle breeding habitat and for the protection of bald eagles from human disturbance during the breeding season. Ms. Wrightman called no evidence to establish that the Eagle Guidelines are deficient or not being met.

Other Wildlife Species and Dairy Cattle

Evidence of the Participant and Presenters respecting other Wildlife Species and Dairy Cattle

[70] Ms. Minten owns and operates an organic dairy farm, with her husband, in the Township of Adelaide Metcalfe. She raised concerns about harm to wildlife, in particular, bobolinks and eastern meadowlarks, snapping turtles and bats. She also expressed concern about the impact of stray voltage on her cattle.

[71] Ms. Minten testified that she has worked with the MNR to set strips of grassland for bobolink and eastern meadowlark, both threatened species, on her farm to help restore their breeding habitat. She expressed concern that the Project transmission lines, proposed to be located near the grassland habitat on her farm, will result in habitat loss for these species.

[72] Ms. Minten stated that she is concerned about the impact of the Project on snapping turtles, a species of special concern under the *ESA*, which she has observed crossing the road and nesting on her property. She said that she has also found baby snapping turtles in window wells and sandboxes on the property. She raised concerns that: the turtles will face an increased risk of mortality due to increased heavy traffic on

the roads; proposed transmission lines will be located in snapping turtle habitat; and a proposed amphibian culvert will not be sufficient mitigation.

[73] Ms. Minten also gave evidence on her concerns about bats, including endangered bat species, stressing the importance of bats to pest reduction in agriculture because they eat insects. She testified that, although the NHA did not identify significant bat habitat in the area, she has seen bats in the vicinity of homes and barns in the area. She stated that damage to bats' nesting sites and fatalities caused by wind turbines would have a significant impact on the bats.

[74] Ms. Minten raised concerns that stray voltage and ground current from the Project transmission lines would cause adverse health effects on her dairy cattle, including reproductive, digestive and behavioural problems.

[75] Ms. Dortmans expressed a number of concerns about how the Project may affect her two properties: the property where her house is located; and a vacant lot that she owns. She provided photographs of snapping turtles on her vacant lot, upon which there is a creek and wetlands. She expressed concern that the Project is located in an environmentally sensitive area.

[76] Mr. Lewis showed a video that addressed the complexity of ecology and the importance of preserving wildlife and wildlife habitat.

Evidence of the Respondents respecting other Wildlife Species and Dairy Cattle

[77] Dr. Kerlinger provided his opinion that the Project would have no impact of any significance on the bobolink or eastern meadowlark for the following reasons: these species are not present in the Project area in significant numbers; there is no significant habitat, such as large, high-quality grasslands fields, present in the Project area; there will be no bobolink habitat removal and only negligible eastern meadowlark habitat removal; and bobolink and eastern meadowlark are at very low risk of mortality from wind energy projects in general based on his research.

[78] Mr. Ryckman testified that there is not a significant amount of suitable habitat present for either the bobolink or eastern meadowlark in the Project area, and that no bobolink habitat disturbance is expected to occur due to the Project. He said that minimal temporary eastern meadowlark habitat removal would occur after the breeding season, but considerable habitat restoration would occur prior to the next breeding season and there would be negligible long-term removal. He also gave evidence concerning the mitigation measures relating to the bobolink and eastern meadowlark,

and gave evidence that these species are rarely impacted by turbines and that the risk of mortality or displacement at this Project is minimal.

[79] Mr. Ryckman also provided his opinion that the Project is unlikely to have any impact on snapping turtles or their habitat, and will not have any population level impact. He based this opinion on the following: the NHA determined there was no significant snapping turtle habitat in the Project area; no snapping turtles were observed in the Project area during fieldwork; and the wetlands in the Project area are not expected to be affected by the construction or operation of the Project. He said that Ms. Minten's and Ms. Dortmans' observations of snapping turtles on their properties may indicate significant habitat in the vicinity, but testified that there is no significant habitat within the Project area. He stated that there would be no Project construction in wetland areas. He further stated that, in his opinion, additional road traffic during the construction period would be marginal compared to existing road use and would not increase the risk to turtles.

[80] Mr. Ryckman gave opinion evidence that the Project would not have any significant impact on bats or their habitats. He stated that the level of bat activity and habitat at the Project location is relatively low because the landscape is not suitable bat habitat, and there are no bat hibernacula and there is relatively little maternity colony habitat. He said there was no evidence that the Project area is a migratory pathway for bats. Mr. Ryckman testified that there would not be any removal of significant bat habitat during the construction and operation of the Project, and that the bat mortality risk from the Project is very low. He noted that the endangered bat species are listed as endangered due to the impact of White Nose Syndrome and not wind projects. He also noted the mitigation measures to reduce risk and minimize any impact on bats. With respect to bats in houses, he testified that houses are not considered significant habitat by the MNR, but that the risk of harms to those bats is also minimal.

[81] Mr. Ryckman concluded with his opinion that the Project would not cause any significant harm to any of these species or their habitat.

[82] James Arkerson, who was called as an expert witness by the Approval Holder, was qualified by the Tribunal as an expert in the design and operation, and management of electrical issues related to transmission lines. He provided his opinion that the design of the Project transmission system would comply with applicable Ontario regulations, including the Electrical Safety Code.

[83] The focus of Mr. Arkerson's testimony was on the potential for stray voltage to have an impact on human health, and this is described in greater detail in that section below. He acknowledged that the Electrical Safety Code is based on human interaction with electricity, although he said that the testing that produced the values used in modern safety codes included animal testing. He testified that stray voltage may occur on surfaces that animals contact, and explained why it would not be created given the design of the Project transmission lines. In his opinion, the design of the Project transmission system would ensure safe levels of stray voltage, ground current, induced current and harmonics.

Submissions of the Participant respecting other Wildlife Species and Dairy Cattle

[84] Ms. Minten submits that the assessment of bat maternity colonies and hibernacula in the NHA is flawed, and that many of the individuals who conducted the bat monitoring were inexperienced. She further submits that the mortality threshold of bats permitted for the Project is too high. She also asserts that the NHA studies should have identified snapping turtles and their habitat in the area.

[85] Ms. Minten argues that Approval Holder too easily deemed species and habitats to be insignificant during its site investigations. She submits that wildlife, the environment and farmland will be seriously harmed by the Project and requests that the REA be revoked.

Submissions of the Respondents respecting other Wildlife Species and Dairy Cattle

[86] The Approval Holder submits the evidence of Ms. Minten and Ms. Dortmans amounted, at most, to general expressions of concern regarding potential risk to wildlife, and notes that neither are expert witnesses. The Approval Holder further submits that they did not lead any evidence to establish that the Project will cause serious and irreversible harm.

[87] The Approval Holder asserts that the evidence of Dr. Kerlinger and Mr. Ryckman demonstrated that the Project would not have any significant impact on the species of wildlife identified by Ms. Minten and Ms. Dortmans, or the habitats of these species.

[88] The Approval Holder submits that, based on Mr. Arkerson's evidence, the transmission line meets or exceeds all relevant Ontario safety requirements, and stray voltage, ground current, induced current and harmonics will be kept to safe levels.

[89] The Director's submissions support those of the Approval Holder. The Director submits that the evidence provided by the Appellants, Ms. Minten and Ms. Dortmans was not sufficient to meet the statutory test that the Project will cause serious and irreversible harm. The Director further submits that Dr. Kerlinger provided un-contradicted opinion evidence that the Project would not cause any significant impact to bobolinks or eastern meadowlarks, and Mr. Ryckman provided un-contradicted opinion evidence that the Project would not cause any significant impact to bobolinks or eastern meadowlarks, snapping turtles or bats.

Findings respecting other Wildlife Species and Dairy Cattle

[90] As stated above, the Appellants bear the onus, under s. 145.2.1 of the *EPA*, of proving that engaging in the Project in accordance with the REA will cause serious and irreversible harm to plant life, animal life or the natural environment.

[91] Ms. Minten and Ms. Dortmans raised concerns regarding potential impacts of the Project on a number of wildlife species, including bobolink, eastern meadowlark, snapping turtles and bats, which they said they had observed in the Adelaide Metcalfe area. Ms. Minten and Ms. Dortmans, however, were not qualified to give opinion evidence. As noted in the evidence section above, Mr. Ryckman and Dr. Kerlinger specifically addressed the concerns raised about the different wildlife species, and provided opinion evidence that the risk to these species from the Project would be minimal.

[92] Given the nature of the evidence before it, the Tribunal was not provided with sufficient information to make a determination regarding the appropriate population scale to consider in assessing harm with respect to the wildlife species noted by Ms. Mintens and Ms. Dortmans. Based on the evidence before it, the Tribunal finds that the Appellants have not met the onus of showing that engaging in the Project in accordance with the REA will cause serious and irreversible harm to any wildlife species regardless of which scale is used.

[93] Ms. Minten also testified to her understanding of the potential for stray voltage to affect cattle on her dairy farm. Mr. Arkerson provided his opinion that the Project transmission system design would ensure that stray voltage, ground current, induced current and harmonics would be kept to safe levels.

[94] As noted in greater detail below respecting stray voltage and human health, the Tribunal found that Ms. Minten, who testified as a fact witness in this proceeding, should

be allowed to express her views concerning the impacts of stray voltage, and accepted that, where appropriate, she could refer to scientific, technical or other forms of expert information, solely on the basis that it informs or clarifies her views, but not as proof of such supporting information.

[95] The Tribunal finds that Ms. Minten's evidence in respect of stray voltage is technical and scientific evidence for which opinion or interpretative evidence is required. Ms. Minten's evidence can only be accepted as a statement of her concerns respecting the issues she has raised. Mr. Arkerson was qualified to give opinion evidence in this area. Accordingly, his is the only opinion evidence before the Tribunal in this proceeding. As Mr. Arkerson's expert opinion evidence has not been contradicted by any expert evidence adduced by the Appellants, the Tribunal finds that the Appellants have failed to establish that engaging in the Project in accordance with the REA will cause serious and irreversible harm to dairy cattle.

Findings on Issue No. 1

[96] Based on the evidence before the Tribunal, the Appellants have not met their onus to prove that engaging in the Project in accordance with the REA will cause serious and irreversible harm to plant life, animal life or the natural environment.

Issue No. 2: Whether engaging in the Project as approved will cause serious harm to human health.

Noise

Evidence of the Appellants respecting Noise Impacts

[97] William Palmer, who appeared as a witness on behalf of Ms. Wrightman, was qualified by the Tribunal to give opinion evidence regarding the application of engineering principles to risk and public safety assessment and in the area of acoustics. Mr. Palmer, a retired professional engineer, began conducting acoustics research in relation to wind farms after a wind farm was proposed near his home. Prior to his retirement, he worked in various roles at Ontario Power Generation's Bruce Nuclear Power facility, including as a section manager for operations performance assessment, a reactor safety superintendent and a training and safety superintendent.

[98] Mr. Palmer gave evidence, based on information from the 2013 Wind Turbine Noise Conference in Denver, Colorado. He stated that the most up-to-date science

shows that: International Standard ISO 9613-2, *Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation* ("ISO 9613-2") underestimates the highest sound levels received at receptors; weather and ground attenuation can give a 14 decibel ("dB") variability in expected wind turbine sound level; and amplitude modulation has been shown to occur 18% of the time at 1 km and 44% of the time at 500 m.

[99] Mr. Palmer testified that cyclical amplitude modulation in the sound emitted by wind turbines is the predominant cause for complaints, and that measuring the one hour average sound level will not be sufficient to determine the annoyance level for a cyclically varying sound. He stated that the sound of wind turbine equipment at 40 A-weighted decibels ("dBA") is not the same as an office ventilation system at 40 dBA because of the cyclical amplitude modulation of wind turbine sound. He noted that international experience, based on the scientific papers at the 2013 Denver conference, showed that annoyance may occur even where regulatory limits are met.

[100] Mr. Palmer stated that a higher wind shear coefficient should have been used in the Noise Impact Assessment ("NIA") for the Project. He said that the values permitted by the MOE for ground attenuation factor, temperature and humidity underestimate sound levels, compared to a worst-case predictable value in winter conditions. He also noted the acoustic emissions of the turbine used in the NIA did not match the Wind Turbines Specifications Report provided with the application for the Project.

Evidence of the Respondents respecting Noise Impacts

[101] Shant Dokouzian, who was qualified by the Tribunal to give opinion evidence as an engineer with expertise in noise and shadow flicker, and the design, impact assessment and post-construction monitoring of wind farms, testified on behalf of the Approval Holder. He is the Team Leader for project development services at GL Garrad Hassan, a consultant for the Approval Holder, and was the lead engineer for the NIA conducted for the Project.

[102] Mr. Dokouzian described the NIA conducted for the Project, as required by O. Reg. 359/09, and testified that the NIA concluded that the Project is predicted to operate in compliance with the sound level limits in the MOE's October 2008 Noise Guidelines for Wind Farms ("Noise Guidelines"), at all receptor points within 1,500 m of the Project turbines. He stated that the noise predictions for the Project used conservative assumptions to address the predictable worst-case scenario. He said that

the NIA took into consideration the potential noise contributions from other wind farms within 5 km of the Project.

[103] In response to Mr. Palmer's evidence about amplitude modulation, Mr. Dokouzian testified that the MOE's sound level limits account for noise variability as they are expressed in terms of the hourly, A-weighted, equivalent sound level, which is a widely adopted environmental noise measurement. He stated, in his Reply Witness Statement, that the Noise Guidelines provide that no special adjustments are necessary to address the variation in wind turbine sound level.

[104] Mr. Dokouzian also addressed Mr. Palmer's concerns about wind shear, noting that wind shear is an adjustment to a turbine manufacturer's specified acoustic emissions for a specific turbine at a specific site, and is only significant to the extent that the model does not use the maximum sound power level. He stated that the wind shear value of 0.35 in the Project NIA resulted in the use of the maximum sound power level at each of the wind speeds modelled, meaning that a higher wind shear value would not have made a difference to the results.

