



Environmental Review Tribunal

Case Nos.: 12-054/12-072/12-073

Monture v. Director, Ministry of the Environment

In the matter of appeals by William Monture filed June 29, 2012, and David Hyslop and Haldimand Wind Concerns filed July 3, 2012, 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. 0300-8UQPKR issued by the Director, Ministry of the Environment, on June 15, 2012, to Grand Renewable Wind LP/Grand Renewable Wind GP Inc. under section 47.5 of the *Environmental Protection Act*, regarding a renewable energy project that includes the construction, installation, operation, use and retiring of a Class 4 wind facility with a total name plate capacity of 148.6 megawatts at a site located near Haldimand Road 20, in the County of Haldimand, Ontario; and

In the matter of a hearing held on September 10, 11, 13, 24, 25, 27, 28, and October 2, 2012 at the Cayuga Kinsmen Community Centre in Cayuga, and on October 9, 10, 11, 12, 17, 22, 23, 24, 29, and November 2, 2012 at the Haldimand Agricultural Community Centre in Cayuga, Ontario, and by teleconference October 1, 4 and 26, 2012.

Before: Robert V. Wright, Panel Chair
Maureen Carter-Whitney, Member
Helen Jackson, Member

Appearances:

William Monture	-	Appellant, on his own behalf
David Hyslop	-	Appellant, on his own behalf
Eric Gillespie and Graham Andrews	-	Counsel for the Appellant, Haldimand Wind Concerns
Betty Ortt and Linda Rogers	-	Representatives for the Appellant, Haldimand Wind Concerns
Frederika Rotter and Sarah Kromkamp	-	Counsel for the Director, Ministry of the Environment
Sarah Powell,	-	Counsel for the Approval Holder, Grand Renewable

Alexandria Pike and
Matthew Milne-Smith

Wind LP/Grand Renewable Wind GP

- Janet Bard - Participant, on her own behalf
- Jim McCallum - Participant, on his own behalf
- Norman Negus - Participant, on his own behalf
- Geraldine Ratcliff - Participant, on her own behalf

Dated this 24th day of **December, 2012.**

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REASONS FOR DECISION

Overview

[1] Wind conditions along the north shore of Lake Erie have attracted a number of industrial wind farm applications under the Province of Ontario's renewable energy initiative. The proposed wind farm under appeal in this proceeding would be located on the north shore of Lake Erie in Haldimand County, bounded by the Grand River to the north and east, and Townline Road to the northwest, with Port Dover being a distance to the west. Other applications have recently been approved for this area, and those projects will soon be operating.

[2] This is a rural setting, consisting of farms and wooded areas, small towns and stand-alone rural residences. Along the lakeshore there are cottages and recreation parks. The wooded areas, fields, streams, creeks and wetlands are inhabited by a wide variety of plants and animals described later in this decision. The area is recognized as a migratory bird flyway.

[3] Some members of the local communities are in favour of industrial wind farms, and some are opposed. Among those opposed are some traditional Onkwehonwe (also called Haudenosaunee) members of Six Nations of the Grand River ("Six Nations"). The proposed wind farm would be mostly located in the Haldimand Tract, which is the subject of a Six Nations' land claim that includes lands within six miles of both sides of the Grand River. The traditional members of the Six Nations use the area for collecting medicinal plants and hunting.

[4] These are appeals of the Renewable Energy Approval ("REA") of a 67 industrial wind turbine facility, which, together with an industrial solar facility, are called the Grand Renewable Energy Park (the "Energy Park"). The wind and solar facilities share a collector substation, an interconnect station and transmission lines. The wind facility, shared equipment and transmission lines will be referred to collectively as the "Wind Project". The solar facility (the "Solar Project") has a separate REA. There was only one appeal of the Solar Project. That appeal was closed following confirmation from the appellant that he was not proceeding with his appeal.

[5] REAs are the end-product of a process under the *Green Energy Act, 2009*, S.O. 2009, c. 12, Sched. A ("GEA") and amendments made to the *Environmental Protection Act* ("EPA"), reflecting the policy of the Ontario government, as set out in the GEA, that:

The Government of Ontario is committed to fostering the growth of renewable energy projects, which use cleaner sources of energy, and to removing barriers to and promoting opportunities for renewable energy projects and to promoting a green economy.

[6] The Wind Project appeals are based on both branches of the REA appeal test set out in the *EPA*, under which the Appellants have the onus of proving that engaging in the Wind Project, in accordance with its REA (the “Wind REA”), will cause serious harm to human health, or serious and irreversible harm to plant life, animal life or the natural environment. Previous decisions of the Environmental Review Tribunal (the “Tribunal”) have been decided on the first branch of the REA appeal test, in regards to human health (*Erickson v. Ontario (Director, Ministry of the Environment)* (2011), 61 C.E.L.R. (3d) 1 (“*Erickson*”)), and the second branch, in regards to plant life, animal life and the natural environment (*Monture v. Ontario, Ministry of Environment*), (2012), 68 C.E.L.R. (3d) 191, (“*Monture 1*”).

[7] In *Erickson*, the Tribunal found that the World Health Organization (“WHO”) definition of “health” is appropriate for the first branch of the test. Among other matters, one of the appeals requires the Tribunal to consider the overlap of “human health” under the first branch of the REA appeal test and the environmental matters in the second branch of the test, in an aboriginal context.

[8] The Wind REA was approved by the Director, Ministry of the Environment (“MOE”) in favour of Grand Renewable Wind LP/Grand Renewable Wind GP Inc. (collectively, the “Approval Holder”).

[9] The self-represented appellants are William Monture (a member of Six Nations) who was also an appellant in *Monture 1* regarding the neighbouring “Summerhaven” industrial wind project, assisted by Lester Green (also a member of Six Nations), and David Hyslop, a resident of the area who lives in the vicinity of proposed Turbine 9. The other Appellant is Haldimand Wind Concerns (“HWC”), a citizen’s group that has appealed other REAs in this area. HWC is represented by counsel but did not call any witnesses and, for the most part, its counsel did not attend the hearing. One, or both, of its member representatives, Betty Ortt and Linda Rogers, attended the whole of the hearing, and made submissions supportive of the positions of the other appellants and the participants. Mr. Monture, Mr. Hyslop and HWC will be collectively referred to as the “Appellants”.

[10] A number of local residents (Janet Bard, Jim McCallum, Norman Negus and Geraldine Ratcliff) are “participants” in the appeals. The participants attended most days of the hearing.

[11] In their evidence and submissions the Appellants and participants raise a number of matters that are not within the jurisdiction of the Tribunal in this proceeding, such as the manner in which the renewable energy program has been implemented, the lack of municipal involvement, aboriginal consultation, the alleged unfairness of the statutory test, and the onus on an appellant on a REA appeal under the *EPA*.

[12] For the reasons that follow, the Tribunal finds that these appeals do not meet either branch of the REA appeal test and they are dismissed. Nevertheless, the Tribunal notes the Appellants' concerns with the Wind REA. The Tribunal is of the view that improvements could be made to its terms and conditions. Under s. 145.2.1(4) of the *EPA*, the Tribunal can only revoke the decision of the Director, or, by order, direct the Director to take some action, or alter the decision of the Director, if the REA appeal test has been met. However, the Director has the ongoing authority under s. 47.5(3) of the *EPA* to alter, change, suspend or revoke a REA if the Director is of the opinion that it is in the public interest.

[13] At the end of these reasons, the Tribunal makes detailed recommendations for the Approval Holder and the Director to consider regarding the following matters: natural heritage pre-construction and post-construction monitoring; reporting and review of results; the Community Liaison Committee; and aboriginal consultation.

Background

[14] On October 4, 2011, the Approval Holder submitted an application to the MOE dated October 3, 2011 under s. 47.5 of the *EPA* for approval to engage in the Wind Project, which is part of the Energy Park.

[15] According to the Approval Holder, the Wind Project is owned by Grand Renewable Wind GP Inc., which is owned by Pattern Grand GP Holdings Inc. and SRE Wind GP Holdings Inc. Grand Renewable Wind GP Inc. is the general partner of Grand Renewable Wind LP (the limited partners are Pattern Grand LP Holdings LP and Samsung Renewable Energy Inc.).

[16] The Wind Project would consist of the construction, installation, operation, use and retiring of the Class 4 Wind Facility, with its 67 wind turbines and associated ancillary equipment, systems and technology with a capacity to generate 148.6 megawatts of electricity, and its transmission/distribution. This would happen through collector lines (on private lands and within a municipal right-of-way), a collector substation (located near Haldimand Road 20), a transmission line (within the municipal

right-of-way along Haldimand Road 20), and an interconnect station (just east of the Hydro One transmission corridor).

[17] The Approval Holder's application for the Wind Project was deemed complete by the MOE on March 12, 2012, and posted to the Environmental Registry for public comment from March 12, 2012 to April 11, 2012.

[18] On June 15, 2012, MOE Director Vic Schroter issued the Wind REA (No. 0300-8UQPKR) that is the subject of these appeals, in accordance with s. 47.5 of the *EPA*.

[19] As already noted, Grand Renewable Solar GP Inc., which is wholly owned by Samsung Renewable Energy Inc., also submitted a separate Solar REA application to the MOE for approval of a Class 3 solar facility sharing the collection and transmission of electricity with the Wind Project in the Energy Park (previously described as the "Solar Project"). That application was also posted to the Environmental Registry for public comment from March 12, 2012 to April 11, 2012. The Solar REA was issued on June 15, 2012. It was appealed by Mr. Negus on June 22, 2012, but later closed following confirmation that he was not proceeding with the appeal.

[20] On June 29, 2012, Mr. Monture filed a Notice of Appeal of the Wind REA with the Tribunal, on the grounds that the Wind Project will cause serious harm to human health and serious and irreversible harm to plant life, animal life or the natural environment.

[21] On July 3, 2012, Mr. Hyslop filed a Notice of Appeal of the Wind REA with the Tribunal, on the grounds that shadow flicker from the Wind Project's Turbine 9 will cause serious harm to human health and that Turbine 9 is being erected in habitat for declining woodland species, area sensitive species woodland habitat, and too close to Wardell's Creek, a significant wetland.

[22] Also on July 3, 2012, HWC filed a Notice of Appeal of the Wind REA with the Tribunal, on the grounds that the Wind Project will cause serious harm to human health. HWC alleges that health effects are caused by exposure to infrasound, low frequency noise, audible noise, visual impact, shadow flicker, stray voltage and/or electromagnetic fields.

[23] The Tribunal received additional notices of appeal from Joyce Smith, Ms. Bard and Mr. McCallum but issued a decision on August 7, 2012 (*Monture v. Ontario (Director, Ministry of the Environment)*, 2012 CarswellOnt 10147) that dismissed the appeals because the Tribunal found that their notices of appeal were not filed by the statutory deadline.

[24] The Tribunal received requests for participant status from Mr. McCallum, Ms. Bard, Mr. Negus, Ms. Ratcliff and Thomas Wasilewski, and for presenter status from Eric Erhard. At the preliminary hearing, held in Cayuga, Ontario, on August 9, 2012, the Tribunal granted participant status to Mr. McCallum, Ms. Bard, Ms. Ratcliff and Mr. Negus, and granted presenter status to Mr. Erhard. The Tribunal did not grant participant status to Mr. Wasilewski, as noted in the Tribunal's order in this proceeding issued August 30, 2012. On September 24, 2012, Mr. Erhard withdrew as a presenter.

[25] On September 8, 2012, HWC filed a Notice of Motion to adjourn the proceedings in its appeal to November 12, 2012. The reasons for the adjournment related to the disclosure of medical information. By order dated September 19, 2012, the Tribunal dismissed HWC's motion for adjournment.

[26] Additional background information is contained in the previous orders of the Tribunal in this proceeding issued on August 14 and 30, and September 5, 13, 19 and 28, 2012.

[27] The hearing of this matter involved 21 hearing days, including teleconferences. On September 13, 2012, the Tribunal made a site visit to Mr. Hyslop's property.

[28] The Tribunal commends the parties and their counsel on these appeals for their mutual cooperation and efforts in ensuring that the hearing proceeded as efficiently as possible given the voluminous evidence.

Issues

[29] 1. Whether engaging in the Wind Project in accordance with the Wind REA will cause:

- (a) serious harm to human health; or
- (b) serious and irreversible harm to plant life, animal life or the natural environment.

2. If the answer to either Issue 1 (a) or (b) is "yes", whether the Tribunal should revoke the decision of the Director, by order direct the Director to take some action, or alter the decision of the Director.

Relevant Legislation and Regulations

[30] The relevant legislation and regulations are set out in Appendix "A".

Discussion, Analysis and Findings

Issue 1 Whether engaging in the Wind Project in accordance with the Wind REA will cause:

- (a) serious harm to human health; or
- (b) serious and irreversible harm to plant life, animal life or the natural environment.

The Test

[31] Issue #1 restates the two-part test on a REA appeal that is contained in s. 145.2.1(2) of the *EPA*. The Tribunal applied the first branch of the test in *Erickson* and the second branch in *Monture 1*. The following is a summary of previous Tribunal findings regarding the test that are relevant to this proceeding:

- the Appellants have the onus of proving that engaging in the Wind Project in accordance with the Wind REA will cause the harm referred to in s. 145.2.1(2) of the *EPA* (s. 145.2.1(3) of the *EPA*);
- evidence that only raises the potential for harm does not meet the onus of proof (*Monture 1*, para. 70);
- the “will cause” harm test must be proved on the civil standard of a “balance of probabilities” (*Erickson*, paras. 595 and 629);
- the Tribunal can consider whether both “direct” and “indirect” effects will be caused (*Erickson*, para. 631);
- the word “serious” should be interpreted in a way that suits both branches of the test (*Erickson*, para. 638);
- the word “serious”, and the phrase “serious and irreversible”, must be interpreted on a case-by-case assessment according to all relevant factors (*Erickson*, para. 638; *Monture 1*, para. 79);
- the WHO’s broad approach to the meaning of human health best fits with the statutory scheme, including the direction provided by the *Legislation Act, 2006*. It provides: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (*Erickson*, para. 645);
- 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 (*Monture 1*, paras. 71 and 80); and

- the Tribunal does not have the jurisdiction in a REA appeal to consider issues related to the Director’s duty to consult with First Nations peoples (*Preserve Mapleton Inc. v. Ontario (Ministry of the Environment)*, [2012] O.E.R.T.D. No. 19 (“*Preserve Mapleton*”), followed by the Tribunal in *Monture*1).

(a) First branch of REA appeal test – serious harm to human health

[32] All three of the Appellants allege that engaging in the Wind Project in accordance with the Wind REA will cause serious harm to human health. As indicated, HWC did not call any witnesses regarding the health issue, but it participated in the cross-examination of the witnesses of the other parties and made submissions. The Appellants and participants raised several health concerns in the hearing that were not raised in the Notices of Appeal, such as impacts from bisphenol A, and emissions of sulphur dioxide and carbon dioxide. Where there was no substantive evidence provided on issues during the hearing, they are not addressed in this decision.

The test and human health

[33] In *Erickson*, the Tribunal applied the WHO definition: “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” HWC’s submission that this definition is also appropriate in this case was supported by the Appellant Monture and not contested by the other parties. Mr. Monture raised “social well-being” as an aspect of human health in his evidence and submissions.

[34] The Tribunal finds that a broad interpretation of human health in the first branch of the REA appeal test is consistent with the REA provisions of the *EPA*, Ontario Regulation 359/09 (the “Regulation”) under the *EPA*, the MOE and the Ministry of Natural Resources (“MNR”) Statements of Environmental Values, and the *GEA*. As in *Erickson*, this panel of the Tribunal finds that it is appropriate to apply the WHO definition of “human health” to the first branch of the REA appeal test under the *EPA*.

[35] The first branch of the test will be applied to the following human health matters raised by the Appellants: human health in an aboriginal context; shadow flicker; electric and magnetic fields; stray voltage; and impacts on gas wells and sewage lagoons due to corrosion, ice throw, and blade failure or vibration.

Human health in an aboriginal context

[36] The evidence of the Monture witnesses is that, for the traditional Onkwehonwe of Six Nations, harm to the environment is harm to health. Mr. Monture states this in many different ways in his evidence and submissions:

Environmental damage and Onkwehonwe people's health are so intertwined in our world view; they cannot be uniquely separated. Environmental damage affects everyone whether they travel the river of life in the Two Row Wampum by boat or in a canoe.

The original people's lives remain closely tied to the land and adverse impacts resonate with great discord as our minds, bodies and souls are woven so tightly into this fabric we are *as one cloth*. Harming or cutting a hole out of the fabric we call Turtle Island is a direct injury upon our people. This is a core value seeming to differ from those who travel in the boats your laws seem to hold man separate from the land, air, water naming these last elements, the natural environment.

Harm from environmental damage affects the health and well-being from many man-made interferences of the natural order.

[37] In *Monture 1*, at para.17, the Tribunal ruled that: "it would hear the Appellant's evidence regarding Aboriginal and Treaty rights to the extent the evidence relates to alleged harm to human health, plant life, animal life or the natural environment." The hearing before this panel of the Tribunal proceeded on the same basis and the traditional knowledge was admitted as evidence. In *Monture 1*, and at this hearing, Mr. Monture did not seek to have his witnesses (Mr. Green, Kelly Curley and Mr. Monture himself in this proceeding) formally qualified as expert witnesses under the Tribunal's Rules of Practice. The Tribunal in *Monture 1* made the following observations and ruling, at para. 18, with which this panel also agrees and applies:

the Onkwehonwe have brought forth their perspective and expertise in this proceeding, sharing their knowledge of observed changes in behaviours of the animals and birds as a result of development. Both he [Mr. Monture] and Mr. Green testified that they relied, in part, on knowledge of the natural environment, including plant and animal life, accumulated over generations through the oral traditions of the Onkwehonwe. In expressing their concerns, they clearly stated that they provided their opinions and views in the context of the traditional values of the Onkwehonwe. The Tribunal has admitted their opinion evidence in this context.

[38] In *R. v. Van der Peet*, [1996] 2 S.C.R. 507 at para. 162, as cited by Mr. Monture on the matter of consultation, the Supreme Court of Canada, in discussing s. 35(1) of the *Constitution Act, 1982* (which recognizes and affirms the existing aboriginal and treaty rights of the aboriginal peoples of Canada) states:

A generous, large and liberal construction should be given to these activities in order to give full effect to the constitutional recognition of the distinctiveness of aboriginal culture.... what constitutes a practice, custom or tradition distinctive to native culture and society must be examined through the eyes of aboriginal people....

[39] Mr. Monture and his witnesses provided a great deal of evidence describing the practices, customs and traditions of the traditional members of Six Nations.

[40] Six Nations consists of the Mohawk, Oneida, Cayuga, Seneca, Onondaga and Tuscarora nations. Mr. Monture provided evidence that it is the largest First Nations community in Canada. According to a pamphlet produced by Six Nations, as of 2005, the on-reserve population was greater than 11,200 persons, and the off-reserve population was greater than 10,900 persons, for a total of over 22,000 persons. Mr. Monture stated that the two populations are growing, and that the land base of the reserve is approximately 18,000 hectares (approximately 44,000 acres).

