

# Wind a Part of our Lives

## Wind Can Remove 40% of Ontario's Air Pollution

The idea of capturing the wind to create energy is a concept that has been used for generations. From water pumps in the Netherlands to the windmills throughout Europe, windmills have been used for centuries. Now there are more than 26,000 windmills world-wide with 12,000 in operation in Europe alone.

Thirty-per cent of Germany's power is produced by the wind, with clusters of a half dozen turbines built in and around small hamlets. Germany has been forced to look for offshore sites to build new wind farms, as the country's onshore locations are getting rare; the country's shipping and hydrograph authority recently approving the seventh offshore wind energy farm in the North Sea. Germany has introduced laws promoting the use of green energy sources, and currently has inland turbines with a total capacity of approximately 15,400 megawatts of installed turbines, making it the world's largest wind energy market. Germany is followed by Spain and Denmark who respectively produce 20% and 16% of their power needs from the wind.

If an Adjala-Tosorontio resident is successful in completing a project that would like to see several modern wind turbines erected on his land, bringing the Township to the forefront of leading renewable energy technology. J.C.Pennie, Chairman of Land's End Corporation (Windrush Energy), is currently in the process of developing a project that would see three wind turbines built on a 121-acre parcel of land northwest of Hockley Village, on the Third Concession of Adjala, just north of County Road One. "My wife and I want to do this because it's something that is responsible and contributes to the well being of our society," he said. "The community of Adjala relies on electric power which contributes to 40% of the CO2 emissions responsible for lung-related ailments. If we use it, we can't say we are environmentalists and then take a NIMBY attitude." As the Ontario government has been looking to the private sector to generate 300 megawatts of power, Windrush Energy wants to build windmills that would stand approximately 80-100 metres tall and have the capacity of generating 4.5 megawatts of power - enough to supply about 2,000 homes.

It was announced by Hydro Quebec at the recent Canadian Wind Energy Association conference in Montreal that GE Wind, one of the proposed suppliers for the Adjala project, received an order for \$1.9 billion for 1,000 windmills. The proposed project in Adjala is estimated to cost \$10 million. The power generated by the turbines would be sold into Ontario's grid, the equivalent of 20% of Adjala's consumption. The property where the windmills would be erected has a gated entrance from the 3rd Line of Adjala, is at the end of a dead-end road, and expands more than a kilometer and a half in depth, through to the unopened 2nd Line. "The blades



*The Huron Wind farm operates on 100 acres north of Kincardine, feeding clean renewable energy into the Ontario grid.*

and mechanics of modern wind turbines rotate slowly," Pennie said, "Any mechanical noise, and the swishing sound created by the turning blades would only carry 120 to 400 metres. "You won't be able to hear them. I know, because I have stood under many elsewhere. The terrain absorbs the sound." Pennie has built his home on the property and said he is confident the turbines are a benefit to area residents and Canadians alike. "I'm living on the property too," he said.

Despite concerns expressed by neighbours regarding the effects on surrounding property values, Pennie said the value of lands next to windmills in Europe have actually increased as residents have the option of hooking up to them as a power source, something being offered to immediate neighbours to the site.

Windmills have been used for centuries, with the technology of today's wind turbines having been improved dramatically. "We will be using age-old technology in a modern way to improve our environment," Pennie said. The environmental effects of harnessing nature's wind for power as opposed to relying on fossil fuels for power are vastly different.

"Wind energy does not contribute to climate change, air and water pollution, habitat destruction, or the production of solid, toxic or nuclear wastes," said Robert Hornung, president of the Canadian Wind Energy Association (CanWEA).

While the economics of using wind to produce energy are high right now, according to CanWEA, the costs are decreasing by about three per cent each year. Currently, the costs of generating electricity from wind ranges from 6 to 12 cents per kilowatt hour in prime areas. Compared with building new coal-fired generating stations or hydroelectric facilities, wind turbines can be set up quickly and cheaply. "Unlike other electricity sources, the production cost of wind energy continues to decline and wind energy has no fuel cost, ensuring long-term price stability," he said. "Wind energy can substitute natural gas in new

electricity generation, reducing pressure on natural gas prices and extending the life of natural gas resources."

While the current price is higher than some traditional forms of energy such as natural gas, the federal government is helping to offset the difference, offering a tax credit to wind producers based on the amount of energy produced. The Wind Power Production Incentive (WPPI) provides one cent per kWh to wind turbines that qualify for the subsidy and will cover 1,000 megawatts of new capacity until 2007. The Federal government announced in the Throne Speech that this is being extended to 4,000 megawatts. Ontario is one of five provinces in the process of developing a renewable portfolio standard (RPS), which will mandate generators to secure a percentage of their electrical needs from renewable sources. RPS's are also being developed in Alberta, New Brunswick, Nova Scotia and PEI. Once costs are low enough to develop more wind turbines to create electricity, subsidies may no longer be required.

While wind power has been a focus as a renewable energy source throughout Europe for decades, Canada's wind power industry is still in the early stages with just 341 megawatts of installed capacity. According to CanWEA, as of June 2004, Canada had 341 megawatts of installed utility-scale wind energy capacity feeding into the grid in six provinces and one territory, making Canada the world's 14th largest wind energy producer. Canada is well behind global leaders including Germany with 14,600 megawatts, the United States 6,300 megawatts, Spain 6,200 megawatts, and also behind smaller countries like Denmark which produces 3,100 megawatts, the Netherlands 912 megawatts, Austria 415 megawatts, Sweden, 399 megawatts, and Greece 398 megawatts. CanWEA believes that wind energy could provide 20 per cent of Canada's total electricity needs and they have advocated an initial target of 10,000 megawatts by 2010 - approximately five per cent of Canada's

total electricity needs. Wind energy already accounts for 16 per cent of Denmark's electricity, 30 per cent of Germany's and 20 per cent of Spain's.

To help meet the targets of wind energy production in Canada, some Ontario farmers have expressed interest in harvesting wind. Landowners could be paid \$7,500 a year for each turbine on their property. Each turbine would require up to 1.5 acres of land, a service road and transmission lines, which can be buried. The remaining land can be farmed as usual. Most cash-crop farmers can make \$10,000 for each 100 acres of workable land in a good year. In a bad year, that amount can be far less. If farmers can rely on two wind turbines to bring in a guaranteed \$15,000 a year, they can better cope with the fluctuations of earnings made from their agricultural endeavours. Neighbours of Huron Wind, Ontario's first commercial wind farm which is home to five turbines are continuing to farm their land. Rita Babineau, who owns three acres just 400 metres from that wind farm, said the land surrounding her home continues to be used to grow beans and greenhouses directly across the road will be used to grow green peppers.

As for the proposed project by Windrush Energy in Adjala-Tosorontio, the turbines would require up to 4.5 acres leaving the remaining 118 acres available for other farming or residential uses.

*Reported by Tatjana Sulker*

## Living Next to Huron Wind

The shores of Lake Huron are home to Ontario's first commercial wind farm known as Huron Wind. Located in Bruce County, just northwest of Tiverton in the municipality of Kincardine, the Huron Wind project was announced in 2001 and on Dec. 1, 2002, it was officially in service. With five 1.8 megawatt wind turbines, Huron Wind is able to supply enough electricity to the province's grid to power between 2,000 and 3,000 homes annually.

**(Con't on Page 2)**



*Rita and Al Babineau with pet dog and Windrush Energy shareholder Marilyn Field (Left), in their side yard 400m from the Huron Wind farm, August 2004.*

### Living with Huron Wind (Con't)

From ground to blade, the turbines stand 117-metres tall, but residents Rita and Al Babineau said they couldn't ask for a better neighbour. The Babineaus have been living directly across the road from the site for three years and they have been sharing their view with the Huron Wind farm since the turbines were erected almost two years ago. "I think they're just great," Rita Babineau said of the wind farm that sits just 400 metres from her home. Unlike some wind farms, Babineau's home is not powered by the turbines, but despite not having the option to hook up, which she would have liked, she is thrilled to have Huron Wind up and running.

