Appendix A

Previous Public Correspondence (Prior to August 1, 2012)

Nodin Kitagan Limited Partnership (NKLP), Bow Lake Wind Farm
EA/REA Public Correspondence Summary – Up Until July 31, 2012

The following table summarizes comments and frequently asked questions, organized by topic, received as part of the EA/REA process since the initiation of the Project (up to July 31, 2012).

Theme	Comment	Response
Energy production, costs, efficiency and CO2	Are wind farms inefficient?	Efficiency along with grid operation and kWh displacement of fossil fuel energy is probably one of the most misunderstood points in relation to wind power generation. In the Physics/Engineering sense of the word efficiency is simply a measure of how much kinetic energy can be extracted from the wind and usefully converted into mechanical and then electrical energy by the turbine. The maximum amount of kinetic energy (i.e. the energy due to the air movement) that can theoretically be extracted from wind flowing through a disc type rotor is around 59% defined by Betz' law which was first formulated by the German Physicist Albert Betz in 1919 (Albert Betz: Wind-Energie 1926). It's obvious that if we extracted 100% of the kinetic energy that would mean that the flow after the turbine would have to be zero and clearly, from a flow perspective that is simply not possible as new air would not be able to enter the rotor. What is perhaps more important than efficiency is the amount of energy generated over the life of a turbine compared to the energy used in manufacturing it. This is discussed further in the following question below.
	I've heard that when you consider the CO2 it takes to build turbines and deconstruct wind farms, there are no savings on CO2. Is this true?	All electricity generation systems have a 'carbon footprint' and at some points during their construction and operation, carbon dioxide (CO2) is emitted. There has been some debate about how large these footprints are, especially for low carbon technologies such as wind and nuclear. The UK Parliamentary Office of Science and Technology produced a report (Ref POSTnote October 2006 Number

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		268) which compared the life cycle CO2 emissions of different electricity generation systems currently used in the UK and concluded that wind turbines have one of the lowest carbon footprints of around 5gCO2eq/kWh, compared with 500gCO2eq/kWh for gas generation, and over 1000gCO2eq/kWh for conventional coal. From an energy perspective, the Danish Wind Manufacturers Association produced a note on Energy Balance (Ref Background Information Note No 16:1997) and concluded a modern Danish 600 kW wind turbine would recover all the energy spent in its manufacture, maintenance, and scrapping within some three months of its commissioning. It further observed that within its 20-year design lifetime it would supply at least 80 times the energy spent in its manufacture, installation, operation, maintenance and scrapping. A more recent assessment undertaken by Vestas for their 3MW turbine estimates a 6.6 month energy payback for its V90 3MW on shore turbine (Life Cycle Assessment of offshore and onshore sited wind plants based on Vestas V90 3.0W Wind Turbines June 2006). The calculation varies depending on the machine type and of course the local wind speed, but it gives an indication of why we suggest efficiency isn't a very meaningful term when applied to a free fuel supply. Efficiency is obviously much more of a critical term when considering thermal plant which uses coal or gas since it's a direct measure of wasted energy.
	How much energy will the Bow Lake Wind Farm generate?	There are a number of terms used in describing wind turbines/farms and their energy production such as rated power, capacity factor, installed capacity etc. Bow Lake has an installed capacity (based on the nameplate rating or generator size) of 60MW (or 60,000kW), but will only generate at 60MW when the wind blows strongly enough

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		for each wind turbine to reach its rated power. A 2.3MW turbine such as a Siemens 2.3MW machine, reaches its maximum or rated power of 2300kW at around 13-14 metres/second wind and maintains this until approximately 25metres/second wind. If the Bow Lake machines ran at their full rated power for all 8760 hours of the year it would be described as have a capacity factor of 100%. In reality, wind farms of course operate at lower capacity factors than this since the wind isn't always blowing. Bow Lake is expected to have a capacity factor of around 30%. The calculation for annual energy production in kWh then is quite straightforward: = 8760hours x 60,000kW x 30% = 157,680,000 kWh To put that into perspective, the Office of Energy Efficiency (Ref National Energy Use Database 1997) gives two figures for average Canadian household electricity usage: 23 367kWh (84.1GJ) per annum for homes which solely rely electricity and 8 587 kWh (30.9GJ) for households which also use Natural Gas. Assuming an all-electric dwelling, the Bow Lake output would equate to around 6,750 homes, or alternatively for properties which use other forms of energy for heat (such as gas or wood) the electricity consumption of 18,400 homes. The total number of Private dwellings in the Algoma District is noted at 58,742, with 50,044 normally occupied (Ref: 2006 Community Profiles Statistics Canada).
	How much energy does a wind turbine use?	Energy is certainly consumed by a wind turbine for various

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		purposes such as energizing the generator, or powering the yaw motors which drive the rotor to face the wind. Blade heating using hot air blowers is also used on some cold weather turbines to increase energy production by reducing turbine downtime due to icing. However, despite some of the speculation you may have heard, these numbers are very small in comparison to energy production. Wind farms are usually metered both for export and import since both are billed on a kWh output or input basis. In November 2010, the monthly billing for one of our Irish wind farms showed the import being 0.38% of output over the month. The Bow Lake machines are unlikely to behave in a manner that is significantly different. With respect to blade heating, an experiment on a high elevation Swiss site, St. Brais using Enercon E82 turbines, demonstrated that a 3% increase in annual energy production could be achieved by blade heating whilst the blade heating itself would only reduce the annual production by 0.5%. (European Meteorology Society 2010 conference Wind Turbines in Icing Conditions)
	I've heard that wind energy doesn't really reduce pollution, because other, fossil-fired generating units have to be kept running on a standby basis in case the wind dies down. Is this true?	Wind energy does not specifically require a standby plant. What actually dictates the size of this standby or so called Operating Reserve (OR) plant is the potential loss of the largest generators on the system – typically large nuclear generators. In Canada, the IESO (that manages the grid) usually schedules between 1,380 and 1,580MW of OR at any given time (www.ieso.ca). Wind is of course variable and it is true that another generating plant has to be available to the power system's operator IESO in order to supply electricity when the wind

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		is not blowing but this is load-following plant and this plant already operates in order to follow the general variation in loads over the course of the day. It is quite easy to schedule a plant to follow load since the wind does not just start and stop. Typically, wind speeds increase gradually and also taper off gradually. In fact, the fluctuations in wind plant output generally change more slowly than do the changes in customer demand that a utility must adjust to throughout the day. To help address the variable nature of wind energy, the IESO is adopting a centralized wind forecasting system, (due to begin in mid-2012), which will allow the IESO to understand the periods of time in which greater levels of wind generation will be available. In response to a similar question raised on a wind project in Scotland, DP Energy wrote a paper in conjunction with one of the Scottish Utilities (Scottish and Southern Energy), who actually manages plants and operates a diverse portfolio of plants, which dealt with this question (Ref:AssessmentofOp&Effectiveness_March2006). Whilst there are differences between the plant fuel mixes in Scotland and Ontario, the principles are the same. The main observation of the report was that the reductions to the efficiency of load-following plants (by running the plant at off maximum loads) to accommodate wind variability, were not significant.
	Will wind energy produce enough power to shut down our coal plants?	Whether a fossil fuel plant will be closed by more wind generation would depend on the specific grid conditions and the balance of other plants on the system. Like most networks, the Ontario grid system has been designed around large generators feeding the system and transporting power from Generator to Consumer through a

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		network of progressively reducing voltage. As more wind and other renewable generation are introduced, usually at lower voltages within the distribution system, and other plants reach the end of their lives, the system and its operation are likely to change. This will involve readjustment of the fuel mix and closing down older plants but will not happen overnight. However, it is worth noting that Ontario's Long Term Energy Plan published by the OPA (Ref Long Term Plan) has a target for 0% generation from coal by 2030. There will, however, always be a need for a mixed fuel grid system, with a variety of plants providing Operating Reserve and Load Following Capacity. It's obvious that without storage, one cannot have a grid system powered solely by wind. In the short term, however, more wind generation does enables less coal or gas to be burnt since load-following plants can be run at reduced loads when the resource is available. This can generally be done without major losses in efficiency (Ref: AssessmentofOp&Effectiveness_March2006). Thus, there are real savings in CO2 emissions.
	I've heard that Ontario does not need additional power generation capacity, and if more power is needed, can't it be imported from Quebec?	Ontario's Long Term Energy Plan published by the OPA (Ref Long Term Plan) actually projects a sizeable increased requirement for generation of 48,000MW by 2030 (compared with the projected 36,975MW in 2010). Grid systems rarely operate in isolation and it is common for them to be interconnected across borders to facilitate power transfer back and forth. This significantly aids system reliability since there is a larger pool of reserve generation available. However, it is unlikely that any Province/State or Country would want to be solely dependent on any other purely from the perspective of security of supply. This is one of the benefits of resources