[41] Mr. Monture is a member of the traditional Men's Fire, and the Turtle Clan of the Mohawk nation. Mr. Green is a member of the Bear Clan of the Oneida nation. They are residents of the Six Nations reserve. It was their evidence that they represent a portion of the traditional members of Six Nations. Mr. Monture and Mr. Green filed as an exhibit a petition supporting the position of the "Council Fires of the Women of Grand River Territory", who are in support of the Appellant Monture. It is signed by approximately 150 residents of Six Nations (referred to as "Five Nations" in the petition for historical reasons), who were described by Mr. Green as "traditional people of the longhouse", or "Haudenosaunee". The petition provides:

THURSDAY MARCH 21, 2012 THE COUNCIL FIRES OF THE WOMEN
OF GRAND RIVER TERRITORY

GAYANESHAKGOWA, THE GREAT LAW IS THE CONSTITUTION OF
PEACE GIVEN BY THE PEACEMAKER TO BRING PEACE AND
PROVIDE A FOUNDATION OF GOVERNANCE TO THE FIVE
NATIONS. IN THIS WAY OF LIFE WE HAVE BEEN HONORED AND
GIVE THANKS. IT IS OUR DUTY TO KEEP OUR AIR, LAND AND
WATER SAFE. IT IS OUR WAY OF LIFE TO PROTECT OUR MAIZE
FRUIT, PLANTS, MEDICINES, TREES, ANIMALS, WHO PROVIDE US
WITH CLOTHING, FOOD AND PROTECTION. THE WINDS,
THUNDERS, SUN, MOON AND STARS ARE PART OF OUR
CREATION. OUR CREATOR GIVES THESE THINGS FOR OUR
HEALTH AND LIFE. THESE THINGS WILL BE DIRECTLY EFFECTED
BY THE CONSTRUCTION OF THE WIND TURBINES. AS ACCORDED
BY THE GREAT LAW, WOMEN ARE THE TITLE HOLDERS OF THE
LAND. THEY ARE THE KEEPERS OF THE LAND AND THE SOIL.
THE COUNCIL FIRES OF THE WOMEN OF THE GRAND RIVER
TERRITORY, HAVE DISCUSSED THE MATTERS OF THE WIND
TURBINES AND AFTER WEIGHING ALL THE NEGATIVE AFFECTS

THE WIND TURBINES WILL HAVE PHYSICALLY AND ENVIRONMENTALLY ON OUR LANDS, AIR AND THE FUTURE OF OUR CHILDREN, WE HAVE COME TO THE DECISION, WITH THE SIGNATURES OF OUR PEOPLE, THAT NO, WE DO NOT WANT THE WIND TURBINES IN OR AROUND OUR TERRITORY. NO AMOUNT OF MONEY WILL EVER JUSTIFY THE ILL AFFECTS THE WIND TURBINES WILL HAVE ON OUR PEOPLE AND FUTURE CHILDREN.

[42] Mr. Monture testified that the Six Nations' Elected Council (established under the *Indian Act*, R.S.C. 1985, c. I-5) and the traditional council (the Haudenosaunee Confederacy Chiefs Council, or "HCC") of Six Nations are often divided on issues, particularly in dealings with government. He said there are also many different religious groups on the reserve.

[43] Mr. Green stated that, in the traditional branch, there are many layers of decision-making, including the Men's Council Fire and the Women's Council Fire. Mr. Green said that when a nation sits on its own, it sits by clans (e.g. Bear, Beaver, Wolf, Fish, Turtle, etc.) which reflects their connection with the environment. Mr. Monture stated: "From our side of the canoe, when we address one issue we are all in common ... we come from the ecosystem, we are part of it". According to the Monture witnesses, and as set out in the petition, in Onkwehonwe traditional culture the women are the holders of the lands, not the Elected Council.

[44] It is not disputed that the Approval Holder made an agreement with the Elected Council of Six Nations regarding the Energy Park, including the Wind Project. It would also appear from the evidence, although it is less clear, that the Approval Holder also has an agreement with the Haudenosaunee Development Institute ("HDI") in relation to the Energy Park. The HDI is authorized by the HCC to deal with third parties.

[45] However, it was the evidence of Mr. Monture and Mr. Green that the Elected Council and HDI agreements were not made on behalf of all of the traditional members of Six Nations and that many of them do not support the agreements that the Energy Park can proceed. They emphasized that the members of the Men's Fire are not motivated by money so that they can speak without compromise and be "of good heart and good mind". Mr. Monture and Mr. Green assert:

Samsung/Pattern Energy has now entered in a monetary agreement with HDI and believes opposition to their project has been relieved. They are wrong. Band Council and HDI are/were engaging in negotiations that they do not have correct or complete authority to do so. This has forced other community members to be impacted from the very serious consequences of developments of lands within our territories.

[46] Mr. Monture also stated: “I didn’t consent to Samsung coming and developing on traditional lands that we do our hunting and collecting of sustenance.”

[47] According to the Monture witnesses, the Two Row Wampum symbolises the separation of the traditional Onkwehonwe view of the world from the European approach. They compare the agreements made by the Elected Council and HDI with the Approval Holder to “jumping out of the canoe [the traditional approach] and into the boat [the European approach]”.

[48] The Monture witnesses gave a great deal of evidence about the Wind Project effectively shrinking the size and quality of the traditional land base of the Onkwehonwe people by hampering and preventing traditional activities and uses such as hunting and gathering, thereby causing serious harm to their social well-being. They testified that the Wind Project and the Energy Park are another step in a process that is destroying their traditions and the aboriginal rights and freedoms of future generations.

[49] Mr. Monture described the Six Nations reserve as a “postage stamp” of only 44,000 acres in the Haldimand Tract (over 900,000 acres), which in turn is a small fraction of the original Beaver Hunting Grounds, a large area extending into the United States and Canada. The proposed Energy Park is not on the Six Nations reserve but it is mostly within the Haldimand Tract. The Tribunal clarified during the hearing that it did not have jurisdiction to determine Haldimand Tract land claim issues. However, the evidence of Mr. Monture and Mr. Green that traditional members of Six Nations make actual use of the area where the Wind Project and Energy Park will be located was not challenged or contradicted. Mr. Monture says:

This project is a continuation of the historical assault on the Onkwehonwe mental and spiritual health and hastens and deepens the process of cultural disruption. This results in ongoing cultural discord. ...

This project offends our rights and is harmful to our mental, physical and spiritual health. It will further deepen the cultural disruption of our traditional ways.

[50] All of the Appellants are concerned about the impact of the Wind Project on future generations. This was an especially strong theme in the evidence of the Monture witnesses. Mr. Green says:

we have to look at our health and our education not only for our generations right now, but those generations that have yet to come and with the traditional people, we make sure that the land and our hunting rights is going to be plentiful, not only for ourselves but for those future generations. Now we are erecting these obstacles that is going to hinder that for the future.

[51] Mr. Monture described a growing need of Six Nations for such things as bigger schools and opportunities for economic growth. He expressed concern that, in his lifetime, the reserve will be too small for the amount of people on it. He stated that the Wind Project “will take away the economic potential, and the community,” of his people. He described a growing frustration in the Six Nations community about the shrinking land base.

[52] Mr. Green stated that “finding the right balance for the wind and the birds is also our traditional point, and living within that balance of nature.” He expressed concern that in the Wind Project area and the Energy Park, their people will be restricted from going into certain areas where the wind and solar facilities are located (e.g. fenced areas and structures), and this will also have an effect on the animals. He stated that this will cause “serious and irreversible harm to how we have been doing things for hundreds and hundreds of years”, that there “has to be a balance for Mother Nature to do her job” and “these turbines are throwing things off balance.”

[53] Mr. Monture, and, to a lesser extent, Mr. Green, provided first-hand personal knowledge of the traditional use of plant life, animal life and the natural environment in the area of the Wind Project for sustenance and spiritual purposes. In this area Mr. Monture collects medicinal plants, and Mr. Monture and Mr. Green hunt. As most of the area is considered private property, Mr. Monture says that his people obtain permission to enter on private lands for their traditional uses, although his people do not believe that permission is required.

[54] Mr. Monture described how the traditional members of Six Nations attend to areas on a selective and sustainable basis, rotating visits, and never taking more than they need. He says that they always leave plants and animals so that they will be there for the future generations. He says in his written submissions that “it is this bond with the land and its resources that give us sustenance from harvesting, hunting, spiritual worship, collection and use of medicinal plants”. Mr. Green said “we look at the environment as a whole. We are within the environment.”

[55] Mr. Monture uses the examples of medicinal plants and wildlife movement as examples of alleged harm to the environment being interwoven with the practices, customs, traditions and beliefs of the traditional members of Six Nations.

Medicinal plants

[56] In addition to the evidence discussed above, Mr. Monture provided evidence with respect to various plants that he gathers throughout the lands of the proposed Energy

Park, which includes the Wind Project area, for use as traditional medicine. The plants named by Mr. Monture included “red whip”, ironwood, white pine, wild carrot root, dandelion, cherry wood, clover, birch, Dutch (or slippery) elm, cedar, prickly ash, buckthorn, white ash, red oak, chrome thistles, goldenseal, red osier dogwood, bellwort and “bella rain”. Mr. Monture gave evidence regarding some of the ways in which these medicinal plants are used to treat different medical conditions. When questioned whether there are medicinal plants in the Wind Project area that do not grow elsewhere in Ontario, he made reference to goldenseal and noted his concern is that because it is rare and expensive, people will take it all if they know where to look for it. Under cross-examination by the Approval Holder, he would not say whether there is goldenseal in the Wind Project area.

[57] Mr. Monture testified that he gathers these plants throughout the Wind Project area, as well as in other locations, and that hundreds of other Onkwehonwe people harvest these plants from this area as well. He stated that the plants are collected from areas where the forest remains in its natural state, and that putting wind turbines and access roads in the locations proposed in the Wind Project would have an impact on the collection of medicines because of the disturbance to the area. He also said that it would take more time to find and collect medicines because he would have to travel a greater distance to find them if there is no longer an abundance in the Wind Project area. Mr. Monture stated that these changes would adversely affect the health of many of the Onkwehonwe people because their freedom to collect these plants would be limited.

[58] The Approval Holder called Chris Powell of Stantec Consulting Ltd. (“Stantec”), who was qualified as an environmental planner with expertise with respect to natural heritage planning. Mr. Powell gave evidence that the majority of the medicinal plants identified by Mr. Monture are commonly available with the exception of goldenseal, which is a rare plant species. He stated that it was not observed during Stantec’s surveys of the Energy Park area.

[59] The Approval Holder also called Andrew Taylor of Stantec, who was qualified as an ecologist with expertise regarding the impact of wind turbines on plants and wildlife. Mr. Taylor testified that some of the species noted by Mr. Monture would be removed in the natural features surrounding Turbine 53, but their availability in the local landscape would not be significantly impacted by the Wind Project.

[60] The Director called Karine Bériault, a species-at-risk biologist with the MNR, who was qualified as a biologist with expertise in species at risk and their habitat. Ms.

Bériault confirmed that goldenseal is a threatened species in Ontario, but doubted that it would be affected by the Project because it is a species found in a deciduous or mixed forest and none of that type of forest would be removed. She also noted that the MNR has no records of goldenseal occurring within the Wind Project area.

Submissions on medicinal plants

[61] Mr. Monture submits that engaging in the Wind Project in accordance with the Wind REA will cause serious harm to human health because medicinal plants will not be readily available for collection, resulting in persons with health problems not receiving their benefits. He submits that the availability and purity of traditional medicines would be diminished as a result of the Wind Project due to industrial contamination, because they would not use plants found near turbines or roads. He asserts: “Our traditional way of life is dependent on purity of the land, the water and all living things.” Additionally, he submits that the traditional members of Six Nations will lose even more of their land base for the traditional collection of medicinal plants because of the Wind Project.

[62] The Director submits that none of the plants referred to by Mr. Monture are rare except for goldenseal, which is not known to occur in the Wind Project area. The Director further submits that the collector substation, which is the only component of the Wind Project that would be fenced, has a footprint of approximately 85 metres by 85 metres. The Director therefore submits that the evidence does not show that the ability of the Onkwehonwe people to collect medicinal plants will be impeded by the construction of the Wind Project and so it will not cause harm to human health.

[63] The Approval Holder asserts that Mr. Monture's evidence did not specifically address what types of plants would be removed as a result of the construction of the Wind Project or their specific locations. The Approval Holder also asserts that all of the plants, with the exception of goldenseal, which was not observed in the Wind Project area, were species common to the Wind Project area and their availability would not be significantly impacted by construction of the Wind Project. The Approval Holder submits that Mr. Monture did not address what serious harm to health will be caused by the construction and operation of the Wind Project in relation to loss of medicinal plants. The Approval Holder further submits that less than seven hectares of the agricultural land used for the Wind Project footprint [access roads and turbine pads] would be unavailable for agricultural use for the life of the Wind Project, and that this land would be replaced through the compensation process under the *Endangered Species Act, 2007* (“ESA”).

[64] The findings on this sub-issue are made at the end of this section on human health in the aboriginal context.

Animal movement corridors

[65] Mr. Monture raised concerns about the cumulative effect of fences around the Wind Project's collector substation and large fenced blocks of land in the Solar Project on deer movement. Mr. Green also gave evidence about his concerns that the fencing around the Wind Project collector substation, along with the fenced 800 acre Solar Project, would interfere with access by animals such as deer and restrict their freedom of movement. He questioned the effectiveness of culverts as pathways to reroute small animals. Mr. Green stated that the Wind Project is disturbing deer habitat in the natural environment and animals are being forced to run through narrowed animal movement corridors.

[66] Mr. Hyslop noted that significant animal movement corridors were marked on a map of the Wind Project area around Turbine 9 contained in the *Natural Heritage Assessment* ("NHA"). He alleged that the studies used to prepare the maps were flawed, stating that a significant animal movement corridor through the area where Turbine 9 is proposed had not been marked on the map. He suggested that this is an error because it is a major corridor. He also questioned whether some of the corridors marked on the map were in fact accurate.

[67] Mr. Hyslop testified that there is an abundance of deer in the large forested area in the vicinity of Turbine 9, referred to as the "Grandfather Block", many of which are harvested annually by hunters, including Mr. Hyslop himself. He stated that Stantec identified the area as Feature 66. He noted that other wildlife is found in the area, including wild turkeys, coyotes and foxes.

[68] Jeong Tack Lee described himself as the President of Samsung Renewable Energy and Director of Grand Renewable Wind GP. He gave evidence on behalf of the Approval Holder that the collector substation component of the Wind Project would be fenced separately from the Solar Project but would be shared by both the Wind and Solar Projects. He stated that the solar panel area would be fenced in blocks. He noted on the Energy Park map that a wildlife migration corridor is provided.

[69] Robert Nadolny, Senior Project Manager with Stantec, was qualified as an expert with respect to renewable energy approval processes. He gave evidence that the Wind and Solar Projects shared REA application documents but are separate REA applications. Mr. Nadolny referred to Figure 4.1, "Significant Natural Features – S1",

attached to the *Project Summary Report* for the Wind Project to show the location of the proposed fencing for the Solar Project component and the collector substation, which was designed to allow the east-west movement of deer and other wildlife between woodlots at Features 29, 30 and 31. He stated that the actual location of the animal movement corridor is to the south of the arrow marking the corridor on Figure 4.1. Although the NHA states that the corridor would be approximately 35 metres in width, Mr. Nadolny provided information that the width of the corridor between the Solar Project component and the collector substation would be 40 metres.

[70] Mr. Powell also testified that the fence is designed to have an opening for movement so that deer could travel east-west between Features 29, 30 and 31 and would not be trapped by hunters within Feature 30. He stated that Stantec did look at the potential for deer movement through the area to make sure that they were not creating a bottleneck or trap for deer, and maintained an opening that will allow for the movement of wildlife westward from the woodland in the vicinity of the Solar Project and collector substation.

[71] Mr. Powell stated that animal movement corridors are identified at different levels: major corridor routes that cross through or connect this study area to surrounding areas, such as the Grand River; larger scale corridors within the study area (identified at Figure 9.0 of the NHA), which are natural areas such as a series of woodlots, that provide east-west connections across the landscape; and potential connections between natural features (not within a natural feature) based on site-specific information and, in particular, the 120 metre site investigation area. He observed that corridors are less of a concern in an agricultural landscape than in an urban environment, and that animal movement in an agricultural landscape is relatively unrestricted from one feature to the next.

[72] Mr. Taylor gave evidence that deer are very adaptable animals and, in this landscape, have had to adapt significantly to changes over the past centuries and are able to move around features such as fencing. Mr. Taylor also responded to Mr. Hyslop's allegation that Turbine 9 is located in an animal movement corridor, stating that the turbine will not be a barrier to movement and that in his experience he has seen deer in proximity to, and moving around, turbines.

[73] Steve Pelletier of Stantec was qualified as a wildlife biologist with expertise on the impact of wind turbines on wildlife. He noted that there are many areas in this landscape where land has been fenced off and is not available to be used by the local deer population. He stated that there are many examples of such habitat alterations

and gave his opinion that the deer population would not be in jeopardy due to the Wind Project.

[74] Amy Cameron, Southern Regional Renewable Energy Operations Team Coordinator with the MNR, was qualified as a biologist with expertise in reviewing natural heritage assessments. She described animal movement corridors as linear natural features on the landscape that animals move along from one habitat type to another. She noted that the MNR's *Significant Wildlife and Habitat Technical Guide* gives guidance on identifying animal movement corridors. She testified that Turbine 9 is not located in an animal movement corridor, but is in a field. She stated that she had not been to the site, but made this determination based on information in the NHA report and her experience with other reviews. She added that amphibian-friendly culverts would be put in place along the access road that leads to the turbine.

[75] In relation to the animal movement corridor between Features 29, 30 and 31, Ms. Cameron stated that there would not be any guidance from the MNR as to how wide that should be. She testified to her expectation that there would have been a conversation with the Approval Holder involving the biologists in the MNR's Guelph office to determine what that opening would be and how wide it would need to be. She noted that in the northern part of the province, or where there is a more forested landscape, the MNR would try to maintain corridors for deer of 200 metres in width.

[76] Ms. Cameron stated that the *Significant Wildlife Habitat Technical Guide* would require only the identification of amphibian movement corridors in this area of the province (Ecoregion 7E), under the *Significant Wildlife Habitat Ecoregion 7E Criterion Schedule* (Draft, February 2012). She referred to page 6.154 of the NHA section addressing the Environmental Impact Study of the Solar Project, which states:

...to mitigate impact on wildlife movement, specifically deer, a gap in the security fence will be maintained along the north side of the access road and transmission line to the southwest of Woodland 30. This area will be fenced off to maintain a secure perimeter around the solar modules, but will maintain a 35 m (approx.) wide corridor to allow for the free movement of deer in an east-west direction.

[77] Ms. Cameron commented that the MNR's *Significant Wildlife Habitat Ecoregion Criteria Schedules* (Working Draft, January 2009), which was available for information purposes at the time the NHA was prepared, does not require that deer movement corridors be identified in this area of the province so that by identifying this mitigation measure, Stantec took a conservative approach. She stated that the MNR would not

have required this measure in this part of the province because the generally open landscape allows for movement across agricultural fields, and not in specific corridors.

Submissions on animal movement corridors

[78] Mr. Monture submits that the Wind Project will cause serious and irreversible harm through the disruption of wildlife habitat, and by interfering with and restricting access and the freedom of movement of animals within the Wind Project and Energy Park area. In particular, he argues that two metre high fencing around the collector substation will restrict wildlife (i.e. deer and wild turkeys) and restrict access for hunting, because it is adjacent to the fencing around the solar panels in the Solar Project.