[105] Mahdi Zangeneh, who was qualified by the Tribunal to give opinion evidence as a noise engineer with experience and expertise in the application of MOE's Noise Guidelines, appeared on behalf of the Director. He is a senior noise engineer at the MOE and was the review engineer responsible for the Project NIA.

[106] Mr. Zangeneh testified that the Project NIA complied with the requirements of the MOE's Noise Guidelines, incorporating the predictable worst-case scenario. He provided his opinion that application of the Noise Guidelines results in a conservative prediction due to both the assumption that all turbines are always propagating sound downwind towards each noise receptor, and the need to account for the noise contributions of all turbines within a 5 km radius of a receptor.

[107] In response to Mr. Palmer's concerns in relation to the MOE's values for ground attenuation factor, temperature and humidity, Mr. Zangeneh noted the MOE's position that noise surveys and acoustical modelling should be done in seasons when members of the public are likely to keep windows open and spend more time outdoors, so that the predictable worst-case scenario incorporates spring, summer and early fall conditions.

[108] In response to the issues raised by Mr. Palmer concerning amplitude modulation and wind shear, Mr. Zangeneh gave evidence consistent with that of Mr. Dokouzian. He also stated that, at the minimum setback distance of 550 m, amplitude modulation is significantly reduced, and the sound level of 40 dBA from wind turbines is comparable

to the same sound level from other types of equipment. He pointed out that the REA includes conditions requiring that an independent acoustical consultant prepare an acoustical audit, which is to be submitted to the Director.

[109] In response to Mr. Palmer's evidence that the acoustic emissions of the turbine used in the NIA do not match the Wind Turbines Specifications Report, Mr. Zangeneh testified that the April 25, 2013 NIA is based on a new turbine with a Low Noise Trailing Edge ("LNTE") blade, while the Wind Turbine Specifications Report was based on an earlier model without LNTE, and that the REA was granted for the LNTE turbines.

[110] In response to concerns expressed by Ms. Wrightman, Mr. Zangeneh noted the NIA predicted that the sound level for Adelaide-W.G. MacDonald Public School would be 34.9 dBA outside the school, measured at 4.5 m above grade. His own calculation of the sound level was 34.8 dBA. He added that the sound level would be about 32.9 dBA at the ear level of children in the playground, and that the sound level inside the school would be approximately 10 dBA lower.

Submissions of the Appellants respecting Noise Impacts

[111] MLWAG and Mr. Wrightman submit that there were numerous errors in the assessments of the Project's noise impact by Mr. Dokouzian and Mr. Zangeneh.

Submissions of the Respondents respecting Noise Impacts

[112] The Director submits that Mr. Palmer's evidence on noise is, at most, a critique of the Noise Guidelines and a wish list for parameters to be included in a noise assessment.

[113] The Approval Holder submits that Mr. Palmer's evidence about the variability of wind turbine noise does not assist the Tribunal in determining the issue under s. 145.2.1(2)(a) of the *EPA*, and maintains that his concern about the variability of wind turbine noise is plainly directed at establishing that the Project will operate out of compliance with the REA. The Approval Holder submits that the *EPA* requires the Tribunal to assume there will be compliance with the REA, so Mr. Palmer's assertions are irrelevant to this proceeding. The Approval Holder further submits that, to the extent Mr. Palmer's evidence is directed at establishing that wind turbine noise might result in a health related annoyance, such opinion is clearly beyond Mr. Palmer's expertise.

Findings respecting Noise Impacts

[114] The Appellants' position is that the REA should be revoked. Under s.145.2.1 of the *EPA*, respecting the ground of harm of human health, the Tribunal has the jurisdiction to do so, only if an appellant establishes that engaging in the Project in accordance with the REA will cause serious harm to human health (the "Health Test"). O. Reg. 359/09, made under the *EPA*, requires that an approval holder conduct noise modelling in accordance with the Noise Guidelines. Under this regulatory regime, the maximum sound level limit applicable to the Project is 40dBA for wind speed from 4 to 6 m per second, and slightly higher levels for higher wind speeds. These sound levels are measured at "receptors" as this term is defined in the Noise Guidelines. For ease of reference, the Tribunal more simply describes the noise level requirement as being 40 dBA. This requirement is expressly incorporated in Part C of the REA. Consequently, the Appellants must demonstrate that the Health Test will be met at sound levels at 40 dBA or less before the Tribunal would have jurisdiction to revoke the REA. If the Appellants establish that engaging in the Project will result in a sound level which exceeds 40 dBA, then the Director would be required to take action to ensure the Approval Holder's compliance with the REA. However, this still would not satisfy the requirements that must first be met under the Health Test, before the Tribunal would have jurisdiction to revoke the REA.

[115] It is important to understand this regulatory context, when considering the evidence regarding noise modelling required under the Noise Guidelines. In this appeal, the noise modelling conducted by the Approval Holder's consultant has been adduced by the Approval Holder in response to the evidence which has been adduced by the Appellants to meet their onus to establish that the Health Test has been met. To meet their onus, it is not sufficient that the Appellants establish only that the results of the noise modelling may not be accurate. The Appellants have a positive onus to establish that noise levels at or below 40 dBA will cause serious harm to human health.

[116] Regarding the opinion evidence adduced by the Appellants respecting the noise modelling conducted by the Approval Holder's consultant, the Tribunal finds that this opinion evidence, assessed from a perspective that is the most favourable to the Appellants, only establishes that there are conflicting opinions regarding: (i) the accuracy of the data inputs used to conduct the noise modelling; (ii) the impact of weather and ground attenuation on sound levels; (iii) the extent to which the noise modelling accounts for amplitude modulation, and the extent to which such modulation is reduced at the minimum setback distance of 550 m; and (iv) the extent to which the

noise modelling represents a conservative estimate. Therefore, the Tribunal finds that the evidence adduced by the Appellants falls short of establishing that the sound levels are higher than those predicted by noise modelling conducted on behalf of the Approval Holder. Even if it did, the test, as noted above, is that the Health Test must be met at sound levels of 40 dBA or less. At most, this evidence would establish that the Director would be required to take action to ensure the Approval Holder's compliance with the REA. In this regard, the Tribunal notes that the Director has proactively addressed this matter, as section F of the REA requires an acoustical audit, by an independent acoustical consultant, once turbines have been constructed.

[117] The Tribunal notes that Mr. Palmer, in his written Witness Statement, acknowledges that his testimony is primarily focussed on public safety and the impact of public safety on human health, and that he only briefly comments on the matters relating to noise. The Tribunal notes that his opinions addressed the above-mentioned concerns respecting the noise modelling, but he did not personally conduct or provide any noise modelling assessment or study, or other specific data respecting predicted noise levels for any of the Project components.

[118] As noted above, Mr. Dokouzian testified that the Noise Guidelines account for noise variability as they are expressed in terms of the hourly, A-weighted, equivalent sound level, which is a widely adopted environmental noise measurement. He also stated that the Noise Guidelines provide that no special adjustments are necessary to address the variation in wind turbine sound level. Section 6.4.8 of the Noise Guidelines states:

> 6.4.8 Adjustment for Special Quality of Sound
>
> Should the manufacturer's data indicate that the wind turbine acoustic emissions are tonal, the acoustic emissions must be adjusted by 5 dB for tonality, in accordance with Publication NPC-104, Reference [1]. Otherwise, the prediction should assume that the wind turbine noise requires no adjustments for special quality of sound described in Publication NPC-104, Reference [1].
>
> No special adjustments are necessary to address the variation in wind turbine sound level (swishing sound) due to the blade rotation, see Section 4. This temporal characteristic is not dissimilar to other sounds to which no adjustments are applied. It should be noted that the adjustments for special quality of sound described in Publication NPC-104 were not designed to apply to sounds exhibiting such temporal characteristic.

[119] Section 4 of the Noise Guidelines states:

> In general, the significant noise sources associated with the operation of a Wind Farm are the wind turbines and the Transformer Substation.

> Noise from wind turbines consists of the aerodynamic noise caused by blades passing through the air, and mechanical noise created by the operation of mechanical elements of the drive-train. Close to the turbine, the noise typically exhibits a swishing sound as the blades rotate; and the whirr of the drive-train and generator. However, as distance from the turbine increases, these effects are reduced. The wind turbine noise perceived at receptors is typically broadband in nature. Any tonal character associated with the wind turbine noise is generally associated with maintenance issues.

[120] The import of Mr. Palmer's evidence is that this averaging does not account for the impact of amplitude modulation, a component of wind turbine noise where noise levels periodically fluctuate. Such amplitude modulation is commonly referred to as "blade swish". Consequently, there clearly is a difference of opinion whether the effects of amplitude modulation are adequately assessed by noise modelling conducted in accordance with the Noise Guidelines.

[121] While Mr. Palmer did speak to annoyance, he only made general reference to papers presented at a 2013 Wind Turbine Noise Conference which he attended. He states that papers presented at this conference indicate that it is the special characteristics of the sound which caused annoyance, not just amplitude modulation. He did not provide any analysis respecting the effects of noise attenuation, particularly as it specifically relates to wind turbines in the Project, nor any analysis of the effects of amplitude modulation where the hourly, A-weighted, equivalent sound level is 40 dBA or less, other than to assert that annoyance is expected to occur. However, Mr. Palmer does not assert that he is qualified to give opinion evidence of the impact of annoyance on human health.

[122] In light of this difference of professional opinion as to whether the effects of amplitude modulation are adequately considered and addressed by the Noise Guidelines, and absent any more detailed evidence regarding these effects, particularly as they apply to the Project wind turbines, the Tribunal finds this evidence, at best, is exploratory in nature. In *Erickson v. Director* (Ministry of the Environment), [2011] O.E.R.T.D. No. 29 *("Erickso*n"), at para. 838, the Tribunal states "It is, therefore, no surprise that the legal test, which requires proof of harm, has not been satisfied when the applicable scientific evidence is in such an early stage of development." The Tribunal, in this case, finds this conclusion applies equally to the sound level evidence adduced in this proceeding.

[123] In summary, the Tribunal finds that the Appellants' evidence respecting noise does not establish that the Health Test has been satisfied.

Health Impacts generally

Evidence of the Appellants, Participant and Presenters respecting Health Impacts generally

[124] Mr. Wrightman called, as witnesses, four individuals who live in the vicinity of existing wind turbine projects in Ontario, who each report that they have experienced adverse health effects, which they assert have been caused by these wind turbine projects (the “post-turbine witnesses”).

[125] The post-turbine witnesses testified concerning a range of adverse health effects that one or more of them had experienced, including: nausea; headaches; sinus pressure and pain; dry eyes; sleep disturbance; mood swings; emotional instability; depression; vibrations in the body; heart palpitations; loss of concentration and memory; ringing in the ears; swollen glands; vertigo; and dizziness. In addition to their oral testimony, the post-turbine witnesses provided the Tribunal with witness information forms and the medical records that they were able to obtain.

[126] The post-turbine witnesses gave evidence that these adverse health effects began at the time that the wind farm near them began to operate, or shortly after that. They stated that when they are away from the wind farm, they experience relief from their symptoms, and that their symptoms return when they go home. They testified to their belief that their adverse health effects are caused by their exposure to the wind farm project.

[127] While some of the medical records provided by the post-turbine witnesses included documents setting out medical opinions respecting specific conditions, none of these witnesses provided a medical opinion that attributed exposure to the wind farm project as the cause of their symptoms.

[128] Ms. Wrightman raised concerns that the Project would have adverse effects on the health of her own children and other children who attend Adelaide-W.G. MacDonald Public School. She testified to her understanding that there will be 11 wind turbines from the project within 2 km of the school, 15 turbines within 3 km of the school and 35 turbines within 5 km of the school. She stated that the Approval Holder had advised that the school’s noise level would be increased to 35.7 dBA. Ms. Wrightman expressed concern about the impacts of shadow flicker and noise, including both low frequency noise and infrasound, on the children’s health and their ability to concentrate

and learn at school. She also said that she was concerned that the Project's transmission lines may be located near the school.

[129] Ms. Wrightman referenced the World Health Organization ("WHO") definition of "health", which states that health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. She stated that the "human habitat", within which she lives, includes her home, community, surroundings, school and local organizations. She noted that many rural families work and farm together and testified that the Project has created stress in families within the community because some individuals have signed leases for wind turbines and others oppose them. She said that there may be adverse impacts on her health and well-being, and the health and well-being of those in her community, because these family and social units are threatened by the Project.

[130] Ms. Minten also expressed concerns about the impacts of the Project on human health. She gave evidence that she had lived near a small (100 foot, 30 kilowatt) wind turbine, which became operational on the farm in 2006. She said that she did not become ill enough to go to a doctor and has no medical records, but stated that she did experience shadow flicker that was, at times, disorienting. She testified that she was aware of a pulsating noise that frequently woke her at night and contributed to tiredness. Ms. Minten also raised concerns about: electromagnetic hypersensitivity; impacts of sleep disorders on the farming community; health risks of noise for children; health effects of financial stress; and health inequality in rural Ontario.

[131] Mr. Lewis showed a video relating to his concerns about wilful blindness in organizations and institutions concerning adverse health impacts. He emphasized the importance of speaking out about his concerns regarding impacts on health.

[132] Ms. Dortmans testified that she lives on a road that will be a main access road to the Project, with collector lines for five of the turbines. Her house is close to the road, and she is concerned about adverse effects on her family's health due to the air quality and water well impacts of gravel dust and diesel exhaust from trucks during Project construction, and due to power surges from the collector lines. She also raised concerns about traffic safety as her children play outside, cycle on the road and travel on a school bus that uses the road. Ms. Dortmans also gave evidence concerning her concerns about the health impacts of noise and shadow flicker from the ten turbines that will be within 10 km of her home, and the potential impacts if she builds a home on her vacant property, as planned.