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		such as wind and hydro which are not vulnerable to fuel supply or fuel cost variations.
	Aren't these Renewable Energy Projects like Wind responsible for the Electricity Price Increases?	Even if no new renewable projects were proposed for Ontario (or Canada as a whole) the reality is that because of the significant investment needed in order to modernize the transmission system (to improve reliability) and to replace aging generation plant electricity prices would have to increase. The OPA's Long Term Energy Plan (LTEP) notes that "over the past 20 years, the price of water, fuel oil and cable TV have (all) outpaced the price of electricity", and that "Over the next 20 years, Ontario can expect stable prices that also reflect the true cost of electricity". Electricity, like clean drinking water (for those of us fortunate to have it) is one of the things many of us take for granted without recognizing the cost associated with it. The CBC news 'Power Switch' report intro page observes that: "People tend to take electricity for granted — at least until the lights go out or they see a big increase on their monthly bill. But electricity is essential to modern life. It lights and heats our homes and workplaces, preserves and cooks our food, powers our communications and entertainment systems, and runs more and more vehicles". (Ref: http://www.cbc.ca/news/canada/features/power-switch/index.html). It is inevitable that investment in technology and the move to a clean carbon free economy will mean additional costs. The LTEP notes that "over the next 20 years. The consumer rate will increase by about 3.5 per cent annually over the length of the long-term plan (20 years). Over the next five years, however, residential electricity prices are expected to rise by about 7.9 per cent annually (or 46 per

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		cent over five years). This increase will help pay for critical improvements to the electricity capacity in nuclear and gas, transmission and distribution (accounting for about 44 per cent of the price increase) and investment in new, clean renewable energy generation (56 per cent of the increase)". That said simply replacing the existing coal plant that Ontario has been phasing out with new coal wouldn't have resulted in significant cost savings over developing a wind energy. The International Energy Agency calculated the levelised costs of electricity (LCOE) from nuclear and fossil fuel thermal power stations as well as from a wide range of renewable technologies, some of them with variable or intermittent production. The assessment considered data from more than 130 power plants worldwide including 27 coal-fired power plants, 23 gas-fired power plants, 13 nuclear power plants, 19 wind power plants, 6 solar power plants, 24 combined heat and power (CHP) and 10 plants based on other fuels or technologies. The IEA report calculated for coal-fired power plants at 5% discount rate, a levelised generation costs of between 25 and 50 USD/MWh for most, whilst for the wind power plants considered ranged between 35and 95 USD/MWh, but noted for a large number of plants the costs were below 60 USD/MWh.
	I have heard that they are removing wind turbines in places like Germany and Denmark. Is this true and if so how can we consider wind farm development a sensible thing?	The short answer to this is yes in some instances turbines are being removed but this is largely a Repowering exercise in which smaller older units are replaced with larger more efficient machines such as those being proposed for Bow Lake. This is discussed further below. So are Germany and Denmark giving up wind? No. The

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		reality is that both Germany and Denmark are committed to expansion of renewable energy in general and to wind energy in particular. Denmark (image) The Danish Energy Agency like most national energy agencies produces an energy outlook. The table below is extracted from the 2011 Outlook which was published in May 2011 (Ref Energy Outlook 2011 Danish Energy Agency). Wind is anticipated to expand its contribution from the current 22% of the national electricity supply to some 32.8% by 2025. Increasing support for wind energy is very much part of the Danish Government's energy policy. In Feb 2008, the Danish Climate Change Minister Connie Hedegaard said: "*We are increasing subsidies for wind turbines, biogas and biomass. Never has Danish society staked so much on renewable energy as we are now doing. In the coming years we will be undertaking massive development of wind power in Denmark, especially offshore*." Germany (image) The table above published by the Global Wind Energy Council (www.gwec.net) records the growth of wind energy in Germany and further notes that Germany continues to lead Europe as the number one wind energy country with 27,214 MW of installed capacity. In 2010, it notes 1,493 MW was added, including 108 MW offshore and that wind energy generated 37.3 TWh of electricity in 2010, which accounted for 6.2% of the country's power consumption. The GWEC also notes that in 2011, the German wind

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		industry expects new installations of about 1,800 MW including 300 MW of offshore wind. This may well be expanded now that Germany has committed to moving away from Nuclear Power. Repowering: The wind industry in Denmark has a long history and many of the early Danish machines were relatively simply and by today's standards very small. In the late seventies, for example, these turbines were generally of around 50kW in capacity with a rotor diameter of perhaps 16metres. By the mid-eighties the machines had grown to 150-200kW and by the early-mid 1990's a large wind turbine was a 500kW machine with a notionally 40metre hub height and rotor diameter. Many machines in the 200-500kW size range were installed in Demark during the 1990s and many of these turbines are reaching the end of their useful life and are due for change. However, even if they weren't the technology has developed and progressed so significantly it is now possible to install a single turbine which produces the equivalent of many older model turbines. So for example a wind farm that was comprised of ten 300kW turbines can now be replaced by one 3MW turbine. This is what is happening across Denmark and also California, and is in fact likely to happen across many of the more mature wind farm sites. It is also worth noting that although the turbines need to be placed further apart because they are larger it is often possible to install more electrical capacity onto the site when repowering since far fewer turbines are required.
	Will the wind farm have to pay for the use of Crown Land? If so then how much?	Bow Lake will be leasing the land from the Crown and will pay an annual rental. This will vary depending on the annual production of the wind farm which is of course

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		dependent on wind speed but we estimate this to be around $600,000 per annum, or around $12million over the 20 year life of the wind farm.
Safety	What about turbines throwing ice or turbine blades?	Ice can build up on wind turbine blades or on the nacelle, as it does on any structure which is exposed to the elements, when appropriate conditions exist. When stationary, a turbine is no more likely to suffer from ice accretion than any large stationary structure such as a building, tree or power line and like such structures, this accreted ice will eventually be released and fall directly to the ground. However, when operating, ice can also accrete on the rotor blades and observations suggest that higher ice accretion rates occur due to the relative velocity of the rotor blades. Usually, icing of the blades is accompanied by icing of the turbine wind sensors and this would inhibit the turbines from starting or shut them down if they are running. Similarly, sensors also detect rotor imbalance and would shut a machine down if the imbalance became too great. There are scenarios where ice throw can occur and it is recognized that ice fragments which detach from the rotor blades can be thrown significant distances from the wind turbine. The theoretical maximum distance of potential ice throw for the proposed Bow Lake turbines is around 300metres, well within the immediate area of the turbines and their access roads. Any fragments which are thrown will land directly below the wind turbine, in the plane of the rotor or downwind. A study of icing throw in the Swiss Alps (Ref: Wind Turbine Studies in the Swiss Alps) based on 600kW Enercon machines recorded that almost 40% occurred within 20metres (blade radius), with a maximum throwing

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		distance of 92metres well below the theoretical maximum of 135metres for that machine. It is fairly easy to predict when icing events are likely to occur and therefore to initiate precautionary measures by posting warning signs and issuing advisories for anybody likely to be in the close the vicinity of the turbines. It is also easy to protect service crew actually accessing the machines by utilizing remote shut down and yawing (by modem). With respect to blade throws, these occurred in the industry's early years, but are almost unheard of today on modern utility scale machines because of better turbine design and engineering as well as the implementation of well defined turbine design and manufacture standards. In reality, most of the dramatic failures that have happened through blade overspeeds for example, have resulted from human error during commissioning. Wind turbines are unfortunately no different in this respect than most other pieces of technology. Lightning strikes and blade damage can and do occur and we have had a number of these on our own wind farms in Ireland, but these do not result in the loss of blades or even blade fragments just the localized splitting of the blade edge, loss of power and sometimes, temporarily increased noise until the machine is shut down and repaired.
	Wind Turbine Fires and Forest Fires?	Forest fires are a common natural occurrence in many parts of the world and are often started by lightning striking tall trees, or just dry exposed ground. Like any exposed tall structure wind turbines do get hit by

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		lightning and can potentially catch fire. Normally lightning strikes hit the blade and are then conducted down the internal lightning conductor into hub and nacelle before passing down the tower to earth. In the rare event of a fire starting in the Nacelle, the turbines' automatic fire suppression system will react and work to contain the fire. It is true that fires at nacelle level are difficult to manage once they've taken hold and installation of the fire suppression system will minimize the possibility of this occurring. In spite of this mitigation however there is of course a small remaining possibility that the fire suppression system will fail to contain the fire. In this unlikely event an alarm is raised by the turbines' automatic monitoring system and sent to the wind farm operator so that fire crew can be alerted immediately. Once in place the approach usually taken is to let the fire burn out and have fire crew on standby to deal with any secondary ground fires immediately around the turbine. This becomes part of the standard emergency operation procedure for the wind farm. It is worth noting that each turbine has a forestry cleared area around the base of the tower. This is primarily to facilitate erection and any possible future rotor off repair in event of problems but obviously having a cleared area makes dealing with any secondary fire much easier. The Wind Farm access roads also act as small firebreaks but more importantly allow firecrew and equipment easy access to where those secondary fires might be. However perhaps the most important elements of success in dealing with any fire is forward planning and getting to the fire early.