[79] The Director submits that the concerns that Mr. Monture raises regarding the impact of the fencing around the solar panels on the Solar Project lands on the movement of wildlife generally, and on deer in particular, fall outside the scope of this appeal.

[80] The Approval Holder submits that, while the Solar Project is outside the scope of this proceeding, the Approval Holder and the MNR have considered the issue of deer movement and provided a corridor for deer movement between the Energy Park's collector substation and the fenced land within the Solar Project. They note that the Stantec and MNR witnesses testified that deer are highly adaptable and quite able to move around this fencing without impact.

[81] The findings on this subsection are included below.

Findings on human health in an aboriginal context

[82] The Tribunal finds that Mr. Monture has established that, from the unique perspective of the traditional members of Six Nations in this case, or "through the eyes of the original people" as was stated in *R. v. Van der Peet*, the two branches of the REA appeal test can significantly overlap. The uncontradicted evidence of the Monture Onkwehonwe witnesses is that, in their traditional culture, they are inseparable from the environment, and harm to the environment is harm to the well-being of their community.

[83] While Mr. Monture raised the issue of consultation with Six Nations during the hearing, the Tribunal followed the decisions in *Preserve Mapleton* and *Monture1*, which held that consultation is not a factor on the REA appeal test, although it can, as in this case, be relevant to the terms and conditions of a REA.

[84] In this case, the harm alleged by Mr. Monture, as a member of the traditional Onkwehonwe of Six Nations, is based on the general concerns about additional

restrictions on, and the alleged shrinkage of, the land base for the traditional culture of his people. His specific allegations concern restrictions on the collection of medicinal plants, and restrictions on the movement and hunting of animals.

[85] Regarding medicinal plants, the Tribunal acknowledges the importance of medicinal plants in the area of the Wind Project to the health of the traditional Onkwehonwe people of Six Nations, but notes that the Wind Project facilities will physically cover only a small amount of land within the overall Wind Project area. In addition, the Tribunal accepts that most of the medicinal plants noted by Mr. Monture are commonly available elsewhere, and not very far away. In the result, either medicinal plants would still be available for collecting in the area of the proposed Wind Project, or, if their medicinal value will be tainted by the presence of the wind turbines, as Mr. Monture alleges, then they will still be reasonably available nearby. The Tribunal, therefore, finds that Mr. Monture has not shown that a loss of access to medicinal plants because of the Wind Project, under these circumstances, will cause serious harm to human health.

[86] The one medicinal plant referred to by Mr. Monture that is a possible exception is goldenseal, which is a threatened species; however, witnesses for the Approval Holder gave evidence that goldenseal has not been observed in the Wind Project area and Mr. Monture refused to confirm if, or where, goldenseal is located in the area of the proposed Wind Project. He expressed a concern that others would use that information to harvest the goldenseal in a manner that would not be sustainable. The Tribunal notes, without being critical, that this response is based on the same reasoning as that of the MOE, which blocked out information in one of the documents regarding the Jefferson salamander, an endangered species. The Tribunal finds that under these circumstances the possible presence of goldenseal does not alter the above finding regarding medicinal plants. However, the Tribunal makes a conditional recommendation regarding goldenseal at the conclusion of this decision.

[87] Regarding restrictions on wildlife movement, fenced areas, and the appropriate width of a corridor, the Tribunal notes that, while the Solar Project is a separate REA and not under appeal, the combined or cumulative impact of the fencing around the solar panels as part of the Solar Project (approximately 800 acres) must be considered in relation to the fencing around the nearby collector substation shared with the Wind Project. That the Solar Project fencing is not part of the Wind REA does not alter the width of the proposed corridor. The fencing around the collector substation cannot be considered in isolation.

[88] Although the Approval Holder's consultants stated that deer are adaptable animals and able to move around features such as fencing, Stantec, the Approval Holder's consultant, has also determined that an animal movement corridor of 40 metres in width would be provided in this location to allow the east-west movement of deer and other wildlife between woodlots.

[89] According to the evidence of Ms. Cameron, the MNR does not provide any guidance on corridor width in this situation, and, in fact, does not require that deer movement corridors be identified in this area of the province at all due to the generally open landscape that includes agricultural fields. She stated that the MNR would try to maintain 200 metre corridors for deer in the northern part of the province.

[90] The Tribunal finds that the combined effect of the fencing and an apparently narrow corridor in the area of the collector substation might restrict the movement of deer and other animals, and have some effect on their being hunted. However, the Tribunal also finds that Mr. Monture has not shown that this will seriously interfere with hunting by traditional members of Six Nations, or will cause or contribute to serious harm to human health, even using the broad WHO definition.

[91] In summary, and as previously stated in the Overview, the Tribunal finds that Mr. Monture has not shown that engaging in the Wind Project in accordance with the Wind REA will cause serious harm to human health within the meaning of s. 145.2.1(2)(a) of the *EPA*. Certainly there is some evidence of restrictions on the collection of medicinal plants and the movement and hunting of animals. The evidence of harm was simply not of the magnitude required under the REA appeal test that would demonstrate that the Wind Project will cause serious harm to the health, as in social well-being, of the traditional Onkwehonwe members of Six Nations. Nevertheless, these are matters of genuine concern and the Tribunal makes some recommendations as to how they might be dealt with at the conclusion of this decision.

Shadow flicker

Evidence

[92] Mr. Hyslop gave evidence on his own behalf, outlining his concerns about the potential effects of shadow flicker from Turbine 9, proposed to be located about 750 metres from his house on a neighbour's property. He testified that he is concerned that shadow flicker will have adverse impacts on the health of his family. He gave evidence that he had been approached by companies interested in locating a turbine on his

property, but that he and his family decided against this due to their concerns about the health effects of shadow flicker.

[93] Mr. Hyslop also described his concerns about the risks of shadow flicker impacts to himself and his workers when they operate farm machinery on the fields. He expressed concern that the shadow flicker will distract them, resulting in an injury or fatality. Mr. Hyslop gave evidence of the strobe effect of shadow flicker he has experienced while driving through a wooded area near Atlanta, Georgia on his annual trip to Florida, and the accidents he has witnessed in that area. Mr. Hyslop provided the Tribunal with two YouTube videos that purport to show the effects of shadow flicker from wind turbines.

[94] Mr. Hyslop referred to information from a webpage, which links shadow flicker to adverse human health effects that include annoyance and stress, and to a low risk of photosensitive epileptic seizures. Mr. Hyslop also relied on an excerpt from an article by Dr. Nina Pierpont, entitled “Wind Turbine Syndrome”, which states that the only realistic form of mitigation is setback from wind turbines. Mr. Hyslop noted a recommendation on the webpage for setbacks of 10 rotational diameters, or approximately 1,000 metres.

[95] Ms. Ratcliff testified to her concerns that shadow flicker may cause negative health effects in her daughter. She provided a letter signed by a nurse and doctor regarding her daughter’s condition, which suggested that shadow flicker may worsen it. Under cross-examination, Ms. Ratcliff stated that the doctor who commented on her daughter’s risk of health effects from shadow flicker did not have specific information about the Wind Project.

[96] Mr. McCallum testified about his concerns that shadow flicker from Turbine 9 will have harmful effects on his health while at work on his farm, located approximately 600 metres from the turbine.

[97] Mr. McCallum discussed his understanding that shadow flicker can be experienced up to 1400 metres from a turbine. He suggested that shadow flicker can be a significant annoyance or nuisance to some individuals, citing the *Wind Turbine Health Impact Study: Report of the Independent Expert Panel*, January 2012 prepared for the Massachusetts Environmental Protection and Public Health departments (“Massachusetts Study”). Mr. McCallum also entered into evidence a table which he and his wife (Ms. Bard) created, showing the shadow flicker that will occur on roads in the vicinity of the Wind Project.

[98] Mr. Lee testified on behalf of the Approval Holder that the turbine speed for all turbines within the Wind Project ranged between six and 16 rotations per minute.

[99] The Approval Holder called Dr. Jim Salmon, who was qualified as an expert with respect to modelling of noise and shadow flicker related to wind turbines. He is the President of Zephyr North, a wind resources assessment company, and obtained a Ph.D. in physical oceanography in addition to undergraduate degrees in physics and meteorology. Dr. Salmon prepared the *Shadow Flicker Report*, dated September 20, 2011, for the Wind Project, but testified that it was not required under the REA process.

[100] Dr. Salmon defined shadow flicker as an alternating light and dark phenomenon caused by the blades of a wind turbine passing in front of the sun. He noted that in wind energy parlance it refers to a phenomenon that occurs within a closed room with a window that is being lit by the sun. Dr. Salmon gave evidence that the shadow flicker study was conducted for receptors up to 1,000 metres from turbines to determine the total hours per year and number of days of shadow flicker. He testified that the report provides values for:

- "astronomical" shadow flicker, a worst case scenario in which it is sunny 24 hours per day, 365 days per year and the surrounding land is flat; and
- "corrected" shadow flicker, adjusted to account for times when the turbines are not turning due to too much or too little wind, or when there are clouds, using data from Pearson Airport in Toronto and London International Airport.

[101] To conduct the study, Dr. Salmon used the wind resource assessment software, Wind Farm, which he stated was similar to other software packages available.

[102] Dr. Salmon gave evidence that the astronomical value for shadow flicker experienced at Mr. Hyslop's home would be 17.7 hours over 42 days of the year, and the corrected value is 6.12 hours per year. Dr. Salmon testified that Mr. McCallum would not experience shadow flicker at the dwellings on his farm property because the sun would never be far enough north for Turbine 9 to cast a shadow on them. Dr. Salmon also stated that Ms. Ratcliff would not experience shadow flicker at her property because it is 3,500 metres from the closest turbine.

[103] The Approval Holder called Dr. Christopher Ollson, who was qualified as an expert in environmental and occupational health science with expertise in evaluating potential risks and potential health effects to people and ecosystems. Dr. Ollson obtained a Ph.D. in environmental science specializing in risk assessment. He is

currently a Senior Environmental Scientist at Intrinsik Environmental Sciences Inc., a privately-held health sciences company, and was formerly Practice Leader of the Environmental Health Sciences Group at Stantec.

[104] Dr. Ollson and a colleague have published a peer-reviewed literature review of the evidence available on health effects from wind turbines (Knopper & Ollson, "Health effects and wind turbines: A review of the literature" *Environmental Health* 2011, 10:78). He has also prepared the *Analysis of Potential Health Effects of Wind Turbines* that was included as Attachment F to the Design and Operations Report prepared for the Wind Project.

[105] Dr. Ollson has reviewed the scientific literature on shadow flicker in relation to wind turbines. He stated that seizures in photosensitive epileptics may be triggered from flash frequencies above 3 Hz, which is equivalent to 60 revolutions per minute. He noted that the turbines to be used in the Wind Project have a rotational speed of 6 to 16 revolutions per minute, much below the 60 revolutions per minute expected to trigger an epileptic seizure. Citing the Massachusetts Study, Dr. Ollson testified that there are no other health effects attributed to shadow flicker from wind turbines.

[106] Dr. Ollson stated that he had reviewed the Zephyr North *Shadow Flicker Report* and was confident that it was reliable. Based on the report and his own evidence, it was his opinion that shadow flicker will occur at different receptors and while it may be irritating, it is not anticipated to result in any serious harm or health impact to the individuals experiencing it.

[107] In response to Mr. Hyslop's concern about potential effects of shadow flicker when operating farm equipment outdoors, Dr. Ollson testified that shadow flicker may be experienced in other circumstances, such as driving. He gave evidence that his research has not identified any reports of farmers experiencing health or safety concerns as a result of shadow flicker, despite more than 100,000 wind turbines around the world, primarily located on agricultural land. If this was a significant concern, he stated it would have been reported in the scientific literature by now. He did not consider it to be a health effect of shadow flicker.

[108] Under cross-examination, Dr. Ollson addressed questions about a German study (Pohl et al, 1999) that found prolonged shadow flicker of more than 30 minutes per day and 30 hours per year can result in transient stress-related effects on concentration, attention, heart rate and blood pressure. Dr. Ollson testified to his understanding that this study looked at annoyance due to shadow flicker and not necessarily health effects,

as the experience of shadow flicker beyond 30 minutes in a laboratory study may result in some transient stress due to irritation and annoyance. He stated that this is not serious harm to health, adding that many experiences result in transient stress-related issues. Dr. Ollson noted that wind turbines are no different than any other changes in the environment that people may be subject to on a daily basis and it is not an undue change or level of stress.

[109] Regarding the reference to German guidance limiting shadow flicker to 30 hours per year and 30 minutes per day, Dr. Ollson gave evidence of his understanding that this was to avoid nuisance effects on neighbouring property as opposed to serious harm to health and applies to a dwelling, not a field. Dr. Ollson stated that there is no standard for shadow flicker in Canada, but noted that, based on the *Shadow Flicker Report*, the shadow flicker at Mr. Hyslop's home would meet the 30 hour standard.

[110] Although Dr. Ollson confirmed that turbines could be shut down to mitigate for shadow flicker, he was not aware of any project in Canada where this occurred. In his experience window blinds, landscaping and vegetation are used for mitigation.

[111] Dr. Ollson clarified that the use of the term "annoyance" in his evidence related to the body of scientific literature on the subject of annoyance from noise. He differentiated "annoyance" from irritation or nuisance with respect to shadow flicker and stated that he viewed annoyance from noise as of greater concern because there is a particular threshold where health concerns potentially manifest. Dr. Ollson testified that shadow flicker may be irritating, but it is not anticipated to result in any serious health impact to individuals that experience it.

Submissions

[112] Mr. Hyslop submits that shadow flicker from Turbine 9 will create serious harm to himself, his family and workers operating heavy farm machinery on his farm. He asserts that wind turbine shadow flicker will cause adverse human health effects that include annoyance, stress, and photosensitive epileptic seizures, and that shadow flicker is a safety concern because it can cause vehicle driver distraction.

[113] Mr. Hyslop further submits that shadow flicker can be an issue both indoors and outdoors, and in locations other than the home. He argues that shadow flicker modelling must consider human exposure to shadow flicker outside a building. He submits that shadow flicker may be experienced while working in a field in a tractor or other heavy farm machinery. Mr. Hyslop notes that the 2011 *Update of UK Shadow Flicker Evidence Base* report prepared for the United Kingdom (UK) Department of

Energy and Climate Change, which was entered into evidence by the Approval Holder, cites 2002 German guidance suggesting that shadow flicker assessments may need to be extended to outdoor locations, and proposing a reference height of two metres above ground level.

[114] Mr. Hyslop questions the data in the *Shadow Flicker Report*, and whether cloud cover data from the airports at Toronto and London is representative of the Turbine 9 area.

[115] Mr. Hyslop submits that shadow flicker can be assessed and avoided. He argues for a greater setback, such as 1,000 metres. He also submits that the Approval Holder should site Turbine 9 in such a way that his home is not subjected to shadow flicker, and that this is possible through the use of software programs that position turbines to avoid shadow flicker. He asserts that mitigation is possible through real time computer control of turbine operations that shut down during times of high shadow flicker.

[116] Ms. Bard and Mr. McCallum submit that shadow flicker from turbines on neighbouring properties and roadways will cause serious harm to human health. They further submit that setbacks in the Wind Project should be increased to eliminate flicker on roadways where turbines are closer than 400 metres to the road. They assert that this will be accomplished by moving them back 1.5 times the total height of the turbine from roads and property lines.

[117] The Director asserts that Mr. Hyslop submitted one article from a scientific journal on shadow flicker, which concluded that turbines will not induce photosensitive epilepsy unless the turbines rotate at speeds greater than 60 rotations per minute. The Director notes that the evidence at this hearing indicates that the turbines will rotate at speeds between six and 16 rotations per minute, so that there will be no risk of photosensitive epilepsy. The Director submits that the other articles submitted by Mr. Hyslop on shadow flicker are written by anti-wind advocates, have not been published in reputable scientific journals and are hearsay, and so the Tribunal should give them no weight. The Director further submits that the YouTube videos provided are unclear as to details about the turbines, are produced by anti-wind advocates and are hearsay, and should be given little weight.

[118] The Director asserts that, in addressing Mr. Hyslop's concerns that shadow flicker in his fields could cause potential accidents while he is driving farm machinery,

Dr. Ollson explained that the majority of the 100,000 wind turbines in the world are situated in agricultural fields, and that this has not proven to be a problem.

[119] The Director observes that while Mr. Hyslop and Mr. McCallum questioned the accuracy of the cloud cover data and suggested that it is often sunnier close to Lake Erie than in Hamilton and Toronto, they provided no evidence in support of this assertion. The Director further submits that the accuracy of the correction factor is irrelevant, because the evidence does not suggest that shadow flicker will result in serious health effects even at the astronomically maximum annual rates.

[120] The Director asserts that the Massachusetts Study submitted by Mr. McCallum concluded that there is no risk of seizures due to shadow flicker from turbines. The Director notes that, although the Pohl et al. (1999) paper, suggested stress-related effects from prolonged exposure to shadow flicker, there was insufficient documentation to evaluate additional health effects. The Director notes that Mr. McCallum's home will not receive any shadow flicker. The Director submits that the table introduced by Mr. McCallum, which purports to show the shadow flicker that will occur on roads in the area of the Wind Project, should be given no weight because Mr. McCallum and Ms. Bard are not experts in modelling shadow flicker.

[121] With respect to the medical letter indicating that Ms. Ratcliff's daughter's condition may be worsened by shadow flicker from wind turbines, the Director submits that it is speculative hearsay and notes that Ms. Ratcliff admitted under cross-examination that this letter was prepared without specific information on the location where turbines would be sited, relative to her home. The Director notes that the *Shadow Flicker Report* stated that Ms. Ratcliff's home will not receive any shadow flicker at all. The Director submits that Dr. Ollson testified that shadow flicker from wind turbines may be a source of irritation but it is not a health concern, and that shadow flicker from modern wind turbines is not a concern even for photosensitive epileptics because modern turbines turn at rates much slower than required to induce photosensitive epilepsy.

[122] The Director submits that, at para. 772 of *Erickson*, the Tribunal considered evidence related to shadow flicker and concluded that "there is no evidence that there are particular factors or a convergence of factors to suggest that shadow flicker will cause serious harm to human health at the Kent Breeze Project." The Director submits that while Mr. Hyslop, Ms. Ratcliff and Mr. McCallum raised concerns about the potential effects of shadow flicker, none of them presented evidence demonstrating that

shadow flicker from the Wind Project will cause serious harm to human health, and that the evidence shows that the Wind Project will not pose a health risk.

[123] The Approval Holder submits that Dr. Ollson reviewed potential health effects with respect to the Wind Project and provided detailed evidence with respect to shadow flicker, addressed the concerns raised by the Appellant and participants, and concluded that the Wind Project would not result in serious harm to human health.

[124] The Approval Holder asserts that while Mr. Hyslop has alleged that shadow flicker will lead to accidents when he and his workers are operating equipment on his farm, he has failed to bring any compelling evidence with respect to these potential risks and has failed to demonstrate that there is any likelihood of such an accident occurring. The Approval Holder submits that, while Dr. Ollson admitted that shadow flicker may cause nuisance, he was confident that the length of time over which turbines have operated in agricultural fields has allowed sufficient opportunity for complaints and research such that shadow flicker is not anticipated to result in serious harm to health while working outdoors.

