



Des Sources Wind Project *Frequently Asked Questions*

Updated Fall 2024

Over the last year, BluEarth has continued its efforts to develop the Des Sources Wind Project. We are currently evaluating the study area and reviewing and optimizing the project design presented last year. The project will continue to evolve, and updates will be presented throughout its development.

This latest update to our Frequently Asked Questions section includes additional questions related to the project.

If you have any further questions or concerns, please do not hesitate to contact us directly at projects@bluearth.ca, visit our Val-des-Sources office in La Mine co-working space, or call us at 819-866-0056. You can also visit the project website: <https://dessourceswind.ca/>

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Des Sources Wind Project

Who is BluEarth ?

BluEarth Renewables Inc. is a Canadian independent power producer, founded in 2010, that develops, builds, owns, operates and acquires wind, hydroelectric, solar and energy storage facilities across North America. Our technologically and geographically diversified project portfolio totals more than 1 GW (gross) in operation, under construction and pre-construction, and more than 7 GW under development.

For all our projects, including the Des Sources Wind Project, we have a long-term vision and aim to establish ourselves in a sustainable manner and have a positive impact on the communities in which we develop projects. To achieve this, we rely on the consultation and collaboration of all stakeholders in the development of our projects and in our decision-making.

What is Des Sources Wind Project?

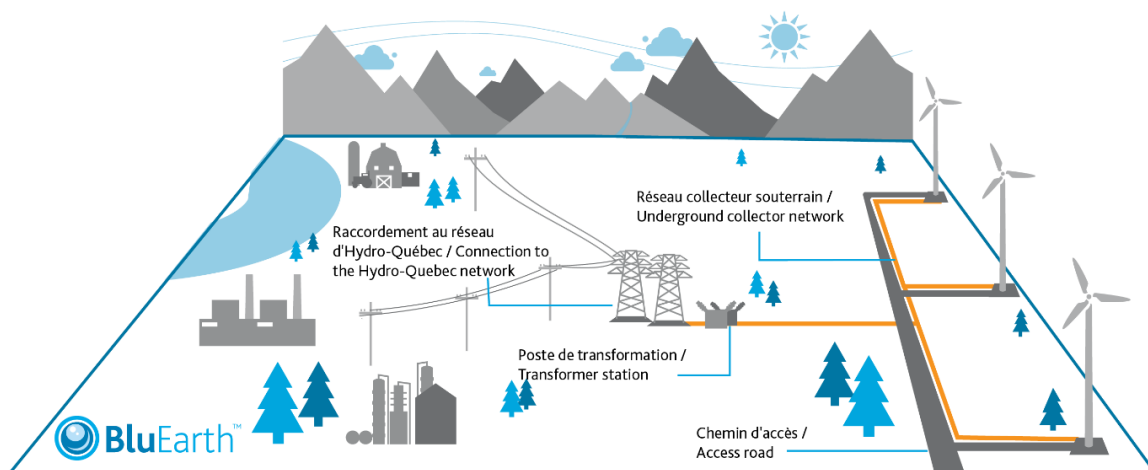
Des Sources Wind Project is a 150 MW proposed wind farm that would generate renewable power on private land in the town of Danville and the municipalities of Saint-Georges-de-Windsor and Wotton, all within the MRC des Sources and the ancestral territory of the W8banaki Nation, the Ndakina.

The project is being developed by BluEarth Renewables Inc, a Canadian renewable energy producer, and anticipates a 50% community ownership, reflecting our commitment to close collaboration with local communities.

What are the components of a wind facility?

The project includes the installation of turbines, a substation, an underground collector system and access roads. Project construction will also include road improvements.

The diagram below shows the various components of a wind farm.



How many wind turbines would the project have?

Des Sources Wind Project is planning between 26 and 35 wind turbines on private land.

How was the project study area determined?

The study area for Des Sources Wind Project meets three winning conditions for the development of a wind project:

- Good wind resources;
- Possibility of connection to the Hydro-Québec grid (proximity and integration capacity);
- Community interest in developing the project.

The study area was created to adapt to the various constraints and implementation standards, particularly bylaws regarding proximity to residences and the avoidance of protected areas. The study area will also evolve following pre-feasibility studies and public consultations.

Will the MRC des Sources and the W8banaki community be partners in the project?

The project anticipates a 50% community involvement, reflecting BluEarth's commitment to close collaboration with local communities.

At the moment, no agreements have been signed with potential community partners, the MRC des Sources and the W8banaki community. These potential partnerships will be determined later in the project's development and the decision to participate in the project will be taken by the community partners.

Will a referendum be held on the project?

The organization of a referendum is a process that falls within the municipal democratic apparatus and its elected officials. We closely follow the actions taken by the MRC and the municipalities and commit to respecting the decisions and regulations in force in the territory.

We invite you to learn about the information and consultation process launched by the MRC des Sources in connection with the energy transition, which includes the development of wind power in the territory. For more information about this process, you can consult the MRC's press release ([press release](#)) as well as the page on their website dedicated to the potential development of wind power ([web page](#)). We invite you to participate in this process to express your opinion and any questions/concerns you may have.

Will the project have insurance coverage?

Yes, if the project is selected as part of a Hydro-Québec request for proposals (RFP), we will take out liability insurance from the construction phase onwards, for the entire life of the project. This insurance would provide coverage in the event of property damage or injury to others caused by the project.

At which stage of development is the project?

The project is in the pre-feasibility and consultation phase. We are evaluating the study area and revising and optimizing the project design presented in 2023.

We are currently awaiting the launch of Hydro-Québec's next request for proposals (RFP), as well as the outcomes of the MRC des Sources' information and consultation process. We will then organize public consultation sessions ahead of an RFP. Public consultations will help us modify the project to meet the community's concerns, while respecting the project's technical constraints.

When do you expect to have a contract to build the wind project?

The project must first be submitted to Hydro-Québec. If the project is selected, a negotiation period to conclude the power purchase agreement will be set up between Hydro-Québec and the project partners (BluEarth and the potential community partners: MRC des Sources and W8banaki community). The date of the next request for proposals (RFP) has not yet been announced.

When would the construction of the project begin?