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Tourism and Visual Impacts	Why are you using the wilderness of the Lake Superior coastline to provide power to Southern Ontario? Wouldn't the impact of needless transmission lines and other infrastructure be much less if these installations were put in Southern Ontario where the demand is?	There are a number of parts to this question: Wilderness can be defined in a number of different ways but usually includes terms describing it as areas where the effects of man are not apparent. Whilst the Bow Lake site certainly has a remote feel to it, both the site and the local area show significant impacts of human presence. The site is actively managed by a forestry company for selective timber felling and is serviced by a number of roads to facilitate extraction. Immediately to the north, the Montreal River has a long history of renewable generation dating back to 1938. Gartshore Dam and Generating Station (23MW) lies 2km to the northwest and is only one of 4 hydro power stations located along the river's length with the Mackay Station (62MW) upstream, and the Hoggs (19MW) and Andrews Stations (47MW) downstream. These stations are linked by service roads and two 115kV overhead lines which run east – west along the river and on to the main Mackay substation and 230kV Transmission system. Immediately to the west of the site is a licensed aggregate pit, and further west at the junction with Highway 17 lies a working Ontario MNR Dump. With respect to transmission lines, very little infrastructure will be required to connect the Bow Lake Project to the electricity grid. It was for this reason that Bow Lake was one of the projects awarded a Feed In Tariff contract rather than being placed on the Economic Connection Test list (Ref: http://fit.powerauthority.on.ca). The Bow Lake Wind Farm will connect directly to the two existing 115kV transmission lines which service the Montreal River Dams. In an ideal world, generation would be at the point of demand but that is not always practical or desirable and power stations of all forms need to be where the resource

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		is (e.g. coal mine, river, windy land etc), or where the infrastructure is in place to support them (e.g. rail head or shipping berth for example). Wind farms need large areas because they are capturing a low density resource and whilst there are good wind farm locations in Southern Ontario, there are also good locations in Northern Ontario where good resource and plenty of area exist to develop significant projects. Bow Lake is particularly fortunate in that it has both resource and existing grid infrastructure.
	What would the visual impacts be upon Lake Superior Provincial Park, the Highway 17 corridor, the Algoma Railway Line and the Lake Superior Shoreline?	How someone feels about the visual impacts of a wind farm is very subjective and often depends on that person's view is of wind turbines in general. If one were of the opinion that wind turbines do not make any useful contribution to CO2 mitigation, you might form a different opinion than if you believed that they genuinely did make a difference. So in response to these questions, rather than making pronounced statements about what our opinion of impacts are, we have elected to provide the information with visibility maps and photo representations to let people make up their own minds. In terms of siting, the Bow Lake turbines are set back around 6km from the Lake Superior Coast in order to reduce their direct impact on the coast whilst at the same time being close enough to benefit from the winds coming off the lake. The Zone of Theoretical Visibility (ZTV) or Viewshed maps which show where turbines may or may not be visible from are posted on the webpage www.dpenergy.com/bowlake/bowlakeztv.htm. These ZTV maps are theoretical in that they are based on land form and don't take into account any forestry or buildings etc. which obviously would reduce the actual visibility from the

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		ground significantly. The ZTVs have been calculated to a distance of around 30km but in reality, turbines appear very small at this distance if they are visible at all. Blades are generally only visible up to around 10km and then only in conditions of good visibility. A good way to test this for yourself would be to view an existing wind farm such as Prince at varying distances. (You should bear in mind though that the Prince turbines are somewhat smaller than those at Bow Lake (150m) but of course, no utility scale machine can be described as small and these are all big machines.) What the maps show is limited visibility on the coastline, on the Highway 17 corridor and very restricted locations of potential visibility on the Algoma Railway. Views from within Superior Park are constrained by topography (particularly in respect of the Agawa Canyon) and vegetation. There will, of course, be views from open ground particularly at high levels on some of the mountain trails but these are mostly mitigated by distance. The ZTV maps are also used to identify where this visibility might coincide with specific areas of interest, such as defined viewpoints, key transit routes, scenic areas, tourist spots etc. and we have already visited a number of these locations to ground truth the visibility compared to the bare earth visibility and to take photographs. Photomontages or photo representations illustrating the likely appearance of the turbines from these locations were then produced from these photographs in order to give a better sense of what the change to the view might be. A number of the viewpoint locations were selected for production of photomontages and lie within the Lake

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		Superior Park and along the lake edge. These images have been also reproduced on the web page www.dpenergy.com/bowlake/bowlakepm.htm and are also displayed at the Public Open House.
	Does wind farming affect tourism? How will it affect local tourism in the Algoma Region?	Concerns over adverse effects on tourism are often voiced but in fact there is no evidence to suggest this is remotely correct. The evidence in fact suggests that most people approve of wind farms and would actually be interested in visiting one if they were open to the public. The UK's first commercial wind farm at Delabole received 350,000 visitors in its first ten years of operation. Also in the UK since opening in 2003, over 60,000 people have climbed the steps to the viewing platform of the Swaffham turbine in Norfolk (Ref: Sustainable Development Commission UK). A MORI (a UK market research firm) poll in Scotland (Ref Tourist Attitudes towards Wind Farms) concluded based on its survey of people, 83% of whom said that they were attracted to the area by its beautiful scenery and views, that 80% of tourists would be either very or fairly interested in visiting a wind farm visitor centre, and 91% felt the presence of the wind farms either had no effect (equal positive and negative) or a positive effect (43%). A comprehensive Report for Scottish Government in 2008 (Ref: The economic impacts of Wind Farms on Scottish tourism) noted that 92% of visitors stated that scenery was important in their choice of Scotland as a holiday destination. The study concluded that 75% of people surveyed were positive or neutral and only 10% strongly negative, and that for those people having seen a wind farm or photomontages, 93-99% suggested they would

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		return (Some noted that the experience actually increased the likelihood of returning). There are a number of other tourism surveys that demonstrate similar results and the levels of support for wind farms but obviously the key question in relation to the Bow Lake and tourism is, 'What is the likely impact on the Algoma Region?' In order to consider the possible impacts, we have reviewed the local tourism literature available from various sources and visited many of these locations to assess visibility and where appropriate, produced photo representations or photomontages. A number of these images are reproduced on the webpage and consider both likely visibility from the viewpoints and the key view directions. It is obviously difficult to prove there will or will not be an effect until the effect has happened. However, based on the Scottish experience where landscape and scenery are also important to visitors, it seems likely that effects would be similar and not significant.
	Wind Turbine Lighting?	Safety aside our preference would be to have no turbine lighting at all but the decision as to whether a turbine must be lit or not depends on the aviation authority in the specific jurisdiction. In Ireland none of our wind farms have required aviation lighting. In Scotland some of the wind projects have required low intensity lighting of turbines on the periphery of the site for nighttime low flying military jets. (The image intensifiers in night vision goggles used by military pilots make even quite dim lights easily visible). North America of course is very different from Ireland or Scotland and there are far more small private aircraft (in fact over 30,000 registered in Canada). Canadian aviation safety and the requirement for aviation lighting rests with

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		Transport Canada and approvals must be sought on a case by case basis. For Bow Lake of the 12 proposed turbines only 5 turbines require lighting, whilst for Phase 2, of the 24 turbines probably a further 11 will require lights but this still requires formal approval. We will be seeking to minimize any lighting impacts and hope to have further discussion with Transport Canada in the future to discuss this.
Cumulative Impacts	How many more phases of Bow Lake are planned? I was lead to believe that Bow Lake was a group of 30 odd turbines but there appear to be many more phases in the near future.	Bow Lake is indeed a group of 30 odd turbines (36 in fact between Phases 1 and 2). There are no other phases of Bow Lake. The maps that SOAR have produced show nothing more than potential projects ranging from projects with FIT contracts and likely to proceed (only Bow Lake and Goulais Phase 1), to projects on ECT list which may only proceed if the grid is strengthened (Nimaasing), to projects which appear not to have progressed at all or are offshore and subject to a Moratorium.
	What about Cumulative Impacts and the other developments in the area?	A number of maps have been circulated by various opposition groups suggesting that there might be 1,000MW of wind projects comprising up to 640 wind turbines between Sault Ste Marie and the Lake Superior Park. How likely is this to become a reality? Prince Wind Farm is of course, already built (189MW), but the reality is that of these '1000MW of projects' only Bow Lake (60MW) and Goulais Phase 1 (25MW) have obtained Feed in Tariff (FIT) contracts from the OPA http://fit.powerauthority.on.ca.) Without a FIT contract and