[125] With respect to Ms. Ratcliff's medical letter with respect to potential impact of shadow flicker from wind turbines on her daughter's condition, the Approval Holder submits that, based on Dr. Ollson's evidence, no epileptic or photosensitive individuals would suffer serious harm to human health as a result of the Wind Project.

[126] The Approval Holder submits that there is no evidence that shadow flicker from the Wind Project will cause serious harm.

Findings on shadow flicker

[127] In this appeal, the Tribunal heard the concerns expressed by Mr. Hyslop, Ms. Ratcliff and Mr. McCallum that the Wind Project may cause serious harm to human health due to shadow flicker. They did not call any expert evidence demonstrating that shadow flicker from this Wind Project will cause serious harm to human health. With the exception of the medical letter concerning Ms. Ratcliff's daughter, most of the documentary evidence was obtained from internet sources, prepared by authors not available for cross-examination and not peer-reviewed. As a result, the Tribunal finds that much of this evidence is of limited weight.

[128] While Ms. Ratcliff did provide a medical letter addressing the potential impact of shadow flicker from wind turbines on her daughter's condition, the letter was general in nature and her daughter's doctor was not provided with specific information about the location of the turbines relative to Ms. Ratcliff's home.

[129] Based on the evidence of Dr. Salmon, the closest turbine would be approximately 3,500 metres from Ms. Ratcliff's home, well beyond the range where any shadow flicker would be experienced, and Mr. McCallum's properties also would not experience any shadow flicker. Mr. Hyslop's house would have an astronomical maximum of 17.7 hours of shadow flicker over the course of a year spread over 42 days, which when corrected, would be approximately 6.12 hour per year.

[130] The Tribunal heard evidence that shadow flicker may trigger photosensitive epilepsy where turbine blades rotate at speeds greater than 60 rotations per minute. However, the Wind Project turbines will rotate at speeds between six and 16 rotations per minute. Dr. Ollson testified that shadow flicker would be present, but at this rate of rotation it is not likely to present a risk to those with photosensitive epilepsy. The Tribunal finds, based on the evidence, that shadow flicker from the turbines in the Wind Project will not cause serious harm to human health to those with photosensitive epilepsy.

[131] In response to Mr. Hyslop's concern that the experience of shadow flicker could lead to accidents when he and his workers are operating farm equipment in his fields, Dr. Ollson testified that, while most of the 100,000 wind turbines around the world currently operate in agricultural fields, he has not encountered any reports of such accidents in his reviews of the literature concerning health impacts of turbines. Mr. McCallum raised the issue of the effect of shadow flicker on drivers, but did not provide any evidence to show that this would cause serious harm to human health. The Tribunal finds that there is no evidence before it that shadow flicker will cause serious harm to the health of those working or driving outdoors.

[132] In response to concerns that shadow flicker will cause annoyance or irritation and stress, Dr. Ollson gave evidence that shadow flicker may be irritating and that at least one study found that prolonged exposure to shadow flicker may have stress-related effects. The Tribunal finds that there is no evidence before it that shadow flicker will cause serious harm to human health, although it may cause irritation and stress.

[133] The Tribunal finds that Mr. Hyslop and the participants have not demonstrated that shadow flicker from the Wind Project, if engaged in according to the REA, will cause serious harm to human health. The Tribunal also finds that Ms. Ratcliff has not shown that shadow flicker will cause serious harm to the health of her daughter.

Electric and magnetic fields (EMF)

Evidence

[134] Mr. Negus lives on Haldimand Road 20, where he breeds dogs. He raised concerns about the potential health effects of EMF from the 230 kilovolt (kV) overhead transmission line to be constructed in the right-of-way along Haldimand Road 20 as part of the Wind Project. He suggested that the transmission line would be too close to homes for public safety. Mr. Negus stated that his house is 42 feet (12.8 metres) from the right-of-way, and discussed the location of other homes along the road in relation to the right-of-way.

[135] Mr. Negus claimed that the Approval Holder plans to locate the transmission line poles six metres from the edge of the roadway. He is concerned that the transmission wires will swing 7.8 metres to either side of the poles. He testified that the requirement in British Columbia is that poles be located at least 9.9 metres from the edge of the roadway. He noted that in the neighbouring Summerhaven wind energy project, the proponent relocated 7.5 kilometres (km) of power lines that had been planned originally to go in the right-of-way. He also stated that approximately 16 km of Haldimand Road 20, is quite narrow at 86 feet (26 metres) wide, although a 3 km section has been widened to about 100 feet (30 metres). He expressed his concern that the road is not wide enough for transmission lines, and his doubt that it would be feasible to bury the lines underground due to the shallow bedrock.

[136] Mr. Negus characterized Haldimand Road 20 as a long, straight road that runs on an angle across Haldimand County and is busy because it is used as a shortcut by many trucks and other travellers. He was concerned that corona ions from the transmission lines will combine with carcinogenic diesel exhaust from vehicles and attach to the skin and lungs of people in the vicinity. He states that colleagues at his work as an electrician have died of cancer.

[137] In his evidence, Mr. Negus relied on a number of articles and other documents about EMF, many of which were not peer reviewed. He cited an excerpt from a December 2010 Market Study on the diminution in value related to a hydro power transmission corridor, prepared by Lansink Appraisals and Consulting. He referred to the human health risks listed in this document, which are alleged to include childhood leukemia, childhood cancer, adult cancer, depression and suicide. Under cross-examination, Mr. Negus acknowledged that the document states at page 22 that a “real

estate appraiser is not expert at electric and magnetic fields and cannot conclude that there are health risks associated with living close to power transmission corridors.”

[138] Mr. Negus cited a 2005 paper published by the Environmental Law Centre entitled *Regulating Power Line EMF Exposure: International Precedents* that referred to a recommendation by the WHO that endorsed “prudent avoidance” with regard to exposure to EMF from power lines. He stated that this paper cites a 2000 WHO background paper, which observes that many governments have adopted the Precautionary Principle in respect of EMF. He noted that the Precautionary Principle is defined as a risk management policy applied in circumstances with a high degree of scientific uncertainty where it has been determined that there is a need to reduce the risk of harm until research provides a conclusive answer. Mr. Negus also referred to a suggestion in the paper that in 2002, the UK’s National Radiological Protection Board was set to require homes to be built at least 150 metres away from overhead power lines or require the lines to be buried underground.

[139] Ms. Ratcliff testified as to her concerns that EMF from the 230 kV transmission line proposed to be situated in front of her home may cause negative health effects in her daughter and her husband, Lee Russell, who suffered from a medical condition while working with an industrial 230 kV machine. Her home is located 64 feet from the right-of-way.

[140] Ms. Ratcliff provided evidence concerning her daughter's condition, raising concerns that EMF would affect her daughter's health. However, Ms. Ratcliff did not provide any medical evidence as to the effects that her daughter could experience due to EMF.

[141] Ms. Ratcliff gave evidence that Mr. Russell’s medical condition abated after he was removed from working in the high voltage workplace. She provided a letter from his doctor stating that he may be at risk of a return of his medical condition if high voltage lines were to pass over his residence. Under cross-examination, Ms. Ratcliff acknowledged that the physician did not know that the transmission line would be at the edge of their property, rather than over the home.

[142] Mr. Lee gave evidence on behalf of the Approval Holder that the transmission line would be located within the right-of-way and would comply with all standards and requirements, including those relating to swaying distance.

[143] Dr. Ollson considered EMF as an issue with respect to the Wind Project in the *Analysis of Potential Health Effects of Wind Turbines*, in which he reviewed the scientific

literature on EMF. He concluded that the EMF from the 230 kV transmission line would not trigger health effects or result in serious harm to health. He gave evidence that EMF is not unique to power lines and is experienced daily in the home from household appliances and electronics. He testified that magnetic fields from high voltage power lines typically are weaker than EMF in the home from household appliances. He stated that electric fields are not of concern but magnetic fields are a potential concern because they pass more easily through buildings and may elicit some response in the human body. In explaining magnetic fields, which are measured in milliGauss (mG), Dr. Ollson cited from *EMF: Electrical and Magnetic Fields Associated with the Use of Electric Power*, prepared by the National Institute of Environmental Health Sciences and the National Institutes of Health in the United States. He stated that the Wind Project transmission line would have a maximum 57.5 mG of magnetic frequency under the line, and that the magnetic field level decreases exponentially moving away from the line, to 19.5 mG at 15 metres distance and 7.1 mG at 30 metres distance. In comparison, he indicated that the magnetic field from a photocopier at six inches could be 90 mG.

[144] Dr. Ollson addressed the 2010 Health Canada publication, *Electric and Magnetic Fields at Extremely Low Frequencies*, which does not provide guidance for the protection of health with respect to EMF and states there is no need to take action regarding daily exposure to electric and magnetic fields at extremely low frequencies, and that there is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes, including those located just outside the boundaries of power line corridors. He also discussed the guidance of the International Commission on Non-Ionizing Radiation Protection (ICNIRP), which believes that the general public should not be exposed to more than 2,000 mG of magnetic frequency. He observed that the EMF from the proposed transmission line would be at an extremely low frequency relative to this guidance, with a magnetic frequency below 60 mG.

[145] Dr. Ollson stated that EMF is classified as a Class 2-B possible human carcinogen by the International Agency for Research on Cancer. However, he noted that caffeine has the same designation, and that there are no accepted biological mechanisms suggesting that low-level exposures are involved in cancer development and that the evidence related to childhood leukemia is not strong enough to be causal. He gave his opinion that people living near the transmission line in the Wind Project would not experience serious harm to health.

[146] Dr. Ollson addressed the concerns regarding Ms. Ratcliff's husband, noting that occupational exposures to EMF typically are much higher than what would be experienced environmentally. Given his evidence that the maximum exposure at the transmission line would be below 60 mG and the exposure at the house would be in the 15 to 20 mG range, Dr. Ollson concluded that there was nothing to suggest that Ms. Ratcliff's husband would suffer any health effects due to the transmission line. Dr. Ollson also stated that there was no basis to suggest that exposure to EMF would affect the health of Ms. Ratcliff's daughter.

Submissions

[147] Mr. Negus submits that the proposed 230 kV overhead transmission line should be moved from its proposed location on Haldimand Road 20, and a new route should be chosen that is shorter, crosses fewer roads and other power lines, and crosses the rear of agricultural fields away from homes and barns. He further submits that a 53 to 61 metre power corridor should be required for a 230 kV overhead transmission line. He further submits that the planned transmission line conflicts with the requirements of the Canadian Standards Association for the allowance of cable swing. He argues that Haldimand Road 20 is too narrow to allow for the 28 metres (92 feet) high poles to be installed in the 26 metres or 30 metres wide right-of-way, as the poles and overhead cables will be only 3.5 to 5.5 metres from many homes on the road.

[148] Mr. Negus asserts that the Precautionary Principle should be applied and measures taken to reduce EMF exposure. He advocates the concept of "prudent avoidance" and notes policies in countries such as Italy, Belgium, Sweden, Switzerland, Spain and the UK, which he states have taken a precautionary approach and/or adhered to the ICNIRP guidelines. He submits that Spain, Norway, Sweden, Australia and the UK prohibit the construction of power lines within 300 feet of homes.

[149] Mr. Negus submits that burying the transmission line would reduce the EMF effect and protect it from the elements. He further submits that decommissioning an underground transmission line will require less work and cost.

[150] Ms. Ratcliff submits that Dr. Ollson is not a medical doctor and that her husband and daughter have provided letters from their physicians.

[151] The Director submits that Mr. Negus, in supporting his assertions that EMF raises health concerns, relied on hearsay evidence that was derived from unreliable sources, misrepresented or taken out of context. The Director submits that this

evidence should be given little weight, and as Mr. Negus was not qualified as an expert witness, his opinions on EMF also should be given little weight.

[152] With regard to Ms. Ratcliff's concerns about the potential health effects from EMF on her daughter and husband, the Director asserts that the medical letter from Mr. Russell's doctor is hearsay evidence and should be given little weight, stating that Ms. Ratcliff admitted on cross-examination that this doctor was not aware of the location of the transmission line relative to her house when the letter was prepared. The Director notes that Ms. Ratcliff also admitted that Mr. Russell's symptoms subsided when he was removed from the occupational source of EMF. The Director further notes that Ms. Ratcliff did not provide any evidence that EMF would exacerbate her daughter's condition.

[153] The Director submits that Dr. Ollson testified that EMF from transmission lines is not a health problem, and that even if one stands directly under power lines, the levels of EMF from the lines would not be of concern. The Director further submits that, based on Dr. Ollson's evidence, it is incorrect to assume that Mr. Russell would suffer health effects from transmission lines given his occupational history, and there is no evidence to suggest that EMF would exacerbate epilepsy.

[154] The Director asserts that the evidence demonstrates that EMF from the 230 kV transmission line does not pose a health risk to either healthy individuals or particularly sensitive ones such as Ms. Ratcliff's husband and daughter, and that there is no evidence that EMF from the transmission line will cause serious harm to human health.

[155] The Approval Holder submits that Dr. Ollson reviewed potential health effects with respect to the Wind Project and provided detailed evidence at the hearing with respect to EMF, and concluded that the Wind Project would not result in serious harm to human health.

[156] The Approval Holder asserts that Dr. Ollson considered in detail Ms. Ratcliff's concerns about the health of her husband and daughter due to their pre-existing medical conditions. The Approval Holder notes that Mr. Russell's doctor raised a concern regarding the return of adverse health effects should a high voltage transmission line pass over his residence, but also notes that the letter was prepared without information concerning the location of the transmission line. The Approval Holder submits, however, that the evidence shows that the transmission line will not pass over Ms. Ratcliff's home but will be located in the municipal right-of-way beyond her property line, more than 64 feet (19.5 metres) from her home.

[157] The Approval Holder submits that Dr. Ollson provided evidence that occupational exposures of EMF are typically much higher than environmental exposures, and that the magnetic fields at and near a 230 kV transmission line are less than those associated with various household appliances and a small fraction of the ICNIRP 2,000 mG limit. The Approval Holder further submits Canada has not deemed it necessary to impose an exposure limit with respect to EMF and the 2,000 mG limit of the ICNIRP is recognized internationally as an appropriate exposure standard.

[158] The Approval Holder submits that Dr. Ollson concluded that neither Ms. Ratcliff's husband nor daughter would suffer any health effects from the transmission line, and that the concerns raised by Mr. Negus with respect to EMF were addressed directly by Dr. Ollson's evidence.

Findings on EMF

[159] The Tribunal heard a range of concerns about the health effects of EMF, including: Ms. Ratcliff's specific concerns about the potential impacts of EMF on the medical conditions of her daughter and husband; and the general concerns identified by Mr. Negus about conditions such as childhood leukemia, childhood cancer, adult cancer, depression and suicide, alleged to be linked to EMF exposure. Mr. Negus suggested possible mitigation such as: requiring greater setbacks from residences; burying the transmission line; and relocating the transmission line from Haldimand Road 20 to a wider right-of-way that is more direct and more remote from homes, barns, roads and other power lines.

[160] Similar to the evidence provided by Mr. Hyslop and various participants about shadow flicker, much of the documentary evidence on EMF was obtained from internet sources, prepared by authors not available for cross-examination and not peer-reviewed. Ms. Ratcliff provided a medical letter regarding her husband Mr. Russell's condition, but did not call the author to give evidence. As with the evidence on shadow flicker, the Tribunal finds that much of the evidence provided is of limited weight.

[161] According to Dr. Ollson, the general public should not be exposed to more than 2,000 mG of magnetic frequency. The Wind Project transmission line would emit a maximum 57.5 mG of magnetic frequency under the line, and that amount would decrease exponentially moving away from the transmission line. Health Canada guidance does not provide numerical guidelines for exposure limits, stating that there is no conclusive evidence of any harm caused by daily exposure to electric and magnetic fields at the low frequencies found in Canadian homes, including those located just

outside the boundaries of power line corridors. EMF is classified as a possible human carcinogen but there is no evidence that low-level exposure to EMF causes cancer or childhood leukemia.

[162] Although Mr. Russell has experienced health effects from workplace exposure to a 230 kV machine, Dr. Ollson gave evidence that occupational exposures to EMF are higher than what would be experienced environmentally, and that exposure at their home and at the transmission line near their home would be too low to present a risk of adverse health effects. Dr. Ollson also testified that there was no evidence to suggest that EMF exposure would affect the health of Ms. Ratcliff's daughter.

[163] While Dr. Ollson is not a medical doctor, he has a Ph.D. in environmental science with a specialization in risk assessment, and was qualified at this hearing as an expert in environmental and occupational health science with expertise in evaluating potential risks and potential health effects to people and ecosystems. The medical letter provided by Mr. Russell's doctor did express concern about the potential return of his heart symptoms should a high voltage transmission line pass over his residence. However, Mr. Russell's doctor was not aware while preparing the letter that the transmission line would not pass over Mr. Russell's home but would be located more than 64 feet (19.5 metres) from the home, where the exposure to magnetic frequency would be approximately 15 to 20 mG.

[164] The Tribunal finds that there is insufficient evidence before it to demonstrate that EMF exposure from the Wind Project transmission line will cause serious harm to human health. The Tribunal further finds that Ms. Ratcliff has not shown that EMF from the transmission line will cause serious harm to the health of her husband or daughter at their home. Given the Tribunal's finding that the test regarding serious harm to human health has not been met, there is no need to address the mitigation measures proposed by Mr. Negus.

Stray voltage

Evidence

[165] Mr. Negus expressed concern that electrical transmission lines, transformers and substations may put stray voltage into the ground and result in cows feeling tingle voltage while drinking water, refusing to drink and eventually dying. He referred to an internet account of a dairy farmer located near wind turbines and a substation who claimed to have lost 600 cows to stray voltage over a three-year period, prior to installing electrical equipment to help reduce currents on his farm. He stated that stray

voltage is more likely to occur where there is shallow bedrock in the area, as is the case in Haldimand County.

[166] Dr. Ollson testified that stray voltage occurs in barns and agricultural settings and is not unique to the electrical components related to wind turbines. He noted his understanding that the wind turbines are specifically designed so that stray voltage would not be an issue.

[167] Dr. Ollson gave evidence that, if stray voltage does occur, cows may experience a mild electrical shock while drinking from a metal watering dish or eating from a grain bin, and then avoid feeding or drinking. He noted, however, that stray voltage is not an issue with respect to the protection of human health, although a person might experience a mild electrical shock. Dr. Ollson further stated that there is a process in Ontario that allows for stray voltage to be examined. He suggested that a farmer could call Hydro One, and that a complaint could be made to the Community Liaison Committee to be struck for the Wind Project.

Submissions

[168] Mr. Negus submits that the transfer substations and transmission line should be relocated so that they are well away from any homes and barns in order to eliminate stray voltage.

[169] The Director relies on Dr. Ollson's testimony on stray voltage and submits that stray voltage is not a health concern for human beings or a serious concern with respect to animal life or the natural environment.

[170] The Approval Holder submits that the Wind Project will not result in serious harm to human health with respect to stray voltage.

Findings on stray voltage

[171] The Tribunal did not receive detailed evidence on the Wind Project's expected impact from stray voltage. The Tribunal heard general evidence that cows may experience tingle voltage caused by stray voltage while eating or drinking, and that this may result in the cows refusing to eat or drink and possibly dying. The Tribunal also heard that this is not a serious issue for human health although a person may experience a mild electrical shock due to stray voltage. Based on this evidence, the Tribunal finds that Mr. Negus has not shown that stray voltage will cause serious harm to human health, or serious and irreversible harm to animal life or the natural environment.