The 100-acre Huron Wind site had been leased to a farmer. Studies found that once the wind farm was built, 95 per cent of the site was still available for agricultural use. According to Babineau, the turbines have added a majestic feel and beauty to the Tiverton landscape that captures the eyes of visitors and residents alike. "You would be surprised at the number of people who stop and take pictures," she said. "I think they look very majestic out there. They fit in beautifully with the landscape."

Babineau said while she doesn't hear sounds from the windmills all the time, occasionally, when the wind turbines are operating at full power, she can hear them only because the sound bounces off her barn, but said the sound is a welcome calm. While the wind turbines are operating, Babineau said the calming sounds make you feel as though you are sitting on the sands of the ocean front, listening to the waves coming in. "It sounds like waves from the ocean. It's a beautiful sound." The operation of a windmill produces about the same sound level as a normal conversation or 43 decibels at a distance of 250 metres.

As for the effects that the presence of Huron Wind has had on the wildlife population, Babineau said since the turbines have been erected, she has not seen any difference in the number of animals or birds in the area. "It doesn't affect anything like that. There's a lot of wildlife here and it doesn't seem to bother anyone - not even our two dogs." When the sun goes down, Babineau said the view of the sun setting with the silhouettes of the turbines in the distance, is a sight of sheer beauty. "(Huron Wind) is beautiful to look at, especially at sunset."

*Reported by Tatjana Sulker*

*The municipality of Kincardine invites visitors to see Huron Wind. Energy presentations for school or tour groups can be arranged by calling the Bruce Power visitor's centre at 519-361-7777.*

## Feds Want Renewables Where Consumed

Canada's federal and provincial governments have taken steps towards using renewable sources of energy - from investments to promises of generating a percentage of the country's energy supply through clean, renewable sources. Coal fired power production contributes to 40% of air pollution which affects the health of all Canadians. Federal studies show there are 5,000 deaths a year that can be attributed to air pollution.

The Government of Canada has taken action to address the need for clean air. Through the Kyoto Accord, Canada is committed to reducing emission rates by 20 per cent. The Kyoto Accord, an international agreement between countries, has been established to control the output of greenhouse gases that contribute to global warming. The Accord recognizes that greenhouse gases have a significant impact on global warming which, in turn, negatively affects the global environment and the planet's ability to sustain present agricultural production. "We have a federal mandate and a provincial mandate to meet these targets, so at a municipal level, Nottawasaga Futures is trying to meet these targets; for a cleaner way of powering our society," said Nottawasaga Futures economic development officer, Margo Cooney.

In support of increasing wind energy in Canada, the federal and provincial governments have introduced the Wind Power Production Incentive (WPPI) to provide financial support for the installation of 1,000 megawatts of new capacity until 2007, and in the recent Throne Speech announced extending this to 4,000 megawatts. Canada's federal WPPI offers a financial incentive of one cent per kilowatt hour to qualifying wind turbines. The Feds have set targets for all departments and committed to buy 20 per cent of their electricity needs from renewable sources, including wind, by next year.

The Canadian government has also created the Market Incentive Program's Action Plan 2000 on Climate Change - a \$25.0 million initiative for municipalities to stimulate emerging markets for renewable electricity, providing funding supplements until 2006. It aims to establish emerging renewable energy sources as market

competitors by 2010, and to reduce current and future greenhouse gas and other air emissions from electricity generation. Revenue Canada policies allowing investors to write off certain costs associated with generating renewable energy sources are also available as 'flow-through' shares.

According to the Canadian Wind Energy Association (CanWEA), federal, provincial and territorial governments have made some progress in developing the broad "framework" policies required to stimulate the development of Canada's wind power potential. At the provincial level, five provincial governments - Ontario, Alberta, New Brunswick, Nova Scotia and PEI - are developing and implementing some form of Renewable Portfolio Standards (RPS) and another four are pursuing wind energy (RFP) requests for proposals.

A RPS is a provincial law requiring electricity utilities and retailers to purchase a certain percentage of their power from renewable resources, including wind. The Green Power Procurement allows provincial governments to commit to purchasing a certain percentage of their electricity needs from renewable sources, including wind; Alberta and Ontario already have such programs in place. Tax incentives to benefit the development of renewable energy are currently available in Ontario and BC. All provincial governments are now considering or implementing specific actions to increase wind energy production.

While Canada continues to lag behind other countries in wind power production, according to CanWEA, for each wind turbine used instead of burning coal to produce power for 200 homes, greenhouse gas emissions will be reduced by 2,000 tonnes annually. CanWEA states that the provincial initiatives currently being pursued could lead to almost a 10-fold increase in Canada's installed wind energy capacity by 2010.

*Reported by Tatjana Sulker*

## Magnetism: Myth or Monster?

To produce wind power, turbines capture the kinetic energy in surface winds and convert it into energy in the form of electricity. To do this, as wind moves over turbine blades, it causes "lift" - the same effect used by airplane wings. Lift makes the blades rotate and the turning blades turn a shaft.

The turning shaft moves a magnetic field in the generator, which in turn creates electricity. Experts say magnetic energy in relation to the turbines and its effects are not transmitted beyond the tower.

"There have been studies in Europe and all over - this has never been a concern," said University of Toronto professor, Dr. Shashi Dewan. Large-scale wind generation provides power to the province's utility grid. Just as large-scale coal, hydro or natural gas electrical generation facilities send power to the grid, so can wind energy facilities. A single large-scale wind turbine produces enough energy to power hundreds of homes. Clustered together in a wind farm, turbines can safely produce enough energy for thousands of distant homes and businesses.

Dewan said the amount of magnetic energy created to produce wind energy is less than that in a hydro pole and the magnetic energy created from the power lines is "so small at 0.4mG compared to a regulatory standard of 833mG." "Magnetism is only produced in the hub of the turbine. "Magnetic energy is coming from the generator at the top," Dewan said. "The generator and converters' magnetic and electrostatic energy (electromagnetic radiation) is shielded by the individual enclosures and the steel in the tower." (Measured MF = 0.4mG in front door of the Windshare turbine installed at Toronto's CNE grounds, one-half of a typical hair dryer with values of 0.8mG, compared to regulatory acceptable standard for emissions = 833mG).

According to Dewan only an insignificant amount of electromagnetic radiation is readable at the generator (75 metres and up), and none at ground level. "There is absolutely no magnetic energy at the base of the (turbine) tower." The test results at CNE wind turbine show that the magnetic field at 10 feet from wind turbine and associated transformer is less than the magnetic field from a household hair dryer. In the case of the proposed Windrush Energy Adjala site, no measurable magnetic field is expected at a distance of 25 feet from the proposed wind turbine installation. All collection and distribution of the 27.6kva power, which is the normal distribution voltage along county roads, will be buried six feet underground and do not emit any magnetic energy at ground level. Dewan concluded, "It is our conclusion that the magnetic fields produced by the generation and export of electricity from the Windrush wind turbine does not pose any threat whatsoever to public health."

*Reported by Tatjana Sulker*



*Measured in front door of the Windshare turbine installed at Toronto's CNE grounds = 0.4mG, one-half of a typical hair dryer with values of 0.8mG, compared to regulatory acceptable standard for emissions = 833mG.*



World renowned crystal artist and Caledon resident, Mark Raynes Roberts, working with kids in Marilyn Field's DAREarts program, sees design and linear beauty in windmills.

## Sculptures for the Landscape

Depending on who you ask, some will describe windmills as being beautiful works of art that create a majestic feel which some believe will add to the area's ambiance. "In our view, (a wind turbine) looks like a ballerina performing a dance," said Martin Sugden, a resident of the 3rd Line of Adjala. Sugden said he and his wife are thrilled with the proposed project of Land's End Corp., as they see wind turbines as artistic sculptures. "The appearance to me is beautiful."

