QUÉBEC INTEGRATED ENERGY RESOURCE MANAGEMENT PLAN 2026–2050

OUR PLAN FOR QUÉBEC'S ENERGY FUTURE

Bâtir l'avenir

Québec

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MINISTER'S REMARKS

Our energy, our future!

Energy has always been one of Québec's greatest assets.

It heats our homes, powers our businesses, and supports the development of our regions. It has also enabled us to build a strong economy and to offer Quebecers a quality of life envied around the world. Today, we are facing a new challenge.

Québec's energy needs are expected to grow significantly in the coming decades. We must also continue our decarbonization efforts, strengthen our energy self-sufficiency, and deal with an increasingly uncertain geopolitical environment.

Faced with this reality, we have a duty to prepare for the future.

To develop Québec's energy sources—to think big—we need a real energy policy.

We also require an economic policy that drives quality job creation, productivity, investment, and sustainable growth. In other words, we need to shore up the foundations of our economic security.

Investing in our energy sector also means we must strengthen our ambitious climate policy. Thanks to our clean electricity and other renewable energies, Québec will continue to be a leader in decarbonization.

What's more, investing in Quebec's energy sector will require a real export strategy. Products made here in Québec, with some of the cleanest electricity in the world, will have a growing competitive edge in markets that value their low-carbon footprint.

Let's think about Europe: the more the trade rules incorporate the cost of carbon, the more Québec products will stand out. Not only will our clean energy become an environmental advantage, but it will also become an economic and commercial advantage.

More than a resource, energy has become a pathway to prosperity, economic sovereignty, the fight against climate change, and international success.

Energy is the central theme of our economic plan.

The Integrated Energy Resources Management Plan 2026-2050 (IEMP) is the roadmap that will guide Québec for the coming decades. It is the result of extensive consultations in 14 different regions of Québec that have informed our thinking and guided development of the Plan.

We have crafted a long-term vision that will allow us to anticipate our needs, better plan our investments, and make the choices we need to make to ensure our energy security.

Our energy future will begin with a simple idea: the most affordable energy is the energy we don't consume. Energy efficiency should therefore be our number one priority, both for households and businesses.

We will also need to develop new renewable energy sources, modernize our infrastructure, and strengthen our power grids to meet growing demand. A Québec with the energy it needs to develop is a Québec that can attract investment, create well-paying jobs, increase productivity, and seize the economic opportunities of tomorrow.

The IERMP is much more than a planning document. It expresses our collective ambition to build a more prosperous, self-reliant, innovative, and resilient Québec.

By making the necessary choices today, we are giving Québec the power to meet the needs of current and future generations. We are using our energy to drive prosperity, economic security, and leadership in the energy transition.

Our energy is one of our greatest assets. It is up to us to make it one of the greatest contributors to our future.

The Minister of Economy, Innovation and Energy and Minister responsible for the Maritime Strategy,

BERNARD DRAINVILLE

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SUMMARY

The 2026-2050 Integrated Energy Resource Management Plan (IERMP) sets out Québec's long-term vision for ensuring its energy security, maintaining competitive energy costs and supporting sustainable economic growth, in keeping with its greenhouse gas emission reduction objectives. The plan's legitimacy rests in part on a broad participatory process that engaged hundreds of stakeholders from civil society, First Nations and Inuit representatives, and energy distributors. It sets out the targets and policy directions that will support the ambitions of Hydro-Québec's Action Plan 2035 and help drive a pragmatic, sequenced energy transition of which those ambitions form part. This transition will require an additional 150 TWh of renewable energy supplies by 2050. Future iterations of the IERMP could revise this target should the evolving context and major trends warrant it.

By proposing this vision, the IERMP serves as a key document for coordinating the stakeholders called on to contribute to achieving its targets, including energy distributors, the private sector, municipalities, universities, research centres, non-profit organizations and energy regulators.

The IERMP focuses first on energy security and the resilience of Québec's energy system. In a context marked by geopolitical upheaval, volatile energy markets and the growing impacts of climate change, Québec intends to fully exercise its powers to strengthen its energy autonomy and reduce its reliance on hydrocarbon imports. The plan provides for increased energy supplies, diversification of energy sources, and greater complementarity among electricity, bioenergy—including renewable natural gas—and existing infrastructure to ensure a reliable supply, especially during winter peak periods. Maintaining and modernizing transmission and distribution systems, as well as developing new renewable energy generation capacity, are considered essential to supporting the resilience of Québec's energy system through to 2050.