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		grid connection, none of the other projects can proceed. Nimaasing (200MW) is on the Economic Connection Test list as is the second phase of Goulais (15MW) and it is uncertain whether they will proceed in the future or at all. Of the other proposed projects, the Offshore Projects have all been shelved although it is worth noting that it was extremely unlikely that they would have been able to proceed anyway once the 5km offshore constraint on siting had been applied since this would have pushed them into deep water and made the construction costs prohibitive. Cumulative impacts (including visual/avian etc) are normally assessed on a first past the post basis. In other words, a second wind farm which applies for permits needs to take into consideration any project that precedes it, and similarly a third wind farm needs to consider the previous two. In this way, the degree of impact is assessed progressively until at some point, the impact is considered too significant and permits will be refused. That is standard practice in most jurisdictions. For Bow Lake, it is almost impossible (nor very meaningful) for us to assess cumulative impacts of any wind farm which hasn't entered permitting, been designed or which is little more than a speculative wind resource monitor application or site. Bow Lake is a significant distance from the only permitted and built Prince Wind Farm and we wouldn't normally look at cumulative effects at these distances because they are so large.
	What about the cumulative impact on birds?	Only one other wind farm presently exists in the region (Prince Wind Farm) and the impacts on birds there have not been found to be significant. Given that the Prince

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		Wind Farm is over 60 km away, it would be hard to make a case that effects between the two wind farms would accumulate in any significant way. With respect to migration routes, there is no evidence to suggest that birds migrating through the Bow Lake project area would necessarily pass through the Prince Wind Farm area as well, as south of the Bow Lake project area there are numerous routes which might take the migrating birds across Lake Superior/St. Mary's River. As for future wind farms to be developed, the cumulative impacts will need to be assessed at that point based on existing wind farms at the time. For now, the Bow Lake Wind Farm can only consider the existing Prince Wind Farm, and due to its distance and other factors, it is not expected that there will be any significant cumulative impact.
Access	Will existing roads still be accessible to people with camps in the area and the general public?	The majority of the Bow Lake proposal is on Crown Land and access provisions have already been discussed with the MNR at some length. Following wind farm construction, all of the existing multipurpose road (such as Mile 67, Rebecca's or the Twin Lake Roads) will remain open to other users just as they are currently. In fact, since we will need to maintain 24/7 and 365 days access to the wind turbines in case of emergency repairs, access is likely to be significantly improved over the winter and thaw periods. There may need to be some temporary restrictions on the roads for safety reasons during construction as there are currently for road repairs or felling and extraction of timber. Our intention would be to minimize these impacts and wherever possible, find alternative routes to avoid inconveniencing other users as far as possible.

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		Newly built roads will largely be open to public access as well. Under the REA process, newly built roads must be restricted access. For this reason the roads are not being built under the REA process, but rather the Forestry Management Plan and the Class EA process, and will be left as multi-use roads allowing for public access. Only in very limited circumstances would roads have restricted access, for instance where the MNR feels that the improved access would result in harm to local wildlife due to increased hunting or fishing pressure.
	Will there be restrictions imposed on access to Crown Land or fishing lakes on the area?	There will be no restrictions on access to the existing multipurpose roads or the Crown Lands outside the immediate vicinity of wind turbines. Nor will there be restrictions to any of the region's fishing lakes.
Health	Do wind farms make you ill?	Given some of the information currently doing the rounds on the internet, you could easily be forgiven for thinking there was a growing body of medical evidence and expert medical opinion supporting the case that wind farms do indeed make people ill -or at the very least, that there was enough concern within the profession that a moratorium should be called until any uncertainty was resolved. But is there any reality to the claims? Dr. Nina Pierpont identified, defined and named a 'clinical phenomenon' Wind Turbine Syndrome. She describes the symptoms of this syndrome (Ref: Testimony NY legislature Committee 2006) as including: 1) Sleep problems: noise or physical sensations of pulsation or pressure make it hard to go to sleep and cause frequent awakening. 2) Headaches which are increased in frequency or

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		severity. 3) Dizziness, unsteadiness, and nausea. 4) Exhaustion, anxiety, anger, irritability, and depression. 5) Problems with concentration and learning. 6) Tinnitus (ringing in the ears). She and others describe various possible mechanisms resulting from Low Frequency Noise that could cause these symptoms.
	What do the various health bodies have to say about health issues?	The Chief Medical Officer of Health (CMOH) (Ref CMOH May 2010 Report) stated that "The review concludes that while some people living near wind turbines report symptoms such as dizziness, headaches, and sleep disturbance, the scientific evidence available to date does not demonstrate a direct causal link between wind turbine noise and adverse health effects". Chatham-Kent's Acting Medical Officer of Health, Dr. David Colby, (Ref: The Health Impact of Wind Turbines: June 2008) "In summary, as long as the Ministry of Environment Guidelines for location criteria of wind farms are followed, it is my opinion that there will be negligible adverse health impacts on Chatham-Kent citizens. Although opposition to wind farms on aesthetic grounds is a legitimate point of view, opposition to wind farms on the basis of potential adverse health consequences is not justified by the evidence." Perhaps the best that can be said for Dr Pierpoint's theory

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		is that "it is physically and biologically plausible that low frequency noise generated by wind turbines can affect people" (Ref: National Health Service Knowledge Service Question Page). The note also went on to say "the study was weak and no firm conclusions could be drawn". The reality is that there is no evidence to support any of the claims and the best that can be said of these apparently clear causal mechanisms was they are "plausible". But this is not evidence. In her evidence to The NY Legislature (Ref: Testimony NY legislature Committee 2006) Dr Pierpoint also appears to have speculative views on other matters relating to low frequency noise and prion or mad cow disease. The full quote of the paragraph from her evidence is repeated without comment: "I get a lot of slander and abuse from the wind salesmen. Their favorites are saying that my abundantly referenced and footnoted articles, like the one before you (note: a separate handout), have "no evidence," or that I think wind turbines cause mad cow disease. The latter smear came from a town meeting in Ellenburg, NY, in October 2004, when I presented information culled from the medical literature on possible effects of low frequency noise. This included a paper out of the UK linking low frequency sound to prion diseases by a complex and highly speculative mechanism. I was very clear how speculative it was, but apparently the concept of something being speculative was over their heads, including over the heads of wind salesmen in the room." The Global Wind Energy Council gives the total installed wind energy capacity (2010) as 194 GW. Even if that were solely made up of modern larger turbines the size of those proposed at Bow Lake that would equate to around 85,000

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		turbines. Whilst it would a fair observation to say that many of these are in relatively remote areas away from people, many are not and if there were serious impacts on public health would they not have materialized long ago and in significant numbers? The quote of Dr. David Colby described above is perhaps worth repeating: "Although opposition to wind farms on aesthetic grounds is a legitimate point of view, opposition to wind farms on the basis of potential adverse health consequences is not justified by the evidence". There is absolutely nothing wrong with saying one does not like the look of turbines it doesn't need to be justified by creating other speculative issues.
Noise, Infrasound and Shadow Flicker	Are wind turbines noisy?	Noisy no, but yes they make noise. All moving mechanical equipment or aerodynamic surfaces produce noise because no energy conversion is 100% efficient. The same is true for trees swaying in the breeze, or a yacht making way under sail. Wind turbines produce noise as a function of their rotating machinery, and the translation of the input energy from a low speed rotor through to high speed shaft and ultimately conversion of that mechanical energy to electrical energy in the generator. Further noise may be generated by the step up transformer converting the low voltage energy into higher voltages, firstly around the site and then at export. Typically, the electrical noise is largely inaudible and disregarded and only the mechanical noise is relevant, particularly mechanical noise from the gearbox. Modern turbines are much better acoustically damped than those of early machines and gearbox noise is rarely an issue today.

