



Des Sources Wind Project Frequently Asked Questions

Update of April 26, 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/>

Summary

Des Sources Wind Project	2
Wind Turbines.....	4
Project Development	6
Construction Process	11
Operation and Maintenance.....	12
Decommissioning.....	12
Context and Hydro-Québec	13
Potential Project Benefits	14
Potential Project Impacts.....	15

Des Sources Wind Project

1. Who is BluEarth ?

BluEarth Renewables Inc. is a Canadian independent power producer that acquires, develops, builds, owns and operates 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.

2. What does Des Sources Wind Project consist of?

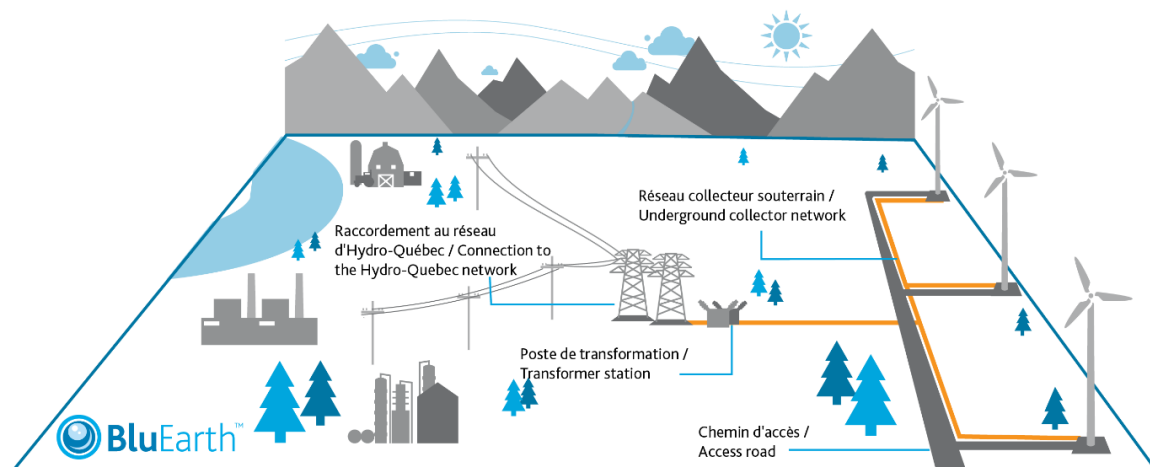
Des Sources Wind Project aims to generate 150 MW of power on private land in the town of Danville and the municipalities of Saint-Georges-de-Windsor and Wotton, all within the MRC des Sources and the ancestral territory of the W8banaki Nation, the Ndakina.

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

3. What are the components of a wind facility?

The project includes the installation and construction 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.



4. What would be the project's energy production capacity?

The wind project aims to generate up to 150 MW of power, which is enough clean, renewable energy for over 27,000 homes annually.

5. How many wind turbines would the project have?

Des Sources Wind Project is currently planning between 26 and 35 wind turbines on private land in the town of Danville and the municipalities of Saint-Georges-de-Windsor and Wotton.

6. 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);
- A suitable geographical context for the development of a wind power project: sufficient space from residences and compatible land uses.

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

7. At which stage of development is the project?

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

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.

8. When do you expect to have a contract to build the wind facility?

The project must first be submitted in a request for proposals (RFP) issued by 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 RFP has not yet been announced.

9. 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.

10. 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.

11. When is the facility scheduled to be operational?

If the project is selected in a future Hydro-Québec request for proposals (RFP), the project could be operational in December 2028 at the earliest.

12. How long will the facility be in operation?

Hydro-Québec's requests for proposals (RFP) generally target 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

13. 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. However, at this stage, it is estimated that the height of the wind turbine tower would be about 100 to 120 metres. Adding the blade in the vertical position, the height could reach approximately 160 to 200 metres. Each wind turbine could generate around 6 MW.

For comparison purposes, the infrastructure in the MRC des Sources with which heights can be compared is Hydro-Québec's 735 kV transmission lines. These are 50 metres tall. Therefore, a wind turbine could represent around three to four times that height, with the blade in the vertical position.

14. What is the footprint of a wind turbine?

During the commissioning 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).

15. What is the footprint required during construction?

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).