If the project is selected in a future request for proposals (RFP) from Hydro-Québec, construction could begin as soon as 2027 or 2028.

When is the project scheduled to be operational?

The project could be operational in December 2028 at the earliest, however the project construction schedule is dependent on when we sign a power Purchase Agreement with Hydro Quebec.

How long will the project be in operation?

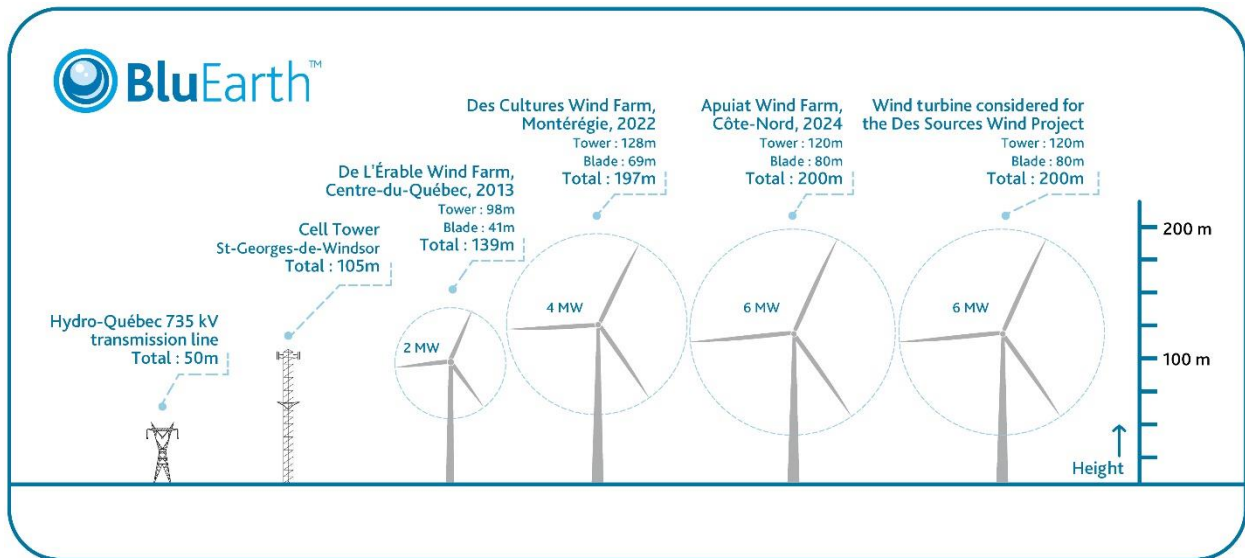
Hydro-Québec's procurement generally targets power purchase agreements with terms ranging from 25 to 30 years. For Des Sources Wind Project, we are planning a 30-year operating period.

Wind Turbines

What would be the size of the wind turbines?

The precise model of the wind turbines will be determined after signing a power purchase agreement with Hydro-Québec. At this stage, it is estimated that the height of the wind turbine tower would be about 120 metres. Adding the blade in the vertical position, the height would reach up to 200 metres. Each wind turbine could generate around 6 MW.

For comparison purposes, the diagram below shows the height of turbines presented in Quebec, along with other buildings or structures.



Why is the project planning to use different wind turbine models from existing projects in the region?

Wind turbine manufacturers are continually improving their technologies, and phase out older models in favor of newer ones. These models have a higher production capacity and longer blades. In the case of the Des Sources Wind Project, the models currently under consideration are approximately 65m taller than those used in the wind facilities constructed in the early 2010's in Quebec and can generate 3 times as much energy. This would mean installing one third as many turbines to achieve the same production capacity, as well as reducing the project's footprint and visual impact. For example, to generate 6MW with an older model turbine, you would need to install 3 turbines, today it would only require 1.

What is the footprint of a wind turbine?

During the operating phase, the footprint occupied by a wind turbine is very limited, approximately 0.02 hectares (ha), or just under 0.05 acres (2153 square feet or 200 square metres).

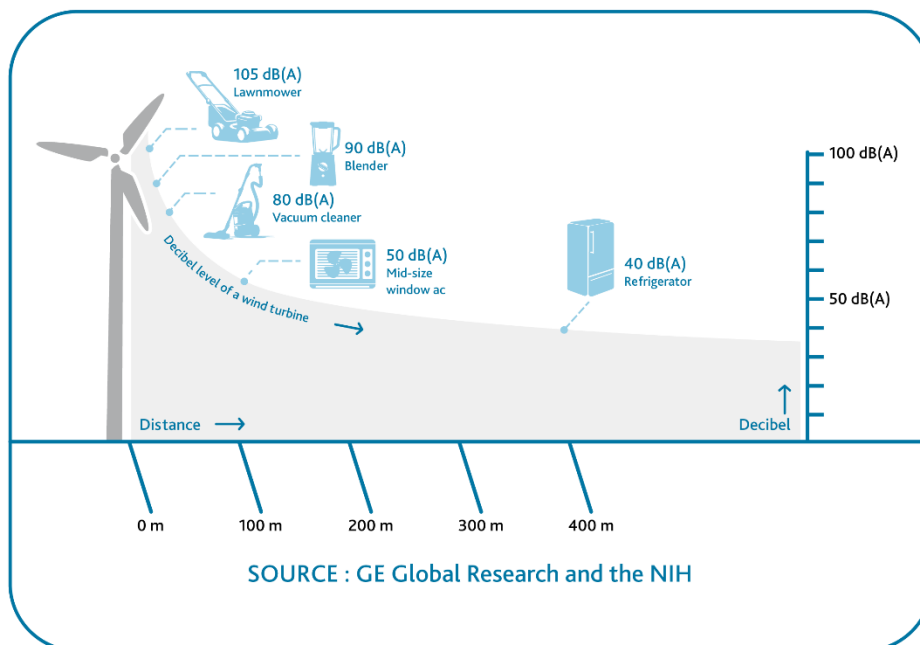
During the construction phase, the footprint required for the assembly of the wind turbine is 1 hectare (ha), or approximately 2.48 acres (108,000 square feet or 10,000 square metres). Once construction is complete the temporary workspace can be returned to it's original use (ie agriculture)

What would be the size and depth of the foundation for the turbines used in the project?