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		Wind turbines also produce aerodynamic noise as a result of the blades movement through the air. This noise results from the leading edge, and trailing edge of the blade and most importantly, from the flow of air around the blade tips where relative velocities are highest. Blade tip speed is a function of the turbine rotor circumference and the rotational speed of the rotor and is a critical design parameter in designing quiet wind turbines. Aerodynamic noise on a modern upwind rotor turbine where the rotor rotates on the wind ward side of the tower can be likened to a 'swishing' noise. So are they noisy? It is possible to stand underneath a turbine and hold a normal conversation without having to raise your voice. Obviously the further away one is, the lower the noise levels and that's why there are strict guidelines on wind turbines, setbacks and noise emissions to ensure the protection of residential amenity. Noise is a topic that has always been very difficult to describe successfully and although it's comparatively easy to quote the noise decibel levels they tend not to be very meaningful to most people. Visualizations such as the one above are helpful but by far the best way to get a feeling for noise levels and experience the noise (or lack of it) is to visit a wind farm and see for yourself. Stand close to the machine and then stand 0.5 or 1km away upwind and downwind and see what you think.
	Do wind turbines produce low frequency noise and infrasound?	What is Low Frequency Noise and Infrasound? For a healthy young adult, the range of hearing extends

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		from a frequency of approximately 20Hz to 20,000Hz. Low frequency noise (LFN) lies at the bottom of this range and whilst not clearly defined, it is generally taken to mean noise below a frequency of 150 Hz whilst noise at frequencies below about 20 Hz is generally referred to as infrasound. The noise from a wind turbine contains energy spread across the audible frequency range and will also have some energy in the low frequency and infrasound range (albeit at low levels). This is not unusual and there are many sources of these frequencies present in any ambient background and it can be produced by a variety of man-made sources, including machinery and transport or natural sources such as the sea, wind and thunder. Infrasound or Amplitude Modulation? It is important not to mistake the audible characteristics of a wind farm which can be perceived, with infrasound. The noise produced by air interacting with the turbine blades tends to be broadband noise, but is amplitude modulated at the blade pass frequency (the number of blades times the revolution rate), resulting in a characteristic 'swoosh'. The results from a spectrograph measuring this 'swoosh' near a typical Vestas 2MW V80 wind turbine illustrates an amplitude modulation frequency of about 0.8 Hz (Ref HGC Report on Infrasound), but this is not infrasound it is simply the overall level of the broadband audible noise (containing a wide range of frequencies) that rises and falls at a low frequency rate. It is reasonable to observe that the audible 'swoosh' and amplitude modulation might be expected to increase one's awareness of the noise from wind turbines, and could

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		potentially be argued to increase one's annoyance but this isn't infrasound and does not have health impacts. What levels of infrasound are perceptible or safe? The International Standardization Organisation (ISO) designated the G-weighting network, dBG, specifically to deal with infrasound and the Environmental Protection Agency in Denmark has developed a criterion for infrasound in general (including wind turbines) of 85 dBG. This includes an allowance of 10 dB for people more sensitive than the norm. Whilst at sufficiently high levels, infrasound can be dangerous and create serious health, visual and motor control problems. Studies prepared for NASA suggest no significant effects from infrasound until the level exceeds 125 dB (linear). Infrasound levels of 85 dBG and lower are not sufficient to create human perception and in fact infrasonic levels created by wind turbines are often similar to the ambient levels prevalent in the natural environment due to wind. There is no evidence of adverse health effects caused by this infrasound.
	What about shadow flicker -isn't this a problem?	What is Shadow Flicker? Wind turbines, like other tall structures cast a shadow on the immediate area when the sun is shining strongly so if you lived very close to a wind farm, and had a narrow window facing the turbines, annoyance could result from the rotor blades chopping the sunlight, causing a flickering (blinking) effect while the rotor is in motion. Shadows cast outside a building are rarely an issue. Careful planning during the turbine siting can resolve this potential issue but in fact shadow casting problems are generally restricted to

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		a few areas very close to the turbines. The further you get away from a turbine the less pronounced the shadow is and the less potential there is for shadow flicker. Is it possible to predict Shadow Flicker? The maximum possible shadow flicker at a given residence can be predicted quite accurately. One may not know in advance whether there is wind, or what the wind direction is, but using astronomy and trigonometry one can compute either a likely, or a "worst case" scenario, i.e. a situation where there is always sunshine, when the wind is blowing all the time, and when the wind and the turbine rotor keep tracking the sun by yawing the turbine exactly as the sun moves. Shadow flicker is easy to predict and where it has occurred mitigation is straightforward. In cases where a household is predicted to experience shadow flicker, wind developers have planted trees, altered siting or agreed to shut down turbines during predicted conditions of shadow flicker events. For Bow Lake the closest residences or properties to the turbines are hunt and fishing camps which are all distant enough from the turbines to ensure that shadow flicker is not an issue.
Environmental Impacts and Decommissioning	How large is the area of trees that will need to be cleared around the Turbines?	The Bow Lake Wind Farm will not involve clear felling the area in order to construct and operate the turbines. Trees will be felled in localized areas around each of the turbines and the other infrastructure elements in a process which is usually called keyholing for obvious reasons. The actual area felled around each of the turbine/crane pad locations

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		is quite small -in case of Bow Lake this will be approximately 50 metre radius. Other felling with required for the grid connection: the cabling from project to the substation will probably require a corridor of around 15-20 metres. And the roads: which will require a corridor of around 20 metres. In respect of the roads which it is probably worth noting that since the wind farm is in an area which is already actively harvested and under a Forest Management Plan the forestry company would be putting in roads to most of these areas in any event to facilitate harvesting and timber extraction.
	What will happen to the White Pine in the Bow Lake area as they are regulated on Crown Land?	We are certainly aware of the presence of White Pine in the project area but it's worth noting that the area mostly consists of secondary-growth forests, having been harvested in the past, and is scheduled to be harvested in the coming years by the forest management company with logging rights in the area. As a shared land user we have been consulting with Clergue the forestry company based in Sault Ste Marie who manages the forest within a Forest Management Plan (FMP) and their comments are: "White Pine is a species that we manage (harvest) as per the approved Forest Management Plan. There is an objective in the FMP to increase the White Pine component on the landscape but no regulations to prohibit harvest. White Pine is a commercial timber species in Ontario and is managed under approved Forest Management Plans". "Technically, the harvest of all species (including White Pine) is regulated under the FMP".

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		"It is important to note that majority of the wind farm area is located within tolerant hardwood (maple & yellow birch) stands which are managed under partial harvest systems for the purposes of improving or maintaining tolerant hardwood species".
	Who is legally responsible for decommissioning, disassembling of the turbines when they are no longer needed?	The obligation for decommissioning falls to the company that owns and operates the wind farm (in this instance Bow Lake Phase 1 Wind Farm Ltd and Bow Lake Phase 2 Wind Farm Ltd). These companies are (subject to permits) proposing to rent land from the Crown and there is a legal obligation under the Crown lease to decommission and restore the site. The Draft Crown Lease actually states: "where the lessee (Bow Lake) fails to restore the Premises to the condition outlined in the approved decommissioning and site restoration plan within 12months from the expiration or sooner termination of this lease agreement the Lessee will pay to the Lessor (the Crown) a sum in lawful money of Canada sufficient to cover the costs, if any, incurred by the Lessor in selling, disposing of or destroying the works or other assets and restoring the Premises to the condition outlined in the approved decommissioning and restoration plan…."
	At decommissioning, please explain what will be done to repair the soil as trees do not grow on compacted soils?	The physical footprint of the wind farm infrastructure (base/crane pad/roads) is very small and any compaction is likely to be extremely limited in nature. The method for decommissioning and reinstatement is that after the surface layers of aggregate or concrete have been removed, soil is returned to these surfaces and conditioned to allow for successful regeneration. Obviously care needs to be taken to ensure that the soil is not left in

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		a compacted state by the equipment used in the process. For the larger cleared areas around the turbines (about 100m diameter) these are really just to facilitate on the ground rotor assembly and would not typically involve heavy equipment crossing the area so there would be no real potential for compaction. Incidentally in respect of the access tracks Clergue already have plans for roads in the area for felling and extraction and we would anticipate minimizing any unnecessary footprint by using common road routes.
Wildlife (Birds and Bats)	Have your avian studies met the requirements of regulations and guidance from agencies such as the Ontario Ministry of Natural Resources (MNR) and the Canadian Wildlife Service (CWS)?	All bird and bat studies conducted by M.K. Ince and Associates for Bow Lake Phase 1 used the most up-to-date guidance available at the time. Before any field studies were started, MNR and CWS were consulted to develop a field study protocol. Through the studies close contact was kept with them. In fact, the MNR and CWS recommended changes through the process, recommending additional work as other work was completed. We satisfied all the requirements of the agencies as they were communicated to us through the process. The Natural Heritage Assessment studies were reviewed by the MNR through late 2010 and early 2011 and confirmed that the assessments met MNR requirements and guidelines and the Renewable Energy Approval (REA) regulations. These Natural Heritage Assessments form part of the REA report package, as does the sign-off received from the MNR. Studies under the Renewable Energy Approval Process for Bow Lake Phase 2 are still underway.
	How much time did you spend on site monitoring birds?	Different seasons have different methodologies for monitoring, according to protocols developed with the MNR and CWS. For Bow Lake Phase 1, the time spent