[133] Ms. Johnston raised concerns about the legislative and policy framework governing the assessment of the impact of the Project on human health. She testified that the Haldimand-Norfolk Health Board and Health Unit, and the acting Haldimand-Norfolk Medical Officer of Health, have refused to engage with Ontario's Chief Medical Officer of Health to determine whether a health hazard exists, under the *Health Promotion and Protection Act*, in response to concerns raised in a petition and deputation. She also raised concerns about wind energy.

Evidence of the Respondents respecting Health Impacts generally

[134] The Director and the Approval Holder did not call any witnesses specifically to respond to the Appellants' evidence. Instead, the Director and the Approval Holder rely on their cross-examination of the Appellants' witnesses.

Submissions of the Appellants and Participant respecting Health Impacts generally

[135] Ms. Wrightman submits that the children at Adelaide-W.G. MacDonald Public School will be affected by the wind turbines in the Project, and are at risk of severe harm. She further submits that the Project will impact the learning environment at the school. She argues that many Adelaide Metcalfe area residents will experience adverse health effects, such as sleep disturbance, vertigo, migraines and depression, from the turbines.

[136] Ms. Wrightman asserts that the Project will have adverse effects on human health, as defined by the WHO, including impacts on income and social status, social support networks, employment, working conditions, social and physical environments and healthy child development.

[137] Ms. Minten states that, in the course of the past months, she heard more and more stories of people who are being affected in negative ways from wind turbines in Southwestern Ontario. Although she acknowledges that she is not a qualified medical expert, she asserts that even qualified medical experts, and the current medical research surrounding industrial wind turbines, are unable to answer the questions that should be answered first, before construction and operation of the Project.

Submissions of the Respondents respecting Health Impacts generally

[138] The Approval Holder submits that the Appellants have fallen short of meeting their onus of proving on a balance of probabilities that engaging in the Project in

accordance with the REA will cause serious harm to human health. The Approval Holder notes that the Appellants did not call any expert evidence on the human health effects of noise. The Approval Holder says that, at most, the Appellants, participant and presenters have raised concerns about the potential for harm from the Project.

[139] The Approval Holder asserts that the Tribunal should not give any weight to lay evidence about what has been said about the health effects of noise in the publications of various experts, which is hearsay, and notes that any statements of opinion offered by lay witnesses is inadmissible. The Approval Holder also asserts that some of the Appellants' evidence was directed at establishing that the Project will operate out of compliance with the REA, and that the Tribunal must assume that the Project will operate in accordance with the REA, which includes a condition requiring compliance with the MOE's noise level limits. The Approval Holder submits that Mr. Palmer's evidence on amplitude modulation was also directed at establishing that the Project will operate out of compliance with the REA.

[140] With respect to the evidence of the post-turbine witnesses, the Approval Holder notes that no health professionals were called to testify to any diagnoses reflected in their medical records, and that the medical records entered as exhibits at the hearing have not been admitted for the truth of the contents. The Approval Holder observes that none of the medical records contained any diagnosis by a medical professional that an illness had resulted from exposure to wind turbines.

[141] The Approval Holder submits that the Tribunal should find, consistent with its findings in *APPEC*, at para. 176, that the individual experiences of the post-turbine witnesses cannot be extrapolated to conclude that engaging in the Project, in accordance with the REA, will cause serious harm to human health because it has not been proven that their health complaints were caused by wind turbines. The Approval Holder argues that, to the extent that Mr. Palmer's evidence was directed at establishing that wind turbine noise might result in a health-related annoyance, such an opinion is beyond his expertise.

[142] The Approval Holder submitted that the following issues raised by the participant and presenters are beyond the scope of the health appeals either because they do not relate to human health or were not raised in the notices of appeal: Ms. Dortmans' construction-related concerns, Ms. Johnston's complaints about wind energy; and Ms. Minten's concerns about financial stress and health inequality.

[143] The Approval Holder summarizes its position, submitting there is no evidentiary basis on which the Tribunal could conclude that noise from the Project will be an issue, let alone cause serious harm to human health. In support of this position, the Approval Holder maintains that: there was a complete dearth of expert evidence on the impact of noise on human health; the Appellants relied on evidence that has already been rejected in previous cases before the Tribunal (i.e., the post-turbine witnesses' evidence); the evidence that the Tribunal heard from those opposed to the project was limited to expressions of concern that were, at best, speculative; and the limited expert evidence that the Tribunal heard from the Appellants was not health-related, and focused on a matter (alleged non-compliance with the REA) that is irrelevant to the statutory test.

[144] The Director's submissions support those of the Approval Holder. The Director submits that the Appellants have not brought any new evidence that would warrant a conclusion that is different from previous Tribunal cases in relation to harm to human health, and did not provide any expert medical evidence.

[145] The Director notes that none of the post-turbine witnesses provided noise level measurements to assist the Tribunal in determining whether they were experiencing symptoms at sound pressure levels below 40 dB, and that the turbines located near the homes of the post-turbine witnesses are not the same as those approved in the Project REA.

Findings respecting Health Impacts generally

[146] The Tribunal first turns to the evidence of the post-turbine witnesses. It is not disputed that each of these witnesses have previously testified, among others, in one or more proceedings before the Tribunal, including *APPEC* and *Bovaird v. Director (Ministry of the Environment)*, 2013 CarswellOnt 18046 ("*Bovaird*"). Their testimony in this proceeding is consistent with their testimony in those other proceedings. In *Bovaird*, paras. 300 and 301 summarize the evidence given by the post-turbine witnesses in that proceeding:

> All of the post-turbine witnesses provided a witness information form which essentially sets out their responses to a list of questions regarding their medical history, self-reported health symptoms, and other personal information. They each provided medical records that they were able to obtain in time to present at the hearing. Some of these medical records included documents setting out medical opinions respecting specific conditions. None of these witnesses provided a medical opinion which attributed exposure to wind project components as the cause of their complaints. … Despite any pre-existing medical condition these

> witnesses may have, they each testified that, after the wind turbines became operational in their environs, they have experienced adverse health effects which they had not experienced before. They state their views that exposure to the wind farm project in the vicinity of their residences has caused these adverse health effects. They maintain that they had no negative perceptions or expectations respecting the impacts of wind turbine projects prior to experiencing adverse health effects.
>
> They cite one or both of the following reasons to support their assertion regarding causality:
>
> - The adverse health effects they have experienced manifested when the wind farm project commenced operation, or shortly thereafter, and they have been unable to find any other explanation for their condition; and
>
> - They have gained respite from their various symptoms when they leave their homes, more specifically, when they are no longer in the vicinity of the wind farm for a period of time (where symptom relief is either immediate or gradual). Their symptoms resume upon returning to their homes either immediately or shortly thereafter.

[147] The Tribunal finds that this is an accurate summation of the evidence adduced by the post-turbine witnesses in this appeal.

[148] In *Bovaird*, at para. 313, the Tribunal made the following finding with respect to this evidence:

> The Tribunal does not question the sincerity of the post-turbine witnesses in giving their evidence. They acknowledge that the identification of their adverse health effects is through their own self-diagnosis. They also acknowledge that they have reached personal conclusions regarding the issue of causation. Several of them assert that they have had to do so, because they maintain that medical professionals either have no knowledge regarding the effects of wind turbines, or are skeptical or dismissive of the possibility that wind turbines can negatively affect human health. Nevertheless, none of the post-turbine witnesses adduced any medical opinion from their health practitioners which confirms that they have experienced symptoms caused by wind turbines. The Tribunal does not question that the post-turbine witnesses have experienced the symptoms they have described. After all, only they can say how they feel. However, in order to arrive at a reliable conclusion respecting causation, personal assessments which do not consider the full range of potential causes of these symptoms, are incomplete. Furthermore, the exercise of arriving at a diagnosis requires a level of education, training and experience, which none of the post-turbine witnesses possess. In this regard, the Tribunal notes that in *Kawartha Dairy* [*Kawartha Dairy v. Ontario (Director, Ministry of the Environment)* (2008), 41 C.E.L.R. (3d) 184], the Tribunal found that confirmation of medical conditions requires the diagnostic skills of a qualified health professional. This conclusion was accepted in *APPEC*, and the Tribunal accepts that it applies in the circumstances of this case.

[149] While the Tribunal is not bound by the decision in *Bovaird*, the Tribunal finds this analysis is persuasive, and concludes that the above findings apply equally in this case.

[150] In addition to the fact that the medical records provided by the post-turbine witnesses do not include any medical opinion that their symptoms are caused by wind turbines, the Tribunal also notes that no other independent medical opinion was adduced as evidence in this regard. As is noted below, the Tribunal excluded the proposed medical opinion evidence of Dr. Nina Pierpont. However, the Tribunal notes that Dr. Pierpont's written Witness Statement did not include any medical diagnosis in respect of any of the post-turbine witnesses.

[151] In conclusion, the Tribunal finds, (as the Tribunal found in *APPEC*, at para. 176), that the individual experiences of the post-turbine witnesses who testified in this proceeding cannot be extrapolated to conclude that engaging in the Project, in accordance with the REA, will cause serious harm to human health, because it has not been proven that their health complaints have been caused by wind turbines.

[152] The Tribunal now turns to the other more general submissions made by the Appellants, the presenter, and the participants. The Tribunal does not find it necessary to address each submission individually. None of the submissions expressing concerns respecting harm to human health were supported by the expert opinion of a qualified health practitioner. Other submissions, as was the case with Ms. Johnston in particular, only addressed policy considerations. At best, this evidence amounts to the expression of concerns that engaging in the Project will cause harm to human health. The Tribunal finds that these expressions of concern fall short of establishing that engaging in the Project in accordance with the REA will cause serious harm to human health.

Public Safety Risks

Evidence of the Appellants respecting Public Safety Risks

[153] Mr. Palmer testified that there would be a risk of ice throw, blade throw, tower collapse and fire from the turbines in the Project, stating that each of these types of failures had already occurred in Ontario. He presented a chart, compiled using data from the Caithness Wind Farm Information Forum website (the "Caithness data") as well as media and industry reports, which listed industrial wind turbine failures internationally from January 2009 to August 2013. Based on his evidence that there were two blade failures and one fire at Ontario turbines in approximately "3400 turbine years in service"

during that time period, he estimated the Ontario failure rate to be approximately 0.001 failures per year. Mr. Palmer acknowledged, under cross-examination, that the Caithness organization is concerned about wind farms but said that its data provided a comprehensive list of wind turbine failures.

[154] Mr. Palmer also testified, based on his review of reports of wind power developments in the Adelaide Metcalfe area conducted in December 2012, that the Project would pose a threat to human health due to shadow flicker along Highway 402. He stated that 8 km of Highway 402 would be subject to 30 to 59 hours of shadow flicker per year, causing five minutes of sustained shadow flicker for drivers during morning and afternoon, which would be distracting and create an adverse impact on a safe driving environment. He based his analysis on his experience assessing changing radiation fields at the Bruce Nuclear Power facility.

Evidence of the Respondents respecting Public Safety Risks

[155] Mr. Greenhouse testified as to the specific measures taken by the Approval Holder to prevent the build-up of ice on turbines and to ensure that safety precautions are taken if ice build-up occurs. He stated that the Approval Holder proactively shuts down turbines when conditions that would allow for ice build-up are imminent. He noted in his Supplementary Witness Statement that if ice accumulation on the blades is avoided, "the safety risk of falling ice is practically zero." He added that, even if ice were to build up on a rotating blade, the increased load and vibration on the turbine would be detected electronically and the turbine would be shut down automatically and restarted only after a visible inspection, eliminating the risk of falling ice.

[156] Mr. Dokouzian provided evidence in response to Mr. Palmer's concerns about ice throw, blade throw, tower collapse, fire and shadow flicker. In his opinion, the risk of harm from ice throw from the Project turbines is very low due to NextEra's ice throw and ice build-up prevention protocol, described by Mr. Greenhouse.

[157] Mr. Dokouzian is also of the opinion that the Project would not pose any significant safety risk to the public due to blade failure, tower collapse or fire. He noted that Mr. Palmer's statistics were generated from a very small set of data and therefore prone to statistical error. He also stated that there are no independent sources confirming that blades or tower parts were ejected from the turbines in the two Ontario blade failure events referred to by Mr. Palmer.

[158] Mr. Dokouzian testified that blade failure events are rare (1 in 2,400 turbines per year based on 2005 Dutch research by Braam *et al*.) and, when they occur, it is more likely that the damaged structure remains attached to the turbine. He was not aware of any injuries caused by blade failure. He stated that the probability of tower collapse is even lower than that of blade failure (1 in 7,700 turbines per year based on the Dutch research). He also noted that turbine fires are extremely rare and described the safeguards with which modern turbines are equipped.

[159] Mr. Dokouzian also addressed the issue raised by Mr. Palmer concerning shadow flicker on Highway 402. He stated that the effect of shadow flicker is much less perceived in a moving vehicle outdoors than inside a dwelling while stationary, due to the diffusion of light outdoors and the lesser exposure time for a driver moving through the area. He further explained the conservative nature of the shadow flicker assessment prepared in relation to the Project.

Submissions of the Appellants respecting Public Safety Risks

[160] Ms. Wrightman submits that incidents involving turbines toppling, blade throw and ice throw happen regularly. She says that the minimum regulatory setbacks are not sufficient. She asserts that shadow flicker on Highway 402 will create a hazard that has not been assessed as part of the approval process.