The size and depth of the foundation for turbines will depend on various factors that have yet to be determined, such as the turbine model and the geotechnical conditions at each location (soil composition, stability, load-bearing capacity, etc.). However, modern turbine models generally require an approximate depth of 3.5 to 5 metres and around 500 to 600 cubic metres of concrete.

Do wind turbines make a noise?

Wind turbines emit a noise that varies and diminishes rapidly with distance. This noise depends on a variety of factors, such as the turbine model, project configuration, wind conditions, land cover (presence of forests, buildings, etc.) and surrounding topography. The below graphic illustrates how the noise level varies based on the distance from a turbine, as well as how the noise level compares with various other objects.



The Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) sets a noise limit of 40 decibels (dBA) outside each residence across the entire site of a project, which is equivalent to the sound of a refrigerator. Throughout the development of the project, sound impact modelling will be conducted to ensure that the appropriate distance from residences is maintained and to guarantee a noise level below 40 dBA outside existing residence. These impact studies will include an assessment of the project's sound impact based on detailed noise modelling and a study of the existing sound climate. Furthermore, a noise assessment will also be completed once the project is installed to verify the project is compliant with MELCCFP limits.

Does the wind turbine model under consideration have more noise impact than a smaller model?

No, the limit of 40 decibels (dBA) outside each residence across the entire site of the project established by the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) must be respected, regardless of turbine model or size.

Do wind turbines produce low-frequency sound?

Low-frequency sounds (between 0 Hz and 250 Hz), such as infrasound (below 20 Hz), are permanently present in the environment and are emitted by various elements, whether natural, such as wind or thunder, or due to human activities, such as vehicles, domestic appliances, industrial equipment or wind facilities. However, the human ear is less sensitive to low-frequency sounds, and they are less likely to represent a noise nuisance.

Wind turbines emit low-frequency sounds, but research by organizations such as the Institut national de santé publique du Québec (INSPQ) and the World Health Organization (WHO) has established that they are not a source of disturbance and have no impact on health.

For Further Information

The INSPQ carried out an update of its synthesis of knowledge concerning the health effects of wind turbine noise, concluding that the level of exposure to wind turbine noise may cause annoyance to a small portion of the population exposed to noise levels above 45 dBA. Regarding low-frequency sounds, the INSPQ notes that the publications reviewed in their knowledge synthesis show no association between exposure to low frequencies produced by wind turbines and disturbance. The study can be consulted (in French) [here](#).

Moreover, the World Health Organization (WHO) has not identified any studies linking low-frequency sound or infrasound generated by wind turbines to health effects.

How is sound impact measured?

Sound impact modeling is calculated by experienced acoustic engineers using specialized software and complies with standard established by the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP). These models take into account a variety of elements such as the wind turbine model, project configuration, winds, temperature, humidity, land cover (presence of forests, buildings, etc.) and surrounding topography. This modelling ensures that an appropriate distance from residences is maintained to guarantee a noise level of less than 40 dBA outside each residence.

Do wind velocity and direction have an impact on the transmission of wind turbine noise?

Wind speed and direction significantly influence the transmission of noise emitted by wind turbines. The wind can carry the noise further in the wind's direction. Variations in temperature and wind speed with altitude can also alter the trajectory of sound waves. All these factors are taken into consideration in the evaluation of the project's study area to ensure that the noise level remains below 40 dBA outside each residence.

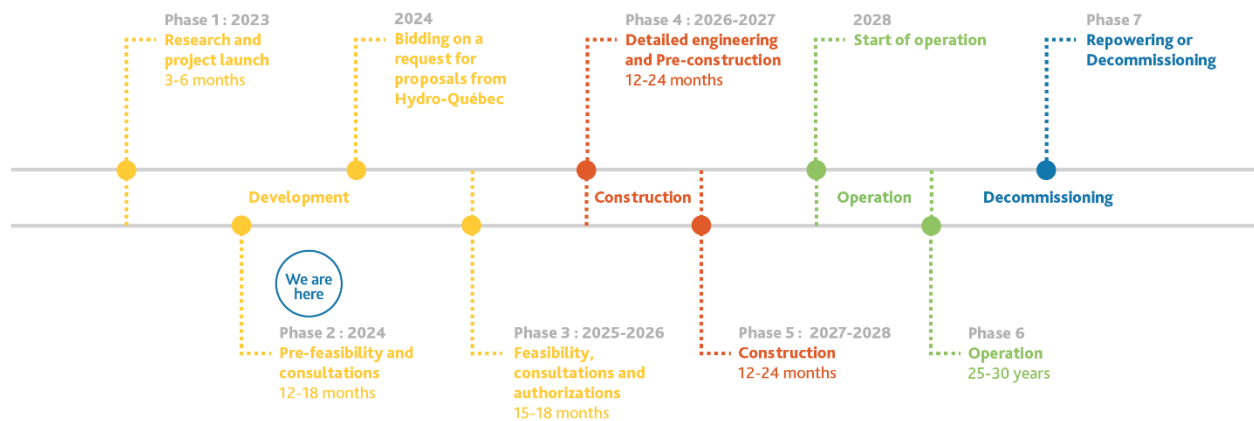
How long does it take for wind turbines to become carbon neutral?

Quebec's Chief Scientist indicates that a wind farm takes around 12 to 18 months to offset the emissions associated with its manufacture and construction ([Source](#)). This statement is based on a 2014 study by two British researchers. The article can be viewed [here](#).

Project Development

What are the development stages of the wind project?

The development of any wind project involves several stages over several years. The timeline below shows a preliminary schedule of the major stages in the development of Des Sources Wind Project. The project is currently in the pre-feasibility and consultation phase.



*This preliminary timeline may change depending on a future Hydro-Québec request for proposals.

1. Research and project launch (3 to 6 months)

The first phase is to identify potential sites that meet the three conditions required for the development of a wind project: good wind resources, the possibility of connection to the Hydro-Québec grid (proximity and integration capacity), and a community interest in the development of a wind project. During this phase initial consultations are held with municipal authorities and landowners to understand their interest in developing a potential wind project. Once a potential site has been confirmed, the pre-feasibility and consultations phase begins.