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		during each season is summarized below: • Winter: 3 days (December 9, February 4, March 4) of walking various routes through the project area, recording all identifications by sight and sound On each day, 5 hours, 4 hours and 4 hours were spent walking the routes, for a total of 13 hours • Summer: Point counts carried out throughout the project area over 4 days, recording all identifications by sight and sound 2 surveys at each of 10 point count locations, 10 minutes each, for a total of 200 minutes of point counts • Fall: Six days of fly-over counts from two vantage points, recording all identifications by sight and sound (where applicable) On each day, 2 hours, 4 hours, 2 hours, 5:45 hours, 1:30 hours, 4:05 hours were spent, for a total of 19 hours 20 minutes • Spring: Four days of fly-over counts from two vantage points, recording all identifications by sight and sound (where applicable) On each day, 3 hours, 4:40 hours, 4 hours and 3:45 hours were spent for a total of 15 hours 25 minutes Studies under the Renewable Energy Approval process for Bow Lake Phase 2 are still underway.
	What areas did you survey?	For Bow Lake Phase 1, the Spring and Fall migration pass-over counts were carried out at two vantage points allowing for a broad view across the project area. One was located along McKay Road (near the Montreal River), at the north end of the project area, where the main access road into the project is proposed. The other was on the other side of the Montreal River, from the side of Highway 17, where the power lines from the dam cross the

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		highway. The ten summer point count locations were spread out from the south-west corner of the project (near turbine 5) through the central area of the project, to the northeast-most turbine, turbine 12. The winter survey routes covered primarily the northern half of the project, from the proposed northern access road, and through the areas around turbines 1 through 4, and 10 through 12. Studies under the Renewable Energy Approval process for Bow Lake Phase 2 are still underway.
	What about Peregrine Falcon nests in the area?	No Peregrine Falcon nests are known to exist within the immediate vicinity (within one kilometer of the outer extents) of the project. New habitat protection regulations protect the area within 1 km of any Peregrine Falcon nesting site occupied at any point within the past 15 years. Working with the MNR district Species at Risk biologist, candidate cliff-faces were identified which might be suitable nesting areas for Peregrine Falcons. The MNR had on record a previous Peregrine sighting at one of these cliff-faces. Surveys were conducted at each of these locations. Two three-hour visits were made to each potential nesting site, with the visits 10 days apart. Recorded Peregrine calls were played at each location, which is a method known to elicit responses from resident Peregrine Falcons which may be out of sight in an attempt to define their territory. During the visits no Peregrine Falcons were seen or heard. No other sign of nests, in use or historical, were evident. The nearest known Peregrine Falcon nests in the area are

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		several kilometers north of the project location, along the Lake Superior shore, within Lake Superior Provincial Park.
	What has the experience been with Peregrine Falcons at other wind farms in Canada?	No deaths of or injuries to Peregrine Falcons are known to have occurred at wind farms in Canada.
	Have Peregrine Falcons ever been killed by wind turbines?	We know of one instance of a Peregrine Falcon killed by a wind turbine in North America. The death occurred at a wind farm outside of Atlantic City, New Jersey, in 2007. We know of three Peregrine Falcons killed by wind turbines in Europe, two in Belgium and one in Scotland.
	Is the Bow Lake Wind Farm in a migration route?	Birds do pass through the general area during Spring and Fall migrations, but the project was not found to be within a major migratory route. Broadly speaking, the geography of the Lake Superior and Lake Huron/Georgian Bay shorelines, and the Upper Peninsula of Michigan serve to create a funneling effect of birds migrating through the region. Whitefish Point Important Bird Area (60 km to the southwest across Lake Superior), and the St. Mary's River Complex Important Bird Area (85 km to the southeast) are noted examples of a nearby migratory concentration point and stopover point. From these points, flocks tend to follow the shorelines. The project is located more than 5 km from the shoreline, and is not located on the sort of ridge that migrating flocks often follow. Based on observations during Spring and Fall migrations and reviews of existing literature it was determined that the project is not in a major migratory route.
Other	Does Public Opinion support wind farms?	It's difficult to exhaustively list the number of surveys that have been conducted as to whether or not people support wind farms because there have been so many. The Canadian Wind Energy Association commissioned a

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		survey (undertaken by IPSOS Reid) in Ontario in 2010 with a survey of 1361 people (Ref: IPSOS Survey Ontario). The response to the question "To what extent do you support or oppose the production of wind energy in your region of Ontario?" The response was 89% supportive: with strongly 46% somewhat 43%. The British Wind Energy Association (BWEA) describes there being 60 separate surveys over the past 15 years and observes that on average 70-80% of people both in principle and in practice believe wind energy to be a good thing. The BWEA briefing sheet (Ref: Public Attitudes) provides links to many of these surveys. Rather than simply repeat the references to these other surveys we thought it might be interesting to look at the reverse question and see just how many people actually oppose wind farms. Given the column inches describing vocal opposition that you may have seen in the Local and Provincial Press you might be led to believe that there is a huge ground swell of opposition to wind farms locally and worldwide. But how real is this? Taking the UK as an example since there is well developed anti wind farm movement including a "UK-wide conservation group" the Country Guardians formed in 1991, one might ask if this demonstrates a ground swell of public opinion? In 2002 The Views of Scotland (www.viewsofscotland.org) a dedicated anti-wind farm group produced a 'Wind Farm Primer' which was entitled 'Wrongly sited Wind-driven power Stations: Making Your Case'. This described in some detail how to oppose a wind farm, how to encourage support and how to ensure any objection was treated as

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		valid and ensure it was given the maximum amount of weight. There is of course absolutely nothing wrong with this. (The Primer was subsequently withdrawn from the website although it is not clear why). However, what was interesting in the Primer was the observations it made on the effects of objections and in particular the number of them. It noted that whilst planners are concerned with quality, councilors take account of numbers and recommended that individuals should send letters and not just one letter per household. The reader is also encouraged to contact both County Guardian and Views of Scotland so that any member who might also wish to object might do so. In 2003, the Views of Scotland endorsed Bob Graham of the Protect Rural Scotland Party for the Scottish Parliamentary Elections as candidate for Highlands and Islands (Ref: Views of Scotland Newsletter Vol1 No 3). Mr Graham's parties lead issue was "an immediate end to ill-conceived wind-turbine projects" (Ref: Election Literature). He received 1438 votes or 0.85% of the vote (Ref: Aspect 2003). Other petitions? In the UK, the Government hosts an e-petition portal which enables electronic petitions (on any subject) to be submitted, validated and replied to by the Prime Minister's Office. Of those specifically looking for an end to onshore wind farms, the largest petition was initiated in 2007 by Mr. Bill Short (A campaigner against wind farms in Northumberland, England) which asked the Prime Minister to "withdraw all subsidies and support to on-shore wind farms in valued landscapes." The petition received 1604 votes (Ref: Petition B Short 2007). Whilst it is clear that not everyone likes wind turbines or

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		believes that they are a good thing and of course, they are entitled to their opinion, the evidence suggests that the vast majority of people are indeed supportive of renewable energy and also supportive of wind energy development.
	Why are these consultation days so late in the process? Why hasn't there been more public consultation?	It is perhaps worth also pointing out that the first meeting held for the Bow Lake project albeit based on the original 9 turbine layout date back to early 2008 with articles in the Sault Star being published both before and after the meeting. In fact Bow Lake's plans for further meetings were then altered by both the requirement for further surveys and ultimately by the significant changes brought about by the introduction of the new Renewable Energy Approvals process. The perception of lateness seems have arisen from a misunderstanding of where the project lies in the approvals process. (Given some of the literature that has been distributed by the anti wind farm lobby this is not entirely surprising). One of the common misconceptions which seemed to be prevalent at the Bow Lake open houses was that approvals had already been given and that the public consultation process was merely a formality and a 'box ticking' exercise. This perception is incorrect and appears to stem from the confusion surrounding the award of a Feed In Tariff (FIT) contract to Bow Lake and the 'approval' for release of the Draft Natural Heritage Reports by the MNR. The FIT contract is no more than a contract to take power, and is accompanied by an acceptance that the wind farm if permitted can connect to the grid because the grid has capacity in that location to accept the power. It does **not** imply the project has completed all environmental works and that these have been reviewed and accepted or that it