One of the world's leading crystal artists and designers, Mark Raynes Roberts, who has a home in Caledon said, from an artistic point of view, windmills have a "very clean and linear design." Roberts, Amongst his many works, created the Wimbledon trophy for Tennis Masters Canada and the Molson Indy Trophy; he has also completed works for Dr. Nelson Mandela, the Archbishop of Canterbury and many more. "To see a windmill, to me, is a far more beautiful and pleasing sight than a tower billowing out smoke," he said. "Windmills have a design which has a linear beauty to it."

Roberts, who has traveled all over the world, said the turbines in Europe "are a way of creating energy in an esthetic way." "From an energy point of view, we realize that we're depleting the earth's resources," he said. "I think its common sense that wind energy is the direction we should be taking." Sugden said he is "solidly in favour of the project" and believes renewable sources of energy are necessary. "I think it's tremendous that (windmills) are finally catching on in North America," he said. "When we look at it in terms of this planet and having to support more and more people, we've got to do things that are a benefit." Sugden said although his 20-acre property is outside of the geographical area which could be supplied power from Windrush Energy, he still wants to see the project become a reality.

For almost two years, Sugden had a windmill on his property that was able to provide 1.5 kilowatts of power to his home. In the future, he said he would not only like to more actively pursue his own personal use of solar energy but would even consider having a Windrush wind turbine on his land. According to the American Wind Energy Association, the majority of people favour wind energy, and support for wind farms often increases after they are actually installed and operating.

Despite opposition being voiced by some Adjala neighbours, Sugden believes clean, renewable energy is the way of the future. "It's just something people here have to get used to - being dragged into the 21st century," he said. "We've got to do something and wind seems to be the next step."

"We are thrilled to see your proposal regarding your Wind Turbine Project. This is a step in the right direction toward sustainability," an email to Windrush Energy from Rosanne & Klaus Fritzsche, residents of the 25<sup>th</sup> Sideroad, stated. "The wind turbines are elegant to watch and a symbol of the future."

*Reported by Tatjana Sulker*

## Infra Sound Is it There?

According to studies conducted by sound experts, "Windmills bring up the discussion of 'infrasound'." There is no clear distinction between 'low frequency noise' and 'infrasound'. Since human hearing has always been accepted to be within the frequency range of 20 – 20,000 Hz, the general trend is to assign the first of the terms to the range 20 – 100 Hz, while the second, infrasound, has been reserved for noise with frequencies below the 20 Hz limit."

Low frequency noise and ultrasound are produced by machinery, both rotational and reciprocating, as well as by traffic, machine vibrations and by natural sources such as air turbulences, storms, earthquakes etc.

Noise is attenuated while in the open air mainly by two phenomena: the spread of the energy from the source to the receiver that causes an attenuation of 6 dB per doubling of the distance and by the absorption by the air. While the second mechanism is stronger for higher frequencies, the spreading out of the energy waves is the most important decay in the sound pressure with the distance at low frequencies.

Because of the low rotational rates of the turbine blades, the peak acoustic energy radiated by large wind turbines is in the infrasonic range with a peak in the 8-12 Hz range. The danger of hearing damage from wind turbine low-frequency emissions is remote to non-existent for two reasons: the ear is not sensitive to low frequencies and the energy contained in this type of radiation is too little to affect the inner ear.

It has been highlighted recently in some publications and web sites that low frequency noise and

infrasound can be produced by wind turbines at such a level that they are annoying. While this was true of early models (especially with the down-wind models), the technology has moved on and modern turbines produce very low levels of noise, including infrasound.

There is a general agreement that effects from low frequency noise and/or infrasound are related to their sound level and their frequency. Therefore, if the sound level is sufficiently low, there is neither perception nor negative effect on people or animals. On the other hand, as mentioned above, the sound level decreases 6 dB with the doubling of the distance. Therefore, by installing the turbines at a distance from the nearest home, the sound levels are kept at values below the allowable limits. In Denmark this distance has been indicated as 300m. Windrush Energy has indicated the minimum distance of its turbines from a residence will be 450m to 1,000m, including the home of the Windrush Energy Chairman, which will fall between the above setbacks.

*By Alberto Behar, P.Eng., C.I.H.*

**"For every 200 homes that use wind power, it will reduce greenhouse gas emissions by 2,000 tonnes, the same as planting 10,000 trees."**

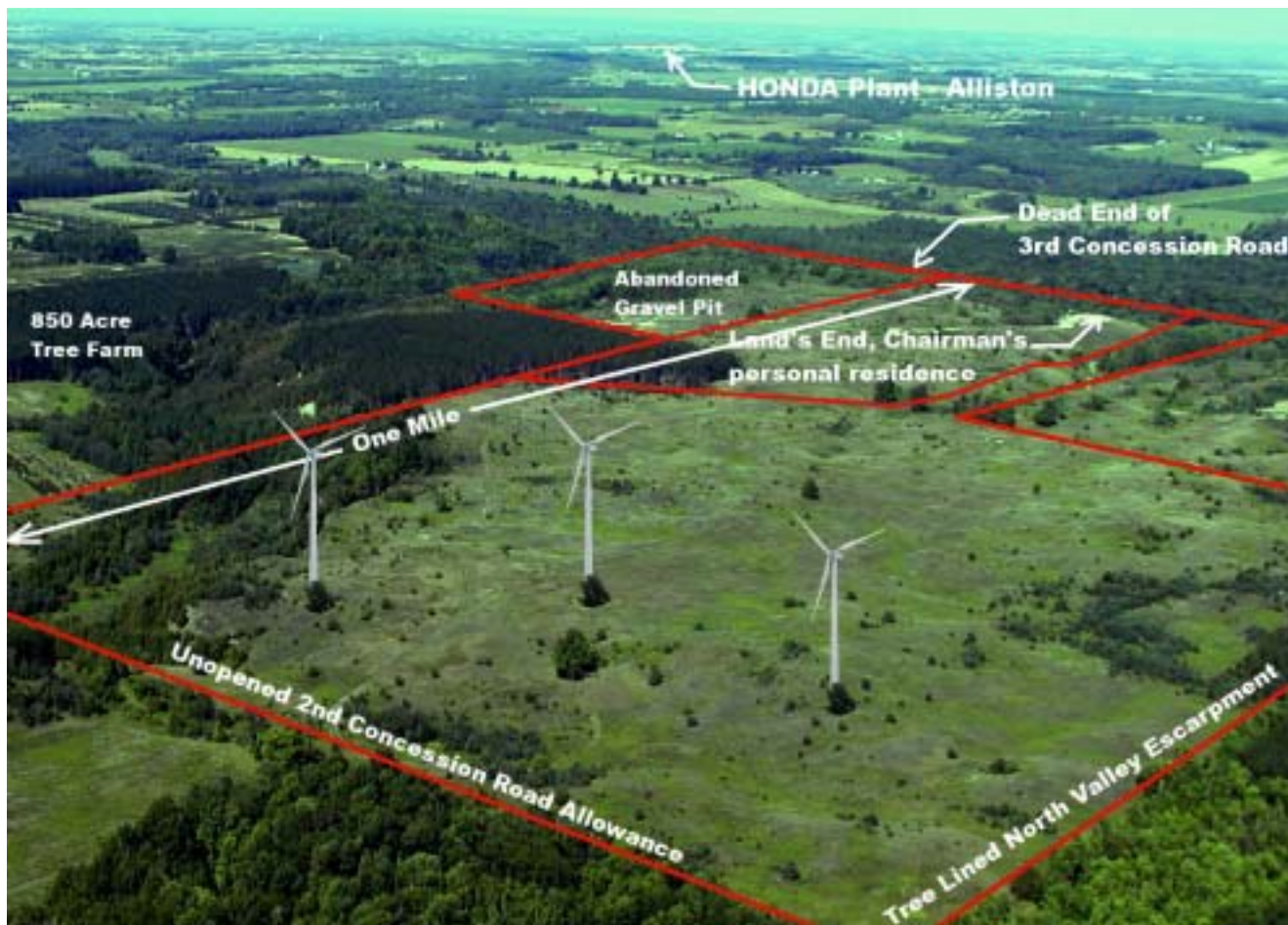
*The Hon. Gilbert Parent,  
Canadian Ambassador  
for the Environment and  
Sustainable Development.*

## Spirit Lake School, Iowa



Joining a movement of schools in the United States (to get off the grid by using non-polluting renewable energy) the Spirit Lake Junior School in Iowa installed a Vestas windmill.