Submissions of the Respondents respecting Public Safety Risks

[161] The Approval Holder submits that Mr. Palmer's testimony concerning ice throw, blade failure, tower collapse, fire and shadow flicker does not demonstrate that the Project will cause serious harm to human health. The Approval Holder asserts that Mr. Palmer's evidence merely raised concerns about theoretical risks of harm from wind farms in general, and that Mr. Dokouzian's expert evidence established that the Project, operated in accordance with the REA, will not cause serious harm to human health.

[162] The Director submits that Mr. Palmer's statements about the risk posed by ice throw, blade throw, fire or tower collapse are not supported by any evidence, and his opinion should not be given any weight. The Director further submits that assessing risks posed by shadow flicker is different than assessing risks posed by nuclear radiation.

Findings respecting Public Safety Risks

[163] In *Erickson*, at para. 629, the Tribunal discussed causation in the context of the "will cause" requirement in the Heath Test, stating:

> With regard to the "will cause" arguments of the Parties, the Tribunal finds that there are some aspects of the case law cited by the Parties which are applicable here. For example, there is a distinction between medical (or scientific) causation and legal causation. The Tribunal is to determine whether specified harms will be caused according to the applicable legal standard, which is a balance of probabilities. That standard is not the exact same standard used by scientists, statisticians or medical experts. The Tribunal will take its direction on determining whether the Appellants have proven that harm will be caused according to the legal concepts of proof and causation. In doing so, it will assess the scientific evidence and consider which approaches to causation and proof were used in that evidence.

The Tribunal adopts these findings.

[164] Mr. Palmer asserts that serious harm to human health will occur as a result of any of the following events: blade throw, tower collapse, damage resulting from a tower fire, ice throw, and shadow flicker distraction for drivers using Highway 402 (the "public safety events"). It is perhaps trite to observe that the Health Test does not require proof at a level of absolute certainty. Such certainty could only be established once the wind turbines are built and operating, and a public safety event occurs. Instead, an appellant must demonstrate that harm will occur on a balance of probabilities. Accordingly, the Appellants are not required to establish that there is absolute certainty that any of these events will occur. However, it is also important to note that the Director and the Approval Holder, in responding to the Appellants' case, are similarly not required to establish with absolute certainty that any of these events will not occur. Therefore, the probability (risk) that these events will occur, is a relevant consideration when determining whether harm will be caused according to legal concepts of proof and causation.

[165] Mr. Palmer was qualified to give opinion evidence regarding the application of engineering principles to risk and public safety assessment. Based on the evidence heard in this proceeding, the Tribunal understands that the key components of such a risk assessment are: (i) to identify plausible events that could cause serious harm to human health; (ii) determine the probability that such types of event will occur; and (iii) determine the probability that such an event, if it did occur, will cause serious harm. In terms of legal concepts of causation, the Tribunal will also consider whether mitigation measures are available to reduce this risk, and, if so, to what extent.

[166] No one disputes that each of the public safety events identified by Mr. Palmer could potentially occur. However, the Respondents dispute that shadow flicker distraction for drivers using Highway 402 could result in serious harm. Respecting the other public safety events, they dispute both Mr. Palmer's assessment of the probability that these events will occur, and his assessment of the probability that serious harm would be caused if an event occurred.

Shadow Flicker

[167] The Tribunal first addresses the issue of shadow flicker affecting drivers using Highway 402. The Tribunal notes that, in his evidence, Mr. Palmer baldly states that shadow flicker will occur and states his opinion that it will distract drivers. However, Mr. Palmer was not qualified to give opinion evidence on the impact of shadow flicker. The Tribunal notes that this would not preclude him from addressing shadow flicker in his risk assessment, but it does require him to include in his assessment, technical information from a reliable source respecting the nature of the shadow flicker to be produced by the 14 Project wind turbines which he states will be situated along Highway 402. In this regard, Mr. Palmer relies on the Shadow Flicker Assessment conducted on behalf of Approval Holder. He acknowledges that this assessment confirms that Highway 402 will be subject to 30 to 59 hours of shadow flicker per year. However, he critiques this assessment, stating:

> This value assumes average hours of sunshine per day, yet what it does not say is that, for many days of the year, drivers along a major traffic artery will be subjected to not only the distraction of moving wind turbines along side of the highway at a setback of barely 120 metres, but also will be subject at this distance to an immersion in pronounced shadow flicker for 5 minutes during morning and afternoon. It is clear that this will have an adverse impact on the safe driving environment for many drivers. This highway traffic safety issue is not addressed in the shadow flicker report.

[168] The Tribunal notes, however, that Mr. Palmer does not provide any explanation or definition for what he describes as "pronounced shadow flicker", or how he determined that it will occur for five minutes during the morning and afternoon. In addition, Mr. Palmer does not provide any explanation, nor was he qualified to give opinion evidence, on how a driver might respond to such flicker, and, to the extent it caused distraction, whether the nature of the distraction could interfere with a driver's ability to safely drive the vehicle. The Tribunal also notes that, in cross-examination, Mr. Palmer acknowledged that he had no statistical evidence demonstrating that people driving by wind farms are in fact distracted by shadow flicker, and admitted that he is not

aware of any accidents having been caused by shadow flicker. In his evidence, Mr. Palmer simply assumes both that distraction will occur and that it will interfere with driver safety. The Tribunal finds this to be a significant deficiency in his assessment.

[169] Mr. Dokouzian was qualified to give opinion evidence on shadow flicker. He conducted a shadow flicker assessment for the Project, and it was his un-contradicted opinion that the effect of shadow flicker is much less perceived in a moving vehicle outdoors than inside a dwelling while stationary, due to the diffusion of light outdoors and the lesser exposure time for a driver moving through the area.

[170] In light of the deficiency in Mr. Palmer's assessment and the un-contradicted opinion evidence of Mr. Dokouzian, the Tribunal finds that the Appellants have not established that shadow flicker will cause serious harm to drivers on Highway 402.

Ice throw

[171] No one disputes that a person could be seriously harmed, if struck by ice thrown from a wind turbine blade. However, the Tribunal finds that Mr. Palmer's assessment in respect of ice throw from wind turbine blades only establishes that this is a plausible event. In this regard, the Tribunal notes that he does not provide any information or analysis respecting the formation of ice on wind turbine blades, or the incidence and conditions where such an event may have occurred in the past. He only provides an assertion that Project wind turbines are located sufficiently close to Highway 402 and other receptors to impact them by ice throw. Furthermore, his assessment does not contain any technical information respecting the Project wind turbines related to the management of ice conditions to prevent ice build-up on turbine blades. The Tribunal finds this to be another significant deficiency in his assessment.

[172] The Approval Holder has provided detailed evidence related to the management of ice conditions to prevent ice build-up on turbine blades, which has been summarized earlier in this decision. Mr. Dokouzian, who was qualified to give opinion evidence respecting this matter, has expressed his opinion that the safety risk of falling ice is practically zero. This evidence was not contradicted.

[173] In light of the deficiency in Mr. Palmer's assessment and the un-contradicted opinion evidence of Mr. Dokouzian, the Tribunal finds that the Appellants have not established that ice throw from wind turbine blades will cause serious harm to human health.

Blade throw, tower collapse, damage resulting from a tower fire

[174] Blade throw, tower collapse, and damage resulting from a tower fire are collectively referred to as “turbine failure”. Blade throw refers to an event whereby a turbine blade becomes detached from the hub and, if the turbine blades are spinning, will then be thrown some distance from the turbine tower. This could be caused by mechanical failure, or due to damage if the wind turbine catches fire. Collapse of the wind turbine tower could similarly occur due to mechanical failure or if the tower catches fire. The Tribunal first turns to an evaluation of how these events could plausibly result in serious harm to human health. In his assessment, Mr. Palmer referred to a report, described only as the “Copes report” which he states identifies that blade parts have been known to have travelled to a distance of 500 m from a wind turbine base. He also refers to a report that, due to a turbine fire at the Kingsbridge I Wind Project North of Goderich, Ontario, burning parts have travelled up to 200 m from the wind turbine tower. Mr. Palmer noted that, in this case, the collapse of a Project wind turbine “can put blade parts…at distances of over 130 metres from the tower”. Mr. Palmer also provided a listing of source data describing wind turbine failures at wind farm projects worldwide from January 2009 to August 2013, which he obtained from the Caithness data. In cross-examination, Mr. Palmer acknowledged, as noted above, that the Caithness organization is a group of people concerned about wind farms, and stated that it is a member of a European association of groups which oppose wind farms.

[175] The Respondents did not dispute that these are plausible events which could cause serious harm to human health. However, they dispute Mr. Palmer’s assessment of the probability that these events will occur. They also maintain that Mr. Palmer did not assess the probability that any of these events would cause serious harm to human health, if these events were to occur. The Tribunal will assess each factor in turn.

[176] Regarding the probability that wind turbine failure will occur, Mr. Palmer’s assessment does not present a probability for each of these three types of events individually. Instead, he calculates the probability of turbine failure which could include any of the events. His Witness Statement states his conclusion solely in respect of the probability of turbine failure in Ontario, indicating that it is approximately 0.001 failures per year. An alternative way of stating this probability is 1 failure for every 1000 wind turbines each year. Mr. Palmer provides the basis for his calculation. He stated that there were three known incidents of wind turbine failure in Ontario from January 2009 to August 2013, for approximately 3400 turbine years in service during this same time period.

[177] In response, Mr. Dokouzian testified that these wind turbine failure events are very rare, and referred to a 2005 Dutch study which states that the risk of blade failure was calculated to be 1 in 2,400 turbines per year and the risk of tower collapse was stated to be 1 in 7,700 turbines per year. He explained that even these low probabilities are very conservative by today's standards, given the evolution and improvement of wind turbine design since 2005.

[178] Mr. Dokouzian also expressed his opinion that Mr. Palmer's conclusion respecting the probability of wind turbine failure is unreliable. In support of this opinion, he notes that Mr. Palmer's calculation was based on limited data, restricted to turbine failure events in Ontario, over a limited time period. On this basis he asserts that Mr. Palmer's calculation is statistically unreliable. The Tribunal notes, however, that Mr. Dokouzian was not qualified to give opinion evidence on statistics, so no weight is given to this aspect of Mr. Dokouzian's evidence.

[179] The Tribunal finds, however, that Mr. Palmer's assessment did not include consideration of the 2005 Dutch study, nor did Mr. Palmer explain why a calculation of probability should be based on data respecting only wind turbines in Ontario. The Tribunal finds these to be significant deficiencies in his assessment. In this regard, the Tribunal notes that Mr. Palmer did include a calculation of probability for known international events, based on the Caithness data (116 incidents of turbine failures for 570,000 turbine years) which showed that the failure rate is approximately 0.0002 failures per year, but he did not explain why he did not adopt this probability, or factor it into his conclusion regarding what the risk of Project failure would be.

[180] In summary, for the purpose of expressing an opinion respecting the probability of wind turbine failure, the Tribunal does not accept that use of only the Ontario data, as Mr. Palmer has done, is adequate. The Tribunal accepts that the Dutch study demonstrates that the probability could be much lower than Mr. Palmer has calculated. However, the Tribunal was not provided with a full report of this study. As such, the Tribunal finds that the evidence adduced in this proceeding is insufficient for the Tribunal draw any firm conclusion regarding the probability that wind turbine failure will occur.

[181] The Tribunal now turns to the probability that wind turbine failure, if it occurred, would cause serious harm to human health. It is clear that the mechanism of the harm to be addressed here, is that a person could be seriously injured if struck by any part of the wind turbine. Therefore, key to Mr. Palmer's risk assessment, is the determination of the maximum distance that wind turbine parts may be thrown in the event of turbine

failure (“striking range”), and the probability that anyone would be within this striking range. The evidence Mr. Palmer adduced respecting striking range is very limited. As noted above, Mr. Palmer quotes one source as describing an event where blade parts were thrown 500 m. However, he did not provide a copy of this report, nor any description of the wind turbine. Therefore, the Tribunal finds it is not possible to draw any firm conclusion respecting striking range for parts throw for Project wind turbines in this case. The striking range for tower collapse for Project wind turbines is relatively straightforward. It is not disputed that the tower height is 80 m, and the blade length is 50 m, so the maximum striking distance would be 130 m. However, the Tribunal notes that this assumes that a tower falls over without first being itself thrown forward from its base. The Tribunal notes that it did not receive any evidence respecting whether a tower could first be thrown forward from its base if a collapse occurred.

[182] The Tribunal observes that, as the striking distances for parts throw and tower collapse appear to be different, the probability of event occurrence should, ideally, be calculated separately for parts throw and tower collapse. As noted above, Mr. Palmer’s assessment does not do so. The Tribunal finds this to be a significant deficiency in his assessment.

[183] The Tribunal now turns to the probability that anyone would be within these striking ranges. Mr. Palmer correctly points out that the non-participating owner and occupants of a property, which is adjacent to the property on which a wind turbine is situated, are entitled to be present anywhere within the boundary of their property. He notes that s. 53 of O. Reg. 359/09, which specifies the minimum setback distance for wind turbines, states:

> **Class 3, 4 and 5 wind facilities**
>
> 53.(1) No person shall construct, install or expand a wind turbine that is to form part of a Class 3, 4 or 5 wind facility unless,
>
> (a) the distance between the centre of the base of the wind turbine and any public road rights of way or railway rights of way is equivalent to, at a minimum, the length of any blades of the wind turbine, plus 10 metres; and
>
> (b) the distance between the centre of the base of the wind turbine and all boundaries of the parcel of land on which the wind turbine is constructed, installed or expanded is equivalent to, at a minimum, the height of the wind turbine, excluding the length of any blades.