**Impacts on gas wells and sewage lagoons due to corrosion, ice throw,
blade failure or vibration**

Evidence

[172] Mr. Hyslop raised concerns about the risk of a turbine blade falling on a private gas well located approximately 65 metres from Turbine 9, stating that this could lead to a disaster causing harm to human health. Mr. McCallum raised similar concerns, and also testified that vibration from the turbines could disturb natural gas in the area.

[173] Mr. Negus noted his concerns about the potential risk to human health from corrosion of gas well pipelines due to stray voltage. He stated that stray voltage has a corrosive effect on metal and may cause it to deteriorate. Mr. Negus testified that gas wells in the Wind Project area are in various states of use and repair, and that stray voltage may cause pipelines to corrode, allowing gas into the water table.

[174] Mr. Lee and Mr. Nadolny gave evidence about the *Petroleum Resource Operation Engineers Report*, which was completed with respect to all wells within 75 metres of a Project component. Mr. Nadolny testified that it was prepared by a professional engineer who determined that the operation of the Wind Project would not pose undue risk to the wells. He also stated that the report included a plan for appropriate construction mitigation to protect wells, including the well near Turbine 9.

[175] Dr. Ollson stated, in the *Analysis of Potential Health Effects of Wind Turbines* prepared for the Wind Project, that there is a low risk of ice shed and ice throw from the turbines.

Submissions

[176] Mr. Hyslop submits that ice shed and ice throw could injure members of his family or compromise the sewage lagoons or gas well in the vicinity of Turbine 9, causing harm to human health. He notes that Mr. Nadolny confirmed that natural gas is dangerous if not handled properly, and submits that a gas well explosion would cause harm to the health of his family and trailer park residents nearby. He further submits that the gas well adjacent to Turbine 9 should have a physical barrier installed to protect it. Mr. Hyslop asserts that the foundation of Turbine 9 should not be tied to the bedrock because this will transfer vibration a significant distance from the turbine.

[177] Mr. Monture submits that the Wind Project will cause harm to human health through emissions to the air, water and soil caused by vibration, and the corrosion and rupture of gas wells. He submits that the *Petroleum Resource Operation Engineers*

Report is deficient in addressing the risks of corrosion and impact strikes to well head equipment because it states that there is no expected interaction between the Wind Project components and the petroleum resources.

[178] Mr. Negus submits that the transfer substations and transmission line should be relocated so that they are well away from gas wells.

[179] Ms. Bard and Mr. McCallum submit that Turbine 9 would be located too close to the sewage lagoons.

[180] The Director submits that the issue of gas wells is not properly before the Tribunal because it was not raised in any of the Appellants' Notices of Appeal, and speculation regarding possible accidents is not within the Tribunal's jurisdiction.

[181] The Approval Holder submits that Mr. Hyslop has failed to bring any compelling evidence with respect to the potential risk that accidents involving Turbine 9 and the private gas well in its vicinity could cause serious harm to health, and has failed to demonstrate that there is any likelihood of such an accident occurring. The Approval Holder further submits that the safety concerns raised with respect to gas wells have been addressed.

Findings on impacts on gas wells and sewage lagoons due to corrosion, ice throw, blade failure or vibration

[182] The Tribunal heard the concerns of Mr. Hyslop, Mr. Monture, Mr. Negus and Mr. McCallum about the potential for ice shed, ice throw or vibration from a turbine to compromise the sewage lagoons or gas well near Turbine 9, or another gas well in the Wind Project area, causing serious harm to human health. Mr. Negus raised a similar concern about the corrosion of gas well pipelines due to stray voltage.

[183] The Approval Holder has conducted a petroleum resource study on gas wells within 75 metres of a Wind Project component, determined there will not be undue risk to the wells and prepared a construction mitigation plan. Dr. Ollson's evidence is that there is a low risk of ice shed and ice throw from the turbines.

[184] The Tribunal finds, based on the evidence concerning risk and the mitigation plan that has been developed for construction, that the Appellants and participants have raised concerns about potential risks but have not provided sufficient evidence to demonstrate that turbine-related accidents or corroded gas lines will cause serious harm to human health.

(b) Second branch of REA appeal test– serious and irreversible harm to plant life, animal life or the natural environment

[185] The evaluation of animal corridors and medicinal plants has been addressed under the first branch of the REA appeal test, in regards to the potential for indirect harm to human health. For the reasons given in the findings regarding those matters, the Tribunal finds that the evidence is not sufficient to show that they “will cause serious and irreversible harm to plant life, animal life or the natural environment” and so they do not meet the second branch of the test either.

Birds

Evidence

[186] Peter Slaman, a local farmer from Port Dover, gave evidence on behalf of Mr. Monture. He expressed concern about the impact of wind turbines on large birds such as turkey vultures and tundra swans. Mr. Slaman testified that due to their size, these large birds are more at risk of collision with turbines. He was concerned that turkey vultures would fly in the vicinity of the turbine blades and scavenge below the turbines, and that tundra swans would be at risk during spring migration.

[187] Mr. Slaman compared the Wind Project to the Wolfe Island wind turbine facility. He suggested that the Wolfe Island facility was a "catastrophe" with thousands of birds killed and bird mortality rates beyond experts' forecasts. Mr. Slaman and Mr. Green also spoke about the damaging effects of the wind turbines at Altamont Pass in California to the raptor population in that area. Mr. Slaman raised concerns about the appropriateness of the bird survey methods that were used in respect of the Wind Project, in particular the drive-by method, and that the surveys that were conducted did not identify all of the tundra swans because the swans had likely already migrated through the area by the time the survey was done.

[188] Mr. Green questioned studies that indicated that larger turbines would have less impact on birds because the blade rotation is slower for larger turbines. He suggested that the slower speed is still over 350 km per hour at the tip of the blade and would still cause bird mortality. He also stated that post construction monitoring should be conducted on all the turbines for the life of the project. The participants Ms. Bard and Mr. McCallum testified that birds will be harmed by direct mortality, such as collision with turbine blades, and due to the disruption to bird habitat and migratory pathways. They expressed concern regarding harm to tundra swans, turkey vultures, eagles, other raptors and sandhill cranes, among many other birds, particularly those that are seen in

the vicinity of Wardell's Creek. Mr. Monture expressed concern that the NHA does not look at bird migratory pathways in the air, and that the presence of turbines would be a calamity for forest dwelling birds.

[189] Dr. Scott Petrie, Executive Director of Long Point Waterfowl, appeared under summons by Mr. Monture and was qualified as an expert in waterfowl, waterbird and wetland conservation and ecology. The Tribunal reserved on whether to also qualify him as an expert in wildlife conservation and management. During his testimony, Dr. Petrie did not speak to wildlife conservation and management, so it is unnecessary for the Tribunal to make a determination on the additional qualification requested. Dr. Petrie provided evidence regarding his assessment of the methodology and the environmental studies that were undertaken for this Wind Project, focusing primarily on waterfowl.

[190] Dr. Petrie testified that other jurisdictions undertake considerably more study prior to the siting of individual turbines and he expressed concern that the level of scientific rigour was insufficient in the assessment and monitoring work undertaken by the consultants for this Wind Project. He noted, for example, that almost all the bird surveys were done from vehicles and that there were only four site visits during the spring surveys between March 27 and April 12. Dr. Petrie gave evidence that by March 27 most tundra swans have already migrated through the area. He also stated that the surveys should have been conducted in the proposed locations of the turbines to properly link with post-construction monitoring.

[191] Dr. Petrie gave evidence that in Denmark, two to three years of pre-construction monitoring is normally done, and turbines are not placed within one km of significant waterfowl staging wetlands, on major flight corridors or in fields traditionally used by large flocks of foraging waterfowl. He stated that the Danish research shows that turbines placed in agricultural grain fields caused a displacement of thousands of birds, which he stated was tantamount to habitat loss. He is concerned about the placement of turbines in agricultural fields associated with important wetlands.

[192] Dr. Petrie testified concerning research which indicates that tundra swans travel from the lakeshore inland about eight to 10 km to feed. He stated that the north shore of Lake Erie is a critically important area for staging waterfowl and millions of birds come through the area during migration, arriving tired and needing to gain body fat. Dr. Petrie gave evidence that as a result, the agricultural fields in this area are important for waterfowl during migration in the spring and fall, and also in the winter when waste agricultural grain is in the field. He noted that the north shore of Lake Erie has recently

become important as an over-wintering area for birds and waterfowl because there is less ice and snow cover. He testified that this is an internationally significant area for almost 30 different species of waterfowl, and that the American Bird Conservancy identified it as an area where birds are likely to be particularly vulnerable to impacts of wind energy developments.

[193] Dr. Petrie discussed a literature review by the Centre for Evidence-Based Conservation entitled *Effects of wind turbines on bird abundance – Review Report*, and concluded that: wind farms can have a negative impact on bird abundance; Anseriformes (ducks) experience the greatest declines in abundance compared to other bird groups; and, the longer a wind farm has been operating, the greater the decline in bird abundance. He suggested that a precautionary approach should be adopted in wind farm developments near aggregations of Anseriformes. He stated that the authors of the literature review also determined that the siting of a wind farm is of critical importance in avoiding deleterious impacts, and that the Environmental Impact Assessments (“EIS”) of wind farms require long-term monitoring before and after construction.

[194] Dr. Petrie also gave evidence concerning a study entitled *Assessing the Impacts of Wind Farms on Birds* by A.L. Drewitt and R.H.W. Langston, noting its conclusion that the “displacement of birds from areas within and surrounding wind farms due to visual intrusion and disturbance can amount effectively to habitat loss.” He noted the recommendation that an assessment include a minimum 12-month field survey to determine the baseline number of birds present during an annual cycle.

[195] Dr. Petrie stated that, although he had asked, the MNR had not provided him with any biological justification for the mortality threshold of 14 birds per turbine per year. He testified that he is not as worried about mortality for species like waterfowl that are considered to be abundant and tend to avoid wind turbines, though he did testify as to his concern about bird collisions with turbines during bad weather such as fog. However, he states he is greatly concerned that turbines may result in displacement from critical habitats that birds would normally use for activities such as foraging, which in his opinion, would amount to habitat loss.

[196] Dr. Petrie expressed concern that the MNR’s December 2011 *Bird and Bird Habitats Guidelines for Wind Power Projects* (“Bird Guidelines”) provides a guideline, rather than a requirement, for a 120 metre setback from significant wildlife habitat, which requires proponents to conduct an EIS before locating turbines within this setback. Dr. Petrie testified that he questioned the MNR regarding the basis for the 120

metre setback distance, and he did not receive a satisfactory answer. He testified that there is no basis in science for the arbitrary 120 metre setback.

[197] Dr. Petrie reviewed the NHA to evaluate the number of Wind Project components that were sited within the 120 metre setback, and found numerous instances of turbines directly adjacent to some form of significant wildlife habitat, including wetlands. He states that this is a concern for displacement of waterbirds from those habitats and for mortality. Dr. Petrie challenged some of the findings of the NHA, suggesting that he would have expected to find more rare species, colonial waterbirds and staging and breeding waterfowl in what he described as one of the most biologically diverse habitats in North America.

[198] Dr. Petrie expressed concern regarding the cumulative effect that the turbines could have on bird Species At Risk (“SAR”). He testified that impacts could be irreversible if they cause a SAR to go extinct. He noted that there is no mention in the NHA of the importance of the region to an expanding sandhill crane population that which was reduced almost to extinction in North America in the late 1800s and early 1900s. He stated that sandhill crane numbers have increased significantly in Ontario due to good habitat and harvest management.

[199] Dr. Petrie testified that the cumulative effects of many wind turbines on the north shore of Lake Erie have not been assessed and expressed concern about the possibility of a “barrier effect” that would result in changes to migratory pathways along the north shore due to the presence of many turbines. He stated that the problem would be worsened if the moratorium on off shore wind turbines were to be lifted. He noted that as there is no assessment of cumulative impacts, there is no upper limit that has been established for the number of turbines in this Wind Project area or in association with neighbouring projects.

[200] Dr. Petrie testified that birds become dependent on waste grains in agricultural fields as an important nutritional source. He also testified that research he has reviewed indicates that displacement can be between 100 metres to as much as 800 metres from a turbine. He states that, given the large number of wind turbines that are planned for the north shore of Lake Erie, even the minimum estimate would constitute “a lot” of displacement of waterfowl from foraging habitat. Based on the number of turbines that have been constructed, proposed and approved along the north shore of Lake Erie, Dr. Petrie’s opinion is that there will be adverse impacts.

[201] Dr. Petrie acknowledged that a large number of birds are killed due to causes such as hunting, flying into buildings, and cats, and that this is a far greater number than that anticipated due to wind turbines. He also acknowledged that the large number of birds, particularly raptors, killed at the Altamont Pass wind farm in California was due to the poor design and siting of that wind farm.

[202] Ms. Cameron and Fiona McGuinness, both of the MNR, testified as a panel on behalf of the Director. Ms. McGuinness, Senior Fish and Wildlife Policy and Program Advisor with the MNR, was qualified as a biologist with expertise in the MNR's renewable energy policy and programs. She participated in the development of the MNR's "Birds and Bird Habitats: Guidelines for Wind Power Projects" ("Bird Guidelines") and "Bats and Bat Habitats: Guidelines for Wind Power Projects" ("Bat Guidelines").

[203] Ms. Cameron described the regulatory provisions for the NHA, found in s. 23.1 to s. 28 of the Regulation. She explained that the Approval Holder must undertake investigations and analyses in accordance with the Regulation, which the MNR evaluates to ensure that the applicable MNR criteria and procedures have been satisfactorily applied and, if so, provides a written letter of confirmation to the MOE. Ms. Cameron stated that the confirmation letter for the Wind Project was submitted on June 30, 2011.

[204] Ms. Cameron testified that the NHA process is habitat based and involves: identifying natural heritage features such as wetlands, woodlands and wildlife habitats in the area of a project through both records reviews and site assessments; assessing the significance of features within 120 metres of the project location; and assessing and mitigating the environmental effects of the project on significant features. She notes that the MNR has prepared the *Natural Heritage Assessment Guide for Renewable Energy Projects*, which sets out this process.

[205] Ms. Cameron stated that the identification and determination of the significance of wildlife habitats was conducted in accordance with the MNR's *Significant Wildlife Habitat Technical Guide & Ecoregion Criteria Schedules*. She testified that the *Significant Wildlife Habitat Technical Guide*:

- considers a wildlife habitat significant where it is "ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System;" and
- is used to distinguish mere habitat from "significant wildlife habitat".

[206] Ms. Cameron indicates that where project components would be located less than 120 metres from significant wildlife habitat, an EIS was conducted to assess and mitigate any negative environmental effects on the significant wildlife habitat. She added that bird habitat must be evaluated in accordance with the Bird Guidelines, and that the Approval Holder was required to identify, evaluate and delineate all wetlands according to the Ontario Wetland Evaluation System.

[207] Ms. Cameron testified that the Wind REA requires disturbance monitoring for woodland breeding birds and landbird migratory stopover areas. She stated that one year of pre-construction data would be collected for a baseline inventory to be compared to post-construction monitoring data, and that post construction monitoring would include bird mortality monitoring. Ms. Cameron noted that Environment Canada has developed a transect survey method which involves driving surveys, to conduct, for example, winter raptor counts, and that this is an acceptable method of surveying.

[208] Ms. Cameron stated that section K of the Wind REA requires the Approval Holder to report monitoring results to the MOE and the MNR, as follows:

The Company shall contact the Southern Region Renewable Energy Operations Coordinator of the Ministry of Natural Resources and the Director if there are any applicable thresholds as described in the Environmental Effects Monitoring Plan for Wildlife and Wildlife Habitat reached or exceeded as follows:

- a) 10 bats per turbine per year;
- b) 18 birds per turbine per year at individual turbines or turbine groups;
- c) 0.2 raptors per turbine per year (all raptors) across the Facility;
- d) 0.1 raptors per turbine per year (raptors of provincial conservation concern) across the Facility;
- e) 10 or more birds at any one turbine during a single monitoring survey; or
- f) 33 or more birds (including raptors) at multiple turbines during a single monitoring survey.

[209] Ms. Cameron gave evidence that the Approval Holder is required to report the mortality levels annually for the first three years following the commencement of operation of the Wind Project, whereas the disturbance monitoring is conducted for one year pre-construction and two years post construction. She noted that if the Approval Holder applies operational mitigation for birds, it must do two more years of mortality and effects monitoring, and report all mortality levels to the MNR to update the database. She indicates that the Environmental Effects Monitoring Plan (“EEMP”) sets

out how impacts will be assessed, and the triggers for mitigation, such as further study, or shutting down turbines at particular times.

[210] Ms. Cameron confirmed that the Regulation expressly references the Bird Guidelines, which were updated in December 2011. She stated that the applicable guidelines in force at the time the Approval Holder submitted its application for the Wind REA were an earlier version of the Bird Guidelines, dated October 2010, so that the bird mortality threshold in the Wind Project REA is 18 birds per turbine per year for individual turbines or turbine groups.

[211] Ms. McGuinness explained that this rate was based on data respecting the highest mortality rates in North America. However, in subsequent consultations the MNR accepted recommendations by non-government organizations to set the rate at the 95th percentile of bird mortality rates in Ontario, resulting in the current threshold of 14 birds per turbine per year for individual turbines or turbine groups. She testified that notwithstanding the revision, a threshold of 18 in this particular approval as opposed to 14 would not have any significant impacts with respect to bird populations. She stated that if a threshold changes later on, as a result of new information, it would not be retroactive. She stated that where a confirmation letter has been issued, the guidelines under which it was issued apply.

[212] Ms. McGuinness testified that the Bird Guidelines address the consideration of significant wildlife habitats, and setback or mitigation to avoid habitat disturbance; and post-construction mortality monitoring. She stated that in developing the Bird Guidelines, the MNR consulted with Environment Canada and the Canadian Wildlife Service, assessed relevant scientific literature from across North America and Europe, and engaged stakeholders to assess and incorporate the latest science and information. She stated that they found no concern regarding the sustainability of bird populations due to wind power, as the mortality related to wind turbines is generally very low.

[213] Ms. McGuinness testified that mortality rates at wind projects are tracked closely by the MNR and have been maintained in a database since 2004. She stated that the database is a powerful tool to ensure the effectiveness of the MNR's adaptive management approach and that the MNR intends to update its policies and guidelines based on new research and the data from post-construction monitoring so that the guidelines are continually informed by the latest science. She noted that if changes are required, the MNR would modify its guidelines, and the MOE, as the approver, would be responsible for modifying the provisions in the Regulation.

[214] Ms. McGuinness explained that the data collected so far shows that mortality levels are low, at an average of 2.5 birds per turbine per year in Ontario, and distributed across a wide range of species. She stated that passerines (songbirds) are the most commonly affected species, representing 67% of the 674 bird casualties found in Ontario, and raptors and waterfowl have relatively low rates of mortality, at 9% and 2% respectively. Ms. McGuinness concluded that the collective evidence to date suggests that the risk to birds from wind projects is low relative to other anthropogenic factors and is unlikely to be causing significant population declines.