**If you would like to learn more about reference texts on these subjects visit:**  
**[www.windrush-energy.com](http://www.windrush-energy.com)**



Setback from all residences from 450 to 1,000 metres, the proposed windmills (shown as simulated in this aerial view from the west) are bordered on the south by the Hockley Valley escarpment; on the west where the 2nd Concession road allowance is unopen, leaving one mile to the Mono-Adjala Townline; on the north an 850 acre tree farm; and on the east is the entrance to the property by way of the 3rd Concession of Adjala which terminates at the site.

## The Future is Here

When we North Americans walk into a dark room, we instinctively reach for the light switch, relying on our electricity source to lighten our way. When we were immobilized by the great blackout just last year, we were jolted by the realization that we can no longer take for granted that electricity will be available when we need it. "We are huge consumers of energy," said Margo Cooney, economic development officer with Nottawasaga Futures. "As our consumption grows, we're going to find ourselves greater and greater at the mercy of other nations to supply our energy."

Canada's per capita energy use is one of the highest in the world. According to Environment Canada statistics, in 1996 it was estimated that 72 per cent of Canada's energy came from the combustion of fossil fuels, 12 per cent hydroelectricity, 10 per cent nuclear power, six per cent wood and a small amount from alternative sources of power including wind and solar energy. Cooney, who has attended numerous presentations about wind energy and its future in Canada, said the country should be looking at renewable sources of energy as other countries have. "Canada is so far behind developing wind energy. Even America, Europe, France and England are moving forward with this."

Windmills have been in operation for years with more than 12,000 commercial windmills in Europe, large installations in Alberta and Quebec, and small scale operations now in Ontario. "I truly believe windmills are the answer to the energy problem we have today and in the future," said Rita Babineau, who lives 400 metres from Huron Wind.

The reality is that Canadians are continually consuming more electricity per capita than in years past, and with the costs of fuel increasing, the amount of fossil fuels being used rising rapidly and the lasting footprints being impressed on our environment for generations to come, the government is

now encouraging the use of green power. "If we can harness the wind to power these things in our life, we can become independent in our power both industrially and domestically," Cooney said.

An environmentally conscious Klaus Fritzsche who lives on Conc. 2 of Adjala said he believes "wind turbines are a symbol of the future." While Cooney referred to Adjala-Tosorontio's strong history of environmental awareness, she said, "There is a level of support for sustainable development and in Adjala-Tosorontio - there's a tremendous amount of support for environmentally sound and sustainable development." Cooney said while area residents enjoy their current lifestyle, the winds of change bring uncertainty.

"Residents are very conscious of the quality of life - that's why they move there (Adjala) and anything that is perceived to change the quality of life raises alarm bells," she said. "I can't stress enough that perception is everything." In recent years, hydro rates have been climbing and the government has set out targets in the Kyoto agreement to encourage the use of renewable energy sources to compliment traditional methods of generating power. "I think that windmills are just something people are going to have to get used to," said Mitch Twolan, owner of Lake Range Realty Ltd. and Deputy Mayor of Huron-Kinloss Township where Huron Wind installed Ontario's first wind farm on 100 acres.

Reported by Tatjana Sulker

## Birds Live with the Wind

The sights and sounds of the bird population in Adjala-Tosorontio have come to be seen as one of the contributing factors to the beauty that attracts residents to the area. While people in other countries were initially concerned with birds and how they would live in relation to the installation of turbines, North American studies have shown the number of birds killed by windmills is significantly lower than those killed by other man-made structures.

Windrush Energy's proposed development to build three to five wind turbines on the Third Concession of Adjala will not negatively affect the bird population as experts say birds will not be distressed by the turbines. John Nicholson, President of the Ontario Section of the Air & Waste Management Association said the project will not cause any significant hazards to the existing bird population. "There have been numerous studies dating back to the early 1990's of bird populations and migratory populations," Nicholson said. "It's been shown time and time again that wind turbines do not affect bird populations." Research shows that communications towers, buildings, houses, even house cats, kill more birds than wind turbines and migrating birds fly well above the height of the turbines.

According to Toronto Hydro Energy Services Inc., the incidence of birds colliding with wind turbines is



very low; the average rate of bird mortality at wind farms in North America is fewer than two birds per year per turbine. A study conducted by Toronto Hydro regarding the Windshare turbine at the CNE grounds in Toronto concluded that two birds were killed during the first year of its operation.

The Canadian Wind Energy Association (CanWEA) concurs. "Wind turbines have a very limited impact on birds - less than a house cat or a car," said Robert Hornung, President of CanWEA. While birds occasionally collide with wind turbines, Canada's domestic cat population of about five-million kills roughly 140 million birds and small animals each year (28 bird deaths per cat annually) and the average residential home experiences about a couple of birds flying into its doors or windows every year. There is currently no groundswell to outlaw cats or patio doors.

According to data collected by FLAP (Fatal Light Awareness Project), a Toronto based organization, they encounter 2,000 dead birds each year within the city's financial district alone and estimate that some 10,000 birds collide with the high-rises within the Metro Toronto area. FLAP's executive director, Michael Mesure said 800 to 1,000 birds collide with Toronto's TD tower annually. "About half of those we're able to rehabilitate," he said. While he is not convinced by all the findings of the Toronto Hydro study, he is not against wind energy but stressed that the geographical location of where turbines are placed are key factors in decreasing the number of potential bird deaths. "The nice thing about the new wind turbine is that the design has certainly become bird friendly."

The American Wind Energy Association states that bird deaths from wind energy are unlikely to ever reach as high as one per cent of those from other human-related sources including house cats, for example, which are believed to kill one billion birds annually in the US alone.

According to experts, the current bird population and migratory habits of the birds in the Adjala-Tosorontio area will not be negatively affected through the existence of the turbines. "It will not have an effect on the migratory habits or the nesting habits of the birds," Nicholson said. "Plus it will not affect other wildlife. While 98 per cent of the 3rd Line property can still be used for other endeavors, such as agricultural farming," Nicholson said, "the wind turbines are in harmony with the environment and wildlife can still function around them."

Dave Stephenson, a senior biologist with Natural Resource Solutions Inc. performed a bird and fauna study on the site of the proposed Windrush Energy project and made similar conclusions. "It's documented through many, many studies in North America and Europe that very few birds are killed by wind turbines." Today's technology of wind turbines see the blades turning at a maximum of 10-15 rpm which, Stephenson said, makes it easy for birds to avoid because the machine moves slowly. According to Stephenson, the key to having birds live in harmony with turbines is to examine the flow of wind and be aware of the areas where birds tend to funnel with the wind. "Our primary concern is avoiding a location where birds are funneling. Windrush Energy's location opening unto a plateau is an excellent area to avoid this problem," he said. "As far as birds and other wildlife on the site of the proposed project,

“Stephenson said, “I havn’t seen any concerns.”

Windrush Energy, Chairman J.C.Pennie said that as his home shares the property with the turbines, he and his wife want to continue to enjoy the wildlife that frequents the 121-acre site. “Previously residents of Caledon for 20 years, we are now living here full time. As we have a beautiful deer population here the Environmental Studies measured to see that we are not risking our habitat,” he said.

Reported by, Tatjana Sulker

## Wildlife and Bats

By David Stephenson, M.Sc.