Québec currently benefits from some of the lowest electricity rates in North America, giving households and businesses a significant advantage. The plan therefore takes a pragmatic approach to preventing changes in the energy mix from leading to excessive rate increases for consumers. That said, it must be emphasized that the energy transition will reduce energy consumption overall, as most electric equipment is two to four times more efficient than the conventional fossil-fuel equipment it replaces. In addition, renewable energy is less costly than fossil fuels for many uses. Household energy bills are therefore ultimately expected to decrease.

Energy efficiency measures, which will accordingly account for a significant share of the new supply required by 2050, will help reduce pressure on the need for new infrastructure and limit overall energy system costs. In the same spirit, the plan also gives consumers an important role in achieving the targets, in particular by encouraging responsible energy use and voluntary contributions to self-generation.

Finally, the plan aims to attract the major investments that are essential to its implementation. These investments, and the jobs they create, will generate significant economic benefits for households, Québec businesses, municipal stakeholders and Indigenous communities throughout Québec. In addition to these economic benefits, the plan will help maintain and develop the strategic expertise essential to the growth of the various energy pathways. Ultimately, this will directly contribute to Québec's energy security, which underpins its economic security.

Overall, the 2026-2050 IERMP proposes an integrated, balanced and pragmatic approach to ensuring a reliable and affordable energy supply, protecting household purchasing power and supporting an energy transition that is aligned with Québec's economic and climate ambitions.

INTRODUCTION

It is well established that geopolitical upheaval directly affects energy supplies and economies around the world. Developed societies are rethinking their economies over the medium and long term, with a focus on growth, productivity, resilience, influence and adaptation to a decarbonizing world. Around the world, renewable energy is now positioned as a way to reduce risks, and investment in clean energy is currently approximately twice as high as investment in fossil fuels. Energy has thus emerged in this new geopolitical ecosystem as a strategic asset that directly influences economic security, supply chain resilience and the competitiveness of states.

Québec is fortunate to have a territory rich in natural resources, a strong economy and leading expertise in a number of key sectors, including energy. It is well positioned to take advantage of the economic and energy transformations driven by the global geopolitical context. For example, the goods Québec produces using its decarbonized energy could have strong appeal on the European market: on January 1, 2026, the European Union's Carbon Border Adjustment Mechanism (CBAM) entered into force. This regulatory instrument aims to ensure that products imported into the customs territory of the European Union are subject to a carbon price equivalent to that applied to European producers manufacturing those products. The primary objective of the mechanism is to combat carbon leakage as the European Union steps up its climate ambitions.[1]

However, the geopolitical context also raises awareness of some of the economic and energy dependencies that persist in Québec. To limit the risks of misalignment, it is essential to ensure coherence between the objectives of the Québec government and the actual availability of energy resources, particularly with respect to economic development and the strengthening of Québec's energy security and autonomy.

One of the key lessons from Québec's experience is that the energy transition must be approached as a long-term economic project needed to strengthen energy and economic security and resilience while also serving to decarbonize Québec's economy. It drives growth, economic diversification, innovation, competitiveness and value creation. However, Québec is currently facing a significant tightening of its electricity supply-demand balance, which is putting the brakes on economically promising ventures within the province.

Based on a long-term vision, integrated planning for Québec's energy future is essential for providing economic actors with the predictability they need, supporting the energy and climate transition, and ensuring a safe, secure and resilient energy supply. This approach is also essential to maintaining the competitive advantage Québec enjoys as a result of its energy system, which is unique in the world.

1. Ministères Transition écologique, Aménagement du Territoire, Transports, Ville et Logement, *Mécanisme d'ajustement carbone aux frontières (MACF)* (in French only), 2026.

LEGAL BACKGROUND

The Act to ensure the responsible governance of energy resources and to amend various legislative provisions (S.Q. 2025, c 24), assented to in June 2025, entrusts the Minister of Economy, Innovation and Energy with the creation of an Integrated Energy Resource Management Plan (IERMP). This plan embodies Québec's new energy policy. It is aimed at promoting energy development in Québec over 25 years with a view to the energy transition. The Act specifies that the IERMP is to cover all energy sources consumed in Québec and report specifically on and assess the energy situation in Québec and the province's future energy needs. It establishes policy directions to be complied with and objectives and targets to be achieved regarding energy efficiency, particularly for the electric power and natural gas markets, as well as policy directions, objectives and targets regarding supply, energy infrastructure development and innovation. The IERMP also specifies the electric power supply target that Hydro-Québec must achieve to meet the electric power needs of Québec markets within the time frame indicated in the plan.

With its approval, the first IERMP will supersede the energy and energy efficiency policy directions, objectives and targets that were initially established by Order in Council No. 537-2017, as well as the electricity supply target of 255 TWh for January 1, 2035, set under chapter 24 of the Statutes of Québec, 2025.