16. When would begin the construction of the facility?

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

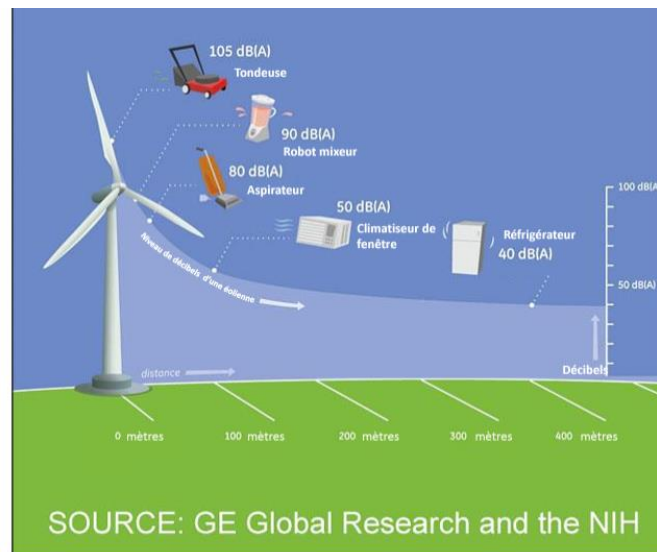
17. What would be the size and depth of the foundation for the turbines used in the project?

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.

18. 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 the 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. For comparison, the outdoor unit of a 30,000 BTU wall-mounted heat pump produces noise of about 54 to 58 dBA ([source](#)).

Throughout the development of the project, multiple iterations of 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 each residence. Furthermore, the impact study to be conducted will include an assessment of the project's sound impact based on detailed noise modelling and a study of the existing sound climate.

19. 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. It is also possible for the ambient noise generated by the wind to mask the noise from the wind turbines. 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.

Project Development

20. What are the development stages of the wind project?

The development of any wind project involves several stages over several years:

1. *Research and project launch (3 to 12 months)*

The aim of this 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 geographical context suitable for the development of a wind project. Once a potential site has been identified, the pre-feasibility and consultations phase begins.

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

The aim of this 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.

Initial consultations are also held with municipal authorities and landowners to understand their interest in developing a potential wind project. More extensive consultations with local communities are then carried out.

This stage usually concludes with the submission of the project to Hydro-Québec's request for proposals (RFP). If the project is selected, the phase of feasibility, consultation and authorizations begins.

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

The aim of this third phase is to conduct detailed 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, which allow the project's pre-construction phase to begin.

4. *Pre-construction (12 to 24 months)*

This 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)*

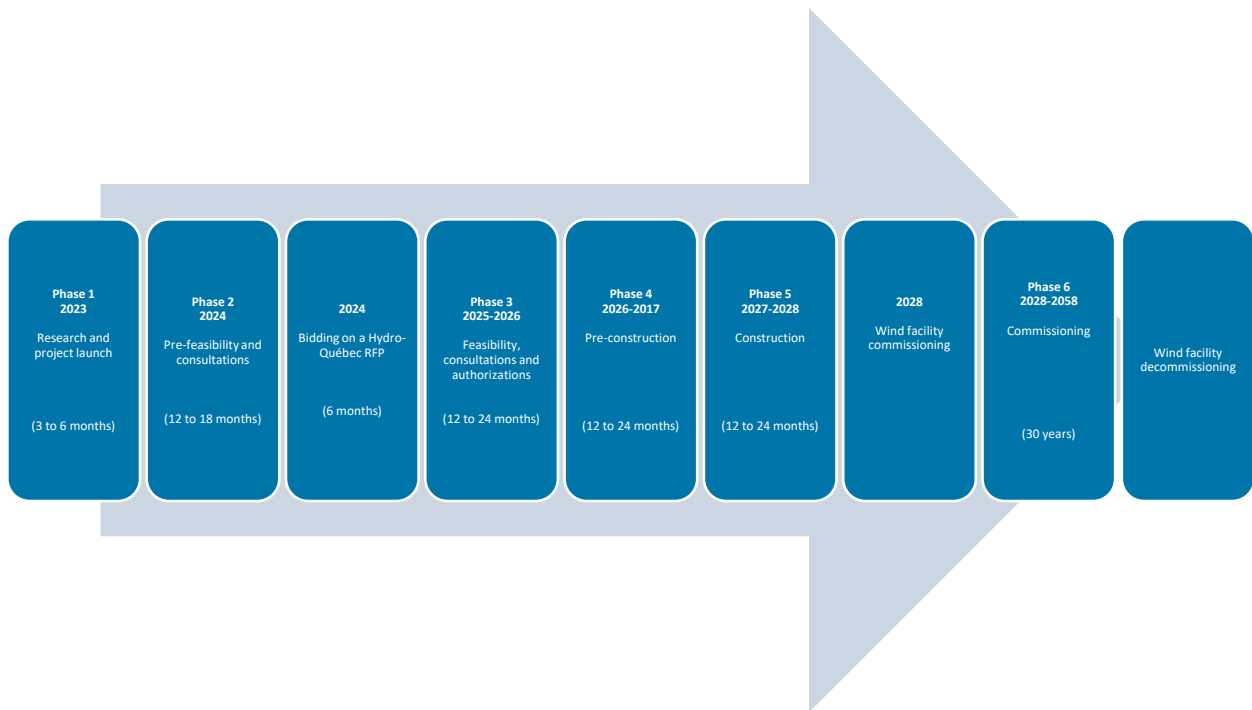
This fifth phase covers the site and access road development, transport and installation of the turbines, and connection of the wind facility to the Hydro-Québec grid. Once construction is complete, the wind facility enters the operational phase.