According to my research as a senior biologist with Natural Resource Solutions Inc., “Like birds, bats could have direct collisions with wind turbines. However, contrary to the unique mature forest and mountain ridge bat kill event at Backbone Mountain in 2003, bats have excellent navigation skills and generally mortality seems to be less than that of birds (Howell and DiDonato 1991, Strickland et al. 1998). Some researchers suggest that bats are killed less frequently than birds because they can echolocate and thereby avoid collision. Other studies have shown that bats are also less likely to collide with lit structures (Dillon Consulting Ltd. 2000). Bats are at low risk at the proposed Windrush site.

Butterflies, dragonflies and other flying insects are also at very low risk of collision with wind turbines, certainly at much lower risk than they experience on highways. What studies there are have indicated negligible effects to insects (Gipe 1995) due to the height of the turbine blades above ground level.

There is no evidence that terrestrial mammals, reptiles or amphibians are likely to be affected at all by wind turbines. Small mammals have been reported living in close proximity to operating turbines (Orloff 1992). The wind turbines will be widely spaced turbines with fairly small footprints.

In some cases, it has been found that the open habitats typically found around the base of the turbines can be attractive to certain wildlife, and as such recommendations have been provided in some cases for the management of these habitats towards other less attractive habitats (e.g. Tarifa, Spain). Generally proven techniques are available to minimize the impact of the construction of the turbines, roads, etc on wildlife habitats.

The issue of avoidance by resident wildlife is documented to be a reasonably short-lived phenomenon and is associated with that usually associated with construction activity. A one-year study completed by (James 2003) at the Pickering wind turbine in Ontario showed no apparent avoidance behaviour for most birds, while they still kept clear of danger. Many species were witnessed foraging, roosting, loafing or flying directly in the vicinity of the wind turbine, even when it was in operation. Other birds showed some avoidance behaviour by flying around the turbine by 75m (James 2003).

Howell, J.A. and J.E. DiDonato. 1991. *Assessment of avian*

*use and mortality related to wind turbine operations, Altamont Pass, Alameda and Contra Costa Counties, California Sept 1988 through Aug 1989.*

Orloff, S. and A. Flannery. 1992. *Wind turbine effects on avian activity, habitat use, and mortality in Altamont Pass and Solano County WRAs. (See Windrush Energy website for additional references.)*

## Wind Energy and the Environment

Wind energy is a clean source of energy that, unlike other methods of generating power, doesn’t produce air emissions or hazardous waste. According to the Canadian Wind Energy Association (CanWEA), for each turbine capturing the wind instead of burning coal to produce power for 200 homes, would leave 900,000 kilograms of coal in the ground and reduce annual greenhouse gas emissions by 2,000 tonnes - the same environmental impact as taking 417 cars off the road or planting 10,000 trees.

Wind turbines, which are large blades mounted on towers, use renewable energy and are pollution free. As the turbine blades are turned by the wind, the blades rotate a generator which produces electricity. Using wind energy in place of conventional energy reduces the generation of smog and acid rain and also avoids the production of greenhouse gases, sulphur dioxide, carbon dioxide, nitrogen oxide, heavy metals and particulate matter.

The proposed site of Windrush Energy, which is on the Third Concession of Adjala, just north of Simcoe Road One, would see it’s wind turbines generating enough energy to power roughly 2,000 homes. “This project is three to five wind turbines. Compare that to a nuclear fired generation station, the difference is huge.” said John Nicholson of Environmental Business Consultants. The environmental benefits of using windmills to produce energy are astounding. “There’s no adverse impact as a result of this project. I think most of the concerns are because the residents haven’t seen them.”

Nicholson said while traditional methods of generating power will continue to be a part of Canada, the comparison between traditional

methods of generating power and using wind energy is vastly different. “As citizens of the province, you have to ask how you want to get your hydro: nuclear, coal or gas fired generation stations, wind power, high scale and low scale hydro, co-generation or solar. These are the options you have.

Of that list, coal fired generation stations are probably the most polluting in regards to air and smog generation. Nuclear is a major concern with long term disposal. Large scale hydro concerns flooding of land, loss or altering habitat. The environmental effects are well known of those three,” he said.

Environment Canada presents a certificate of green power to those sources that have the least environmental impact. “You’re eligible for a certificate of green power if you use wind, solar energy or small scale hydro.” The federal and provincial governments are encouraging use of wind as a source of producing energy. “There are efforts to have companies buy (electricity) from certified green power.”

As for Windrush Energy’s attempts to bring wind power to the hills of Adjala, Margo Cooney, community economic development officer with Nottawasaga Futures said Nottawasaga Futures “supports wind energy” and the “opportunity for a sustainable energy force.” The cost of oil continues to rise with the cost of a barrel of oil recently reaching more than \$50 US. Cooney said, “If we can harness our wind and not rely on barrels of oil being shipped from the Middle East, it benefits our economy.” The environmental benefits of wind power include the reduction of society’s contribution to global climate change - changes that will be seen for generations to come. “We’ve seen the effects of using our fossil fuels,” she said. With wind, “we’re not emitting anything into our air, (or) depleting our ozone layer,” Cooney said. “We’re not leaving more for our kids and grandkids to clean up.”

Reported by Tatjana Sulker

We all use Ontario power, we all share a responsibility to clean it up.



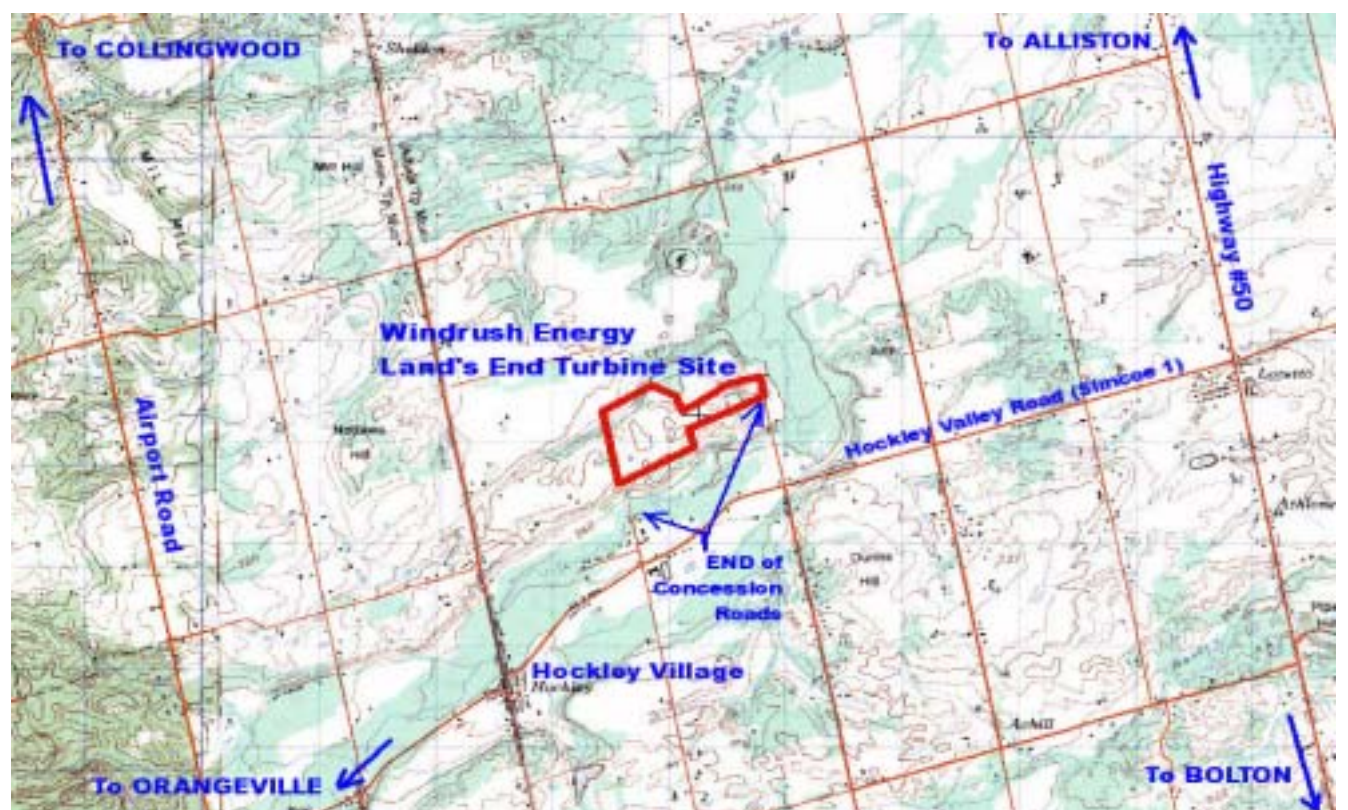
Turbine fire in nacelle burns itself out, thought to be caused by overheated parts igniting wire insulation. Newer turbines have fire suppression equipment to contain and extinguish fires within the structure.