The IERMP is established, first, in accordance with the government's economic policy directions, which seek to incorporate the development ambitions of businesses into energy demand forecasts and to make the transition to clean energy a lever for wealth creation for the benefit of the Québec nation. Second, the IERMP is established in accordance with the principles and objectives of the climate change framework policy, as well as Québec's GHG emissions reduction target under the Environment Quality Act (CQLR, chapter Q-2), to reduce GHG emissions by 37.5% from 1990 levels by 2035.[2] This coherence forms the foundation for a long-term vision, ensuring coordination between the evolving demand for low-carbon energy, which is essential to the energy transition, and the deployment of energy solutions in a structured, gradual and coherent sequence. It also requires taking climate change into account in order to support the resilience of energy systems, along with applying the principle of a just transition.

To develop the IERMP, the Minister worked with Hydro-Québec and natural gas distributors, consulted with the public, including Indigenous communities, and sought advice from the Régie de l'énergie (the Régie), in accordance with section 14.3 of the Act respecting the Ministère de l'Économie, de l'Innovation et de l'Énergie (chapter M-14.1) (see Appendix 1).

The introduction of the IERMP was accompanied by amendments to the *Act respecting the Régie de l'énergie* (CQLR, chapter R-6.01, ARE) to ensure greater alignment between government policy directions, the actions of distributors and the electric power carrier, and the decisions of the Régie.

Roles and responsibilities of actors in relation to the IERMP

The IERMP is a government-approved policy, and as such, it replaces the Energy Policy 2030 released in 2016. This policy serves in particular to guide the supply plans of regulated distributors while ensuring alignment with Québec's decarbonization initiatives and economic ambitions. In doing so, it supports the Minister in carrying out his mission with respect to energy planning and energy transition.

The Régie is an economic regulatory body whose mission is to monitor the energy sector and ensure a balance between the public interest, the protection of consumers in Québec and fair treatment of the electric power carrier and distributors.

2. Government of Québec, *Québec's commitments in respect of the climate*, 2026.

Its main responsibilities are to set the rates and conditions of service for electric power distribution, natural gas distribution and electric power transmission, and to monitor the operations of regulated enterprises to ensure that consumers' needs are adequately met and that customers pay fair rates.

The Régie's mission was enhanced in 2025 to clarify that, in addition to promoting the meeting of energy needs, it must also foster an orderly energy transition at the lowest cost, innovation, and the maximization of the economic, social and environmental benefits of energy for Quebecers. In carrying out its mission, the Régie must act in compliance with the policy directions and with a view to achieving the objectives and targets of the IERMP (ARE, section 5) and other government-approved energy policies or plans.

This renewed mandate will allow the Régie to exercise its jurisdiction in a way that contributes to the success of Québec's energy and economic vision. The Régie's exclusive jurisdiction over the setting of energy distribution and transmission rates and conditions remains unchanged. However, it will have to give greater prominence to innovation in its rate-setting methods and practices, and its decisions will have to promote the maximization of economic, environmental and social benefits for society as a whole in the short, medium and long terms.

Hydro-Québec, as the principal electric power distributor, must submit a 15-year electric power **supply plan**, prepared in compliance with the IERMP, to the Régie for approval. The same legal obligation applies to the **natural gas distributors** Énergir and Enbridge Gaz Québec for supply plans that, in their case, cover a 10-year period. These plans must also include a strategy for adapting the distribution system to allow for the injection of gas from renewable sources (GRS), which should foster local production and regional economic development.

In its capacity as electric power carrier, Hydro-Québec must, no later than six months after the Régie approves its electric power supply plan as distributor, make available online and file with the Régie a 15-year electric power transmission system development plan prepared in compliance with the IERMP. The transmission plan is not approved by the Régie, but the Régie must take it into account when reviewing the carrier's applications for authorization to make investments under section 73 of the ARE, such as for the construction of a new line. Such long-term planning will provide greater predictability regarding the investments required to achieve the IERMP targets and ensure that they are properly sequenced over time.