2. Pre-feasibility and consultations (12 to 18 months)

The second phase is to conduct technical pre-feasibility studies, including preliminary studies on wildlife and the environment, measurement of the site's wind potential, and assessment of the project's potential connection to the Hydro-Québec grid. More extensive consultations are held with municipal authorities and landowners and local stakeholders are brought into the consultation. This stage usually concludes with the submission of the project to Hydro-Québec. If the project is selected, the phase of feasibility, consultation and authorizations begins.

3. Feasibility, consultations and authorizations (15 to 18 months)

The third phase is to conduct detailed, onsite technical feasibility studies and new consultation phases with the objective of obtaining the authorizations required to develop the project. The feasibility studies include the environmental impact assessment, which will analyze the project's potential impacts on flora and fauna, the noise environment, recreational and tourism activities, and the landscape. These feasibility studies will involve further

information and consultation sessions led by the project developer, as well as the process conducted by the Bureau d'audiences publiques en environnement (BAPE). These consultations usually lead to the granting of authorizations from the Commission de protection du territoire agricole du Québec (CPTAQ) various provincial Ministries, which allow the project's pre-construction phase to begin.

4. Detailed engineering and Pre-construction (12 to 24 months)

The fourth phase involves completing the detailed engineering for the project and obtaining the necessary permits for construction. In this phase, the developer also completes land rights, formalizes partnerships with community partners, proceeds with the purchase of turbines and plans for construction work.

5. Construction (12 to 24 months)

The fifth phase covers the site and access road development, transport and installation of the turbines, and connection of the wind facility to the Hydro-Québec grid. Once construction is complete, the wind facility enters the operational phase.

6. Operation (30 years and more)

The sixth phase involves the operation of the wind facility. Throughout this period, equipment maintenance is carried out by the project developer, and profits are distributed among the community partners.

7. Recontracting, Repowering or Decommissioning

When the operating agreement with Hydro-Québec comes to an end, the operator can extend the contract and continue to operate the wind facility. Once a wind facility reaches the end of its life cycle, consideration is given to either decommission or repower the facility. Repowering means to replace or upgrade the equipment with more advanced and efficient technology. This would be completed at the facility owner's (BluEarth's) expense and would result in an additional 10 to 30 years of useful life for the equipment. Decommissioning means to cease production and dismantle the facility. In many cases, the metal and electrical parts can be recycled or sold as scrap due to their high value. If a new agreement is not signed, the operator must decommission the wind turbines at their own expense within 12 months of the end of the contract.

[What is the regulatory approval process for a wind project?](#)

The approval process for wind projects in Quebec is regulated by the Environmental Quality Act. This process begins as soon as Hydro-Québec selects a project and includes several stages during which communities are consulted. The process has three components:

1. Environmental impact assessment

The first stage begins with the environmental impact assessment and review procedure. Following the filing of a written project notice with the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP), the Minister issues guidelines that mandates the requirements to be addressed in the environmental impact statement, including the project's potential impacts on flora and fauna, the noise environment, human, setting, recreational and tourism activities, and the landscape. This resulting environmental impact statement is then analyzed by the MELCCFP. The public consultation phase is administered by the Bureau d'audiences publiques en environnement (BAPE) and environmental impact statement documents area made public. The BAPE provides a report to the Minister based on public inquiries and comments on the project. This process ends with the government's decision on whether to authorize the project.

2. CPTAQ authorizations

If a project is located on agricultural land, the developer must obtain authorizations from the Commission de protection du territoire agricole du Québec (CPTAQ). At this stage, the process focuses on protecting agricultural land and includes community consultations.

3. Certificate of authorization and other permits

The third stage involves obtaining a certificate of authorization from the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) prior to construction and operation of the wind farm. Additional permits are issued by the Ministère des Transports et de la Mobilité durable (MTMD), NAV CANADA, and Transport Canada.

Have any impact studies been carried out?

In April 2024, BluEarth initiated the preliminary studies on birds of prey by conducting a nest inventory covering a radius of 20 kilometers around the study area. This inventory was completed by the environmental consulting firm ACTIVA Environnement, and found no nests belonging to birds of prey. The inventory was carried out by helicopter, in accordance with the *Protocole d'inventaires d'oiseaux de proie dans le cadre de projets d'implantation d'éoliennes au Québec*, established by the Government of Québec. Further steps toward the full impact study will be carried out if the project is selected by Hydro-Québec in a future request for proposals (RFP).

How will citizens be informed and consulted on the project's development?

BluEarth develops projects in collaboration with the community. For information on the project, you can refer to the project website www.dessourceswind.ca. 3-4 times per year, we publish a newsletter with recent updates on the project's development. To subscribe to the newsletter please email us at projects@bluearth.ca and provide your email or mailing address.

Our team is available by phone or email to answer any questions you may have. You can also make an appointment with members of our team to discuss the development of the project by contacting us by e-mail (projects@bluearth.ca). We will be continuing to organize public consultation in the community throughout development, to answer citizens' questions and consult them on the project. Public consultations will help us modify the project to meet the community's concerns, while respecting the project's technical constraints.

Will it be possible to modify the project?

Yes, the project will evolve and be modified to address community concerns to the extent technically feasible respecting local bylaw and regulatory requirements. To do so, we will work with the various groups and stakeholders to identify areas for improvement and make changes to the project.