## Fires & Fears

Yes, windmills have caught on fire! As the entire structure is made of metal from the tower to the equipment, how is this possible? Simply, overheated bearings or accessories, such as wiring insulation, on board computers and, in non-direct drive turbines, hydraulic fluids. Lightning is not a suspect as the towers are grounded deep into the earth and carry lightning rods. What happens? Incidents are so rare of the few recorded on land, the fires were contained within the equipment and extinguished themselves. Firefighters stood by to ensure there were no secondary grass fires. New installations have automatic fire suppression systems, including those planned for the Windrush Energy project.

The industry does not yet have a central record of accidental mechanical failures. One private website reported 62 events over a five year period from Nov. 1996 to Dec. 2000. These ranged from throwing ice to blade parts and loose bolts to destruction of the blades. Ice and parts thrown were from an older series of units which had 20-30 RPM rates.

In these cases, ice and other parts were reported to be thrown 100-200 metres with an unsubstantiated record of 420 metres. “New windmill technology is much safer through better engineering manufacturing processes, and modern windmills have deicing systems, with flexible fiberglass blades that rotate at 10-15 RPM, one-half the speed and energy inertia of older turbines. A further safety margin is the minimum setback from any dwelling of 450 metres for the proposed Windrush Energy turbines.” said J.C.Pennie.



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## The Hon. Gilbert Parent

Canadian Ambassador for the  
Environment and Sustainable  
Development,  
Oct 19, 2004 address  
at the 20<sup>th</sup> Annual Conference of  
the Canadian Wind Energy  
Association.

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“Ever since my appointment as Canada’s Ambassador for the Environment in December, 2000, I have made renewable energies in general and wind power and hydrogen in particular, a strong focus of my mandate. I have travelled widely both in Canada and internationally to visit renewable energies facilities and the researchers, developers and manufacturers of renewable energy technologies. I have also met with a great number of wind farm and hydrogen developers at home and abroad. I am happy to report that my hands-on research has had extremely positive results.

Countries world-wide have had to face the negative effects of Climate Change. The Kyoto Protocol came into being in an attempt to mitigate greenhouse gas emissions on a global scale. Canada ratified the Protocol in December, 2002, but it has not yet come into effect due, in large part, to Russia putting off its ratification and the United States refusing to ratify.

Regardless of whether or not Kyoto comes into effect, nations are reducing their greenhouse gas emissions of their own volition. For example, despite the United States’ administration’s not ratifying the Protocol, 41 of its states have environmental regulations on their books.

Because of my strong belief in Canada’s limitless potential for wind energy, I travelled to countries that are most advanced in wind power generation to see for myself what ingredients had led to their rapid growth in wind power development. I also wanted to visit major wind turbine manufacturers such as Vestas of Denmark, Enercon of Germany and GE Wind Power of the United States, to find out exactly what future technical refinements they were planning for their turbines.

At the back of my mind I have long held the hope that Canada will be as bold regarding wind power as it was a few decades ago in building the James Bay Hydropower Complex in northern Quebec which generates 15,000 MW of power. I wanted to make sure that existing wind power technology could meet the demands of a 30,000 MW wind farm. I was not disappointed.

Denmark has a capacity of 3,110 MW of wind power with another 750 MW planned over the next 4 years, and it produces 20% of the electricity it uses during the daytime from wind and 50% of the electricity it uses at night from wind. The Danish countryside is dotted with wind turbines, most of them from Vestas. This turbine manufacturer has recently merged with Micon, with headquarters in Ringkøbing.

Vestas produces hundreds of wind turbines a year, the largest, at present, a 3.6

MW. When I asked the company’s president whether a 10 MW turbine was a possibility, given the existing technology, his answer was a resounding yes.

In Germany, that has 14,609 MW of wind power, I visited the Enercon turbine manufacturing plant near Berlin. There I was treated to the sight and visit of a functioning, although not yet commercialized, 4.5 MW turbine.

The USA’s 7,360 MW of wind power are increasing at a phenomenal rate every year. In Atlanta, I met with the head of GE Wind Power, a division of General Electric, that is engaged in the sale of wind turbines world-wide. He also assured me that a 10 MW turbine was a very real probability.

The reason for my curiosity regarding the largest potential size of wind turbines is in order to reduce the infrastructure costs of the mega-wind farm that I am proposing. The larger the turbines, the fewer are needed, thus lowering the costs.

The federal government’s Wind Power Production Incentive will be quadrupled to provide increased financial incentive to the initial 1.2 cents (Canadian) per KWh that had previously been in place. This increase is for the installation of 4000 MW of new wind capacity by 2007. Our Government has also committed to the purchasing of 20% of its total electricity needs from renewable sources, including wind, by 2005. Sustainable Development Canada is a strong financial supporter of the research and development of hydrogen production from wind. Universities in Quebec and California are working on this challenge, the success of which will propel us towards the cleanest, renewable energy of all - hydrogen.

While electric power generated from wind has many advantages, it presents one challenge; intermittency. Due to its intermittent nature, there are times when no electric power can be produced, even though the demand for power at the time might be very high. Alternately, surplus power may often be generated during times of reduced demand, such as between midnight and 6:00 AM.

This could become a serious issue in future as more and more wind energy is harvested. In spite of its major environmental benefits, if a wind generation facility is not “dispatchable”, it has a disadvantage compared to more conventional sources such as gas and coal. If the energy could be stored, this challenge could easily be met. There are promising energy storage technologies being developed. The generation of hydrogen through electrolysis of water is one of the most convenient ways to store electrons. This process while both simple and effective, generates a product that could become a key energy carrier. It could be widely applied in the coming decades as we endeavour to de-carbonize our sources of energy.

Stored hydrogen is not only a way to adjust to generation times; it can also be used to fuel vehicles and for many other industrial applications. It is an energy currency that is very broad in scope and usage. It can leverage wind energy well beyond its present benefits. And best of all, the by-product of hydrogen is simply water. We

could make clean, renewable energy from clean, renewable energy and store it in a clean renewable energy medium, one that creates no toxic emissions.

Wind is a clean source of energy that does not produce hazardous air emissions or waste. Wind energy and hydrogen will offset the emissions of other energy sources, substantially reducing our contribution to global climate change. Using wind to produce power for just 200 homes will reduce annual greenhouse gas emissions by 2,000 tons and have the same positive impact as taking 417 cars off the road or planting 10,000 trees. A study by the David Suzuki Foundation, based in Vancouver, British Columbia, states that Canadians could save \$200 billion if greenhouse gas emissions were cut in half by 2030.

My concept of a 30,000 MW wind farm on Canada’s provincial or territorial crown lands would offer investment opportunities from \$35-\$45 billion in capital funds over ten years. The potential revenue for such a project would be \$2 to \$3 billion annually. There would be jobs created. A typical wind park project employs 1 person per 1 MW during the construction phase and 1 person per 10 MW for operation. For 30,000 MW, that would be employment for 30,000 during construction and 3000 for operation.

Public and private partnerships and global partnerships will fund these projects. The initial investment costs might seem large at first sight, but from 1970 to 2003, direct Canadian federal government spending on fossil fuels totalled \$44.5 billion.