[184] Therefore, Project wind turbines may be located a minimum of 60 m from public road or railway rights of way, and a minimum of 80 m to the boundary lines of the property where a Project wind turbine is located. Assuming striking distance due to parts throw could be up to 500 m, or even a more conservative estimate of 200 m (as demonstrated by the other data provided by Mr. Palmer discussed above), there clearly is the potential for persons on adjacent properties or on public roadways to be within striking distance, based on these minimum setbacks. However, a proper risk assessment respecting the Project requires consideration of the actual proposed setback for each individual turbine from adjacent property boundaries and public roads and railways. For example, assuming that the maximum striking distance is 500 m, an adjacent property owner would not be exposed to any risk if a wind turbine is actually located more than 500 m from the property line. The Tribunal notes that Mr. Palmer's assessment does not include or consider this data. The Tribunal finds that this is a significant deficiency in his assessment.

[185] As noted above, the assessment of risk of injury due to parts throw or tower collapse must also include the probability that anyone would be within striking range. Although Mr. Dokouzian was not qualified to give opinion evidence respecting risk assessment, he testified that a proper risk assessment of turbine failure should not only consider the failure rate and striking distance, but also the probability of a person being at that specific location at a given time. This evidence was not contradicted by the Appellants.

[186] The Tribunal notes that Mr. Palmer's assessment did not include consideration of the probability that a person would be within striking ranges of wind turbine parts throw or tower collapse. The Tribunal finds that this is a significant deficiency in his assessment.

[187] In his testimony, Mr. Dokouzian expressed his opinion that the probability that a person would be within striking distance when an event occurred would be very low. However, the Tribunal notes that he provided no data or analysis to support this conclusion. Mr. Dokouzian stated that, if this probability is included in the risk assessment, the probability of harm to a person, as a result of an event, would be much lower than the probability that the event would occur. He further asserted that this risk would be lower than the risk of being hit by lightning, which he stated is often used as a benchmark in risk assessments. However, the Tribunal again notes that Mr. Dokouzian was not qualified as an expert in conducting risk assessments, and, like Mr. Palmer, he did not provide any data regarding actual turbine setback distances, in support of his

conclusion. Consequently, the Tribunal finds that it cannot make any definitive findings based on this evidence.

[188] In summary, due to the numerous deficiencies in Mr. Palmer's assessment, and limitations respecting the evidence adduced in response to Mr. Palmer's evidence, the Tribunal finds that it has received insufficient evidence to make any definitive findings regarding the probability that blade throw, tower collapse, and damage resulting from a tower fire, would cause harm to human health. As such, the Tribunal finds that the Appellants have provided insufficient evidence to meet their onus to establish that such turbine failure will cause serious harm to human health.

[189] In light of this finding, the Tribunal finds that it is unnecessary to address the Respondents' submissions respecting bias. These submissions are summarized in the procedural ruling respecting Mr. Palmer's qualification to give expert evidence, which is set out in Appendix A to this decision, as described below.

Summary conclusion

[190] The Tribunal has found that the Appellants have failed to establish that the Health Test has been met based on the public safety risks cited by the Appellants, namely: shadow flicker; ice throw; and blade throw, tower collapse, and damage resulting from a tower fire.

Stray Voltage

Evidence of the Participant respecting Stray Voltage

[191] Ms. Minten gave evidence on her concerns about stray voltage, which she described as power acting in unintended ways, including ground current, earth potential rise, step and touch potential, induced current and harmonic frequency. She testified concerning her understanding of each of these topics.

[192] Ms. Minten raised concerns that having the Project's high voltage transmission lines near her property would create stray voltage problems, causing electrical shock, which could have adverse health effects on her and her family. She expressed concern that increased levels of electrical exposure could result in injury, pain, respiratory arrest, severe muscular contractions, adverse impacts on pregnant women, and potentially death.

Evidence of the Respondents respecting Stray Voltage

[193] Mr. Arkerson described the layout and components of the Project transmission facilities in relation to Ms. Minten's property. He testified that all transmission line designs used in the Project are signed by Ontario Licensed Professional Engineers, ensuring the safety of the transmission lines and their compliance with applicable Ontario regulations, including the Electrical Safety Code.

[194] Mr. Arkerson noted that NextEra does not narrow the definition of stray voltage to the concerns set out by Ms. Minten, and stated that stray voltage is a general term used to describe low-level voltages that may occur on surfaces that animals contact. He said that distribution systems use the neutral wire as a return path for current flow and, based on local service loading, may have unbalanced flows on the phase wires, creating stray voltage issues. He testified that the Project transmission line is not a distribution line and is not impacted by local service loading because it is not directly connected to the local distribution system. He stated that, due to its design, the Project transmission line would have balanced current conditions.

[195] Mr. Arkerson specifically explained how the design of the transmission line and mitigation measures would address Ms. Minten's concerns with respect to ground potential rise, step and touch potential limits, induced voltage and harmonic distortion, and ensure that they are kept to safe levels. He testified that, given the nature and design of the transmission line and the mitigation measures implemented by NextEra, the transmission line would not cause harm to human health.

Submissions of the Participant respecting Stray Voltage

[196] Ms. Minten submits that the health of people in her community will be seriously harmed by the Project, and requests that the REA be revoked.

Submissions of the Respondents respecting Stray Voltage

[197] The Approval Holder submits that all of the potential problems that Ms. Minten raised have been given consideration by the Approval Holder's professional engineers and addressed where appropriate. The Approval Holder further submits that Mr. Arkerson's expert evidence should be preferred to Ms. Minten's non-expert, lay opinion.

[198] The Director submits that Ms. Minten's evidence and the documents she referred to should be deemed inadmissible and irrelevant, and should not be considered by the

Tribunal. The Director asserts that it is clear from Mr. Arkerson's testimony that Ms. Minten's evidence is inaccurate and that there is no basis for her concerns.

Findings respecting Stray Voltage

[199] Ms. Minten testified as a fact witness in this proceeding. As noted elsewhere in this decision, the Respondents challenged the admissibility of her evidence on the basis that she does not have the requisite expert qualification to give the opinions she has expressed in her Witness Statement. Ms. Minten acknowledges that she is not an expert for the purpose of providing opinion evidence, nor does she have expertise in interpreting scientific and technical evidence. The Tribunal found that she should be allowed to express her views, as this may assist the Tribunal's understanding of the issues. The Tribunal also accepted that, where appropriate, she could refer to scientific, technical or other forms of expert information, solely on the basis that it informs or clarifies her views, but not as proof of such supporting information.

[200] In her evidence, Ms. Minten provided detailed commentary on a variety of technical topics related to stray voltage, including ground current and earth potential rise, induced current along high voltage transmission lines, harmonic frequency and its effect, and health effects of electrical currents on humans. None of the parties disputed that this subject matter involves scientific and technical information. Ms. Minten does not dispute that, in her evidence, she presents and analyzes this technical information and provides her views on the implications of this analysis as it relates to harm to human health.

[201] The Tribunal finds that Ms. Minten's evidence in respect of stray voltage is technical and scientific evidence for which opinion or interpretative evidence is required. Although she gave a thoughtful, detailed, and well-organized presentation, Ms. Minten's evidence can only be accepted as a statement of her concerns respecting the issues she has raised. Mr. Arkerson was qualified to give opinion evidence in this area. Accordingly, his is the only opinion evidence before the Tribunal in this proceeding on this issue. For this reason, the Tribunal does not find it necessary to discuss Ms. Minten's evidence in detail.

[202] Mr. Arkerson's overall opinion and conclusion, as stated in his Witness Statement, is:

> Due to the nature and design of the transmission system for the Adelaide project, stray voltage, ground current, induced current and harmonics will be kept to safe levels. NextEra's transmission line also meets or exceeds all relevant Ontario safety requirements.

[203] As Mr. Arkerson's expert opinion evidence has not been contradicted by any expert evidence adduced by the Appellants, the Tribunal finds that the Appellants have failed to establish that the Health Test has been satisfied.

Findings on Issue No. 2

[204] Based on the evidence before the Tribunal, the Appellants have not met their onus to prove that engaging in the Project in accordance with the REA will cause serious harm to human health.

Issue No. 3: Whether the renewable energy approval process violated Mr. Wrightman's and Ms. Wrightman's rights to security of the person under s. 7 of the *Charter.*

[205] Although Mr. Wrightman and Ms. Wrightman raised the s. 7 *Charter* violation issue in their notices of appeal, and Mr. Wrightman filed a Notice of Constitutional Question, neither Appellant made submissions on the *Charter* question. As noted above, the parties agreed that the Appellants would not proceed with a constitutional challenge under s. 47.5 of the *EPA*. However, the Appellants did not withdraw their constitutional challenge to s. 142.1 of the *EPA*.

[206] Ms. Wrightman's submissions did not address this issue at all, and Mr. Wrightman merely included a copy of the Notice of Constitutional Question in his written submissions. While the Appellants called evidence concerning human health, as described above, they did not identify any specific evidence in relation to the constitutional issue.

[207] As a result, these Appellants did not proceed with their constitutional challenge to s. 142.1 of the *EPA*.

[208] In the absence of sufficient evidence and legal submissions from Mr. Wrightman and Ms. Wrightman to establish their case on the constitutional issue, the Tribunal finds that it is not appropriate to make any formal rulings on this issue. For that reason, the constitutional issue in these appeals is dismissed.

[209] The Tribunal did receive submissions on the constitutional issue from the Director, but in light of its finding above, it is unnecessary to summarize them.

DECISION

[210] The Tribunal finds that the Appellants have not established that engaging in the Project as approved will cause serious and irreversible harm to plant life, animal life or the natural environment.

[211] The Tribunal finds that the Appellants have not established that engaging in the Project as approved will cause serious harm to human health.

[212] The Tribunal dismisses the constitutional challenge to s. 142.1 of the *EPA* on the basis that the Appellants did not proceed with this issue in their appeal.

Appeals Dismissed

Dirk VanderBent, Panel Chair

Maureen Carter-Whitney, Member

Appendix A – Procedural Rulings

Appendix A

Procedural Rulings

The Tribunal made a number of procedural rulings over the course of the hearing. These rulings are set out in this section of the decision.

Motion to Strike paragraphs in notices of appeal

The Approval Holder brought a motion to strike out paras. 30 and 35 of Ms. Wrightman's, and para. 17 of MLWAG's and Mr. Wrightman's, notices of appeal. Ms. Wrightman's notice of appeal refers to "any other issues which the community feels would cause harm to human health and safety, and to plants, animals and the natural environment", and both notices of appeal refer to "such further and other grounds as counsel may advise and this Tribunal may permit." The Approval Holder submitted that these allegations are vague and unparticularized, and asserted that the Tribunal does not have jurisdiction under the *EPA* to consider them.

At the commencement of the hearing, the Tribunal heard submissions and issued an oral ruling, as follows:

> Regarding the motion to strike certain grounds in the notices of appeal, the Tribunal finds it unnecessary to do so. The witness statements have been filed, so the issues have been identified for this proceeding. The Tribunal confirms, therefore, that no additional grounds can be raised.

Motion to exclude evidence of Larry Cook and Harvey Wrightman

Prior to the commencement of the hearing, the Approval Holder brought a motion to exclude the testimony of Ms. Wrightman's witnesses, Larry Cook and Harvey Wrightman, regarding lease negotiations. In its order dated October 11, 2013, the Tribunal ordered that this issue be determined by the panel hearing the appeals.

At the commencement of the hearing, the Tribunal heard submissions and issued an oral ruling, as follows:

> The Tribunal finds that the Appellants have not established that the evidence proposed to be given is relevant to the test under 142.1 of the *EPA*. While the Appellants have concerns regarding the leasehold negotiations, how these negotiations came about does not indicate one way or the other, whether engaging in the Project in accordance with the REA will cause serious harm to human health or serious and irreversible harm to plant life, animal life or the natural environment.

> Respecting the last sentence in Mr. Wrightman's Witness Statement, which asserts that the documents of the wind companies reveal that the effects of these projects will cause serious harm to human health, the Tribunal notes that this statement is in the nature of a submission, and Mr. Wrightman is entitled to make closing submissions, based on the evidence, at the end of the hearing.

Motion to exclude evidence of Linda Rogers

In response to Ms. Wrightman's request that Linda Rogers be permitted to give evidence in this proceeding, the Tribunal heard submissions and issued an oral ruling at the hearing, as follows:

> Pursuant to the schedule of events, all reply witness statements were to be filed by Sept. 24, 2013. In this regard, the Tribunal notes that the purpose of establishing a final date for the filing of witness statements, is to establish a date by which the Tribunal can identify the witnesses who will be called to give evidence by each party, so that the Tribunal can set the hearing schedule for the main hearing. In the case of renewable energy appeals, the timely scheduling of hearing dates is of particular importance, given the strict legislative timeline for completion of these appeals.
>
> At a continuation of the preliminary hearing held on Sept 27, 2013, the Tribunal granted Ms. Wrightman, at her request, an extension of the filing due date to Oct. 1, 2013. The Tribunal made it clear that this was the final date by which the Appellants' witness statements were to be filed. It is not disputed that Ms. Rogers' witness statement was served and filed on October 9. The commencement date of the hearing is October 15, 2013, which is insufficient time to allow the Respondents a fair opportunity to identify whether they would need to call a witness or witnesses to respond to Ms. Rogers' evidence if she were allowed to testify, nor for the Tribunal to schedule such response witnesses within the days which have already been scheduled to hear the respondents' case.
>
> The Tribunal will not comment on Ms. Rogers' qualification to give opinion evidence, or the evidence she proposes to adduce. The Tribunal is prepared to accept that Ms. Rogers' testimony is not solely to replace the testimony of Ben Lansink and Michael McCann, whom the Tribunal has ruled cannot testify in this proceeding. However, the Tribunal notes that the Appellant has not established any basis on which to conclude that Ms. Rogers' proposed evidence could not have been identified, and her Witness Statement served and filed by the October 1st deadline.
>
> For these reasons, the Tribunal does not grant Ms. Wrightman's request that Ms. Rogers be allowed to given evidence in this proceeding.