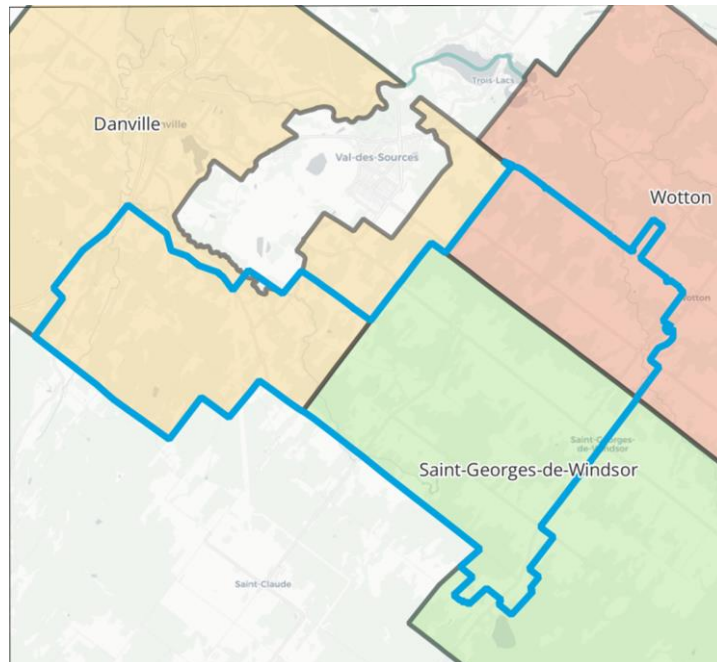
Does the selection of the project by Hydro-Québec means that the project will go ahead?

While Hydro-Québec's selection of a project is an important first step, several other steps must be completed before the project is authorized. These include completing the environmental assessment process and the Bureau d'audiences publiques en environnement (BAPE) process, as well as obtaining various other authorizations and permits, such as those from the Commission de protection du territoire agricole du Québec (CPTAQ) and the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP).

Where would the wind turbines be located?

The exact locations of the turbines have not yet been determined. We are continuing to assess the project's study area based on various implementation constraints and standards, such as distances from the urban perimeter, residences and infrastructure (roads, paths, power lines, etc.). We must also take into account environmental constraints, such as wildlife habitats, wetlands and watercourses. Landowner consent is needed to develop on private land and our aim is to minimize impacts on the land and on landowners. In addition, we are continuing to evaluate the study area with the results of technical studies (wind measurements, wind turbine wake effects, Hydro-Québec exploratory studies, geotechnical data, wind turbine model availability, roughness and topography of the territory, etc.).

The project will then evolve, and updates will be presented throughout its development. The project study area currently under consideration is presented below.



What constraints have been considered in the project's development?

Many factors are considered in the project's development and in the identification of potential locations for the turbines. The various constraints currently considered are as follows:

- Urban perimeter: 1,000 metres
- Residences outside the urban perimeter: 600 metres for the municipality of Wotton and 500 metres for the rest of the MRC des Sources
- Protected buildings (campgrounds, golf courses, outdoor centres, municipal parks, tourist accommodations, etc.): 500 metres
- Territories of ecological and landscape interest (natural conservation areas, exceptional forest ecosystems, wetlands of regional interest): prohibited on these territories
- Resort and rural housing: 500 metres
- Unstructured islands: 500 metres
- Other Infrastructure (roads, power lines, Hydro-Québec substations): from 200 to 300 metres depending on specific infrastructure type.

As part of the public consultation we will be organizing, other elements and constraints may be added and considered in the project's development.

How far would the turbines be of homes and buildings?

The current regulations specify a minimum distance of 500 metres between the base of a wind turbine and a residence or building in the MRC des Sources, and 600 metres in the municipality of Wotton. The regulations also stipulate a distance of 1,000 metres from the urban perimeter. In addition, the wind turbines will be positioned to respect MELCCFP noise limits, which means that the minimum required distance may be more than 500 or 600 metres from residences.

For Further Information

The World Health Organization (WHO) does not recommend a maximum distance from the location of wind turbines. Instead, the WHO recommends a limit in terms of maximum noise level. Indeed, the WHO published guidelines on housing and health in 2018. For wind turbines, this guide recommends a maximum noise level of 45 decibels (dBA) for residences. The guide can be consulted [here](#).

The INSPQ also recommends that the limit should be set in terms of sound level, rather than distance. Indeed, in 2023, the INSPQ carried out an update of its synthesis of knowledge concerning the health effects of wind turbine noise, and suggests following the WHO recommendation of a maximum exposure limit of 45 decibels (dBA). The synthesis concludes that the level of exposure to wind turbine noise may cause annoyance to a small portion of the population exposed to noise levels above 45 dBA. In view of these results, the INSPQ recommends that projects implement preventive measures to limit exposure to wind turbine noise. The study can be consulted (in French) [here](#).

The Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) sets a noise limit of 40 decibels (dBA) outside each residence across the entire site of a project, which is equivalent to the sound of a refrigerator. For comparison, the outdoor unit of a 30,000 BTU wall-mounted heat pump produces noise of about 54 to 58 dBA ([source](#)).

Have you started signing option contracts?

Signing option contracts is an essential step in submitting a project to a request for proposals (RFP) from Hydro-Québec. BluEarth began signing option contracts in June 2023. Since then, we have continued to meet with landowners and sign option contracts.

What compensation do landowners receive?

The [Cadre de référence relatif à l'aménagement de parcs éoliens en milieux agricoles et forestier](#), developed by the Union des producteurs agricoles (UPA) and Hydro-Québec, defines the compensation amounts to be paid to landowners hosting wind facility-related infrastructure on their land, and to those who have signed option contracts in the project development process. The amounts depend on a number of factors, including the size of the land under option, the type of land, the type of infrastructure installed on the land, and the duration.

Would it be more cost-effective to develop the project on public land?

Developing a project on public land doesn't necessarily guarantee lower costs than developing it on private land. In fact, most of the cost of a wind power project is attributed to the turbines, their installation and transportation. So, when a project is located in a remote area, the cost of transporting components, equipment, materials and personnel to the site increases. Moreover, developing a project far from areas of high consumption entails additional costs for setting up a transmission grid, as well as generating greater electrical losses.

Is the trailer with the Western Wind logo used for the Des Sources Wind Project?

Yes, the trailer with the Western Wind logo is being used for the Des Sources Wind Project. It contains a LiDAR, which is a laser-based remote sensing tool for measuring wind. The project is currently in the pre-feasibility and consultation phase, which includes the installation of wind measurement equipment, including LiDAR. The equipment is self-contained, with the power supply and telecommunications inside. This means there's no need to connect it to utilities. Moreover, the trailer is installed in accordance with the [Cadre de référence relatif à l'aménagement de parcs éoliens en milieux agricoles et forestier](#).