6. Operation (30 years and more)

This 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.

When the operating agreement with Hydro-Québec comes to an end, the operator can extend the contract and continue to operate the wind facility. If a new agreement is not signed, the developer must decommission the wind turbines at their own expense within 12 months of the end of the contract.

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.



21. 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 on several occasions. The process has several components:

1. Environmental impact assessment

The first stage begins with the environmental impact assessment and review procedure. A specialized environmental firm is mandated to conduct an impact study, which analyzes the project's potential impacts on flora and fauna, the noise environment, recreational and tourism activities, and the landscape. This study must then be analyzed by the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP) and the Bureau d'audiences publiques en environnement (BAPE).

As part of this stage, consultation periods are included at the beginning of the process to listen to community concerns during the impact study phase, then during the BAPE analysis of the study. This stage ends with the government's decision on whether or not 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 the protection of agricultural land, and includes community consultations.

3. Ministerial authorizations and permits

The third stage involves obtaining ministerial authorizations and permits for the construction and operation of the wind farm. Authorizations must be issued by the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP), while permits must be issued by the Ministère des Transports et de la Mobilité durable (MTMD) and Transport Canada.

22. Have any impact studies been carried out?

In April 2024, we began the preliminary stages of the studies on birds of prey. The full impact study will be carried out if the project is selected by Hydro-Québec in a future request for proposals (RFP).

23. 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. 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 turbine models and suppliers, wind measurements, roughness and topography of the territory, wind turbine wake effects, Hydro-Québec exploratory studies, etc.).

The project will then evolve, and updates will be presented throughout its development. In the meantime, it is possible to consult the project study area that was presented at the open house held in 2023. It is attached to the next page.