Motion to exclude evidence of Dr. Nina Pierpont

Prior to the commencement of the proceeding, the Director brought a written motion dated October 4, 2013, requesting an order prohibiting Dr. Pierpont from testifying in this proceeding. This motion was adjourned to be heard by the Hearing Panel in this proceeding. The Hearing Panel then heard this motion and gave an oral ruling as follows:

> It is regrettable that this particular issue has not been avoided, and therefore the Tribunal has had to make a very difficult decision. The Tribunal grants the Director's request that Dr. Pierpont be prohibited from testifying at this hearing. The Tribunal will provide written Reasons to follow.

The Tribunal now provides its reasons for this disposition.

Background

On September 24, 2013, Ms. Wrightman disclosed a witness statement for Dr. Pierpont (the "Witness Statement"). This brief Witness Statement states:

> **BACKGROUND AND AREA OF EXPERTISE**
>
> I am a physician (MD, Johns Hopkins University School of Medicine, 1991) and ecologist (PhD, Princeton University, 1985), and the author of Wind Turbine Syndrome: A Report on a Natural Experiment (K-Selected Books, 2009), a peer-reviewed book of original, primary research data and analysis, addressing specifically the issue of why some people are affected by symptoms in the presence of wind turbines and others not, and placing the symptoms in the context of the known physiology and pathophysiology of the ear, balance system, and brain. A CV is attached.
>
> **INTRODUCTION**
>
> I will attempt to teach the representatives of NextEra and the Ontario Ministry of the Environment, as well as the members of the Tribunal, enough about brain and ear physiology and pathophysiology, population-level studies in free-living organisms, and medical interviewing that they can understand the wind turbine-associated health issues. I will review and discuss studies since 2009 that have supported my conclusions and reports that oppose them.
>
> I will also review the history since 1987 of the stratagems used by the wind industry and its consultants to deny health effects. These include:
>
> - The assertion that wind turbines with upwind blades do not cause the same problems to nearby residents as wind turbines with downwind blades.
> - The assertion that if a sound cannot be heard, it cannot have any other effects on the ear or body.

- The assertion that internally generated infrasound is more apparent to the ear than wind turbine-generated infrasound.
- The assertion that differences in susceptibility mean that the people with symptoms are either consciously or unconsciously making up their symptoms.
- The assertion that my book and other descriptions of turbine-associated symptoms are creating these symptoms in other people by suggestion.

DOCUMENTS REVIEWED

Pierpont, N. 2009. Wind Turbine Syndrome: A Report on a Natural Experiment. K-Selected Books, Santa Fe, NM, 294 pp.

Remainder of list in file submitted is pending.

SUMMARY OF OPINION

Current evidence makes the denial of health effects from wind turbines an increasingly untenable position by the wind industry and Ontario government.

By email dated September 25, 2013, Katie Clements, counsel for the Director, wrote to Ms. Wrightman:

I am in receipt of the witness statement and 52 supporting documents that you provided for Nina Pierpoint. In Dr. Pierpont's witness statement, she does not specifically reference these supporting documents or what portions of those documents she will be referencing.

Rule 170 of the Tribunal's Rules requires that a witness statement include not only a summary of the opinions, conclusions and recommendations of the witness, but also reference to those portions of other documents which form an important part of the opinions, conclusions and recommendations of the witness.

In its Practice Direction for Technical and Opinion Evidence, the Tribunal states that "where the opinion and evidence are based on information contained in other documents, detailed references should be provided in any report prepared by the expert" [10(f)]. The Practice Direction also states that the report "provide enough information on the assumptions made, procedures used, and conclusions drawn to allow comprehension of the report as it stands, and to permit a fair and efficient cross-examination [10(c)].

Dr. Pierpont's witness statement is incomplete and we are not able to properly prepare a reply witness statement. I would ask that you forward to us a complete witness statement in accordance with the Rules forthwith.

Ms. Wrightman then responded the same day:

> Dear Ms. Clements,
>
> I re-read Dr. Pierpont's witness statement and believe it is sufficient.
>
> You will note in her Documents Reviewed, Dr. Pierpont states one reference: "Pierpont, N. 2009. Wind Turbine Syndrome: A Report on a Natural Experiment. K-Selected Books, Santa Fe, NM, 294 pp."
>
> I am sending you this book today and encourage you to read it entirely as an extension of her witness statement. It clearly details how Dr. Pierpont formed her, "opinions, conclusions and recommendations". As well, this book has sixteen pages of footnoted references throughout.

Ms. Clements then responded on September 26, 2013:

> Ms. Wrightman,
>
> The 52 documents that you provided are not reference[d] in either Dr. Pierpont's book or her witness statement. As such, I will assume, unless you indicate otherwise, that Dr. Pierpont will not be relying upon any of those 52 documents you provide[d] on Tuesday night. If Dr. Pierpont does want to rely upon the 52 documents, a detailed witness statement with references is required in accordance with the Rules.
>
> In accordance with Rule 170, could you provide us with the passages of the book that Dr. Pierpont will be relying on in her evidence? As you mentioned there are 16 pages of references, which you have not disclosed to us. If Dr. Pierpont is relying on some of those book references in her evidence, the disclosure rules would dictate that we should receive a copy of at least the references relating to the most significant portions of the book that Dr. Pierpont would be relying on.

Ms. Wrightman then replied September 26, 2013:

> I do not have Dr. Pierpont's witness statement and evidence in comic book form.
>
> Luckily when she wrote her book, she divided it into two sections: for physicians, and for non-physicians. At the very least read through the non-physician portion if you want a clear understanding of what she will speak to.
>
> Although, as you are a professional, it would be best if you made it through the physician portion as well, which is written in a very comprehensible format.

In a continuation of the preliminary hearing by telephone conference call (“TCC”) with the parties on September 27, 2013, Tribunal Vice-Chair, Paul Muldoon, who chaired the preliminary hearing, directed that Ms. Wrightman be permitted the opportunity to file additional witness statements no later than October 1, 2013. In this TCC, the Tribunal confirmed the Tribunal’s requirement that each witness statement must fully summarize all of the evidence the witness intended to adduce at the hearing.

On September 30, 2013, Ms. Wrightman delivered an updated version of Dr. Pierpont's Witness Statement (the "updated Witness Statement"), although it remained signed and dated September 24, 2013. Para. 1 was amended as follows:

> INTRODUCTION
>
> I will attempt to teach the representatives of NextEra and the Ontario Ministry of the Environment, as well as the members of the Tribunal, enough about brain and ear physiology and pathophysiology, population-level studies in free-living organisms, and medical interviewing that they can understand the wind turbine-associated health issues **(ref. 1-3).** I will review and discuss studies, reports, and submitted evidence since 2009 that have supported my conclusions **(ref. 4-30)** and reports that oppose them **(ref. 34-46).**

This updated Witness Statement also includes a new section entitled "Documents Reviewed" and lists 46 documents which include Dr. Pierpont's book, published papers, and other articles.

Submissions of the Director and Approval Holder

The Director provided written submissions in his motion record, which are supported by the Approval Holder. The Director relies on Rule 170, particularly Rules 170(b), (e), (f), and (g), and paras. 2 and 10(c), (e), and (f) of the Practice Direction for Technical and Opinion Evidence. The Director made the following submissions:

- Dr. Pierpont's Witness Statement is deficient and does not allow the Director to know the case to meet and to prepare a responding case. The Director submits that the Pierpont Statement should be excluded from evidence as it prejudices the Director's ability to prepare a responding case.
- In light of the expedited timelines enshrined in the REA appeal process, it is critical that the responding parties receive as much information as possible to be able to understand the case that each of the Appellants intends to advance. One of the key ways that this is achieved is by providing detailed witness statements in advance of the hearing. Complete witness statements in accordance with the Rules are necessary so that the responding parties can understand the case to be met and can adequately prepare their responding cases within the strict timelines set out by the Tribunal
- The Tribunal has continually emphasized the need for detailed witness statements and adequate particularization of the Appellants' case in this proceeding as well as other REA appeal proceedings. Given the limited time

available for hearings, it is imperative that parties provide detailed witness statements in order that opposing parties know the case to meet and have the opportunity to meet it.

- The need to promote efficiency and fairness in the Tribunal's process and to decrease delay has a heightened significance in REA appeal proceedings relative to other appeals under the *EPA*. In *Preserve Mapleton Inc. v. Ontario (Ministry of the Environment)* (2012), 67 C.E.L.R. (3d) 246, at para. 64, the Tribunal held that the "expedited nature of the REA appeal process demands that the parties make their best efforts to provide as much information to each other as early as possible…".
- Dr. Pierpont's Witness Statement does not reference those specific portions of other documents which form an important part of the opinions, conclusions and recommendations of the witness. Nor does it provide basic information about the content of her opinions and conclusions. Given that there is no explanation of the reasons and facts supporting the opinion, it is not obvious what portions of the references are being relied upon. Furthermore, the Pierpont Statement does not indicate whether Dr. Pierpont has an interest in the proceeding or not.
- Dr. Pierpont's Witness Statement states "I will review and discuss studies, reports, and submitted evidence since 2009 that have supported my conclusions (ref. 4-30) and reports that oppose them (ref. 34-46)." It is insufficient to simply say that a proposed witness will review 42 documents that support or oppose her conclusions, without providing any content to the review that is proposed to be conducted. The failure to provide a basic outline of the proposed witness' opinions and conclusions about these articles does not permit fair and efficient cross-examination, as required by the Tribunal.
- Similarly, Dr. Pierpont's Witness Statement provides that she will "review the history since 1987 of the stratagems used by the wind industry and its consultants to deny health effects" and she lists five (5) of these "stratagems." In effect, Dr. Pierpont lists five (5) statements that she opines are false. However, there is no summary or commentary as to why these five (5) statements are false and how Dr. Pierpont came to the conclusion that these statements are false.

- Dr. Pierpont's Witness Statement meets neither the heightened requirements for statements in renewable energy appeal proceedings nor even basic compliance with the letter of the Rules.
- As such, the Director submits that the Tribunal should decline to accept the evidence of Dr. Pierpont.
- The Tribunal states very clearly in para.15 of its Practice Directions the consequences of failing to comply with Practice Directions:

  > If this Practice Direction is not complied with, the Tribunal may:
  >
  > (a) decline to accept the opinions or evidence of an otherwise qualified witness;
  >
  > (b) admit the evidence, but accord it little weight;
  >
  > (c) adjourn the date of the Hearing until such time as this Practice Direction is complied with;….

  In order for the responding parties to provide meaningful additional disclosure and witness statements in accordance with the subsequent disclosure deadlines, they must be substantially aware of the case each of the Appellants intends to call. In particular, it is essential that the parties know what witnesses will be called by each Appellant, the content of each witness's evidence and how each witness's evidence will assist the Tribunal in determining whether the statutory test has been met.
- Given that the Tribunal has already extended the deadline for Ms. Wrightman to provide a revised witness statement that complies with the Rules, Ms. Wrightman's failure to do so, and the impending commencement of the hearing, the Director requests that the Tribunal strike the evidence of Dr. Pierpont. Ms. Wrightman has been provided with the opportunity twice to provide a detailed witness statement that permits for fair and efficient cross-examination. Ms. Wrightman has refused to provide a detailed witness statement. It would be unjust and unfair to permit Ms. Wrightman to benefit from her non-compliance with the *Rules,* despite an additional opportunity to comply.

Submissions of Ms. Wrightman and Mr. Wrightman/MLWAG

The Appellants did not respond to the Director's motion in writing. Their response submissions were given orally by Ms. Wrightman. Mr. Wrightman and MLWAG support her position. In summary, her submissions are:

- Ms. Wrightman states her belief that there is no restriction as to the length of a witness statement. She submits that the second version of Dr. Pierpont's Witness Statement listed the documents to be reviewed by Dr. Pierpont and specified which of these documents she would be relying on in support of her conclusions.
- Ms. Wrightman points out that she provided the Respondents with a document entitled *Wind Turbine Syndrome – A Twenty Minute Crash Course* (the "Crash Course Document"), which is a written transcript of a video-conference presentation given by Dr. Pierpont in Shelburne Falls, Massachusetts on January 28, 2012. She asserts that this document provides an outline of what Dr. Pierpont's evidence will be in this proceeding. She stated that she assumed she would have heard from the Respondents if this was not satisfactory.
- Ms. Wrightman submits that if Dr. Pierpont's Witness Statement is an expert report, it should have been called that. She indicated that it is surprising that Dr. Pierpont's Witness Statement could take the place of direct evidence. She notes that Dr. Pierpont included her book, *Wind Turbine Syndrome: A Report on a Natural Experiment* described in her Witness Statement ("Dr. Pierpont's Book") which Ms. Wrightman submits is an extension of her Witness Statement. She emphasizes that this book was written by Dr. Pierpont, and extensively addresses what Dr. Pierpont referenced in her Witness Statement. Ms. Wrightman asserts that it is there if you read Dr. Pierpont's Book.
- Ms. Wrightman asserts that there has been no delay, and maintains that Dr. Pierpont's Witness Statement was delivered on time and Dr. Pierpont is prepared to attend and testify as scheduled.
- Ms. Wrightman emphasizes that para. 15 of the Tribunal's Practice Directions, which addresses the consequences of failing to comply with the Practice Directions, states that the Tribunal *may*, not shall, decline to accept the evidence of a witness. She submits that the prejudice to her case far outweighs any prejudice to the Respondents, whose resources are limitless, as compared to hers, which hardly exist.
- Ms. Wrightman asserts that the Respondents have indicated their right to have evidence admitted "may" be prejudiced, or there "may" be a

delay in the hearing. She submits that her Witness Statement was filed in time, and she doesn't see what the problem is.