Construction Process

At which time of the day would the construction work take place?

Our objective is to carry out most construction activities during daylight hours; however, some activities may require work to be carried out at night. For example, the foundations of the wind turbines require a continuous concrete pour that can last from 8 to 12 hours. Typically, we try to start work early in the morning, but delays may require us to continue into the night at certain times. Also, the installation of wind turbines is subject to certain wind and temperature restrictions, which sometimes require us to work at night, when winds are generally weaker. Construction work would be carried out in compliance with all applicable regulations.

Will new roads have to be built to access the wind turbines?

The project will give priority to the use of existing roads, but it is possible that other short sections will have to be built to provide access to the turbines. In this situation, we would keep the impact on farmland to a minimum by respecting the [Cadre de référence relatif à l'aménagement de parcs éoliens en milieux agricole et forestier](#). The framework was developed by the Union des producteurs agricoles (UPA) and Hydro-Québec. It sets out various best practices, procedures, compensation methods and other elements designed to minimize the impact of wind project development, operation and decommissioning on agricultural land in Quebec.

Who would be responsible for restoring the roads after the project is built?

BluEarth would be responsible for restoring the roads after the construction of the project. Prior to construction, BluEarth would carry out a detailed condition assessment of the roads to ensure that they would be restored to the same condition as when construction began. BluEarth would restore all roads to their original condition after construction, in consultation with the municipalities. In the case where a municipality has road improvement projects, we would work closely with them to ensure that the work is coordinated.

Operation and Maintenance

Who would be responsible for the maintenance of the wind project?

The facility's operator, BluEarth, would be responsible for the maintenance throughout operation.

Who would be responsible for the maintenance of the access roads to the wind turbines?

The facility's operator, BluEarth, would be responsible for the maintenance of access roads throughout the operation.

How many jobs will the project create?

We estimate that the project would create 160 to 190 temporary jobs during the construction phase and 6 to 10 stable well-paid permanent positions for wind facility maintenance and operation.

Recontracting, Repowering or Decommissioning

What happens at the end of the operating contract?

When the operating agreement with Hydro-Québec comes to an end, the operator can extend the contract and continue to operate the wind facility. Once a wind facility reaches the end of its life cycle, consideration is given to either decommission or repower the facility. Repowering means to replace or upgrade the equipment with more advanced and efficient technology. This would be completed at the facility owner's (BluEarth's) expense and would

result in an additional 10 to 30 years of useful life for the equipment. Decommissioning means to cease production and dismantle the facility.

If a new agreement is not signed, the operator must decommission the wind turbines at their own expense within 12 months of the end of the contract.

Who would be responsible for the facility's decommissioning?

When the operation contract of a wind facility expires, the owner must dismantle the wind turbines at its own expense within 12 months following the end of the contract. In the case of the Des Sources Wind Project, the project company, which would consist of BluEarth and potential community partners, would be responsible for the dismantling.

It should be noted that Hydro-Québec's request for proposals (RFP) and power purchase agreements include an obligation to dismantle a wind farm. This obligation comes with financial guarantees that the wind farm or its owners must set up 5 years before the end of its contract with Hydro-Québec to ensure that the dismantling is carried out according to best practices.

BluEarth is committed to dismantling all elements of the project and restoring all affected areas at the end of the project's lifespan.

Why are financial guarantees only set up 5 years before the end of the contract with Hydro-Québec?

Expenses associated with the development and construction of a wind project are high at the beginning of the project. To ensure the project's profitability, financial guarantees are put in place at a later stage in the project's life so that this cost can be funded through the project's revenue. This approach reduces the cost to produce the power and maximizes the economic benefits for the community partners throughout the project's development.

When a wind facility is decommissioned, are the turbines reused or recycled?

Yes, around 85-90% of the components that form a turbine can currently be reused or recycled, including the steel tower, copper cables and electrical equipment. The only elements that cannot currently be recycled are the blades. However, significant research and investment have gone into developing commercially viable recycling solutions for wind turbine blades. It is therefore expected that, by the time the project is decommissioned, wind turbine blades can be recycled.

Context and Hydro-Québec

Why does Quebec need to produce more electricity?

As part of its efforts to fight climate change, Quebec has committed to achieving carbon neutrality by 2050, meaning that the government intends to reduce or offset all its greenhouse gas (GHG) emissions. To achieve this, the government wants to replace the consumption of fossil fuels, such as oil, with renewable energies, such as hydroelectricity, wind power and solar power. With this objective in mind, Hydro-Québec will need to generate more electricity to meet future demand. To achieve this, Hydro-Québec is counting on wind power generation in particular, and is inviting renewable energy developers to submit projects in response to a request for proposals (RFP).

For more information, visit [Hydro-Québec's website](#).

How does a Hydro-Québec wind requests for proposals work?

To meet Quebec's growing energy needs, Hydro-Québec aims to acquire electricity from renewable sources, such as wind power, through long-term supply contracts for electricity. Developers of renewable energy projects are invited to submit new wind power projects that can be connected to its grid, in certain identified zones. Contracts are awarded on a combination of price, technical merits of the project and social benefits including community & indigenous participation, Quebec content and social acceptability.

For more information, visit [Hydro-Québec's website](#).

Will Hydro-Québec's new wind power development strategy have an impact on the project's development?

In May 2024, Hydro-Québec presented its [Wind Power Development Strategy](#). With this strategy, Hydro-Québec intends to focus on large-scale projects, up to over 1,000 MW, in structuring zones and in partnership with First Nations and municipalities. For small-scale projects, such as the Des Sources Wind Project, Hydro-Québec intends to continue to proceed by request for proposals. The development of the Des Sources Wind Project is therefore unlikely to be altered by Hydro-Québec's new strategy.

What would the energy generated by the wind project be used for?

The electricity generated by Des Sources Wind Project would be sold entirely to Hydro-Québec. The electricity could be used to meet the electricity needs of Hydro-Québec's domestic, commercial and industrial customers, mainly in the high-consumption areas of southern Quebec.

Potential Project Benefits

What are the potential benefits of the project?