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		has permits to build. In respect of the 'approval' of the Draft Natural Heritage Reports by the MNR again this does not imply approval of the proposal it simply says that MNR have approved the report for release for consultation. Draft Natural Heritage documents cannot be released until the MNR has given clearance for this to be done. The Renewable Energy Approval (REA) process is very clear on how this is to be done and what procedure and timing must be adopted for both the consultation and the required meetings.
	Why wasn't the format a Public Meeting instead of an Open Day event?	A number of comments on the questionnaires were made about the Open House format and expressing a preference for a Public Meeting format. We have been involved in the development of wind farms for over 20 years and have held (and attended) many public meetings in varying formats from small meetings with Local Interest groups, to full Public Open Houses events, to unmediated Public Meetings and just about everything in between. Our experience is that Public Meetings rarely do much more than provide the more vocal minority attendees with an opportunity to express their opinions and do not serve the purpose of the event; which is to relay information to, and engage with the public. One correspondent highlighted in his suggestion for a Public Forum that at our Bow Lake Open House "attendees felt passionate enough about this issue to commandeer the meeting space". And that illustrates exactly the problem. People who have genuine questions and who may not be used to public speaking will not ask a question because the atmosphere is confrontational and they do not want risk being attacked by the more vocal or aggressive attendees). We have had people approach us

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		after a 'public forum' meeting extremely unhappy that they were unable to get ask a question because they felt intimidated by anti groups or other attendees. This is a well recognized problem and in his note on 'Pros and cons of public meetings as a delivery method' Vincent T. Covello, Director of the Center for Risk Communication notes that: "*The problem is that public meetings function very well as one-way communication but often they fail us as two-way communication. The goals of communication typically are to enhance knowledge, to improve understanding and to establish dialog. Often public meetings in a high concern, high stress situation tend to be not supportive of those goals and risk communication. Often they lead to grandstanding and therefore the public health official rather than going first to the public meetings should think about alternatives to public meetings such as information exchanges, such as hotlines, such as personal visits. We can establish a one on one dialog or a small group dialog as opposed to having a dialog with a very large number of upset individuals".* By contrast the Open House format with the information displayed in the static format of posters and handouts means that a event can take place over a period of several hours (and even days) which both allows individuals to attend at a time most convenient to them and also allows them time to review and digest the information and formulate questions or thoughts at their own pace. Open Houses provide a perfect opportunity to display material on what will it look like and where will it be visible from and to discuss what are possible impacts on noise or wildlife.

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		The presence of wind farm representatives on the floor rather than on a separated stage means that people can then engage with them on a one to one, or small group basis to discuss general or specific matters of interest or concern. This, much more personal and interactive approach also means that people can essentially ask whatever, and however many questions they like on an individual basis. To get important responses out to a wider audience we then use the Question and Answer sheets distributed on the day and posted on the web as a means of conveying any important questions raised and answers given. This too is an important part of the engagement and consultation and feedback process. It is worth noting that some questions take a substantial amount of time to answer properly and to provide proper references so that they can be independently researched and considered. It is rarely possible to answer complex detailed questions on efficiency and grid operation for example at an Open House or at a Public Meeting and that is why a formal Q and A publication and web posting is produced. (The answer to the wind turbines don't work question Q1.5 above includes an attachment which is 45 pages long!). In short we are firmly of the view the 'public forum' does not achieve the same level of useful engagement as an Open House.
	Have you consulted with the First Nation and Metis communities?	From the early stages of the development process we have been in contact with the various First Nation and Metis communities associated with the area. Over the course of our consultations it became apparent that the Batchewana First Nation community has the primary interest in the relevant area, which forms part of their

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		traditional lands. Strong relations have been developed with the Batchewana community over the years and we continue to consult with them on an ongoing basis with regard to many aspects of the proposed development. In some cases we work with the Batchewana community to carry out studies that are related to, but in addition to MNR requirements. These studies are developed and carried out by Batchewana with their unique knowledge and considerations in mind.
	Have you considered the impact of the wind farm on the heritage associated with the Group of Seven artists?	A number of questions or concerns have been raised about the possible cultural heritage impacts associated with the 'Group of Seven' artists and in particular the impacts that the Bow Lake project might have on the painting sites or vistas in the Montreal River area. It would appear that some of this concern also extends to possible tourism impacts because we understand there is a plan to release a publication illustrating many of the Group of Seven painting viewpoint locations and to develop these into heritage trail. Because of this interest we have commissioned a third party consultant to produce an objective assessment of both the cultural heritage and tourism aspects of the development and the Group of Seven will be part of this consideration. That report will be made public (and posted on the web page) and open for review later in the year. It would be inappropriate to make detailed comments on the consultant's report in advance of its being published and appreciation of art is somewhat subjective but a number of observations are perhaps worth making.

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		There is no question that the Group of Seven are a very important part of the art heritage of Canada and produced a significant body of work capturing the beauty and character of the Canadian countryside. However, whilst perhaps best known for their landscapes members of the group also painted portraits, townscapes and even industrial scenes. The Group of Seven style is generally accepted as not being illustrative or photographic; it is more interpretive as the artists selected what they wanted to convey to the audience. Most works involve one particular scene in an 'interpretive realistic' sense where the artist takes a real subject (e.g. a rugged landscape) and emphasizes / exaggerates certain features he feels are significant. The colours in many Group of Seven paintings are not realistic, but they give a mood of roughness and boldness. It is also worth noting that landscapes are rarely fixed in time and unchanging and the Montreal River is a particular case in point: Since this picture was painted the Montreal River has changed significantly with the introduction of a number of hydro electric dams. The earliest of these dates back to 1938. The Montreal River has in fact 4 hydro power stations located in the vicinity of the wind farm, the closest at Gartshore (23MW) developed in 1958, and with the Mackay Station (62MW) upstream, and the Hoggs (19MW) and Andrews (47MW) downstream. The painting is of course a record of the location at the time but it can also still be appreciated for what it is, the capture of the wild untamed water rushing down the falls as seen through the painter's eyes. That is obviously something of an imponderable question but the fact is the Montreal River

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		has changed but it seems unlikely that that has diminished the quality or appreciation of the painting.

Bow Lake Wind Farm – Public Information Open House #1

February 21st, 2008 5:00 p.m. – 8:00 p.m., Captain Tilley Community Centre, Goulais River

Please return to: M.K. Ince and Associates Ltd., 35 Main St. N. Suite 32, Waterdown, Ontario, L0R 2H0

Your feedback is important to us! We appreciate the time taken to fill out this questionnaire. Please use additional pages for further comments.

We are collecting this information to understand your concerns and improve every aspect of our project.
Your comments may be anonymously published in our Environmental Assessment Screening Report.

Contact Information:

Name:		
Place of Primary Residence:		
Place of Secondary Residence (if applicable):		
Address:		Telephone Number(s):
City/Province:	Postal Code:	E-mail:

Correspondence:

Would you like to be placed on our MAILING LIST to receive future correspondence? Yes ☐ No ☐

How would you prefer to receive correspondence? E-mail ☐ Mail ☐

Have you received official Bow Lake Wind Farm correspondence in the mail? Yes ☐ No ☐
(Notice of Commencement, Newsletters)

Have you seen official Bow Lake Wind Farm notices in the newspapers? Yes ☐ No ☐
(Notice of Commencement, Newsletters, Public Open House Ads)

Are you a member of any organizations in the area? Yes ☐ No ☐
If so, which ones? _____

Please circle the most appropriate response.

	YES!		Undecided		NO!
Do you support Wind Energy in general?	1	2	3	4	5
Why or Why Not? _____					
Do you support Wind Energy coming to your Municipality?	1	2	3	4	5
Why or Why Not? _____					
Do you support the Bow Lake Wind Farm?	1	2	3	4	5
Why or Why Not? _____					
Have these opinions changed since the project was first announced?	1	2	3	4	5
Why or Why Not? _____					

Please Continue to Page 2…

After visiting this First Public Information Session….

What QUESTIONS do you still have about Wind Energy in general?

What QUESTIONS do you still have about Bow Lake Wind Farm?

Do you have any specific CONCERNS about Wind Energy in general?

Do you have any specific CONCERNS about Bow Lake Wind Farm?

Do you have any SUGGESTIONS for any aspect of the project?

What did you think of this First Public Information Open House?

	YES!		Impartial		NO!
Did the location of the Open House suit you?	1	2	3	4	5
Location Preference: _____					
Did the time and day of the Open House suit you?	1	2	3	4	5
Time and Day Preference? _____					
Do you think this event was timely (early / late enough in the project process)?	1	2	3	4	5
Comments: _____					
Did you find this event informative? Did you learn anything new?	1	2	3	4	5
Comments: _____					
Did you learn anything today that was contrary to what you previously believed?	1	2	3	4	5
Comments: _____					

We would like to know more about the people interested in the proposed Bow Lake Wind Farm.

Please tell us a little bit about yourself!

Age:	Occupation:
Number of years in this area:	Amount of time of each year spent locally (%):
Do you have children attending school in the community?	Do you consider yourself active in the community?

Do you use the land in the vicinity of wind farm for any purpose? If so, what?

This information collected will be used for the public record. The names of the respondents will not be used in any public records.