- In summary, she asks that the Tribunal "not throw the baby out with the bathwater". She submits that fairness requires that Dr. Pierpont should be heard, and that the Tribunal should listen to her testimony and then apply weight. She submits that there is no reason to decline her evidence, and that the Director's request is frivolous.

Findings respecting the request for an order prohibiting Dr. Pierpont from testifying in this proceeding

The Tribunal finds that Rule 170, particularly Rules 170(b), (f), and (g), and paras. 2 and 10(a), (c), (e), and (f) of the Practice Direction for Technical and Opinion Evidence apply in the circumstances of this case.

Rule 170 states:

> **Witness Statements**
>
> 170. If the Tribunal requires the production of witness statements, the Parties and Participants shall serve those statements on each other and file them with the Tribunal within the time directed by the Tribunal, which is usually no later than 15 days before the commencement of the Hearing. Each witness statement shall include, where applicable:
>
> (a) the name, address and telephone number of the witness;
>
> **(b) whether the evidence will be factual evidence or, if the witness is qualified, opinion evidence;**
>
> (c) a resume of the witness' qualifications, where the witness is to give opinion evidence;
>
> (d) a signed form in accordance with Form 5 in Appendix F, where the witness is to give opinion evidence;
>
> (e) whether or not the witness has an interest in the application or appeal and, if so, the nature of the interest;
>
> **(f) a summary of the opinions, conclusions and recommendations of the witness;**
>
> **(g) reference to those portions of other documents which form an important part of the opinions, conclusions and recommendations of the witness;**
>
> (h) a summary of answers to any interrogatories to or from other Parties that will be relied upon at the Hearing;
>
> (i) where applicable, a discussion of proposed conditions of approval that are in controversy among the Parties or agreed upon conditions that may be related to issues in dispute;

(j) the date of the statement; and

(k) the signature of the witness. [emphasis added]

Paragraphs 10 (a), (c), (e), and (f) and para. 15 of the Practice Direction for Technical and Opinion Evidence (the "Practice Direction") state:

Preparing Reports

10. In preparing reports to be used by the witness' employer or client in determining the issues to be raised and the employer or client's position on those issues and for use as evidence, and *in testifying before the Tribunal, the witness has the following disclosure duties*:

(a) It is the responsibility of the witness to make fair and full disclosure.

…

(c) To provide enough information on the assumptions made, procedures used, and conclusions drawn to allow comprehension of the report as it stands, and to permit fair and efficient cross-examination.

…

(e) The witness should state all the material facts and assumptions upon which his or her opinion is based. He or she should consider and acknowledge material facts which could detract from the opinion. Where the facts are in dispute, the Tribunal expects that the witness will give his or her view of the facts and the proof relied upon before giving the opinion.

(f) Where the opinion and evidence are based on information contained in other documents, detailed references should be provided in any report prepared by the expert, and copies of those documents made available on request before and during the Hearing.

Compliance

15. If this Practice Direction is not complied with, the Tribunal may:

(a) decline to accept the opinions or evidence of an otherwise qualified witness;

(b) admit the evidence, but accord it little weight;

(c) adjourn the date of the Hearing until such time as this Practice Direction is complied with;

…

[emphasis added]

The Tribunal turns first to the requirement of Rule 170.

The Tribunal first notes that Dr. Pierpont's proposed evidence is to address the issue of whether engaging in the Project, in accordance with the REA, will cause serious harm to

human health. The adequacy of her Witness Statement must be assessed in this context.

In reviewing Dr. Pierpont's updated Witness Statement, the Tribunal finds she clearly provides only one conclusory opinion, in the section entitled Summary of Opinion. She states "Current evidence makes the denial of health effects from wind turbines an increasingly untenable position by the wind industry and Ontario government."

However, the Tribunal finds that statement is better described as a summation. In this regard, she refers to "current evidence", but provides no indication of the specific evidence on which she relies. Even if the Tribunal accepts Ms. Wrightman's assertion that the list of documents reviewed should be read as an extension of Dr. Pierpont's Witness Statement, the Witness Statement itself states that this list include documents that both support and oppose her conclusions. Consequently, there is no indication of the specific evidence on which she will rely to support this conclusion.

Clearly, Dr. Pierpont's Witness Statement, at best, can be described as setting out a list of topics that she intends to address in her evidence. Her Witness Statement does not provide any of her substantive opinions on any of these topics. There appears to be a misunderstanding on her part, when she states in the introduction that she "will attempt to teach" the parties and the Tribunal about the topics she specified. In the context of being a teacher it may be sufficient to simply provide an outline of the topics to be addressed. However, if she were an expert witness in this proceeding, her role would be to provide her expert opinion regarding the issues to be addressed in this proceeding. As with all witnesses, her evidence may be challenged by the other parties through cross-examination, and by calling response witnesses. The other parties can only do so if they have been provided with a clear statement of what her specific opinions will be.

It is not sufficient, as Ms. Wrightman suggests, that the parties be left to read through the documents Dr. Pierpont has listed for review. This only leaves them to guess which opinions, analysis, data, or other information Dr. Pierpont will adopt as her evidence. Ms. Wrightman's answer to this, particularly as it relates to Dr. Pierpont's book, is that Dr. Pierpont relies on all of it. The Tribunal does not accept this position. The documents listed by Ms. Wrightman, including her book, were not written to respond to the issues in this proceeding. Furthermore, other parties are not required to respond to the portions of these documents which will not be referenced by Dr. Pierpont. Therefore, it is incumbent on Dr. Pierpont to identify, in her Witness Statement, her specific opinions as they relate to the issue in this proceeding, and to quote the specific

parts of the documents listed on which she relies in support her opinions. Without this information, the other parties will be unable to determine precisely what her evidence will be, and, as a consequence, have no fair opportunity to respond to her evidence.

The Tribunal's finding in this regard is clearly supported by the Rules and the Practice Direction. Rule 170(f) requires that a witness statement include a summary of the opinions, conclusions and recommendations of the witness. Rule 170(f) does not say that a witness is merely required to provide an agenda respecting the subjects of the opinions to be provided.

Rule 170(g) requires that a witness statement include "reference to those portions of other documents which form an important part of the opinions, conclusions and recommendations of the witness". This section clearly underscores that there is a difference between the opinions, conclusions, and recommendations that are to be included in the witness statement under Rule 170(f), and the portions of other documents referenced in support of those positions. Apart from this, Rule 170(g) clearly requires reference to the specific portions of the documents on which she relies. It is clear that Dr. Pierpont's Witness Statement does not comply with this provision. Her Witness Statement only lists the titles of the documents reviewed. The Tribunal also notes that the requirement of Rule 170(g) is substantially repeated in para. 10(f) of the Practice Direction.

Regarding para. 10 of the Practice Direction, although Ms. Wrightman questions whether there is a difference between an expert report and a witness statement, the Tribunal finds that any distinction between the two is not a probative consideration. Paragraph 10 expressly states that it applies in preparing reports *and* when giving testimony before the Tribunal. Clearly the report is evidence. Therefore, the Tribunal finds that, for expert witnesses, requirements for reports also apply to witness statements. The Tribunal notes that the wording of sub-paras, 10 (a), (c), and (e) are clear. It is the responsibility of the witness to make full disclosure, to provide enough information on assumptions, procedures, and conclusions to allow comprehension of the report or witness statement as it stands. This means that the witness statement itself must allow comprehension of the opinion evidence, without further reference to the information contained in other documents that have been cited in support of the opinion evidence. Clearly, Dr. Pierpont's Witness Statement does not satisfy this requirement. It also does not satisfy the requirement of para. 10(e). Dr. Pierpont's Witness Statement does not include all the material facts and assumptions upon which her opinions are based.

Ms. Wrightman also submits that the Crash Course Document provides an outline of what Dr. Pierpont's evidence will be in this proceeding. The Tribunal does not accept this submission. The Tribunal has reviewed this document. As noted above, it is a transcript of a public lecture given by Dr. Pierpont. As such it does not indicate the evidence which Dr. Pierpont intends to adduce in respect of the issues in this proceeding.

In summary, based on the above analysis and findings, the Tribunal finds that Dr. Pierpont's Witness Statement does not satisfy the applicable requirements of Rule 170 and the Practice Direction.

Having found that Dr. Pierpont's Witness Statement does not comply with Rule 170 and the Practice Direction, the Tribunal turns to its analysis of the appropriate response. As noted in para. 15 of the Practice Direction, the Tribunal may: decline to accept the opinions or evidence of an otherwise qualified witness; admit the evidence, but accord it little weight; or adjourn the date of the Hearing until such time as the Practice Direction is complied with. The Tribunal accepts Ms. Wrightman's submission that, because para. 15 says it may take any of the listed responses, the Tribunal has discretion to allow Dr. Pierpont to testify. The question, therefore, is whether the Tribunal should do so.

The least intrusive response is to adjourn the hearing until the Practice Direction has been complied with. The Tribunal finds that this is not a feasible option. Based on the witness schedule, approximately half of the hearing is devoted to the Health Test. Ms. Wrightman made no alternative submissions regarding whether Dr. Pierpont would comply with the Practice Direction, and, if so, when. In any event, rescheduling this part of the proceeding would significantly delay completion of the hearing, bearing in mind that the hearing must be completed and the appeals disposed of within six months from the filing of the appeals. The Tribunal finds that such an adjournment would seriously prejudice the Tribunal's ability to complete the hearing of these appeals and dispose of them within six months.

The Tribunal next considers whether it should admit the evidence but afford it little weight. The Tribunal finds there is no purpose to be served by this approach in the circumstances of this case. Dr. Pierpont's Witness Statement, in and of itself, contains virtually no substantive evidence, so allowing Dr. Pierpont to testify, but restricting her evidence to the contents of her Witness Statement, would be of no assistance to the Tribunal.

The remaining option is to decline to accept Dr. Pierpont's evidence. Ms. Wrightman asserts that it would be unfair to do so, and submits that Dr. Pierpont should be allowed to testify. Each case must be determined on its own merits. The Tribunal accepts that an overall consideration of fairness is relevant, and has given this matter serious consideration, particularly as the Appellants assert that Dr. Pierpont's evidence is important for their case. However, the Tribunal must also consider whether the current situation could have been avoided. In this regard, the Tribunal has considered the following:

- Ms. Clements, in her emails dated September 25 and 26, 2013, clearly alerted Ms. Wrightman to the requirements of Rule 170. Ms. Wrightman's reply email dated September 26, 2013, can be characterized as a flippant response.
- The Tribunal extended the filing due date for her witness statements to October 1, 2013, in order to allow Ms. Wrightman a further opportunity to provide a witness statement for Dr. Pierpont which would satisfy the requirements of Rule 170 and the Practice Direction, but Ms. Wrightman did not do so.
- The Director's motion is dated October 4, 2013, and was originally brought before the Tribunal on October 8, 2013, so the Appellants were well aware of the issues being raised by the Director, and the relief being sought, prior to the commencement of the hearing on October 15, 2013.
- All parties were aware of the Tribunal's direction that examination-in-chief would be restricted to less than hour, and, therefore, it would be necessary for witness statements to contain all the witness's evidence, so the witness could adopt the witness statement when testifying. Clearly, given the scope of the topics described in Dr. Pierpont's Witness Statement, oral examination-in-chief could not possibly be completed within this time frame.

Based on these considerations, the Tribunal finds that reasonable efforts were made to: (i) alert Ms. Wrightman to the requirements for Dr. Pierpont's Witness Statement; (ii) allow her the opportunity, and sufficient time, to prepare and file an adequate witness statement; and (iii) provide her with notice of the potential consequences if she did not do so. Consequently, the Tribunal finds that Ms. Wrightman could have avoided this situation had she chosen to do so.

Based on the above analysis and findings, the Tribunal has, as stated in its oral ruling, exercised its discretion to prohibit Dr. Pierpont from testifying in this proceeding.

Request for qualification of William Palmer as an expert witness

The Appellants and Mr. Palmer requested that he be qualified by the Tribunal to give opinion evidence as a professional engineer in the province of Ontario with experience and qualification in the operation, public safety, risk assessment and environmental assessment related to the electrical power generating system. This includes evaluating operation of electrical generating systems, including wind turbines, and advising and reporting specific to the professional engineering aspects of safeguarding of life, health, property and the public welfare requiring the application of engineering principles of risk assessment, and evaluation of operating experience.

The Respondents opposed this request as discussed in greater detail below.

The Tribunal provided an oral ruling as follows:

> The Tribunal qualifies Mr. Palmer to give opinion evidence regarding the application of engineering principles to risk and public safety assessment, and in the area of acoustics.
>
> Our reasons will follow. However, to assist the parties in proceeding with Mr. Palmer's evidence, the Tribunal makes two observations:
>
> - Submissions regarding bias and advocacy will be assessed by the Tribunal when giving weight to the evidence; and
> - This witness may speak to the areas for which he has been qualified, and the Tribunal will assess the extent to which his opinions apply to the subject areas addressed in his Witness Statement.

The Tribunal now provides its reasons for this ruling.

Mr. Palmer prepared a written Witness Statement dated September 24, 2013, and a Supplemental Witness Statement dated October 1, 2013, jointly referenced as the "Witness Statements".

Regarding Mr. Palmer's qualifications, he is a professional engineer, having a Bachelor of Applied Science degree, which included auditing a course on acoustics. He has taken courses at the Massachusetts Institute of Technology in nuclear power reactor safety and risk-informed operation management. His Witness Statement indicates that these courses include areas of risk assessment (deterministic and probabilistic) and evaluation of operating experience of generation systems. He is a member of the Acoustical Society of America. His Witness Statement also indicates that he has attended several international conferences respecting wind turbine noise. In terms of

his work experience, he has worked for approximately 30 years at the Bruce Power facility in various positions, the most recent as the section manager for performance assessment. Since his retirement in 2007, he has continued to maintain his registration as a professional engineer.