Although North America - Canada, the United States and Mexico - is home to just nine percent of the world’s population, we create twenty five percent of the world’s pollution. We also consume a disproportionate share of the world’s energy resources. As our energy consumption has risen, we have become increasingly dependent on Middle East oil. North America imports 53% of its oil from Middle East nations. With that region in turmoil, we all become vulnerable.

While our energy needs in Canada, and throughout North America will be tripled in a single lifetime, the supply of fossil fuels is finite. The effects of fossil fuels generating our electricity and fuelling our transportation vehicles are creating havoc with our health and our environment. Without taking action our future and the future of our children and grandchildren is in peril.

Today wind turbine technology is sophisticated and wind energy is viable and competitive both on a small and large scale. I believe we should all take advantage of both individual turbines and varying sizes of wind farms, including mega-wind farms that will match the energy output of our great hydropower complexes such as the Hoover Dam in the United States, the Aswan Dam in Egypt, the Itaipu Dam on the border of Brazil and Paraguay and Canada’s own James Bay project.

Clean, renewable energy will prove to be less expensive than fossil fuels and it will be profitable. We all face environmental crises that know no boundaries. What do we need to implement the available solutions to our climate change and pollution problems? We need the public and political will! Let’s not be part of the problem. Join me in bringing about the solutions!”

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## Wind Sounds

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The sounds emanating from the rotating blades of a wind turbine have been compared to the tranquil sounds of an ocean’s waves. Kevin Cameron, an environmental technologist who conducted sound measurement studies on the proposed site for the Windrush Energy project,

said the ‘turbines will not adversely affect the quiet that residents now enjoy.’ As part of the environmental assessment process, Cameron examined the site and studied the possible noise that would be created by the windmills and its effects on the surrounding community.

“Sound in the area of the proposed site on the Third Concession of Adjala is primarily from urban activities,” he said. “The increased sound from pressure creating sound due to the winds will not be an issue.” Cameron explains that the terrain will absorb any sound created by the turbines, sound that dissipates with distance. It has been estimated that the sound of the turbines when they slowly rotate at 10-15 RPM with the intermittent winds about 28 per cent of the time, will only carry for approximately 120 to 400 metres.

Ninety per cent of the sound created by the windmill is caused by the compression of the air as the blades pass the tower. According to the Canadian Wind Energy Association (CanWEA), noise issues associated with wind energy production have been eliminated, thanks to advances in turbine design and required setbacks from residences. The level of Adjala’s background noise has been measured at 40 decibels, about the same that would be measured in the average living room. As the sound of the wind increases, the decibel level of the background noise also rises.

The sound of windmills comes from the compression of the blade passing the tower, the windmill sound is slightly louder than the wind noise from half power to full power. Beyond that, the natural sound of the wind is louder than the windmill. Below that, sounds from the windmill are not audible. Sound measurements of a windmill at start speed in a wind of seven miles per hour (seven mph is equivalent to three metres per second) ranges from 45 decibels to a maximum at 27 miles per hour (equivalent to 12 metres per second) at 102 decibels. Cameron said the terrain of the Third Concession site, along with the mature trees, will absorb the sound. “Some evenings (during the study) there was a dead calm. There has to be a significant wind force for the turbines to operate. Even with the added pressure of adding a wind turbine to this site, it won’t have any impact other than that the wind itself has,” Cameron said.

In order for the turbines to operate, there must be a significant wind force and when the wind picks up, sound doesn’t carry as far. As some residents have raised concerns that the turbines would create noise pollution, Cameron said he doesn’t expect that they will “have any measurable impact.” When it comes to vibration noise, he said, modern technology of turbine blades have greatly improved. The impact of the noise created by the turbines of Huron Wind is reportedly nonexistent, as the sound has been compared to that of a normal conversation.

According to Huron Wind, “recent studies have indicated that the perception of noise from wind turbines has more to do with people’s attitude to the source of the noise rather than the noise itself.” While a small amount of noise is generated by the mechanical components of the turbine, to put it into perspective, the American Wind Energy Association compares a turbine that is 300 metres away to be no noisier than the reading room of a library.

*Reported by Tatjana Sulker*

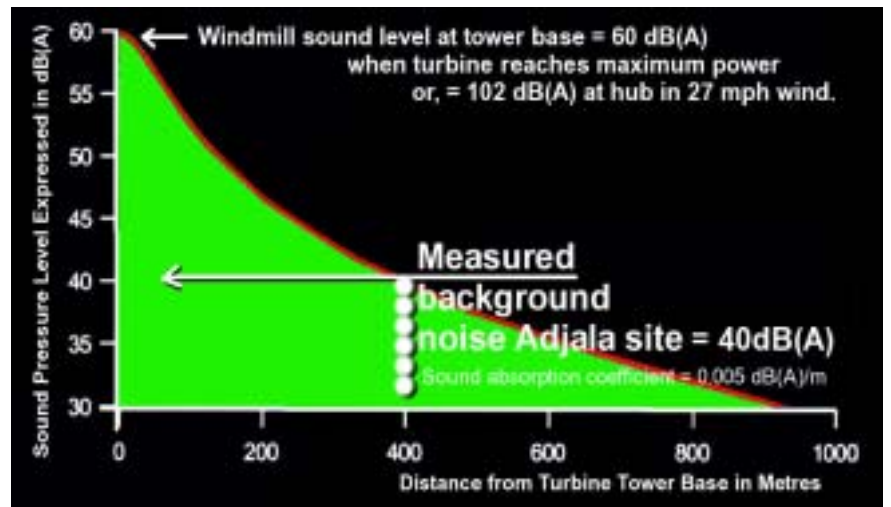


*Above, a horse grazes near wind turbines west of Pincher Creek, Alberta.*

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**“There’s a lot of wildlife here and it doesn’t seem to bother anyone - not even our two dogs.”**

*Rita Babineau,  
On living 400 metres from the Huron Wind farm.*



**To question the experts,  
come to an Open House Meeting  
at the Township of  
Adjala-Tosorontio Offices  
7855 Sideroad 30  
Tues., Nov 30th  
6:00pm - 8:00pm**

## Wind & Your Health

*By nutritionist & health researcher, Lois Ferguson*



- First published August 25, 2004 -

### Notice of Commencement Windrush Energy, Wind Turbine Project

Windrush Energy is proposing to construct from three to five wind power turbines for a maximum of 4.5MW on 121 acres of agricultural land it owns in the Township of Adjala-Tosorontio. As a requirement prior to construction, the project is subject to the Ministry of the Environment’s Environmental Screening Process for Electricity projects over 2.0MW. The project will be located on Parts 1 & 7 and Parts 2,6,8 & 9, East Half Lot 18, Concession 2, Township of Adjala-Tosorontio, County of Simcoe, Plan of Survey R51-31617. Following is the project’s address location & site map:

3042 Concession 3 Adjala  
RR1, Hockley Valley  
Palgrave, Ontario L0N 1P0



More information will be made available upon the public circulation of the Draft Environmental Assessment. If you would like more information about the project, please visit <http://www.windrush-energy.com> or wish to comment on the project, please contact:

John Nicholson  
Environmental Business Consultants  
Mississauga, Ontario L5G 1L3  
905-271-2845  
[john.nicholson@ebccanada.com](mailto:john.nicholson@ebccanada.com)

J.C. Pennie, c/o Land’s End Corporation  
3042 Concession Road 3 Adjala, RR1  
Palgrave, Ontario L0N 1P0  
905-729-0060  
[jcpennie@windrush-energy.com](mailto:jcpennie@windrush-energy.com)

#### Breathe Easy

Pure clean air is precious and wind power can help protect this valuable commodity. Wind energy is clean with absolutely no emissions, radiation or by-products to pollute the air. In contrast, power generated by burning fossil fuels emit pollutants that gather in the atmosphere, creating smog or radioactive by-products from nuclear stations such as water circulating through the reactor and then pumped back into the Great Lakes.

Smog is the chemical soup that is often visible as a yellow-brown haze that hangs over cities on calm summer days. Radioactivity is invisible and lasts more than 10,000 years.