[215] Ms. McGuinness addressed concerns about bird mortality rates at the Wolfe Island wind farm, stating that even if gross fatality numbers were two or three times as high as they currently are at Wolfe Island, bird mortality would be at 0.001% of the population size, which would have an insignificant effect on local or regional populations. Her opinion was that, given the wide mortality distribution over at least 58 bird species, the impact on any one species is negligible and does not constitute a threat to sustainability.

[216] Ms. McGuinness testified that the MNR's requirements regarding the method, frequency and duration of post-construction monitoring of the Wind Project are consistent with Environment Canada's recommended protocols, and wind power guidelines in other jurisdictions. She stated that these protocols generally accept that an analysis based on representative sampling provides accurate information regarding an entire project.

[217] Ms. McGuinness gave evidence that the results of the monitoring would be used by: the MNR to continue to monitor bird populations provincially to ensure that the provincial mortality average remains at or below 2.5 birds per turbine per year; and the Approval Holder, in consultation with the MNR, to avoid and mitigate local and turbine-specific effects. She stated that if threshold mortality rates per turbine are exceeded, the Approval Holder is required to implement contingency measures to address and mitigate elevated mortality levels for a specific turbine or group of turbines, and to conduct additional effectiveness monitoring for three years at the turbine or group of turbines to ensure that mitigation is effective.

[218] Ms. McGuinness addressed migratory corridors, observing that because migration pathways are broad swaths, it is more important to evaluate ground-based habitat for birds. She stated that the proper siting of project components is a key factor in preventing potential negative effects on birds, and therefore the Regulation and the Bird

Guidelines focus on identifying and avoiding significant bird habitats and mitigating potential negative impacts on these habitats.

[219] Ms. McGuinness provided her opinion that there will be no serious and irreversible harm to bird populations from the operation of the Wind Project.

[220] Mr. Powell, Mr. Taylor and Mr. Pelletier, all of Stantec, testified as a panel on behalf of the Approval Holder.

[221] Mr. Powell described the methodology undertaken by Stantec for the NHA, and explained that the siting of turbines is an iterative process. He stated that Stantec:

- looked at available records for natural features within one kilometre of the Wind Project components;
- confirmed natural features present within 120 metres of Wind Project components through field investigations;
- compared natural features to criteria with respect to significance;
- considered whether the Wind Project component should be removed or set back from the feature; and
- if a feature was within 120 metres of a Wind Project component, conducted an EIS to determine if that component could remain by undertaking appropriate mitigation measures.

[222] Mr. Powell gave evidence that efforts were made to site project components outside of natural features, and that only one turbine is located within a natural feature. Turbine 53 is located in a large woodland identified as Feature 42, which consists of deciduous forest, deciduous swamps and cultural plantations. He states that Feature 42 was determined to be a significant woodland providing breeding habitat for declining forest birds, in particular, the deciduous woodland habitat portion 42-A. He also stated, however, that Turbine 53 is within the cultural plantation portion, and that the associated access road and collector lines were also located outside of the deciduous woodland and wetland communities, and sited to minimize tree removal to a net loss of only 0.5 hectares of plantation. He confirmed that all other turbines and Wind Project components are in agricultural fields or disturbed grassland.

[223] Mr. Powell stated that both mortality and disturbance monitoring are included in the EEMP, which includes post-construction mortality monitoring for birds and a program for ongoing disturbance monitoring of the effectiveness of the mitigation

measures with respect to significant wildlife habitats located in proximity to turbines in Features 42, 66, 68 and 69. He testified that the implementation of commitments made in the NHA, EIS, EEMP and other documents required to be submitted in the Wind REA application are binding under the Wind REA. He noted that the MOE would be responsible to ensure compliance as issuer of the Wind REA.

[224] Mr. Powell testified that the SAR report was prepared to assist the MNR in determining whether the proposed Wind Project would result in the need for a permit to be issued under the *ESA*. He noted that the work for this study occurred in parallel to the NHA and Wind REA application. He stated that the Regulation outlines the specific natural features to be assessed as part of the NHA and specifically excludes endangered and threatened species because they are protected under the *ESA*. He testified that as work was undertaken for the NHA, the consultants also collected information on SAR that could potentially be in the area, and habitat that could potentially support those species.

[225] Mr. Powell gave evidence that staff made specific observations as to whether and where there is a high probability of SAR occurring in the area. He noted that once an opinion is made as to whether or not the species and/or its habitat are considered present or absent in the study area, recommendations are made in terms of appropriate mitigation measures to avoid the habitat or to prevent impacts to a species by scheduling work at specific times of the year when it is known that the species is not active. He added that this is done in consultation with the MNR staff, to assist them in identifying which species and which habitats would trigger the need for an *ESA* permit to be issued should this Wind Project be built.

[226] Mr. Powell testified that in this case, it was determined that portions of the Wind Project would be located in hay fields that are known areas inhabited by bobolink and eastern meadowlark. He noted that a conservative approach was used that assumed that hay fields that existed at the time the field work was done were habitat for these species, since bobolink and eastern meadowlark are relatively common in this area.

[227] Mr. Powell stated that the amount of hay field habitat that would be lost and/or disturbed as a result of the Wind Project was calculated, and an area of equal size is planned to be set aside for the life of the project, to be used as a hay field and managed specifically to protect bobolink and eastern meadowlark and offset the lost habitat across the study area. He referred to the requirement for ongoing monitoring of the use of those areas as well as a commitment to undertake a research project to look at the specific impacts of turbines on disturbance effects to these species.

[228] In his response to concerns about tundra swans and turkey vultures, Mr. Taylor gave evidence that tundra swans are typically in the Lake Erie region for approximately three weeks in late March and early April for spring migration and move into agricultural fields to forage. He noted that in the fall migration, they arrive in large numbers in October and stay as late as January if there is open water and abundant food in marshes, their primary feeding habitat. He stated that drive-by surveys are appropriate for large-bodied birds such as swans, and that this technique was adopted at the recommendation of Canadian Wildlife Services. Mr. Taylor also explained that the majority of the provincial turkey vulture population is present in the agricultural areas of Southern Ontario. He stated that turkey vultures migrate along the edge of lakes using thermals, and that 30,000 to 40,000 turkey vultures have been identified during the fall migration along Lake Erie.

[229] Mr. Taylor testified that he has been involved in the post-construction monitoring of the Kruger Energy wind project, about 200 km to the west of the Wind Project, which was approved prior to the introduction of the REA regime. He stated that at this project two raptors were found during mortality monitoring in 2010, one of which was a turkey vulture, and four raptors were found in 2011, three of which were turkey vultures. He testified that, correcting for scavengers and the number of turbines searched, this would result in a mortality rate of eight turkey vultures over the 88 turbine facility, or about 0.02% of the population that migrates along Lake Erie, which in his view is not a concern with respect to the population level.

[230] Mr. Taylor also described disturbance and mortality monitoring for tundra swans conducted at the Kruger Energy wind project in the spring of 2011 during the three week period when they are moving through that area. Regarding mortality, he stated that no dead tundra swans were found, and that there have not been any swan mortalities from turbines found either in Ontario or all of Canada to date. Regarding disturbance, he noted that 13 different flocks of tundra swans were observed in the spring of 2011 at the Kruger Energy wind project and no avoidance has been observed, and he therefore concluded that they are continuing to use that area.

[231] Mr. Taylor also testified that the population of bald eagles in Ontario is increasing, particularly around Lake Erie. He stated that the closest known nest to the Wind Project is about two kilometres away. He gave evidence that a bald eagle nest about one kilometre from the Kruger Energy wind project was found to have three young, and that six bald eagles were identified in the study area at the Wolfe Island wind project in pre-construction surveys and six to 12 bald eagles were identified post-

construction. Mr. Taylor concluded on this basis that there has not been a significant disturbance of bald eagles at these two facilities.

[232] Mr. Taylor stated that he has been involved in monitoring at the Wolfe Island wind project. This monitoring was done on the basis of "waterfowl days", a measure of number of birds counted over number of days surveyed. He testified that there were 340,000 "waterfowl days" measured during pre-construction compared to 381,000 to 386,000 "waterfowl days" post-construction. He added that surveys involving actual waterfowl foraging in fields measured 10,000 individual birds pre-construction and between 9,000 and 16,000 birds post-construction. He noted that although waterfowl are rarely seen to forage within 50 metres of the turbine base or under the blade sweep, they continue to use the surrounding area in high numbers. Mr. Taylor concluded that the Wolfe Island wind project is not having any impact on the use of the area by waterfowl.

[233] With respect to other birds at Wolfe Island, Mr. Taylor confirmed that there are virtually no woodland breeding bird mortalities and no marsh breeding bird mortalities from the operation of the wind turbines. He testified that forest breeding birds tend to be at fairly low risk of mortality at wind turbines because they tend to stay either below the canopy, or fly at tree height below the turbine blade sweep. He stated that, similarly, marsh birds tend to stay in the marshes. He concluded that the Wind Project would not likely cause mortality or disturbance of these types of birds. Mr. Taylor also addressed bobolinks, noting mortality rates of 46 bobolinks a year across 86 wind turbines at Wolfe Island, or approximately 0.5% of the bobolink population within the project area and 0.005% of the Ontario bobolink population. Mr. Taylor testified that this mortality rate was not a concern at either the local or provincial population levels.

[234] Mr. Taylor referred to a report, prepared by the National Wind Coordinating Collaborative, comparing mortality rates at various wind farms across North America. He noted that the raptor fatality rate of 0.2 birds per megawatt at the Wolfe Island wind project is in the middle of the range of bird mortality, and not at the top. He concluded that although there has been higher bird mortality at Wolfe Island compared to other projects in Ontario, the mortalities are in line with what was predicted prior to the operation of the facility and there have been no significant concerns resulting from its operation.

[235] Mr. Taylor stated that, in his opinion, the cumulative impact of many turbines is not a significant concern for disturbance. He testified that disturbance is a site-specific issue and unlikely to be an issue beyond the 120 metre setback. Because he has

observed that waterfowl continue to forage near turbines, he states that the cumulative impact of many wind farms along Lake Erie will not displace waterfowl from the area.

[236] Mr. Pelletier was asked to confirm if Mr. Taylor's conclusions with respect to wind projects were comparable to Mr. Pelletier's experience in the United States. He confirmed that with respect to turkey vultures, tundra swans, water birds, waterfowl and bald eagles, the experience in the United States has been very similar. He reviewed post-construction reporting with respect to various Ontario projects and confirmed waterfowl movement continues in the vicinity of the wind facilities, contrary to the potential disturbance issues raised by Dr. Petrie.

[237] Mr. Pelletier confirmed that studies have attributed the death of 28,000 to 40,000 birds per year to wind turbines. He advised, however, that even if those numbers were doubled or tripled, they would still pale in comparison to other sources of bird mortality (other types of energy facilities, windows, cats, etc.).

[238] Mr. Pelletier differentiated the Altamont Pass wind project in California where many golden eagles were killed, and noted that it was a different project design with 5,000 wind turbines located at a high elevation in a bird migratory corridor. He noted that the turbines were lattice tower structures that allowed for perching and there was significant prey in the grasslands under the turbines, creating a "perfect storm" for bird mortality.

[239] Ms. Bériault testified that s. 9 and 10 of the *ESA* prohibit the killing, harming or harassing of a member of an endangered or threatened species, and also prohibit damaging the habitat of an endangered or threatened species. She stated that the Approval Holder was required to prepare a SAR report to identify any endangered or threatened species or habitat in the project vicinity, noting that this was not a requirement of the Regulation, but was a separate, concurrent process under the *ESA*. She also testified that species of special concern are classified under the *ESA* but do not receive protection under s. 9 and 10 of the *ESA* and, therefore, are addressed in the NHA/EIS process instead of the SAR Report.

[240] Ms. Bériault gave evidence that she reviewed and commented on the Approval Holder's SAR Report and indicated that she was satisfied that adequate measures would be taken to protect SAR as documented in the final version of the report. She also advised that the Approval Holder was required to apply for, and was granted, an overall benefit permit under s. 17(2)(c) of the *ESA* for the destruction of bobolink and eastern meadowlark habitat, because some of this habitat would be removed in the

construction of the turbines. She stated that this permit requires the Approval Holder to construct habitat enhancement sites to replace the habitat which will be removed by the construction of the Wind Project.

Submissions

[241] Mr. Monture submits that the Wind Project will cause harm to birds that are killed by turbines, compromising the sustainability of avian species populations. He also submits that the Wind Project will cause harm to global migratory flyways, due to a barrier effect, and that displacement will equal large areas of habitat fragmentation and loss. Mr. Monture asserts the true effect of the turbines will not be known until 40 to 50 years in the future when more data has been collected, but by that time the harm will be done.

[242] Ms. Bard and Mr. McCallum submit that the updated threshold of 14 bird kills per turbine per year in the 2011 Bird Guidelines should be applied rather than the old threshold of 18 bird kills per turbine per year, and that every wind farm in Ontario should be required to comply with the updated threshold. They also submit that at least 20 years of post-construction monitoring should be required to effectively understand the cumulative effects of wind farms on the area.

[243] Ms. Bard and Mr. McCallum assert that because new turbines of the type to be used by this Wind Project are much larger than those used in the past, a greater search radius of 70 metres should be used to monitor bird kills, as opposed to 50 metres, as is currently proposed. They also assert that wind turbines should be eliminated in Important Bird Areas and significant migration routes, as they understand, such as the region in question. They submit that setbacks from provincially significant wetlands and woodlots should be increased to account for flight patterns during inclement weather.

[244] The Director submits that the direct mortality of birds from the operation of wind turbines is typically low and not of concern. The Director submits that, nonetheless, the REA and the MNR regulatory regimes impose requirements on the Approval Holder to monitor mortality at turbines to determine whether any of these turbines will cause unusual or unforeseen mortality patterns.

[245] The Director submits that under the Bird Guidelines, some mortality as a result of the operation of turbines is permissible, and that it would be illogical to interpret the test in such a way that the death of one organism would meet the test. The Director submits that the Tribunal reached this conclusion in *Monture 1*.

[246] The Director submits that many of the Appellants' witnesses raised general concerns about bird mortality from the operation of turbines that were not based on evidence, and that they relied on hearsay evidence. The Director submits that their evidence should be given little weight.

[247] The Director submits that the Approval Holder followed the NHA process and made efforts to site Wind Project components outside of natural features. Only Turbine 53 is located within a natural feature, all other turbines are sited in agricultural fields.

[248] The Director notes that the main concern regarding the impact of turbines on birds, according to the expert witnesses, is habitat loss and displacement, not mortality. The Director submits that the habitat based approach to turbine siting, mandated by the regulatory regime and applied in the design of this Wind Project, is appropriate. The Director further submits that the Appellants have not shown evidence of actual habitat loss, and that while a few trees will be cut on the pine plantation at Turbine 53, there will be equivalent replanting with native species.

[249] The Director asserts that the concerns raised about the cumulative impact of turbines on birds is outside the scope of this appeal, because the test is whether this Wind Project will cause serious and irreversible harm, and not whether the cumulative impacts of all wind energy development in Ontario will cause serious and irreversible harm. The Director asserts, however, that the evidence shows that wind turbines do not have any serious cumulative impact.

[250] The Director submits that the evidence has not shown that there will be serious and irreversible harm to birds from the Wind Project.

[251] The Approval Holder submits that mortality rates at wind projects are low. The Approval Holder notes the evidence of Mr. Taylor and submits that bird mortality rates at the Wolfe Island wind project are within pre-construction predictions and were not a concern on a local, regional or provincial scale. The Approval Holder also submits, as Mr. Taylor testified, that turkey vulture mortality rates at the Kruger Energy wind project were not a concern, and that there were no reported tundra swan mortalities there or elsewhere in Canada. The Approval Holder further submits, based on Mr. Taylor's evidence, that the mortality rates of bobolinks, woodland breeding birds and marsh breeding birds at Wolfe Island are not a concern to local, regional or population levels. The Approval Holder submits that, notwithstanding this evidence, it is required to conduct post-construction monitoring to confirm that mortality is not an issue at this Wind Project.

[252] The Approval Holder asserts that there are significant differences between the Altamont Pass wind project and more modern wind turbines such as those to be used for this Wind Project, and submits that raptors have high collision avoidance behaviour as they can visually and acoustically detect turbines and tend to migrate during clear weather so that there are no concerns with respect to notable eagle mortality in relation to the Wind Project.

[253] The Approval Holder submits that Dr. Petrie did not raise significant concerns about mortality rates with respect to the Wind Project, and that he was most concerned about waterfowl being displaced by wind turbines, particularly from agricultural fields where they forage. The Approval Holder asserts that the articles referenced by Dr. Petrie did not provide any support for his allegation that waterfowl will be displaced due to the Wind Project. The Approval Holder submits that Mr. Taylor's evidence shows that waterfowl are continuing to use areas in the vicinity of the Wolfe Island wind project at equivalent or greater levels than observed pre-construction, and that there is evidence in the Great Lakes region that waterfowl displacement is not an issue with respect to wind projects.

[254] The Approval Holder submits that Mr. Taylor confirmed that the issue of cumulative effects of numerous wind projects would not be an issue in relation to displacement and could only be considered with respect to mortality, which both he and Dr. Petrie did not believe to be an issue. The Approval Holder therefore submits that the potential for significant cumulative effects incurred from wind projects is considered limited.

[255] The Approval Holder submits that the evidence of the Appellants has not demonstrated that harm will occur, and further submits that if the loss of one bird were to constitute serious and irreversible harm, that would make the statutory threshold so low as to render it meaningless.

[256] The Approval Holder submits that data from mandatory post-construction monitoring that will be included in the MNR's Bird and Bat Database will assist in the MNR's future policy decisions to ensure that there are no significant cumulative effects to birds. The Approval Holder further submits that the MNR has the authority to determine that the Bird Guidelines should be amended based on this data, and the MOE has the authority to amend the Wind REA for this Wind Project to the extent that it is in the public interest.

[257] The Approval Holder submits that the documentary evidence filed by the Appellants and the participants was, in a large part, downloaded from the internet without regard to credibility of source, and that the lack of opportunity to cross-examine the authors means that the Tribunal should place less weight on the reliability of this evidence.

[258] The Approval Holder asserts that the Respondents' evidence has demonstrated that the Wind Project operating in accordance with its approval will not cause serious harm to the environment.

Findings on birds

[259] Under s. 145.2.1(3) of the *EPA*, the Appellants have the onus of proving that engaging in the renewable energy project in accordance with the renewable energy approval will cause serious and irreversible harm to plant life, animal life or the natural environment.

[260] Most of the concerns of the Appellants and participants regarding bird mortality were provided either as personal observations, or as evidence obtained from internet sources. The Tribunal agrees with the submissions of the Director and the Approval Holder in this regard, and finds that much of the internet evidence is of limited weight as hearsay, as the authors were not available for cross-examination, and that it was not established that the evidence is applicable to this Wind Project.

[261] The Tribunal finds that direct mortality to birds from the wind turbines proposed at this Wind Project does not amount to serious and irreversible harm to birds. This finding is based on the evidence provided by Mr. Taylor that: the mortality at Wolfe Island was not abnormally high, but was in the range of values for wind farms in North America, contrary to the allegations of the Appellants; and mortality monitoring at the Kruger Energy facility has not raised a concern. This is supported by the testimony of Mr. Pelletier who agreed with Mr. Taylor that the direct mortality of birds due to collision with turbines was not a concern, and the information from the database described by Ms. McGuinness that indicates that bird mortality is low and is not a threat to a species, either on the population level or the local level. Of note, Dr. Petrie agreed that direct mortality is not his greatest concern. Nevertheless, the Tribunal recommends that the current Bird Guidelines threshold of 14 birds per turbine per year apply to the Wind Project, and the data from the post-construction monitoring will add to the body of knowledge in Ontario about the effects of wind turbines on birds.