Mr. Palmer testified that he has expertise in conducting shadow analysis respecting nuclear radiation, which he asserted is expertise which can also be applied to shadow flicker analysis.

Regarding the field of acoustics, Mr. Palmer testified that professional engineers in Ontario are not specifically registered as acoustical engineers. He noted that there is a consulting engineer association which designates consulting acoustic engineers, but the only standard to be met is primarily to pay a registration fee. He explained that the MOE has specifically identified within their compliance protocols for industrial wind turbines a set of criteria for persons who would do acoustical audits. He also stated that persons other than engineers may be qualified as acousticians, pointing out that the Acoustical Society of America has associate and full members, where full membership is granted based on recognition of work done in the field of acoustics. Mr. Palmer testified that, since he retired, he has worked the equivalent of six or seven years of full time self-training and work, the majority of this time being devoted to the area of acoustics, with the remaining time including work on risk assessment. Respecting his experience relate to industrial wind turbines, his Witness Statements list papers he has presented, conferences he attended, his involvement in proceedings before the Ontario Municipal Board and the Ohio Power Siting Board, and as technical advisor to a Multi Municipality Wind Turbine Working Group. He states that he has also personally viewed all the major wind turbine arrays in Ontario.

The Respondents objected to several areas addressed in Mr. Palmer's Witness Statement and Supplemental Witness Statement, including Mr. Palmer's comments on medical evidence, natural environmental resource assessment, and greenhouse gas emissions. In reviewing his Witness Statements, the subject matter of some of his opinions clearly fall outside his qualification as requested by the Appellants. In addition, the Tribunal notes the Witness Statements include opinions in response to witnesses who did not testify in this proceeding, which includes the subject area of greenhouse gas emissions. Mr. Palmer acknowledges that he does not have special expertise respecting health matters. He testified that he has no qualifications in the fields of ecology and biology, and his experience respecting environmental assessment was in working on a team where he received input from other persons with expertise in those

areas. For the above reasons, the Tribunal concludes that he should be not be qualified in the areas of health, or natural resource environmental assessment.

The Respondents assert that Mr. Palmer is not qualified to give expert opinion on shadow flicker. The Tribunal accepts that Mr. Palmer does not have direct experience respecting shadow flicker, *per se*, but he does have related expertise, which the Tribunal finds qualifies him to comment on shadow flicker, in the context of applying engineering principles to risk and public safety assessment.

The Respondents assert that Mr. Palmer is not qualified to give expert opinion evidence on acoustics, noting that he is not an acoustical engineer. However, the evidence adduced indicates that acousticians are not legislatively regulated as a professional occupation. Mr. Palmer is a professional engineer who has audited one academic course in acoustics, and has engaged in significant amount of self-study in acoustics as it relates to industrial wind turbines, and has presented papers on this subject at several conferences. Therefore, the Tribunal finds that he has sufficient education, training and expertise to be qualified to give opinion evidence on acoustics.

The Respondents do not challenge that Mr. Palmer has significant experience in public safety and risk assessment in the nuclear energy field, but they argue that it cannot be assumed that this experience is transferable to industrial wind turbine energy. The Tribunal accepts this submission in part. Mr. Palmer did not clearly state that he had direct experience in conducting public safety and risk assessment. But he is a professional engineer who has considerable related work experience in the nuclear energy field. Therefore, the Tribunal is satisfied that he is qualified to give opinion evidence on the application of engineering principles to risk and public safety assessment.

The Tribunal finds that the wording of the qualification sought by the Appellants for Mr. Palmer is imprecise, and his training, education and experience only support a more circumscribed qualification, as stated in the Tribunal's oral ruling. Finally, the Tribunal notes, that this ruling is only in respect of his qualification to give opinion evidence. It is not an acceptance that all opinions, as presented in his Witness Statements, fall within the areas for which he has been qualified, nor is it an indication of the weight to be given to Mr. Palmer's opinion evidence.

The Respondents have also raised concerns respecting Mr. Palmer's qualification as an expert on the grounds that he has, in the past, been affiliated with an organization which opposes industrial wind farms, and has been an advocate against wind farm

development. As noted in the Tribunal's oral ruling, these submissions regarding bias and advocacy will be assessed by the Tribunal when weighing his evidence.

Request to strike witness statement of Kathryn Minten

During the proceeding, the Approval Holder brought an oral motion to request that Ms. Minten's Witness Statement be struck and that her evidence in this proceeding be restricted to oral evidence of a lay (fact) witness. One of the Approval Holder's grounds in support of this motion, was that portions of Ms. Minten's Witness Statement speak to issues which were not raised in the Appellants' notices of appeal. In this regard, the Approval Holder had, earlier in the proceeding, raised a request to strike certain parts of these appeals on the grounds that they were so broadly drafted that they did not disclose a discrete ground in support of the appeals. The Approval Holder asserted that these clauses included phrases such as "any other issues which the community feels will cause harm" or "such further or other grounds as counsel may advise and this Tribunal may permit".

The Tribunal's ruling on the motion to strike Ms. Minten's Witness Statement was prepared in writing, and delivered by the Tribunal's case coordinator to the parties by electronic mail:

> Regarding the Tribunal's earlier ruling respecting the Approval Holder's motion to strike what has been described as the "basket clause" grounds of appeal (Paragraph 17 of the MLWAG/Harvey Wrightman Notice of Appeal, and paragraphs 30 and 35 of the Esther Wrightman appeal), the Tribunal clarifies that it did not find it necessary to rule on this request, as the Tribunal expected that the issues should have been adequately identified through the witness statements filed in this proceeding. As a further clarification of this ruling, the Tribunal notes that it does not accept that these "basket clauses" can be relied on when determining whether proposed evidence is relevant. However, this does not mean, as the Approval Holder has submitted, that relevance is to be determined in the context of the scope of the witness statements of the parties' witnesses. The Tribunal finds that relevance is to be determined having regard to the grounds set out in the notices of appeal (other than the basket clauses).
>
> As Ms. Minten has been granted participant status in a later stage of this proceeding, she was directed to file her Witness Statement by October 16. The Approval Holder requests that the Tribunal strike Ms. Minten's Witness Statement in its entirety, and that she only be allowed to testify orally to evidence that is generally accepted from a lay fact witness. In this regard, the Approval Holder refers to the Tribunal's Practice Direction for Technical and Opinion evidence. The Approval Holder's submissions in support of this request fall into two categories: (i) matters addressed in Ms. Minten's Witness Statement are not relevant to the grounds of appeal of any of the Appellants; and (ii) her Witness

Statement includes technical or opinion evidence which a lay fact witness is not allowed to give. In addition, the Approval Holder notes that Ms. Minten's Witness Statement reports evidence of other persons, and states that these parts of her Witness Statement should be struck as they are hearsay. The Approval Holder also asserts that Ms. Minten refers to health effects regarding a wind turbine owned by her father-in-law, to which her family was exposed. The Approval Holder asserts that her testimony in this regard should not be accepted, as she has filed no documents regarding her medical history.

The Approval Holder asserts that the following areas of Ms. Minten's Witness Statement are not relevant:

- The impact of stray voltage on animals
- Soil compaction (as set out in the following sections in Ms. Minten's Witness Statement: Serious and irreversible harm to the natural environment – effects of soil compaction, Wet Weather, Tracks and Subsoiling, Soil Rehabilitation, and Mitigation is not sufficient)
- Impact to wildlife, including specific evidence regarding individual species.
- Health effects experienced by Ms. Minten regarding a wind turbine purchased and installed by her father-in-law.

For reasons to be provided later, the Tribunal finds that Paragraph 27 of Ms. Wrightman's Notice of Appeal sets out grounds to which subject areas #1 and #3 are relevant. The Tribunal finds that neither notice of appeal sets out grounds of appeal to which area #2 is relevant. Therefore, in respect of area #2, the Tribunal will strike the previously mentioned sections of her Witness Statement.

Turning to the second category of the Approval Holder's submissions, Ms. Minten acknowledges that she is not an expert for the purpose of providing opinion evidence, nor that she has expertise in interpreting scientific and technical evidence. On this basis, the Tribunal cannot accept any opinion evidence or any evidence interpreting scientific or technical evidence. However, for reasons to be provided later, the Tribunal accepts that participants and presenters may be allowed to express their views even though they may be giving evidence as fact witnesses, as this may assist the Tribunal's understanding of the issues. The Tribunal also accepts that, and, where appropriate, they may refer to scientific, technical or other forms of expert information, solely on the basis that it informs or clarifies any views they may have stated, but not as proof of such supporting information. In this case, the Tribunal finds that the portions of Ms. Minten's Witness Statement which are otherwise relevant and admissible, may be accepted subject to this caveat.

To the extent that Ms. Minten's evidence regarding her personal exposure to a wind turbine includes conclusions regarding the health impact of the turbine, the Tribunal will not accept this evidence. However, consistent with previous Tribunal rulings, she can describe any symptoms she personally experienced.

The Tribunal finds that the evidence of other persons quoted by Ms. Minten are hearsay, and, for reasons to follow, will not be admitted.

The Tribunal now provides its reasons respecting its ruling, as identified in the above disposition.

Regarding the issue of relevance, para. 27 of Ms. Wrightman's notice of appeal states:

> Animals health, safety and habitat at risk
>
> **The Adelaide Wind Energy Centre poses serious and irreversible harm to wildlife**, **livestock**, and household pets **in the project area** - and even outside the project area, when cumulative impacts are taken into consideration. Bats, eagles, and **other** flora and **fauna are at risk from the installation of** the turbines**, transmission lines, substations**, access roads and other general destruction and disruption made by the wind company. [emphasis added]

The Tribunal notes that this paragraph does not contain one of the basket clauses to which the Approval Holder objects. The Tribunal finds that this paragraph of Ms. Wrightman's appeal clearly alleges harm to wildlife and livestock, and identifies the installation of transmission lines and substations as one of the alleged causes of the harm.

The Tribunal now turns to its reasons respecting the issue whether a participant or presenter may express their views even though they may be giving evidence as fact witnesses. The Tribunal notes that, under Rules 63, 66, and 69, two of the relevant matters that the Tribunal may consider in deciding whether to grant participant or presenter status are whether:

- a person has a genuine interest, whether public or private, in the subject matter of the proceeding; and
- a person is likely to make a relevant contribution to the Tribunal's understanding of the issues in the proceeding.

For this reason, even if a participant or presenter is a fact witness, Tribunal practice is typically to allow them to state their views on issues, and to either state their understanding of technical information or opinions which inform their views, or to file what is commonly referred to as supporting documents, such as published reports. This evidence is typically not accepted as proof of this supporting evidence. Rather it is accepted on the basis that it describes the information on which the participant or presenter has relied to inform the views which they have expressed.

The Approval Holder argues that the complexity of the information provided by Ms. Minten in her Witness Statement transcends the latitude normally allowed to participants and presenters, in essence crossing the boundary into giving expert

technical or opinion evidence. However, Ms. Minten acknowledges that she is not an expert for the purpose of providing opinion evidence, nor that she has expertise in interpreting scientific and technical evidence, and the Tribunal has clearly indicated her evidence is not being accepted as such.

Regarding the hearsay evidence, the Tribunal notes that it is factual evidence, and the Tribunal received no explanation why the persons who provided the evidence to Ms. Minten could not have been called to testify. The nature of the hearsay evidence is such that the Respondents should be able to cross-examine on this evidence, and it is clear that Ms. Minten would not be able to adequately respond to such cross-examination, as she had no independent personal knowledge relating to this evidence. For these reasons the Tribunal excluded this evidence, notwithstanding that the Tribunal has the jurisdiction to accept hearsay evidence.

During the hearing, the Tribunal ruled that, to the extent that Ms. Minten's evidence regarding her personal exposure to a wind turbine included conclusions regarding the health impacts of the turbine, the Tribunal would not accept this evidence. However, consistent with previous Tribunal rulings, Ms. Minten was permitted to describe any symptoms she personally experienced.

Request by Stephana Johnston to give evidence about the impacts of wind turbines on her own health

After the hearing commenced, Ms. Johnston indicated that she wished to give evidence about the impacts of wind turbines on her own health. When Ms. Johnston sought presenter status at the preliminary hearing, she raised concerns about the legislative and policy framework governing the assessment of the impact of the Project on human health. She did not indicate at that time that she wished to testify concerning the impacts of turbines on her health, and she did not subsequently provide medical records. As a result, the Tribunal ruled that Ms. Johnston was not permitted to provide evidence concerning her health.

Closing Submissions of the Appellants and Participant

The Appellants raised a number of concerns regarding the fairness of the hearing in their written closing submissions, in relation to disclosure of medical records, accessibility and video recording, and access to transcripts. These concerns were addressed and determined as preliminary issues or during the hearing. At this stage, the Tribunal's role is to make a decision on the issues raised in these appeals,

according to the legislative tests set out below, and not to revisit or make further findings concerning its procedural rulings made over the course of the hearing. The Tribunal has, therefore, considered only the portions of the Appellants' submissions that address the issues to be determined in this decision.

The Tribunal notes that numerous final submissions made by the Appellants and the participant included, and referred to, evidence that was not adduced at the hearing, and therefore cannot be considered. Some of the submissions also refer to evidence from a different appeal before another panel of the Tribunal. Also, MLWAG and Mr. Wrightman made submissions concerning the Witness Statement of Richard James, an expert witness who was not called at the hearing, and in particular his evidence directed at showing that the Project will not meet the terms and conditions of the REA, which the Tribunal excluded in its orders of October 11 and December 18, 2013. This evidence was disregarded by the Tribunal.

New Evidence

Ms. Wrightman and Ms. Minten both included new evidence in their written closing submissions. The Tribunal has not considered this new evidence. The Tribunal clearly stated in its opening remarks at the hearing that no new evidence would be accepted in closing statements.