Des Sources Wind Project has the potential to generate significant economic and social benefits for the entire community:

- **Municipalities**
 - Guaranteed income of \$6,227 per MW installed payment which equates to over \$930,000 yearly for 30 years on a 150 MW project. The payment is indexed throughout the lifetime of the contract.
- **Community partner**
 - Equal share in profits from the wind project. between project partners, BluEarth and potential community partners (MRC des Sources and W8banaki Nation). The decision to participate in the project will be taken by the community partners.
- **Landowners**
 - Compensation for landowners hosting wind farm-related infrastructure on their land, and those who signed options in the project development process.
 - These compensations are higher or equal than those in the Cadre de référence relatif à l'aménagement de parcs éoliens en milieux agricole et forestier, and would represent compensations totalling approximately \$1M/year over the life of the project.
- **Local job creation**
 - 160-190 temporary jobs during the construction phase
 - 6-10 stable, well-paid permanent positions for wind facility maintenance and operation
- **Collaboration with local businesses**
 - Support for local economy and collaboration with regional companies for products and services throughout project development, , construction and operation.
- **Community Engagement**

- We reinvest profits into the community by supporting local projects and initiatives, demonstrating our commitment to community development.
- We also provide educational programs to promote understanding of renewable energy and through the BluEarth Scholarship Program, we award 3-8 scholarship annually to post secondary students, with a preference towards students in the communities where we operate.
- **Quebec's energy transition**
 - Local production of renewable energy that contributes directly to Quebec's decarbonization objectives and greenhouse gas (GHG) reduction targets.

How will you maximize local content for the project?

We are committed to generating economic benefits for Quebec and the MRC des Sources region. To this end, we are committed to supporting the local economy and working with regional businesses throughout the project development process.

From the beginning of development of the Des Sources project, we have been working with Quebec based businesses supporting the project on development, environmental and regulatory, communications, engineering, construction, and procurement. We have opened an office in Val-des-Sources and joined the chamber of commerce to foster relationships with local suppliers as the project advances.

Potential Project Impacts

Do turbines have an impact on human health and sleep?

Human health remains one of our priorities, and the Des Sources project will be developed in such a way as to meet or exceed all regulations and guidelines designed to protect human health. Research by organizations such as the Institut national de santé publique du Québec (INSPQ) and the World Health Organization (WHO) has established that below an exposure limit of 45 decibels (dBA) for residences wind turbines do not pose a risk to human health. The noise limit set by the Quebec government is 40 dBA, which is lower than the recommendations of the INSPQ and the WHO, ensures that the Des Sources project would not have any negative effects on health and sleep.

For more information:

In 2018, the WHO published guidelines on housing and health, recommending a maximum noise level of 45 decibels (dBA) for residences from wind turbines. Below this limit, the WHO does not recognize any adverse health effects. The guide can be consulted [here](#).

The INSPQ also recommends that limits should be set in terms of sound level, rather than distance. Indeed, in 2023, the INSPQ carried out an update of its synthesis of knowledge concerning the health effects of wind turbine noise and suggests following the WHO recommendation of a maximum exposure limit of 45 decibels (dBA). The synthesis concludes that the level of exposure to wind turbine noise may cause annoyance to a small portion of the population exposed to noise levels above 45 dBA. Regarding the impact on sleep, the INSPQ synthesis found no impact on sleep below the exposure threshold of 45 dBA. In view of these results, the INSPQ recommends that projects implement preventive measures to limit exposure to wind turbine noise. The study can be consulted (in French) [here](#).

What would be the visual impact of a wind project?

As part of the public consultations for the project, BluEarth will present updates of the project's visual simulations, which will enable visualization of the layout of the wind turbines in the landscape. It will then be possible to discuss and collaborate in order to make modifications to the project to reduce potential visual impacts. BluEarth presented preliminary visual simulations at the 2023 open houses which can be found [here](#) (slide 20).

The Impact Study must include a detailed assessment of the project's visual impact. The public will have the opportunity to comment on the siting of the turbines within the visual landscape during the public consultation process lead by the Bureau d'audiences publiques sur l'environnement (BAPE). Where appropriate, modifications will be considered for the layout of the turbines.

Would turbines cause shadow flicker?

A shadow flicker from a wind turbine can occur when the sky is clear, and the sun is low on the horizon. Under these conditions, it can cast a shadow on the surrounding ground when the blades pass in front of the sun. The location of the wind turbine's shadow varies throughout the day and the season and usually falls in a single place for only a few minutes.

Therefore, it is possible for a wind turbine to produce a shadow flicker under certain conditions. However, several measures can reduce the intensity and likelihood of this effect being visible from residences. Notably, strobe studies on each wind turbine would have to be carried out as part of the environmental impact study, and would be submitted for review to the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP). The MELCCFP considers that a maximum exposure of 30 hours per year and 30 minutes per day represents the best practice to adopt.

Would a wind project generate electromagnetic fields or stray voltages?

The wind project's collector network would be grounded and buried underground, and so would emit a magnetic field much smaller than that of the existing electrical distribution network.

For more information on electromagnetic fields, please visit [Hydro-Québec's website](#).

Also, the project would not emit stray voltages as the cables would be inside protective sheaths and buried. A stray voltage is a well-documented and much-discussed phenomenon in farming communities, especially those with many dairy farmers. To learn more about this phenomenon, we recommend you consult the practical guide developed by the Union des producteurs agricoles (UPA), the Ministère de l'Agriculture, des Pêcheries et de l'Alimentation du Québec (MAPAQ) and Hydro-Québec. The guide is available here (in French) [here](#).

Would a wind farm project have an impact on recreational and tourism activities?

Because of their small footprint, wind projects can co-exist well with recreational activities (hiking, hunting, snowmobiling, etc.). Local bylaws specify setbacks from recreational spaces including campgrounds, golf courses, outdoor centres, municipal parks, tourist accommodations and natural conservation areas. The area currently under study takes into account the various recreational and tourism activities present in the area, and the project is being developed in such a way as to avoid or minimize impacts on these activities. Consultations will be held with local recreation and tourism groups over the next few months to ensure that the project takes all recreational and tourism activities into consideration.