[262] The Appellants allege, through the evidence of Dr. Petrie, that the bird habitat and migratory pathways will be disrupted and this will lead to serious and irreversible harm. Dr. Petrie testified that in his opinion, the presence of wind turbines can lead to disruption in foraging for waterfowl, both during migration, when the birds come inland to feed, and during the winter, as many waterfowl now over-winter along the north shore of Lake Erie. Dr. Petrie based his testimony and opinion on his own research and on review of scientific papers that were peer-reviewed. Therefore the evidence of Dr. Petrie is given a significant amount of weight by the Tribunal.

[263] The Approval Holder and the Director did not provide peer-reviewed scientific papers, research studies, or other documentary evidence to support their contention that birds are not displaced by turbines, but they did provide evidence from monitoring at other projects, and their experts' opinions, that displacement is not a concern.

[264] Notwithstanding the concerns and evidence put forward by Dr. Petrie and the others, the Tribunal is required to determine whether the Wind Project, operated in accordance with the Wind REA, will cause serious and irreversible harm based on the evidence provided at the hearing.

[265] The evidence from Dr. Petrie suggests that due to the conditions present along the north shore of Lake Erie, specifically in the study area, the presence of the Wind Project may cause some disruption to the foraging behavior of some birds, particularly waterfowl, and to a lesser extent, there may be some impact to migratory pathways/behaviour, if there are many more turbines along the north shore of the lake. On the other hand, the Tribunal received evidence that other existing projects near water bodies have not resulted in significant disruption. On this basis, the Tribunal recommends that further baseline studies be undertaken regarding migrating and over-wintering birds, as described in the recommendations.

[266] The Tribunal finds that the evidence regarding disruption of bird habitat is not sufficient to meet the test that this Wind Project will cause serious and irreversible harm to birds. The test has not been met.

Bats

Evidence

[267] Mr. Green raised concerns that bats commonly roost in woodlots near where turbines will be located. He noted that three out of the eight species of bats in Ontario are facing extinction and suggested that more than two years of post-construction

monitoring should be required. He stated that there was no population study of bats in the NHA, so there is no information on how many bats there are and where they are found.

[268] Ms. Bard also expressed concerns about the impact of the Wind Project on bats, suggesting that low pressure air pockets near wind turbines may cause bat lungs to implode. She noted that the bat population in Ontario is already at risk from white nose syndrome and are at risk of regional extinction. She stated that the province of Ontario is deciding whether or not to list them as SAR.

[269] Much of the testimony of Ms. Cameron and Ms. McGuiness in relation to birds also applies to bats.

[270] Ms. Cameron stated that one year of pre-construction data would be collected for a baseline inventory to be compared to post-construction monitoring data, and that post construction monitoring would include bat mortality monitoring.

[271] Ms. Cameron noted that section K of the REA requires the Approval Holder to report monitoring results to the MOE and the MNR, where the thresholds of 10 bats per turbine per year is reached or exceeded. Ms. Cameron gave evidence that, as with birds, the Approval Holder is required to report the mortality levels annually for the first three years following the commencement of operation of the Wind Project, whereas the disturbance monitoring is conducted for one year pre-construction and two years post construction. She noted that if the Approval Holder applies operational mitigation for bats, it must do two more years of mortality and effects monitoring, and report all mortality levels to the MNR to update the database. Ms. Cameron observed that the EEMP sets out how impacts will be assessed, and the triggers for mitigation, such as further study, or slowing or shutting down turbines at particular times.

[272] Ms. Cameron confirmed that the Regulation expressly references the Bat Guidelines, which were updated in July 2011. She stated that the applicable guidelines in force at the time the Approval Holder submitted its application for the REA were an earlier version of the Bat Guidelines, dated March 2010. She also stated that pre-construction data would be collected for a baseline inventory to be compared to post-construction monitoring data, and that post construction monitoring would include bat mortality monitoring.

[273] As described by Ms. Cameron in relation to birds, the identification and determination of the significance of wildlife habitats was conducted in accordance with the MNR's *Significant Wildlife Habitat Technical Guide* and the Ecoregion Criteria

Schedules. She stated that bat habitat must be evaluated in accordance with the Bat Guidelines.

[274] Ms. Cameron testified regarding the contention that bats were not counted in the NHA. She stated that during the records review, information was gathered about potential places where bats would hibernate for the winter, but because these areas were located far away from the Wind Project, they were not considered further. She added that no evaluation of significance was required because during the site investigation stage, no features such as abandoned mines or caves, which could be potential bat hibernacula, were identified.

[275] Ms. McGuinness was involved in developing the Bat Guidelines, which address: the consideration of significant wildlife habitats and the setback or mitigation to avoid habitat disturbance; and the post-construction mortality monitoring. She stated that there were almost no bat guidelines available in other jurisdictions because bats are much less studied. Ms. McGuinness testified that the most prominent bat experts in Ontario were involved in developing the Bat Guidelines. She further stated that, as with birds, they found no sustainability concern regarding bats from wind power, as the mortality related to wind turbines is generally very low. Ms. McGuinness referred to the MNR's database, which is intended to ensure that its adaptive management approach to bats is effective.

[276] Ms. McGuinness stated that bats are not well studied generally, and the MNR does not know how bats move and migrate through the landscape, and what their important migratory habitats are. She observes that the MNR's *Significant Wildlife Habitat Technical Guide* and Ecoregion Criteria Schedules identify criteria for determining significance of bat hibernacula and bat maternity colonies, but not bat migratory stopover areas. She notes that the MNR currently does not have those criteria and cannot identify bat migratory stopover areas, but is involved in research to address this.

[277] During cross-examination by Mr. Green, Ms. McGuinness explained how comments posted on the Environmental Registry concerning the draft Bat Guidelines were considered, and some of the recommendations were adopted while others were not. It was her view the Bat Guidelines reflect the current state of science and represent the most stringent regulatory requirements known related to monitoring the impacts of wind turbines on bats. Ms. McGuinness also noted that the three comments highlighted in Mr. Green's cross-examination only represent a small portion of the

approximately 70 comments received on the Bat Guidelines through the Environmental Registry consultation process.

[278] Ms. McGuinness discussed one of the comments that resulted in a change in the final version of the Bat Guidelines, which indicated that the March 2010 draft Bat Guidelines reduced the amount of protection offered to bats by reducing the previous one km setback from hibernacula habitat to 200 metres. She observes that in the final July 2011 version of the Bat Guidelines, the setback was increased and restored to 1,000 metres.

[279] Ms. McGuinness stated that the Wind REA contains thresholds for bat mortality that were derived in accordance with the Bat Guidelines and that if bat mortality thresholds are exceeded, mandatory mitigation will be imposed for all turbines across the Wind Project. She indicated that this mitigation is proven to be effective at significantly reducing bat mortality.

[280] Ms. McGuinness gave her opinion that there will be no serious and irreversible harm to bat populations from the operation of the Wind Project.

[281] Mr. Powell stated that both mortality and disturbance monitoring are included in the EEMP, which includes post-construction mortality monitoring for bats to ensure that the Wind Project is not having any unanticipated mortality effects.

[282] Mr. Taylor gave evidence that Wolfe Island did have some pre-construction bat surveys, but it was not considered to be as high risk for bats as it was for birds. He stated that the mortality rate there is about six bats per megawatt, which is roughly in the middle of the range shown in a report by the National Wind Coordinating Collaborative. Mr. Taylor testified that the majority of bat mortality is found in a fairly brief period from mid-July to the end of September, so operational mitigation could be put in place through that time. He added that mortality generally is not anticipated during the winter months.

[283] As of the date of her testimony, Ms. Bériault observes that there are currently no bats listed as SAR in Ontario. She stated that four species have been addressed by the Committee on the Status of Species at Risk in Ontario but they had not yet been added to the list as of the date of her testimony. She noted that the little brown bat, which is one of the species that was assessed, and is in very bad shape due to white-nose syndrome.

Submissions

[284] Mr. Monture submits that tree-dwelling bats will be at risk from the many turbines in the Wind Project that are within 120 metres or less of forest edges, and migrating bats will be at risk from all turbines along their flyways. He further submits that if the mortality levels of bats counted at the turbines decrease, it would indicate that the bats are no longer in the area and this would be irreversible harm.

[285] Ms. Bard and Mr. McCallum submit that setbacks from provincially significant wetlands and woodlots should be increased to account for bat flight patterns during inclement weather.

[286] The Director submits that wind turbines do not pose a threat or raise particular concerns about the sustainability of bat populations in Ontario. However, the Director further submits that the Approval Holder is required to conduct post-construction bat mortality surveys to ensure that mortality threshold are not exceeded, and where they are exceeded, mitigation measures must be used to reduce the mortality effects of turbines across the Wind Project.

[287] The Approval Holder submits that mandatory post-construction monitoring data that in the MNR's Bat Database will assist in the MNR's future policy decisions to ensure that there are no significant cumulative effects to bats. The Approval Holder further submits that the MNR has the authority to determine that the Bat Guidelines should be amended based on this data, and the MOE has authority to amend the REA for this Project to the extent that it is in the public interest.

Findings on bats

[288] The Tribunal finds that, although there are significant concerns about the bat population in Ontario, the Appellants have not satisfied their onus to demonstrate by evidence that engaging in the Wind Project in accordance with the Wind REA will cause serious and irreversible harm to bats. (This would be difficult for any appellant to demonstrate in a situation such as this where there is a lack of scientific knowledge about bats.) The Tribunal accepts the evidence of Ms. McGuiness that the mortality threshold of 10 bats per turbine per year, and the mandatory mitigation to be imposed for all turbines across the Wind Project when if it is exceeded, has been proven to be effective at significantly reducing bat mortality.

[289] The Tribunal notes that bats, which have been far less studied than birds, are under significant threat due to disease in Ontario. Mortality from wind turbines may exacerbate this problem. At the same time, the MNR does not have criteria to identify

bat migratory stopover areas, although it is pursuing research to determine these criteria.

[290] While post-construction monitoring will add to the body of knowledge in Ontario about the effects of wind turbines on bats, there is currently a lack of knowledge about bats, and in particular bat migratory stopover areas. The Tribunal is concerned that there is insufficient current baseline data on bat conditions, and therefore the ability to measure potential impacts from the wind turbines will be hampered. On this basis, the Tribunal recommends below that further baseline bat studies be undertaken.

[291] The Tribunal also notes with concern that the draft Bat Guidelines, which include a setback of only 200 metres from hibernacula habitat will apply to the Wind Project, as opposed to the 1,000 metre setback in the current Bat Guidelines, and recommends that the current Bat Guidelines apply to the Wind Project.

Turbine 9

[292] As already noted, proposed Turbine 9 will be near Mr. Hyslop's farm property and residence. It was the focus of his evidence and submissions. Mr. Hyslop's allegations of serious harm to human health (e.g. shadow flicker) are discussed above under the first branch of the test.

Evidence

[293] With respect to Turbine 9, Mr. Hyslop gave evidence that:

- Turbine 9 is surrounded by sensitive features with significant woodland habitat 43 metres away, significant habitat for migratory birds 47 metres away and it is on the boundary of a wetland, and significant habitat for woodland declining species and migratory birds;
- the tip of Turbine 9 is in a significant woodland, as is the access road to the turbine;
- the NHA overlooked the winter raptor roosting and feeding area along the Wardell's Creek watershed;
- the NHA overlooked the fact that Wardell's Creek watershed is a stop-off for thousands of waterfowl, including tundra swans, ducks, geese, and herons, among others; and
- the NHA overlooked the many other species (turtles, bullfrogs, amphibians, raptors, eagles, etc.), that use Wardell's Creek.

[294] Joan Ament testified on behalf of Mr. Hyslop, and described the presence of various wildlife species in Wardell's Creek. She also expressed concern regarding the fragile population of bald eagles in Haldimand County.

[295] Ms. Bard raised various concerns with respect to the location of Turbine 9, including:

- the inadequacy of the 120 metre setback, and her recommendation that setbacks from significant wildlife habitat be increased to five km;
- birds such as gulls, herons, ducks, geese, tundra swans, egrets, barn swallows, red-tailed hawks, bobolinks and terns "would probably be doomed";
- the ineffectiveness of post-construction monitoring due to issues such as scavengers that would eat birds injured and killed by turbines before they could be counted; and
- general concerns with respect to other animals in the area of Wardell's Creek including beaver and Fowler's toad.

[296] Dr. Petrie testified that the location of Turbine 9 was inappropriate because the area includes swampland and woodland adjacent to creek habitat and Lake Erie. He noted that bird migration in the area would be north-south with a very major east-west migration with movements inland to feed. He also stated that the area around Turbine 9 is very important for bird over-wintering and migratory movements, especially because birds tend to stop at the lakeshore during migration to put on body fat, socialize and group up before they cross the lakes.

[297] Dr. Petrie stated that Ontario has obligations to protect waterfowl and migratory bird habitats, and for the conservation of birds to ensure that populations are not adversely affected. Dr. Petrie expressed his opinion that a disruption of birds from their migratory corridor would remain changed for a long period of time.

[298] Dr. Petrie also stated his opinion that siting Turbine 9 just 445 metres from Wardell's Creek watershed will cause harm, and that "you couldn't pick likely a worse place to put an industrial wind turbine in this entire region."

[299] With respect to the bald eagles that witnesses testified they have seen in the area of Turbine 9, Dr. Petrie testified that the MNR had not provided a biological justification for the mortality threshold of 0.2 raptors per turbine per year. He further stated that with that threshold, one wind farm could kill about five or 10 bald eagles per

year before mitigation measures would be required to be put in place, and that this would be a substantial number of bald eagles.

[300] Mr. Powell testified that Turbine 9 and the associated access road and collector line were sited within a managed agricultural field, but he stated that there are significant features within 120 metres, consisting of deciduous woodlands, migratory bird stopover habitat to the east, and wetlands associated with Wardell's Creek and Evans Creek. He further stated that Wardell's Creek and its associated open water habitats were not evaluated for significance as there are no Wind Project components within 120 metres. Mr. Powell also testified that there is no blade sweep over woodlands or wetlands by Turbine 9. He confirmed that Turbine 9 would not interfere with existing water drainage from east to west.

[301] Mr. Powell explained the process used to assess lands in the vicinity of Turbine 9, and testified that air photos show that possibly, with the exception of the natural features closer to Wardell's Creek, the cultural plantations and open areas in and around this area were all farmed as recently as 1979. He described the candidate features in the area, noting that the trigger for evaluating a candidate feature is whether it is within 120 metres of a project component. He noted that Feature 66 is within the vicinity of Turbine 9, and that candidate habitat for declining woodland species has been identified to the east of Turbine 9.

[302] Mr. Powell gave evidence that the areas to the west are identified as supporting area-sensitive species, and both woodlands are identified as providing habitat for declining woodland species. He added that Feature 66-A, which is a large, diverse woodland community with a mix of upland and lowland habitats, is also identified as a significant migratory bird stopover area, but as part of this Wind Project, migratory bird surveys were not completed specifically for individual features.

[303] Mr. Powell testified that rather than completing the migratory bird surveys in the fall and the spring, Stantec took a more conservative approach and assumed Feature 66-A would provide significant stopover habitat for migrating species because the large, diverse woodland habitats that occur closest to Lake Erie have the potential to support that stopover habitat function.

[304] Mr. Powell testified that habitats associated with Wardell's Creek that would be specific to waterfowl stopover habitat or important for other species, such as bullfrogs or snapping turtles, were not evaluated because Wardell's Creek is beyond 120 metres from the Wind Project study area.

[305] Mr. Powell noted that Turbine 32 was proposed to be located to the northeast of Turbine 9, within a migratory stopover habitat and that this would have required completion of fall and spring migratory bird surveys in order to proceed at that location. He stated that, as a result of not wishing to delay the approval of the Wind Project while the required studies were done, the turbine and its access road was dropped from the Wind Project.

[306] Mr. Taylor gave evidence that he had experience studying turbines that are much closer to more significant wetlands than Wardell's Creek and he had not seen any impact. He stated that the 120 metre setback policy reflects common sense. Mr. Taylor also testified that he disagreed with the conclusion of Dr. Petrie that it was inappropriate to site Turbine 9 in proximity to Wardell's Creek.

[307] Mr. Taylor stated that waterfowl could fly in proximity to Turbine 9, and that waterfowl mortality from wind turbines is very low because they have a very good ability to avoid the turbines during flight. Mr. Taylor testified that while there is a potential for some waterfowl mortality, it is very low and would not have a significant impact to the waterfowl populations, particularly in comparison to how many waterfowl are harvested each year by hunters.

[308] Mr. Pelletier stated that Dr. Petrie's evidence was based on conjecture regarding the impacts of the turbines on waterfowl, rather than on studying the post-construction work that has been conducted at other projects that show that impacts to waterfowl are very low.

Submissions

[309] Mr. Hyslop submits that Turbine 9 has been "squeezed in", and is surrounded by, sensitive areas. He further submits that the wetland appears to be continuous from east to west, with Turbine 9 sitting in the middle in the mowed field. Mr. Hyslop asserts that the drainage continues across the mowed area where Turbine 9 is to be located, and although the land has been altered, it should be considered to be similar to the adjacent wetland.

[310] Mr. Hyslop submits that the location of Turbine 9 is inappropriate due to the environmental features in its vicinity and that its siting will lead to serious and irreversible harm to plant life, animal life and the natural environment. Mr. Hyslop suggested that Turbine 32 was dropped from the Wind Project due to environmental concerns, and that those same concerns apply to the location of Turbine 9.

[311] Ms. Bard and Mr. McCallum jointly assert that the lack of rigour applied to the bird assessment in this area is a problem, and they cite examples of bird species that were missed, such as chimney swift, red-headed woodpecker, golden eagle and bald eagle. They also note that tundra swans were not observed because the bird counts were taken after their migration period. Ms. Bard and Mr. McCallum submit that had these species been documented more fully, they could be better protected. They further submit that this oversight and poor study methodology will lead to serious and irreversible harm to bird species.

[312] Ms. Bard and Mr. McCallum submit that there is the possibility of a bald eagle nest being present within the vicinity of Wardell's Creek, and that if a nest is determined to be present, the setback distance of Turbine 9 to the nest may be insufficient, leading to serious and irreversible harm to the bald eagle.

[313] The Director submits that Turbine 9 is not sited within a pristine area or natural feature, but in a meadow that has been cultivated. The Director acknowledges that Wardell's Creek is within a significant wetland, but submits that it is situated well over 120 metres from Turbine 9 and, therefore, was not assessed in the NHA.

[314] The Director asserts that Turbine 9 would not impact any wildlife in Wardell's Creek, as it is more than 120 metres from that area, except possibly during the construction phase. The Director further submits that mitigation measures have been put in place to address construction impacts.

[315] The Director submits that no evidence was provided to suggest that Turbine 9 is improperly sited, or would result in serious and irreversible harm to plant life, animal life or the natural environment.

[316] The Approval Holder submits that the Tribunal should prefer Mr. Taylor's evidence to that of Dr. Petrie because, the Approval Holder argues, Dr. Petrie's evidence was based upon conjecture regarding impacts rather than studying the post-construction work that has been conducted at other wind farms, showing that impacts to waterfowl are very low.