ZONES D'IMPLANTATION POTENTIELLE



Projet éolien Des Sources

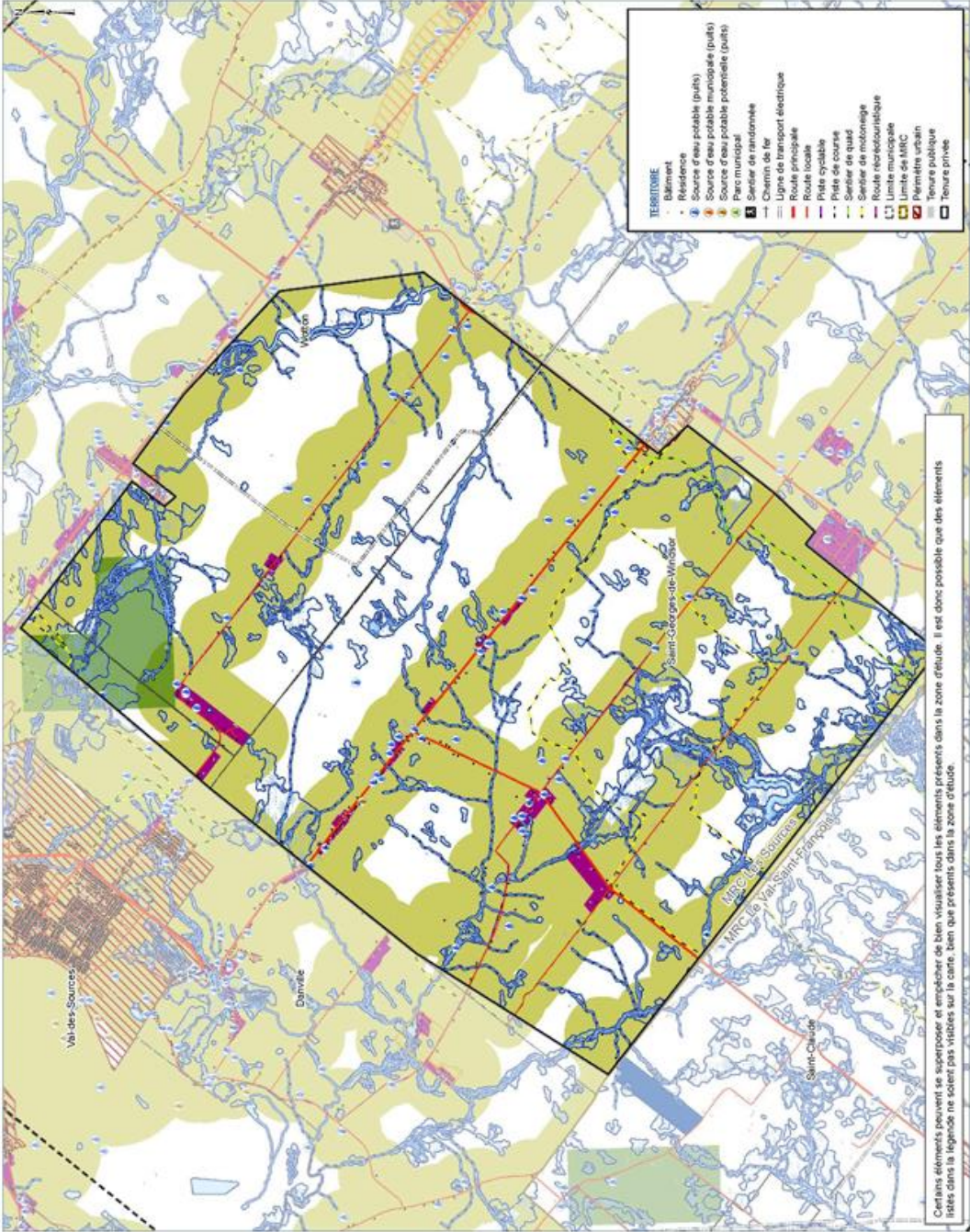
Carte 1 Zones d'implantation potentielle

- PROJET**
- Zone de projet
 - Zone d'étude des contraintes
- MILIEU NATUREL**
- Cours d'eau permanent
 - Cours d'eau intermittent
 - Milieu humide
 - Blendue d'eau
- MISÉRICORDIES**
- Habitat d'oise, berraches et canards
 - Habitat du oie de Virginie
 - Écosystème forestier exceptionnel
 - Habitat d'espèces forestières à statut
 - Bande de protection de l'hydrosphère (15 m)
 - Zone de protection - Puits (30 m)
- Schéma d'aménagement de la MRC Des Sources**
- Lot destructuré
 - Affectation de conservation
 - Zones de réfrigération pour refroidissement d'eau souterraine
 - Zone de protection - Puits municipaux (30 m)
 - Bande de protection (200 m - 1 km)



Revised: Représentation de l'Agence d'Évaluation et de Contrôle de l'Environnement
 Des Sources, Québec, Révisé le 15 Mars 2022
 Carte préparée par Paul O'Neil, B. Eng.
 Projet: 12315-001/1293
 9 Mars 2022

ACTIVA
 ENVIRONNEMENT



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

BlueEarth develops projects in collaboration with the community. To do so, we will organize public consultation sessions following the launch of Hydro-Québec's next request for proposals (RFP) and the publication of the conclusions of the MRC des Sources' information and consultation process.

As part of the public consultations, we will be able to modify the project to address community concerns, while respecting the project's technical constraints.

In the meantime, our team remains available to answer any questions you may have and will be in frequent attendance at our Val-des-Sources office. For more information, visit the project website (<https://dessoourceswind.ca/>) or contact us by email (projects@blueearth.ca).

25. 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. To do so, we will work with the various groups and stakeholders to identify areas for improvement and make changes to the project.

26. 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).

27. 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: 500 metres
- 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

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

28. How far will the turbines be of homes and buildings?

The current regulations of the MRC specify a minimum distance of 500 metres between the base of a wind turbine and a residence or building, and 1,000 metres from the urban perimeter. In addition, the wind turbines will be positioned to respect noise limits, which means that they could be located at a distance of more than 500 metres.

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](#)).

Construction Process

29. When will 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.

Therefore, with the exception of certain occasions when work may be carried out over extended hours to meet deadlines, construction work is generally carried out during the day. Construction work is also carried out in compliance with various regulations.

30. 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 try to 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.

31. Would the construction of a facility lead to temporary roads and access road closures?

Some construction activities and the moving of large equipment could result in short-term restrictions to access roads and roads.

In this regard, wind project construction work must be carried out in accordance with the [Cadre de référence relatif à l'aménagement de parcs éoliens en milieux agricole et forestier](#). The latter was developed by the Union des producteurs agricoles (UPA) and Hydro-Québec. It establishes various best practices, procedures, compensation methods and other elements aimed at minimizing the impacts of wind project development, operation and decommissioning on agricultural land in Quebec.

Any restrictions to access roads and roads would be of short duration, and would occur only during specific construction activities or the relocation of major equipment. To coordinate construction work and minimize potential impacts on landowners, BluEarth is committed to maintaining constant communication with the community and landowners.

32. Who would be responsible for restoring the roads after the facility 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

33. Who would be responsible for the maintenance of the wind facility?

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

34. 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.

Decommissioning

35. What happens at the end of the operating contract?

When the operating contract ends, the operator may extend the contract with Hydro-Québec. If a new agreement is not signed, the operator must decommission the turbines at its own expense within 12 months of the end of the contract.

36. 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.

37. 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 or reused 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

38. 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](#).

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

To meet Quebec's growing energy needs, Hydro-Québec is launching requests for proposals (RFP) to acquire electricity from renewable sources, such as wind power. Through these RFP, Hydro-Québec aims to conclude long-Cad supply contracts for electricity from new wind power projects that can be connected to its grid, in certain identified zones. Developers of renewable energy projects are then invited to submit projects in response to a RFP.

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

40. What would the energy generated by the wind facility 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

41. What are the potential benefits of the project?

Des Sources Wind Project has the potential to generate significant economic and social benefits in a variety of ways, including :

- 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 (potentially the MRC des Sources and the W8banaki community):
 - Equal share in profits from the wind project.
- Landowner:
 - Compensation payment representing a total of \$100,000/year for landowners hosting wind facility-related infrastructure on their land and those who signed options in the development process. The compensations are based on the Cadre de référence relatif à l'aménagement de parcs éoliens en milieux agricoles et forestier.
- Job creation for the region and skill development opportunities for workers:
 - The construction phase creates local jobs, needing 160-190 workers, while the operational phase offers 6-10 stable, well-paid permanent positions for wind facility maintenance and operation.
- Collaboration with local businesses:
 - We commit to enhancing the local economy by partnering with regional businesses for services such as construction, legal support, and temporary accommodations, among others
- Social and educational commitment:
 - We reinvest profits into the community by supporting local projects and initiatives, demonstrating our commitment to community development. For details on our community involvement and supported projects, click [here](#).
 - 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.

42. 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.

Potential Project Impacts

43. What would be the visual impact of a wind project?

The impact study to be carried out will include a detailed assessment of the project's visual impact. As part of this study, visual simulations will be created from various viewpoints on and around the site, to demonstrate how the wind project would look in the surrounding landscape. The study also assesses the integration of the turbines in the various landscapes, and usually recommends mitigation measures for the layout of the turbines to ensure that they integrate harmoniously with the landscape.

As part of the public consultations for the project, BluEarth will share these visual simulations and the possible mitigations. We look forward to collaborating with the community to reduce potential visual impacts. BluEarth also presented visual simulations at the 2023 open houses.

44. Would turbines cause shadow flicker?

A shadow flicker can occur when the sky is clear, and the sun is low on the horizon. Under these conditions, a wind turbine 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). It is also worth noting that there are no regulations in Quebec on these points, but the MELCCFP considers that a maximum exposure of 30 hours per year and 30 minutes per day represents the best practice to adopt. Moreover, MRC regulations impose a minimum distance between a wind turbine and a residence, which considerably reduces the shadow flicker.

BluEarth commits to working with landowners and residents to avoid and minimize the project's impacts.

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

Impacts on recreational activities (hunting, snowmobiling, etc.) vary from project to project.

In the case of Des Sources Wind Project, we currently foresee no impact on recreational tourism activities. 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.

In addition, 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 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.

46. Do turbines have an impact on human health and sleep?

Research by organizations such as the Institut national de santé publique du Québec (INSPQ) and the World Health Organization (WHO) has established that the potential impacts of wind turbines can be minimized by respecting an exposure limit of 45 decibels (dBA) for residences.

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 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. 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](#).

Thus, as the noise limit set by the Quebec government is 40 dBA, which is lower than the recommendations of the INSPQ and the WHO, the noise level should not have any negative effects on health and sleep.

Nevertheless, human health remains one of our priorities, and the project will be developed in such a way as to meet or exceed all regulations and guidelines designed to protect human health.

47. 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.

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](#).

In the case of Des Sources Wind Project, we began the preliminary stages of studies on birds of prey in April 2024. 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 behaviour. These avian inventories will be conducted in the spring and fall and will include birds of prey, migratory birds, protected species, and bats.

Furthermore, follow-up studies are conducted for several years after the wind facility is in operation. In the event of a problem being identified, specific mitigation measures will be developed in collaboration with the Ministère de l'Environnement, de la Lutte contre les changements climatiques, de la Faune et des Parcs (MELCCFP).

48. 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.

For more information

A recent and comprehensive study on wind installations and property values was conducted in 2023 based on data from property sales between 2005 and 2020 in the United States. The study confirmed that there is no significant impact approximately 5 years after the start of operations. The study concluded that the implementation of a wind facility has a negative impact on property values when a project is announced, but that residences recover their values after a few years. Specifically, the study shows that properties located within 1.6 kilometres (1 mile) of a project experienced an average devaluation of 11% immediately after the announcement, but this diminished over time to an insignificant. The study can be accessed [here](#).

The Lawrence Berkeley National Laboratory in the United States also conducted a study in 2013. This study analyzed over 50,000 home transactions near 67 wind installations across nine states over ten years and 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 third study conducted in Ontario in 2014 reached similar conclusions. The study can be accessed [here](#).

49. Would a wind project have an impact on the environment?

No, the project does not foresee any negative impact on the environment. On the contrary, the project will contribute to Quebec's energy transition thanks to the renewable energy that will be produced.

50. Would a wind project have any impact on wetlands?

No, the project does not plan to install wind turbines in wetlands. As part of the project development, we will ensure that no wetlands are affected by the project. Further studies will also be conducted in the coming months to ensure that potential sites are not wetlands.

51. 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.

52. 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. Indeed, livestock such as sheep, cows and horses can move around at the foot of the turbines. Crops can be planted and harvested within a few metres of the turbines, provided that a small safe distance of between 5 and 10 metres is maintained to avoid the risk of collision with agricultural machinery.

Further Information

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 milieu 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 this call for tenders 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). Consequently, 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.

53. 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.

54. Would a wind project generate electromagnetic fields?

The wind facility's collector network would be essentially underground, which would eliminate the emission of electric fields since the cables would be inside protective sheaths. As a result, the collector network would emit a magnetic field comparable to that of the existing electrical distribution network.

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

55. Would a wind project produce stray voltage that would have an impact on cows?

The wind facility's collector network would be essentially underground, which would eliminate the emission of stray voltages since the cables would be inside protective sheaths.

Further information

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 (in French) [here](#).

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

The time required for a turbine to be carbon neutral, meaning that it prevents more emissions than it took to manufacture and install it, depends on various factors that have yet to be determined, such as the turbine model, size, transport of the various parts, and the type of energy used in the manufacture, transport and construction.

Many of these factors have not yet been determined for Des Sources Wind Project, but 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 study can be viewed [here](#).