Thank You! **We Hope You Enjoyed Your Visit!**

BOW LAKE WIND FARM OPEN HOUSE

Proponent: Vortex Wind Power Ltd.
Date: February 21, 2008 – 5pm to 8pm
Location: Captain Tilly Community Centre, Goulais River, Ontario

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Questions and Comments Received

Question: Several people expressed their concerns over turbine lighting. Prince Wind Farm has all turbines lit with flashing red lights.
Response: We don't anticipate placing lights on all turbines as we are not in close proximity to an airport (as is Prince). One or more turbines may have to be lit in the interest of safe air navigation, as per Transport Canada regulations. In the interest of protecting bird life, we will likely use a flashing red light, with the minimum flash duration and least number of flashes per minute that is permitted by Transport Canada.

Q: Several people were concerned about losing access to existing back roads, currently used by off-road vehicles.
R: We don't anticipate gating any roads. Only the door at the base of the turbines will be locked and the switchyard will be fenced. We will not erect fences or gates unless we are required to by MNR or some other jurisdiction.

Q: How economically viable is wind energy? Would it be viable without any government subsidies?
R: It is becoming more and more economically viable, especially as the price of competing forms of energy (oil and coal) both in terms of pure economics and externalities (i.e. pollution) is increasing dramatically. The Bow Lake Wind Farm will apply for the Standard Offer Program, which is not a subsidy but an agreement to purchase the energy at a standard price. The Bow Lake Wind Farm does intend to apply for the federal EcoEnergy program.

Q: Several people asked about potential employment during the construction of the Bow Lake Wind Farm
R: It is Vortex's intention to hire local workers, where possible, for the construction of the Bow Lake Wind Farm. We anticipate that there will be a strong, skilled local work force available as many people have obtained wind turbine experience through the construction of the Prince Wind Farm.

Q: How will vibrations from the turbines affect aquatic life?
R: We don't know. Turbines will be set back from any waterbodies or watercourses in the area and vibrations at the waterbodies are not expected to be significant. However, during the environmental assessment process we will see whether any research has been done on the effects of wind turbine vibrations on aquatic life, and incorporate these findings into the ESR.

Q: There are a lot of moose in the area. How will the turbines affect moose and moose yarding.
R: We don't know. To our knowledge, wind turbines do not adversely affect domestic livestock. But we don't know whether any research has been done on the effects of wind turbines on large wild mammals. During the environmental assessment process

we will see whether any research has been done on the effects of wind turbines on moose, and incorporate these findings into the ESR. We will consult with the MNR for assessment requirements for moose.

Q: I run kayak tours along the shores of Lake Superior. Will the turbines be visible from the water?
R: We will include Lake Superior in our line-of-sight visual modeling to determine how many (if any) turbines will be visible from the water.

Q: Will turbine construction coincide with forestry operations planned for the area?
R: As much as possible, the turbine construction will utilize forestry roads for access and minimize further removal of trees, but it really depends on the exact locations of turbines and location and scale of forestry operations in the area. Discussions have taken place with MNR regarding future forestry operations in the area and will continue.

Q: What will be the impact on public roads during construction?
R: We will have to maintain any roads as part of the construction plan for the site and ensure minimum impact on local traffic.

Q: The importance of Vortex investigating possible impacts on local animals was emphasized
R: Detailed studies will be undertaken as part of the EA.

Q: Concerns were raised about the visual impact on the community of Montreal River Harbour.
R: Visual modeling will be carried out to see where turbines will be visible. Current photo montage shows the view from Highway 17 near Gartshore generating station.

Q: Will public comments be considered?
R: As part of the EA process, we must identify concerns and mitigate related effects to the satisfaction of regulatory agencies.

Q: Will the new Hwy 17 diversion affect the project?
R: No, only in that it makes delivery of equipment simpler if roads have fewer hills and curves.

Q: Bird studies being undertaken?
R: Protocol for migration and resident bird monitoring, consultation undertaken with CWS and MNR on requirements.

Q: Concern was raised about the speed of development in the area.

Q: Suggestions were received regarding using forestry tree markers to do surveying for flora.

Q: Attendees indicated that the following species are or might be present in the study area: Black-backed Woodpecker, Three-toed Woodpecker, Braun's Holly Fern, Blue Bilberry.

Q: Possible contacts for local naturalist information or help with field studies: Dave Euler (Birchpoint Consulting), Pictographics (archaeology)

Questionnaire Results from Bow Lake Public Meeting #1

YES		Undecided		NO
1	2	3	4	5

	Media Question						Opinion on Wind Energy								Questions	
Questionnaire #	Mailing List?	Email/Regular Mail	Received Mailings	Seen News Ads	Organizations		Do you support wind energy in general?		Do you support wind energy in your Municipality?		Do you support the Bow Lake Wind Farm?		Have these opinions changed?		Questions about wind energy	Questions about the Bow lake Wind Farm project
1	Y	Y	N	Y	N		1		1		1		1			
2	Y	E		Y	N		1		3		3		5			
3	Y	Reg	N	Y	Y	Community Centre	1		1		1		5		We have some property in the area and would like to know more about it and our own home	
4	N		N	Y	Y	Goulais Area Rec. Committee	1		1		1		5			
5	Y	Reg	Y	Y	N		1	Clean energy and no visable polution	2	Good for economy	3	Close to transmission lines and good for Trader people	1		What would be done with the turbines once life span is over	access to property around the turbines for hunting and fishing
6	Y	E	Y	N	N		1	Clean energy source	2		2		5			what access roads are being used?
7	Y	Y	N	Y	N		1	Green energy	1		3	Interest in knowing Long term effects of wind farms on wildlife	5		what is the long-term effect on wildlife habitat? (mammals, birds, etc.)	what is the long-term effect on wildlife habitat? (mammals, birds, etc.)
8	Y	E	Y	Y	Y	LSCWC	1		3	High aesthetic quality of area requires planning	3	High aesthetic quality of area requires planning	4			Does this project fit into the long term interests for the general area?
9	Y	E	Y	N	N		1	It's green	1		1		5			effect on land access via road/trail for hunting, snowmobiling etc.
10	Y	E	N	Y	Y	Paddling Ontario (POA)	3	Nuclear appears more effective in addressing CO2 issues globaly	3		3	Concerned about windmills affecting veiw line on L. Superior	3			How far into Lake Superiror will the turbine be visible, (I own a kayaking business)
11	Y	Reg	N	Y	N		3	Not sure all biological, enviro effects have been studied	3	See previous comment	3	Veiwscape from L. Superior	5		Effects on mammals (sound waver, noise). Moose uarding areas as well as aquatic life	Effects on moose wintering in area, mammals, visual effect on Lake Superior
12	Y	Reg	Y	Y	N		2		2		3		4			Road Access/ Dominating the Landscape

Concerns			Open House Format							Personal Info							
Concerns about wind energy in general	Concerns about Bow Lake Wind Farm projects	Any Suggestions	Good Location	Good Time	Timely	Informative	Learn anything contra			Occupation	Age	Years in Municipality	% of Year	Children in school	Active in Community	Do you use the land	What do you use it for?
			1	1		1											
			1	1	1												
	Visibility, effect upon birds, access to roads and area		1	1	3	1	5					4 generations	100%	N		Y	Recreation and Hunting
		Why not put in 110 turbines?	1	1	1	1	5	Good presentation of charts		Retired	79	30	100%	N	Y	N	
Effect on Wildlife	Effect on Wildlife		1	1	1	1	5			Crane operator, mechanic	40	36	20%	N	Y	Y	Hunting, Fishing, camping
			5	1	1	3	5			Mechanic	50	30	50%	N	Y	Y	General outdoor use
what is the long-term effect on wildlife habitat? (mammals, birds, etc.)	Are the environmental studies adequate? Viewshed protected for recreation interests.		4	1	1	2	5	Sault Ste. Marie would be better to meet Public requirements		Forester	44	18	80%	Y	N	Y	Recreation and professionally
			3	3	3	3	4	very informative		Chemist	46	2	5%	N	N		
No	effect on land access via road/trail for hunting, snowmobiling etc.		1	1	1	1	5			Retired college teacher	70	20	50%	N	N	Y	Hike, sight seeing
			1	1	1	1	4			Biologist-business owner	56	20	95%	N	N	Y	Guided Sea Kayak Tours in L. Superior
Effects on mammals, aquatic life. Whales, etc that communicate	Effect on Moose wintering in the area as well as view from Lake Superior. Existing roads being open for public use	Study on Moose behaviour, ensure windfarm has no impact on moose during construction. Existing roads remain for public	1	1	2	1	5			Forester	35	20		N	Y/N	Y	Recreation- Fishing, hunting, hiking, kayaking
Effect on Wildlife	Area access; more tree cutting; future expansion		4	1	1	2				Froestry Technician-Retired	61	60	29%	N	Y	Y	Recreation- Fishing, hunting, hiking