The pollutants created by burning fossil fuels are carbon dioxide, particle pollution, carbon monoxide, sulphur dioxide and nitrogen dioxide. These air pollutants gather in the atmosphere, putting human health at risk.

#### Air pollution harms human health

“Evidence gathered over the last ten years has increased concerns about the health effects of air pollutants,” according to Health Canada. Smog has been linked with a broad spectrum of human health effects, injuring biological tissues and cells.

The principal health problems caused by air pollution are coughing, bronchitis, emphysema, heart disease and lung cancer. And the most vulnerable groups are infants, the elderly and those suffering from asthma.

In healthy people, reduced lung function during periods of exercise can be accompanied by symptoms such as tightness of the chest, pain and difficulty breathing, coughing and wheezing. This can make breathing difficult, especially for people who already suffer from asthma or bronchitis.

#### Asthma on the increase.

Statistics Canada data shows that the percentage of Canadians with asthma is on the rise. Females between 20 and 24 years of age showed an increase from 8.9 % of the population in 1994 to 13.7 % of the population in 2001.

The Lung Association notes there is a general trend of increased deaths and hospitalization from asthma. They say that asthma is the most common chronic respiratory disease of

children and it accounts for one quarter of school absenteeism.

#### Air quality and future health

A United Nations panel of scientists and over 160 governments agree that the burning of fossil fuels (coal, oil and gas) is causing our climate to change dramatically. Last year the government of the United Kingdom predicted that climate changes will expose many millions of people to the risks of hunger, drought and flooding.

Something needs to be done to protect the health of generations to come. Wind power is emission-free, requires no fuel to mine, transport, or store, no cooling water and it creates no wastes such as ash, sludge, toxic chemicals, waste heat or radioactivity.

Using wind power effectively and efficiently is a must for our health – now and for the future.

**Asthma  
in females  
between  
age 20-24  
increased from  
8.9% in 1994  
to 13.7%  
in 2001.**



*J.C. Pennie, Chairman of Land’s End Corporation believes that since we all use Ontario power, we all share a responsibility to clean it up for our children and grandchildren. He and his wife live year round on the Windrush Energy site.*

**This public information circular was independently prepared for Windrush Energy to inform area residents.**



Residents of the Third Concession Road are 80 metres below the western plateau which is not visible from the Windrush Energy entrance.

## Real Estate, Up or Down?

When potential home buyers have the option of hooking up to windmills as a source to power their homes, studies have shown the values of such properties have actually increased. A real estate broker in Huron-Kinloss Township, Mitch Twolan, who is also the deputy mayor of the Bruce County Township, said he doesn't expect property values in Ontario to decrease as a result of wind turbines. "I haven't seen an issue with windmills as far as real estate values go," he said. "As far as real estate, it's not affecting anyone right now - it's hard for people to visualize what they're going to look like. But my feeling is that it's not going to be an issue."

According to an analytical report known as the Renewable Energy Policy Project (REPP) which was completed in May 2003, the installation of wind developments has not negatively affected property values in the US. The report analyzed every wind development that came on line after 1998 with 10 megawatts of installed capacity or greater. For the analysis, the wind developments were considered to have a visual impact for the area within five miles of the turbines and are referred to as the view shed. For all projects that had sufficient data, the REPP conducted a statistical analysis to determine how property values changed over time in the view shed and in a close, comparable community.

The REPP study states "if property values had been harmed by being within the view shed of major wind developments, then we expected that to be shown in a majority of the projects analyzed. Instead, to the contrary, we found that for the great majority of projects the property values actually rose more quickly in the view shed after the projects came online than they did before. Finally, after projects came online, values increased faster in the view shed than they did in the comparable community. In all, we analyzed 10 projects in three cases; we looked at 30 individual analyses and found that in 26 of those, property values in the affected view shed performed better than the alternative."

Within the REPP study, Case One looked at changes in the view shed and comparable community for the entire period of the study. Of the ten projects analyzed, property values increased faster in the view shed in eight of the 10 projects. In the two projects where the view shed values increased slower than for the comparable community, special circumstances make the results questionable. Kern County, California is a site that has had wind development since 1981. Due to the existence of the old wind machines, the site did not provide a look at how the new wind turbines will affect property values. For Fayette County, Pennsylvania, the statistical explanation was very poor. For the view shed the statistical analysis could explain only two per cent of the total change in prices.

For example, two wind projects (Storm Lake I and II) in Buena Vista County, IA, found that over the study period from Jan. 1996 to Oct. 2002, the rate of change in average view shed sales price were 18 per cent greater than the rate of change of the comparable community. Properties in the view shed area increased by \$401.86 per month while properties outside of the view shed saw a \$341.87 monthly rate change.

Case Two looked at how property values changed in the view shed before and after the project came online. For the 10 projects analyzed, in 9 of the 10 cases, the property values increased faster after the project came

on line than they did before. Again, with Storm Lake I and II wind projects in Buena Vista County, IA, the rate of change in the average view shed sales prices were 70 per cent greater after the online date than the rate of change before the online data. A monthly change of \$370.52 in the view shed before installed wind development from Jan. 1996 to April 1999, increased to \$631.12 after the online project from May 1999 to Oct. 2002.

Case Three looked at how prices changed in both the view shed and the comparable region, after the projects came on line. Once again, for 9 of the 10 projects analyzed, the property values increased faster in the view shed than they did for the comparable community. The Buena Vista County analysis found the rate of change after the on line date in the average view shed sales price was 2.7 times greater than the rate of change of the comparable property. From May 1999 to Oct. 2002, properties in the view shed changed to \$631.12 per month, while comparable properties saw a rate change of \$234.84 per month.

REPP studies of the Madison wind development in Madison County, New York, found that properties in the view shed before the project was online from Jan. 1997 to Aug. 2000 saw a monthly rate change of \$129.32, but those same properties were hiked to \$1,332.24 per month after the project was up and running from Sept. 2000 to Jan. 2003 - making the rate of change

in the average view shed sales price after the online date 10.3 times greater than the rate of change before the wind development started operating. During the same time period, the properties in the view shed increased \$1,332.24, and comparable properties actually decreased by \$418.71.

While the township of Huron-Kinloss is currently in the stages of approving proposals for windmills to be located at several locations throughout the area, Mitch Twolan, who owns Lake Range Realty Ltd. said potential buyers have been unfazed by the news. "It doesn't seem to affect buyers," he said. "Some say they'd like to live by windmills. Some think they're majestic."

An Ontario Municipal Board hearing came about in Huron-Kinloss because, in its official plan, the township doubled the required setback distance for windmills from residences. This led to a local farmer taking the issue to the OMB in an attempt to lessen the setback requirements. The OMB ruled that the township's requirement of a 1,200 metre set back for wind development was unfounded and revised the official plan to state that "all sites shall comply with the regulations of the zoning bylaw," which requires a 600 metre set back from a developed area for windmill installations.

As for Windrush Energy's plan to erect up to five windmills in Adjala, Twolan said with his experience as a realtor, he believes the turbines will not adversely affect real estate sales. "The Hockley Valley area has beautiful landscape; beautiful properties and I think (windmills) will blend in." While windmills are not new, with 12,000 in Europe and large installations in Alberta and Quebec, Twolan said he thinks the future of wind turbines in Ontario is something people must get used to. "It's change and people don't like change," he said. "but, environmentally, let's face it, its better."

Reported by Tatjana Sulker

**Immediate neighbours of the Windrush Energy site can join a cost saving co-op to hook up.**

## Wind a Part of Our Lives ...

Has been prepared as a public information document by Windrush Energy to address concerns expressed by residents in the Adjala-Tosorontio area. If your are in favour of clean renewable energy being created within our community, please express your voice:

YES, I support the Windrush HockleyValley project  Please send me a Windmill pin.

TO: Windrush-Energy, 3042 Concession 3 Adjala, RRI, Palgrave, Ontario L0N 1P0

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ Code: \_\_\_\_\_

Phone: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_