[317] The Approval Holder submits that its evidence demonstrates that the Wind Project, including Turbine 9, operating in accordance with the Wind REA will not cause serious and irreversible harm to the environment.

Findings on Turbine 9

[318] The Tribunal is faced with conflicting evidence in relation to the appropriateness of the location of Turbine 9.

[319] Mr. Hyslop relies on Dr. Petrie's evidence that the location for Turbine 9 is inappropriate as the area includes swampland and woodland adjacent to creek habitat and the lake. It was also Dr. Petrie's opinion that, in this area, bird migration would be north-south with a very major east-west migration and movements inland to feed.

[320] Because the open water habitat of Wardell's Creek is greater than 120 metres from the turbine (or other project component), the creek is not evaluated. This is a source of concern for the Appellant Mr. Hyslop and the participants Ms. Bard and Mr. McCallum, and relates to the concern that the many species that use the creek have not been considered. However, the creek is almost 500 metres from the turbine, and on the basis of the prescriptive nature of the NHA, there is no evidence that the creek should have been assessed. Dr. Petrie's opinion evidence that birds using the creek and the lake will travel in the vicinity of Turbine 9 and therefore be at risk is similar to the concern expressed regarding mortality to birds in general. The Tribunal finds that there is insufficient evidence to determine that the Wind Project will cause serious and irreversible harm to plant life, animal life or the environment due to the presence of Turbine 9. Nevertheless, the Tribunal recommends that further study regarding the inter-related bird habitats of the Grand River, Wardell's Creek, Lake Erie and its shoreline be undertaken to provide further baseline data on the use of these areas by both migrating and over-wintering birds.

Conclusion on the REA test

[321] The Tribunal finds that the Appellants have not shown that engaging in the Wind Project in accordance with the Wind REA will cause serious harm to human health within the meaning of s. 145.2.1(2)(a) of the *EPA*, or that it will cause serious and irreversible harm to plant life, animal life or the natural environment under s. 145.2.1(2)(b) of the *EPA*.

Issue 2. If the answer to either Issue 1 (a) or (b) is "yes", whether the Tribunal should revoke the decision of the Director, by order direct the Director to take some action, or alter the decision of the Director.

[322] In light of the above findings that the answer to Issue 1 is "no" in its entirety, there is no need to decide Issue 2.

Recommendations

[323] Although the appeals have not been successful, in response to some of the concerns raised by the Appellants and participants, and in light of the Approval Holder's stated commitment to continue to consult with aboriginal stakeholders and the Director's authority under s. 47.5.3 of the *EPA*, as noted by the Approval Holder, the Tribunal makes the following recommendations to the Approval Holder and the Director regarding the terms and conditions of the Wind REA:

Natural Heritage Pre-Construction and Post-Construction Monitoring

1. The Approval Holder, in consultation with other relevant stakeholders, should conduct further study and monitoring to augment the data that has been compiled as part of the various natural heritage assessments. The studies, monitoring and data collection should include aboriginal traditional knowledge. It is intended that this additional data would be used to enhance the available natural heritage baseline information, for the purposes of more fully evaluating impacts following construction and operation of the Wind Project, and, in the future, to evaluate cumulative impacts as other renewable energy projects along the north shore of Lake Erie are constructed. The studies, monitoring and data collection should include, at a minimum:
 - further baseline and post-construction studies on the inter-related bird habitats of the Grand River, Wardell's Creek, Lake Erie and its shoreline, and in agricultural fields, with emphasis on how these areas are used collectively by migrating and overwintering birds;
 - bird displacement monitoring of the above features during, and following, construction for the purposes of evaluating cumulative impacts;
 - further baseline and post-construction study of bats, both resident and migratory. The evidence at the hearing indicated that the understanding of bat activity in the area is limited and that there are additional stresses to bats, such as white nose syndrome. Insufficient current baseline data on bat conditions will hamper the measurement of future impacts from wind turbines on bats and their habitat.
2. The stakeholders referred to above should include, but not be limited to, representatives of the MNR, the MOE, and relevant organizations, and may include some of the Appellants and participants. Dr. Petrie should be

requested to provide advice in the development of the additional studies described above.

3. The width of the animal movement corridor immediately to the west of the collector substation that serves both the Wind and Solar Projects should be reconsidered by the Approval Holder's consultants and the MNR to ensure it will be effective at allowing the free movement of deer and other animals through that area.
4. The commitments made by the Approval Holder for pre-construction, construction and post-construction work to be done under the Wind REA should be compiled in a single document, in order to be available for audit purposes by the Director.

Reporting and Review of Results

5. The Approval Holder should commit to using the bird mortality threshold of 14 birds per turbine per year in the monitoring program, as per the updated Bird and Bat Guidelines.
6. The 1,000 metre setback from hibernacula habitat for bats in the final Bat Guidelines should apply to the Wind Project, as per the updated Bird and Bat Guidelines.

Community Liaison Committee

7. In addition to the terms and conditions contained in the Wind REA regarding the Community Liaison Committee, it should:
 - include at least one traditional member of the Onkwehonwe of Six Nations who were represented in this appeal, if they so request;
 - operate for a minimum period of five (5) years from the day it is established; and
 - be provided with copies of all studies and reports generated by, and on behalf of, the Approval Holder under the Wind REA, as and when they are provided to the Director.

Aboriginal Consultation

8. The Approval Holder's consultants, and a representative of the MNR, should meet with the Appellant Mr. Monture, if requested by him, on a confidential

- basis, for the purpose of protecting any goldenseal known by Mr. Monture to be in the area of the proposed Wind Project.
9. The traditional members of the Onkwehonwe of Six Nations who were represented in this appeal shall be considered an “interested Aboriginal community” for the purposes of this provision in the Wind REA.

DECISION

[324] The appeals of Mr. Monture, Mr. Hyslop and Haldimand Wind Concerns are dismissed under s. 145.2.1(5) of the *EPA*. The Tribunal confirms the decision of the Director.

Appeals Dismissed

“Robert V. Wright”
Robert V. Wright, Panel Chair

“Maureen Carter-Whitney”
Maureen Carter-Whitney, Member

“Helen Jackson”
Helen Jackson, Member

Appendix A: Relevant Legislation and Regulations

Appendix A

Relevant Legislation and Regulations

Environmental Protection Act

Director's powers

47.5 (1) After considering an application for the issue or renewal of a renewable energy approval, the Director may, if in his or her opinion it is in the public interest to do so,

- (a) issue or renew a renewable energy approval; or
- (b) refuse to issue or renew a renewable energy approval.

Terms and conditions

(2) In issuing or renewing a renewable energy approval, the Director may impose terms and conditions if in his or her opinion it is in the public interest to do so.

Other powers

(3) On application or on his or her own initiative, the Director may, if in his or her opinion it is in the public interest to do so,

- (a) alter the terms and conditions of a renewable energy approval after it is issued;
- (b) impose new terms and conditions on a renewable energy approval; or
- (c) suspend or revoke a renewable energy approval.

Grounds for hearing

142.1 (3) A person may require a hearing under subsection (2) only on the grounds that 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.

What Tribunal must consider

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.

Onus of proof

(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).

Powers of Tribunal

(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.

Ontario Regulation 359/09

Environmental effects monitoring plan

23.1 (1) A person who proposes to engage in a renewable energy project in respect of a Class 3, 4 or 5 wind facility shall prepare an environmental effects monitoring plan in respect of birds and bats.

(2) For the purposes of subsection (1), the person shall prepare the environmental effects monitoring plan in accordance with the following publications of the Ministry of Natural Resources:

1. "Birds and Bird Habitats: Guidelines for Wind Power Projects" dated October 2010, as amended from time to time and available from the Ministry of Natural Resources.
2. "Bats and Bat Habitats: Guidelines for Wind Power Projects" dated March 2010, as amended from time to time and available from the Ministry of Natural Resources.

Natural heritage assessment

24. (1) A person who proposes to engage in a renewable energy project shall conduct a natural heritage assessment, consisting of the following:

1. A records review conducted in accordance with section 25.
2. A site investigation conducted in accordance with section 26.
3. Subject to subsection (3), an evaluation of the significance or provincial significance of each natural feature identified in the course of the records review and site investigation, conducted in accordance with section 27.

(2) For the purposes of this section and sections 25 and 26, in conducting a records review or a site investigation, identifying natural features and determining the boundaries of any natural features, a person mentioned in subsection (1) shall use applicable evaluation criteria or procedures as set out in the Natural Heritage Assessment Guide.

(3) This section and sections 25, 26, 27 and 28 do not apply in respect of a proposal to engage in a renewable energy project in respect of a Class 2 wind facility.

Natural heritage, records review

25. (1) In conducting a records review mentioned in paragraph 1 of subsection 24 (1), a person who proposes to engage in a renewable energy project shall ensure that a search for and analysis of the records set out in Column 1 of the Table to this section are conducted in respect of the project location for the purpose of making the determinations set out opposite the records in Column 2 of the Table.

(2) For the purposes of this section, “natural feature” includes all or part of,

- (a) a sand barrens, a savannah, a tallgrass prairie and an alvar, if the records review is being conducted in respect of a project location that is in the Natural Heritage System; and
- (b) a sand barrens, a savannah and a tallgrass prairie, if the records review is being conducted in respect of a project location that is in the portion of the Oak Ridges Moraine Conservation Plan Area that is subject to the Oak Ridges Moraine Conservation Plan.

(3) The person mentioned in subsection (1) shall prepare a report setting out a summary of the records searched and the results of the analysis conducted under subsection (1).

TABLE

Item	Column 1	Column 2	
	Records to be searched and analyzed	Determination to be made	
1.	Records that relate to provincial parks and conservation reserves and that are maintained by the Ministry of Natural Resources.	Whether the project location is in a provincial park or conservation reserve or within 120 metres of a provincial park or conservation reserve.	
2.	Records that relate to natural features and that are maintained by,	Whether the project location is,	
	i. the Ministry of Natural Resources,		
	ii. the Crown in right of Canada,		i. in a natural feature,
	iii. a conservation authority, if the project location is in the area of jurisdiction of the conservation authority,		
	iv. each local and upper-tier municipality in which the project location is situated,		ii. within 50 metres of an area of natural and scientific interest (earth science), or
	v. the planning board of an area of jurisdiction of a planning board in which the project location is situated,		
vi. the municipal planning authority of an area of jurisdiction of a municipal planning authority in which the project location is situated,	iii. within 120 metres of a natural feature that is not an area of natural and scientific interest (earth science).		

	vii. the local roads board of a local roads area in which the project location is situated,	
	viii. the Local Services Board of a board area in which the project location is situated, and	
	ix. the Niagara Escarpment Commission, if the project location is in the area of the Niagara Escarpment Plan.	

Natural heritage, site investigation

26. (1) Subject to subsection (1.1), for the purposes of conducting a site investigation mentioned in paragraph 2 of subsection 24 (1), a person who proposes to engage, as part of a renewable energy project, in an activity described in Column 1 of the following Table shall ensure that an investigation set out opposite the description in Column 2 of the Table is conducted, either by visiting the site or by an alternative investigation of the site, for the purpose of making the determinations set out opposite the description in Column 3 of the Table:

TABLE

Item	Column 1	Column 2	Column 3
	Description of activity	Investigation	Determinations to be made
1.	Any of the following activities:		
	1. The construction, installation or expansion of a transmission or distribution line.	Investigation of the air, land and water within 50 metres of any part of the project location on which the activities described in Item 1 of Column 1 are engaged in.	1. Whether the results of the analysis summarized in the report prepared under subsection 25 (3) are correct or require correction, and identifying any required corrections.
	2. The expansion of an existing transformer station, distribution station or transportation system.		2. Whether any additional natural features exist, other than those that were identified in the report prepared under subsection 25 (3).
	3. If it is engaged in with respect to a Class 3 solar facility, any construction, installation or expansion in		3. The boundaries, located within 50 metres of the project location, of any natural feature that was identified in the records review or the site investigation.

	addition to the activities described in paragraphs 1 and 2.		
			4. The distance from the project location to the boundaries determined under paragraph 3.
2.	Any activity other than the activities described in Item 1.	Investigation of the air, land and water within 120 metres of any part of the project location on which the activity described in Item 2 of Column 1 is engaged in.	1. Whether the results of the analysis summarized in the report prepared under subsection 25 (3) are correct or require correction, and identifying any required corrections.
			2. Whether any additional natural features exist, other than those that were identified in the report prepared under subsection 25 (3).
			3. The boundaries, located within 120 metres of the project location, of any natural feature that was identified in the records review or the site investigation.
			4. The distance from the project location to the boundaries determined under paragraph 3.

(1.1) The person mentioned in subsection (1) may conduct an alternative investigation of the site only if he or she determines that it is not reasonable to conduct a site investigation by visiting the site.

(2) For the purposes of this section, "natural feature" includes all or part of,

- (a) a sand barrens, a savannah, a tallgrass prairie and an alvar, if the site investigation is being conducted in respect of a project location that is in the Protected Countryside; and
- (b) a sand barrens, a savannah and a tallgrass prairie, if the site investigation is being conducted in respect of a project location that is in the portion of the Oak Ridges Moraine Conservation Plan Area that is subject to the Oak Ridges Moraine Conservation Plan.

(3) The person mentioned in subsection (1) shall prepare a report setting out the following with respect to the air, land and water in respect of which any site investigation was conducted:

- 1. A summary of any corrections to the report prepared under subsection 25 (3) and the determinations made as a result of conducting the site investigation.

2. Information establishing the type of each natural feature identified in the records review and in the site investigation.
3. A map showing,
 - i. all boundaries required to be determined under Column 3 of the Table to subsection (1),
 - ii. the location and type of each natural feature identified in relation to the project location, and
 - iii. all distances required to be determined under Column 3 of the Table to subsection (1).
4. A summary of methods used to make observations for the purposes of the site investigation.
5. The name and qualifications of the person conducting the site investigation.
6. If an investigation was conducted by visiting the site:
 - i. The dates and times of the beginning and completion of the site investigation.
 - ii. The duration of the site investigation.
 - iii. The weather conditions during the site investigation.
 - iv. Field notes kept by the person conducting the site investigation.
7. If an alternative investigation of the site was conducted:
 - i. The dates of the generation of the data used in the site investigation.
 - ii. An explanation of why the person who conducted the alternative investigation determined that it was not reasonable to conduct the site investigation by visiting the site.

Natural heritage, evaluation of significance

27. (1) In conducting the evaluation of the significance or provincial significance of a natural feature for the purposes of paragraph 3 of subsection 24 (1), a person who proposes to engage in a renewable energy project shall consider any information available to the person relating to natural features, including,

- (a) all information obtained during the records review conducted in accordance with section 25;
- (b) all information obtained during any site investigation conducted in accordance with section 26; and
- (c) all information received from the public, aboriginal communities, municipalities, local road boards and Local Services Boards until such time as the report mentioned in subsection 27 (4) has been prepared.

(2) For the purposes of the evaluation under subsection (1), a person shall determine that a natural feature is significant if it is a woodland or a wildlife habitat,

- (a) that the Ministry of Natural Resources has identified as significant;
or
 - (b) that is considered to be significant when evaluated using
evaluation criteria or procedures for significant natural features, as
set out in the Natural Heritage Assessment Guide.
- (3) For the purposes of the evaluation under subsection (1), a person
shall determine that a natural feature is provincially significant if it is a
southern wetland, a northern wetland, a coastal wetland, an area of
natural and scientific interest (earth science) or an area of natural and
scientific interest (life science),
- (a) that the Ministry of Natural Resources has identified as provincially
significant; or
 - (b) that is considered to be provincially significant when evaluated
using evaluation criteria or procedures for provincially significant
natural features, as set out in the Natural Heritage Assessment
Guide.
- (4) The person mentioned in subsection (1) shall prepare a report that
sets out the following:
1. For each natural feature shown on the map mentioned in
paragraph 3 of subsection 26 (3), a determination of whether the
natural feature is provincially significant, significant, not significant
or not provincially significant.
 2. A summary of the evaluation criteria or procedures used to make
the determinations mentioned in paragraph 1.
 3. The name and qualifications of any person who applied the
evaluation criteria or procedures mentioned in paragraph 2.
 4. The dates of the beginning and completion of the evaluation.
- (5) This section does not apply if the project location is,
- (a) at least 50 metres outside of all areas of natural and scientific
interest (earth science); and
 - (b) at least 120 metres outside of all natural features that are not
areas of natural and scientific interest (earth science).
- (6) If the project location is in the Protected Countryside or in the portion
of the Oak Ridges Moraine Conservation Plan Area that is subject to the
Oak Ridges Moraine Conservation Plan, this section does not apply in
respect of,
- (a) a sand barrens, a savannah, a tallgrass prairie or an alvar; or
 - (b) an area that has been identified by the Ministry of Natural
Resources, using evaluation procedures set out in the Natural
Heritage Assessment Guide, as an area of natural and scientific
interest (life science) but that has not been identified by that
Ministry as provincially significant.

Confirmation from Ministry of Natural Resources

28. (1) A person who proposes to engage in a renewable energy project
shall submit to the Ministry of Natural Resources each plan the person is

required to prepare under section 23.1 and each report the person is required to prepare under subsections 25 (3), 26 (3) and 27 (4).

(2) The person mentioned in subsection (1) shall obtain the following in writing from the Ministry of Natural Resources:

1. Confirmation that the determination of the existence of natural features and the boundaries of natural features was made using applicable evaluation criteria or procedures set out in the Natural Heritage Assessment Guide.
2. If no natural features were identified, confirmation that the site investigation and records review were conducted using applicable evaluation criteria or procedures set out in the Natural Heritage Assessment Guide.
3. Confirmation that the evaluation of the significance or provincial significance of the natural features was conducted using applicable evaluation criteria or procedures set out in the Natural Heritage Assessment Guide.
4. If the person has determined that the project location is not in a provincial park or conservation reserve, confirmation that that Ministry agrees with the determination.
5. If the person has determined that the project location is in a provincial park or conservation reserve, confirmation that engaging in the project is not prohibited by or under the *Provincial Parks and Conservation Reserves Act, 2006*.
6. If section 23.1 applies, comments received from the Ministry of Natural Resources in respect of the environmental effects monitoring plan required under that section.

(3) As part of an application for the issue of a renewable energy approval, the person mentioned in subsection (1) shall submit,

- (a) the plan and reports mentioned in subsection (1);
- (b) a copy of any confirmation or comment required under subsection (2); and
- (c) any additional written comments provided by the Ministry of Natural Resources in respect of the natural heritage assessment.

Legislation Act

Rule of liberal interpretation

64.(1) An Act shall be interpreted as being remedial and shall be given such fair, large and liberal interpretation as best ensures the attainment of its objects.

Green Energy Act

Preamble

The Government of Ontario is committed to fostering the growth of renewable energy projects, which use cleaner sources of energy, and to

removing barriers to and promoting opportunities for renewable energy projects and to promoting a green economy.

The Government of Ontario is committed to ensuring that the Government of Ontario and the broader public sector, including government-funded institutions, conserve energy and use energy efficiently in conducting their affairs.

The Government of Ontario is committed to promoting and expanding energy conservation by all Ontarians and to encouraging all Ontarians to use energy efficiently.

Constitution Act, 1982

Recognition of existing aboriginal and treaty rights

35. (1) The existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed.