

Charting the Course toward Collective Success

Wind Power Development Strategy

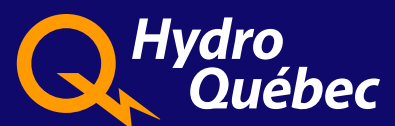


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Unit of measure

MW megawatt or million watts
(a unit for measuring capacity or power demand)

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The New Model at a Glance

- The electricity needs to decarbonize Québec's economy and support its growth, as well as the challenges facing the wind power industry, call for a large-scale strategy in which wind will play a significant role, with **over 10,000 MW of new wind power generation by 2035**.
- Following a wide-ranging consultation, it is clear that the **development model for the wind power sector needs to be redefined** to ensure our collective success.
- As a public institution and *maître d'œuvre*—or lead actor—for energy development, **Hydro-Québec will play a key role in the implementation of large-scale wind power projects**.
- The new approach will **prioritize large-scale projects in strategic areas, in partnership with First Nations and municipalities**.
- Securing **social acceptability of each project** will be the cornerstone of this more coordinated planning of wind power development and the approach to partnership that is fundamental to it.

	Current model Small-scale projects	Hydro-Québec's Wind Power Strategy Large-scale projects
Scale	<ul style="list-style-type: none"> • Average: 90 MW 	<ul style="list-style-type: none"> • Capacity that can reach over 1,000 MW
Hydro-Québec's role	<ul style="list-style-type: none"> • Electricity purchaser 	<ul style="list-style-type: none"> • <i>Maître d'œuvre</i> • Shareholder • Electricity purchaser
Role of municipalities and First Nations	<ul style="list-style-type: none"> • Varies from project to project 	<ul style="list-style-type: none"> • Involved from the earliest stages of project development • Shareholders
Role of industry partners	<ul style="list-style-type: none"> • <i>Maître d'œuvre</i> • Shareholders 	<ul style="list-style-type: none"> • Use of expertise (technical, shareholders)
Development zones	<ul style="list-style-type: none"> • No overarching plan • Scattered across the territory 	<ul style="list-style-type: none"> • Overall planning • Establishment of development zones • Integration in the evolution of the power transmission system



Wind Power: A Key Component of the Energy Transition

The energy transition is under way. With its [*Action Plan 2035 – Towards a Decarbonized and Prosperous Québec, Hydro-Québec*](#) is implementing the strategies that will enable it to meet the challenge of this society-wide endeavor.

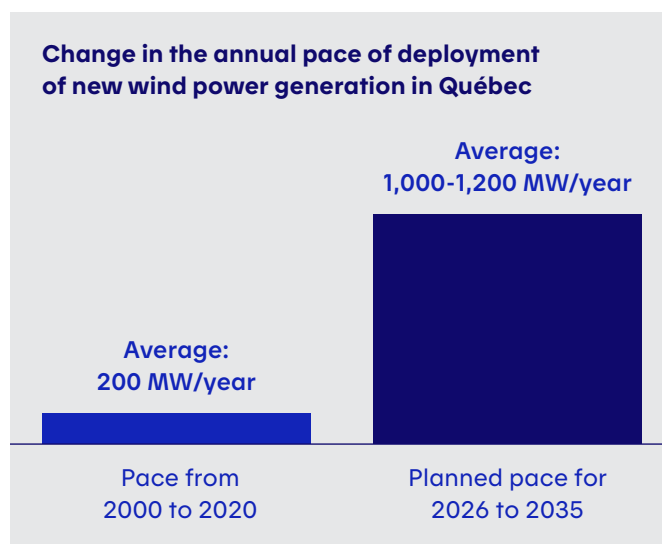
Given the significant electricity needs required to decarbonize Québec and contribute to its economic growth, we will support our customers in their efforts to use electricity more wisely, but we will also need to add new clean power generation. In this context, Hydro-Québec must diversify both its energy portfolio and its expertise. The wind energy sector is thus emerging as a key component in the success of the energy transition.

I A Change of Scale Leading to a New Role for Hydro-Québec

The electricity needs arising from the energy transition call for an acceleration in wind power development, as well as an increase in its weight in Québec's energy mix.

As indicated in Action Plan 2035, 10,000 MW of new wind power generation will be required by 2035, corresponding to a pace of deployment of 1,000 to 1,500 MW per year.

The challenge is significant, given that over the past 20 years, 44 wind farms with a total installed capacity of around 4,000 MW have been commissioned across Québec, in an energy context quite different from today's.



As part of its consultation on the *Action Plan* over the last several months, Hydro-Québec has met with municipal, First Nations and Inuit leaders, as well as environmental, labor, business and consumer groups across Québec, with the aim of better understanding how they see the implementation of the *Plan*. One of the major concerns expressed at these meetings was the way in which wind power is currently being developed in Québec.

In response to requests from First Nations and municipalities for a better planned and coordinated approach to wind power development, Hydro-Québec is redefining the model and confirming that it will play a strategic role in the sector from now on.

The comments received during the consultations led to a clear finding that will be decisive for the success of the energy transition: social acceptability and public trust must form the foundations of future energy projects.

Participants also made it clear that Hydro-Québec should play a more active role and that First Nations and municipalities must be involved as founding partners in wind projects—should they wish to be.

Thus, Hydro-Québec's status as a public institution, its expertise and its close ties with municipalities and First Nations make it the ideal *maître d'œuvre* to play a pivotal role, consolidate the efforts of the various parties, and foster social acceptability and the collective benefits of expanding wind energy in Québec. With a comprehensive vision for energy transition in Québec, Hydro-Québec is well positioned to coordinate public, private, union and community efforts, consolidating the expertise of each for the collective benefit of all.

The Challenges of Wind Power Development

The challenges of wind power development call for a different approach to the development of the industry.

I Social Acceptability

The pace of wind power development will increase in a context in which expectations around the social acceptability of projects are very high:

- Many First Nations and municipalities no longer want to simply be consulted—they now want to participate in projects as partners.
- The public is increasingly aware of environmental issues and wants to be reassured about the impact of projects.
- Protecting biodiversity and agricultural land is an important consideration that must be integrated in planning.

I Coordination with the Evolving Transmission System

As Hydro-Québec works to bring more wind power onto the grid in Québec, this energy source will become a determining factor in the planning and design of the transmission system.

Major work and investments will be required to increase the capacity of the transmission system and connect new wind farms. To speed up wind power development and keep costs down, close coordination of the planning of wind power projects with the construction of new transmission infrastructure will be essential.

I Access to Labor

As set out in the *Action Plan*, Hydro-Québec will need around 35,000 construction workers per year on average until 2035 to roll out its new energy infrastructure. This projection includes the workforce required for wind farm projects, estimated at around 3,000 to 3,500 construction workers per year.

To meet this challenge, Hydro-Québec plans to work closely with unions and other stakeholders. Acting jointly, we will define innovative approaches to workforce training and create job opportunities for the benefit of all. Flexibility will be essential to meet the challenges of developing the infrastructure we need.

I Access to Equipment

The global rush to renewables is creating strong competition in the market for strategic equipment. At a time when Hydro-Québec is planning to deploy 10,000 MW of new wind power generation, this sector is expected to grow by over one million MW worldwide.

While Québec enjoys an advantageous position when it comes to clean electricity, the size of the Québec market is limited. To secure supply chains, Hydro-Québec needs to ensure greater predictability in the development of large-scale projects on which all suppliers can count.

I Achieving Economies of Scale

Worldwide appetite for wind power and the current economic situation are putting upward pressure on costs. In this context, economies of scale will result in significant savings. Specifically, and according to preliminary market indicators, we expect to be able to generate economies of scale of over 20% by offering predictability and large volumes to suppliers. These savings will help keep electricity rates affordable and competitive.

The Role of Self-Generation

As resources are scarce, priority should be given to wind power projects that serve collective interests. It is important to remember that turbines or workers assigned to a private project cannot be used to build a wind farm that will meet the needs of Québec's public electricity system.

Self-generation could play a role in some cases. Hydro-Québec will therefore work with the government to ensure that self-generation projects are thoroughly analyzed and implemented in line with needs, to the benefit of society and without impacting rates, supply chains or Québec's energy security.

Hydro-Québec: *Maître d'œuvre* for Energy Development

As a public institution present in every region of Québec, Hydro-Québec has forged close ties with communities, making it the ideal entity to inspire trust and protect the public interest in this context of change in scale. Its expertise in large-scale energy projects, its sound financial health, its ability to generate economies of scale and its integrated vision of Québec's energy system reinforce its legitimacy as the *maître d'œuvre* for energy development going forward.

I Coordinated Planning of Wind Power Development in Québec

To promote the collective success of wind power development, Hydro-Québec will focus on an orderly, phased approach to project implementation. Concretely, this means:

- Identifying strategic zones;
- Integrating transmission requirements; and,
- Ensuring predictability in the procurement of labor and equipment.

Planning will make it possible to integrate considerable volumes of energy at a sustained and predictable pace. It will be consistent with the integrated energy resource planning that the Québec government intends to roll out, with Hydro-Québec as its principal advisor.

Development Partnerships

Hydro-Québec will quickly initiate discussions with municipalities and First Nations to establish partnerships for the development and completion of wind power projects. Together, the partners will establish the main zones with wind power potential at the most suitable locations in Québec.

- With this approach, First Nations and municipalities will be, if they so desire, financial partners in wind power projects. As shareholders, they will be able draw recurring autonomous streams of income that can be allocated to priorities of their choosing.
- As partners, municipalities and First Nations will be involved from the initial stages of project planning. Hydro-Québec will define the geographic development sectors with these partners so as to ensure their integration within the optimal development of the transmission system. For this purpose, Hydro-Québec will make its transmission system planning public.
- In collaboration with its partners, and according to their needs, Hydro-Québec could then launch a competitive process to harness the expertise of players in the wind power sector.

The Development of Large-scale Projects Comes First

The new model focuses on the development of large-scale projects. These projects, which could exceed 1,000 MW, are necessary to meet the growth in demand and reduce costs through economies of scale. The Des Neiges wind farm project, currently under construction in the national capital region, is a good example of the economies of scale that are possible. With an installed capacity of 1,200 MW, this wind farm will have lower production costs than any other wind farm in Québec, thereby limiting the impact of rate increases on all Quebecers.

Maintaining the Current Approach for Smaller-Scale Projects

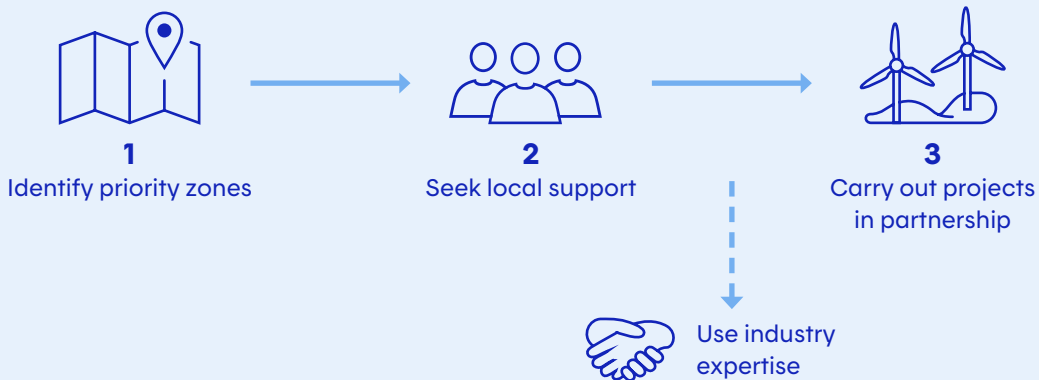
As a complement to large-scale projects and to respond to varying regional realities, it will be important to maintain the flexibility to do smaller-scale projects. Industry partners will participate in those projects, whose scale will be comparable to those carried out over the past 20 years, with an installed capacity of up to 300-350 MW. Calls for tender will continue to be the preferred approach for these projects, and Hydro-Québec will ensure, in advance, that target communities are willing to welcome them.

New Development Model

Milestones in the Completion of Major Wind Farm Projects

Hydro-Québec will first prioritize development zones on the basis of their wind power potential, the possibility of adding new capacity quickly, the support of host communities and the optimal development of the transmission system. It will then enter into partnerships with the communities concerned, be they municipalities or First Nations.

For each project, the partners could add industry partners.



Example of how different parties will contribute to large-scale projects

	Government	Hydro-Québec	First Nations and municipalities	Industry partners
Integrated energy resource management plan	✓	✓		
Identification of zones and community partnerships (≈6-18 months)		✓	✓	
Project development (≈1-2 years)		✓	✓	✓ According to the partners' needs
Wind farm construction (≈2 years)		✓	✓	✓ According to the partners' needs
Wind farm operation (≈25 years or more)		✓	✓	✓ According to the partners' needs

Examples of characteristics sought in potential industry partners:

- Experience and ability to carry out major wind power projects
- Expertise and knowledge of the Québec and international wind energy sectors
- Strategic alignment with the collaborative development model
- Vision of community participation and consultation
- Capacity to contribute to economies of scale and cost reduction

An Opportunity to Be Seized

The 10,000 MW planned in this strategy represent an unprecedented growth opportunity for all players in the wind energy industry, including manufacturers, developers and construction companies. By focusing on integrated planning, collaboration, partnership and economies of scale, this strategy will have positive impacts for all players, enabling everyone to contribute to our collective success.



I Sharing Roles and Optimizing Skillsets

The development model presented above will promote optimal role sharing between the various parties.

- **The Québec government** will produce an integrated energy resource management plan that will establish directions, objectives and targets for adding generating capacity.
- **Hydro-Québec** will play the role of *maître d'œuvre* in the overall planning and development of the projects and in all subsequent stages. This will enhance the know-how and trust inspired by the public institution that is Hydro-Québec.
- **First Nations and municipalities** will participate in the entire process and, as financial partners, they will receive autonomous income generated by the wind farms. These partners' interests and concerns will therefore be represented at every stage. They will have the opportunity to leverage their knowledge of the territory, and to engage in transparent communication adapted to their reality.
- As for **industry partners**, their expertise and knowledge of the wind power sector could prove beneficial for carrying out projects on a cost-effective basis. Depending on the circumstances and preferences of First Nations and municipalities, the industry could participate financially in projects.

A Unifying Model for Collective Success

The *Action Plan 2035* sets out the concrete commitments Hydro-Québec is making to meet growing electricity demand, in particular through the massive and rapid integration of new wind power facilities.

The wind power development model presented above therefore marks the beginning of a new era in the history of this energy option in Québec.

This model lays the foundations for a strategy that will lead to a change in the scale of wind power projects and optimize their implementation. It will also generate significant benefits for local communities. Lastly, the resulting cost optimization will benefit all customers by limiting the impact on Hydro-Québec's rates.

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The original text written in French shall prevail.
Ce document est également publié en français.

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