The Impact Study to be carried out in preparation for the BAPE will also include an assessment of the impact on this type of activity and will identify, where appropriate, mitigation measures to limit or even eliminate the potential impacts identified.

Do wind turbines have an impact on wildlife?

The relationship between birds, bats and wind turbines has been extensively studied in Canada, North America, and worldwide over the last several decades, and is well understood. Wind energy projects, such as des Sources, have a low impact on birds and bats when properly sited.

As part of the development of the Des Sources Wind Project, BluEarth initiated preliminary studies on birds of prey in April 2024 by conducting a nest inventory covering a radius of 20 kilometers around the study area. This inventory was completed by the environmental consulting firm ACTIVA Environnement and found no nests belonging to birds of prey. The inventory was carried out by helicopter, in accordance with the *Protocole d'inventaires d'oiseaux de proie dans le cadre de projets d'implantation d'éoliennes au Québec*, established by the Government of Québec.

The impacts on wildlife will continue to be analyzed during the impact study of the project and will be based on comprehensive field inventories, which will allow for the accurate identification of the species present in the project area and their habitats. These surveys will be conducted in the spring and fall and will include migratory birds, protected species, and bats. Follow-up studies are mandated by the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) and may be conducted for several years after the wind project is in operation. In the event of a problem being identified, specific mitigation measures will be developed in collaboration with the MELCCFP.

For more information

Environment Canada conducted a study in 2013 showing that wind turbines do not have a significant effect on bird populations. In fact, the study indicated that the majority of deaths (70%) are caused by cats, both wild and domestic, and almost all of the remainder (25%) result from collisions with building windows, vehicles, and power lines. As for wind turbines, they are responsible for about 1 accidental bird death per 16,000. The study can be reviewed [here](#). The results of this study have also been cited in an article by the Chief Scientist of Quebec, available [here](#).

Would a wind project have an impact on the environment?

As part of the project development, we will be carrying out an environmental impact study, which will analyze the project's potential impacts on flora and fauna, noise, recreational and tourism activities, and the landscape. This study must subsequently be analyzed by the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP). The Bureau d'audiences publiques en environnement (BAPE) will manage the public consultation process associated with the impact assessment.

The full impact study will be carried out if the project is selected by Hydro-Québec for a power purchase agreement.

Would a wind project have any impact on wetlands?

We are developing the Des Sources Wind Power Project in such a way as to avoid or minimize impacts on the territory, particularly on wetlands. An environmental impact study will also be carried out if the project is selected by Hydro-Québec in a future request for proposals.

Would a wind project have any impact on the groundwater table?

No, the project does not foresee any impact on the groundwater table. Geotechnical studies will be carried out to ensure that the turbines have no impact on the water table, and that the foundations are designed in such a way as not to affect it.

Do wind projects have an impact on surrounding property values?

Numerous studies conducted in Canada and the United States regarding the impact of wind energy projects on property values have shown that the establishment of a wind farm has little to no long-term negative impact on the values of surrounding properties. Most research concludes there is no impact on property values, however there is a small amount of research that shows an increase in property values and small amount of research that shows a temporary decrease.

For more information

- The American Clean Power Association (ACP) has produced a factsheet that summarizing studies carried out in the United States on the impact of wind projects on property values. The document presents several studies showing impacts of wind facilities on property values. The factsheet can be accessed [here](#).
- The Lawrence Berkeley National Laboratory in the United States conducted a study in 2013. This study found no consistent statistical evidence of a measurable impact on sale prices from the operation of wind facilities. The study can be accessed [here](#).
- A study conducted in Ontario in 2014 reached similar conclusions. The study can be accessed [here](#).
- Most recently, a 2023 University of California study confirmed that there is no significant impact to property values approximately 5 years after the start of operations. The study concluded that the implementation of a wind facility has a negative impact when a project is announced, but that residences recover their values after a few years. The study can be accessed [here](#).

Would a wind power project have any impact on woodlands?

The project study area includes wooded areas, and turbines may be sited in these areas. For siting in woodlands, BluEarth will work with the forestry producers' union and other stakeholders to minimize the impact on forestry activities and the local ecosystem. To this end, wind project construction work must be carried out in accordance with the [Cadre de référence relatif à l'aménagement de parcs éoliens en milieux agricoles et forestier](#).

Would turbines be located on agricultural land?

Yes, it is likely that some wind turbines will be located on farmland and so the project is being developed to avoid or minimize impacts on farming activities. BluEarth has experience developing on agricultural land and will apply that experience in the developpement of the Des Sources Project. The project is also being developed in compliance with the [Cadre de référence relatif à l'aménagement de parcs éoliens en milieux agricole et forestier](#), developed by Hydro Quebec and the UPA.

Would a wind farm project have any impact on agricultural activities (including dairy production)?

Turbines may be located on agricultural land. However, the project is developed in such a way as to avoid or minimize impacts on these activities. What's more, a wind farm occupies a fraction of the land on which they are deployed (less than 1%), and wind turbines can be installed in harmony with existing land uses, such as agriculture and livestock farming. Livestock such as sheep, cows and horses can move around at the foot of the turbines and crops can be planted and harvested within a few metres of the turbines.

In Quebec, the Union des producteurs agricoles (UPA) and Hydro-Québec have agreed on a frame of reference for wind power development on agricultural land. The [Cadre de référence relatif à l'aménagement de parcs éoliens en milieux agricole et forestier](#) establishes various best practices, procedures, compensation methods and other elements aimed at minimizing the impacts of wind farm development, operation and dismantling on agricultural land in Quebec. Hydro-Québec requires that bidders to their request for proposals (RFP) formally commit to respecting the Cadre de référence. As such, since the beginning of the project's development, we have paid close attention to this subject to ensure that the project complies with the Cadre de référence, and we will continue to do so throughout its lifetime.

In the regulatory process, the project will have to obtain authorization from the Commission de protection du territoire agricole du Québec (CPTAQ) so it is essential that the project be developed in harmony with the site's agricultural activities and uses. In addition, impacts on farming activities will be assessed as part of the project's impact study.

Would a wind project have any impact on the types of crops that can be planted nearby?

No, farmers can continue to plant any type of crop in the vicinity of wind turbines.