Electric power carrier's plan

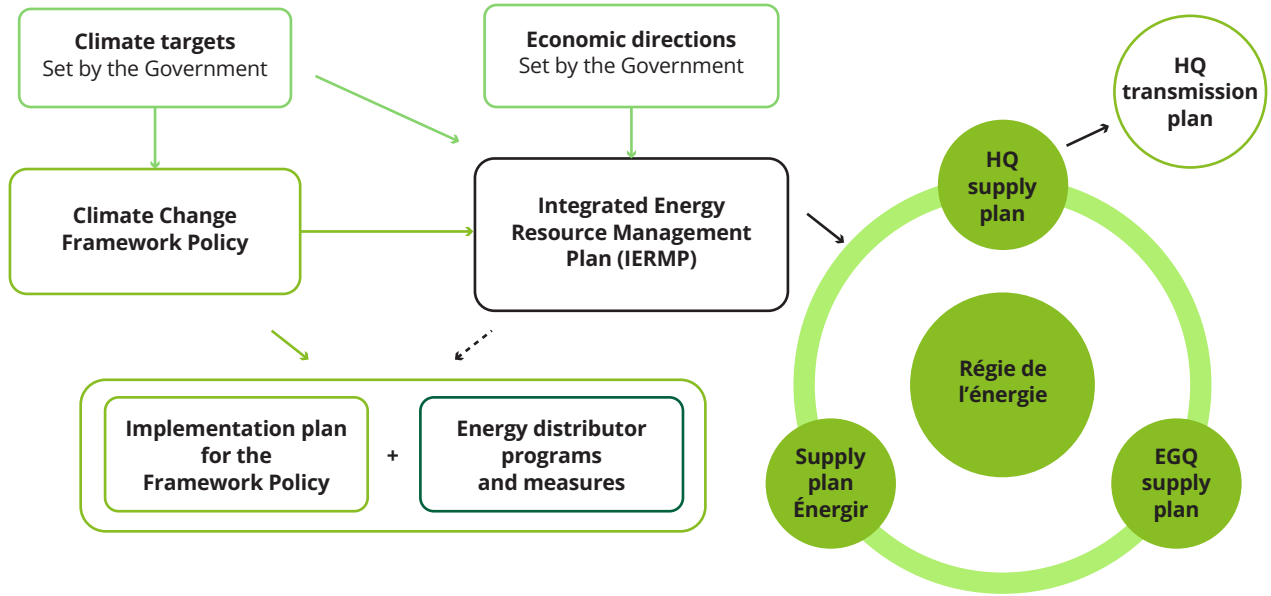
With an integrated, long-term vision, Hydro-Québec, in its capacity as an electric power carrier, will be better able to plan the development of the transmission system in a manner consistent with its supply plan as electric power distributor. This will ensure that the required investments are aligned with a long-term development vision in order to ensure the reliability and resilience of Québec's distributed energy systems, consistent with the policy directions, targets and objectives of the IERMP. For its part, the Régie will have to guide its decisions on the basis of the predictability provided by the IERMP.

Sector actors and the public will be consulted as part of the development of Hydro-Québec's first transmission system development plan. This plan will be expected to evolve gradually and become more precise in the coming years. Hydro-Québec has already stated that the transmission system upgrade plan should eventually bring into service 1,000 km of new lines and five new substations.[3]

The Minister of Environment, the Fight Against Climate Change, Wildlife and Parks is responsible, among other things, for developing the climate change framework policy, which is deployed through a five-year implementation plan updated annually. The implementation plan must take into account the IERMP's energy trajectory when establishing its energy sobriety, efficiency and conversion measures, in order to ensure coherence between climate objectives and energy supply capacity. Energy distributors must also submit to the Minister of Environment, the Fight Against Climate Change, Wildlife and Parks, for approval, the programs and measures they propose to make available to their customers in order to achieve the targets established by the IERMP.

3. Hydro-Québec, *Annual Report 2025*, 2025, page 13.

Figure 1: Roles and responsibilities of institutions and distributors in implementing the IERMP



HQ: Hydro-Québec
EGQ: Enbridge Gaz Québec

VISION AND PRINCIPLES

An ambitious vision

The IERMP sets out a mobilizing vision that continues a true societal project carried forward over several generations. Having inherited a renewable energy heritage built through ambitious collective choices, Québec now has a responsibility to extend that legacy, pass it on to future generations, and sustain it through ongoing dialogue with communities and the First Nations and Inuit. This vision aims not only to address climate challenges, but also to strengthen Québec's energy security, economic resilience and collective prosperity over the long term.

The development of renewable energy, improved energy efficiency, diversification of the energy mix and the adaptation of infrastructure are all levers for building an economy that is more competitive, more autonomous and better prepared for the transformations ahead. Just as earlier generations shaped Québec's modern energy system, Québec society is now called upon to make structuring choices so it can pass on to future generations an energy system that is even more sustainable, resilient and able to generate wealth.

This vision is based on the idea that the energy transition is, first and foremost, a collective investment in Québec's future: a mobilizing project that not only makes it possible to meet today's needs, but also gives those who come next the means to prosper in a changing world.

1. A lever for sustainable wealth creation

For several decades, clean energy production has been an important asset in Québec's economic development, generating major investments, creating quality jobs and fostering the development of industrial sectors. Our world is changing at a rapid pace, shaped by transformations in trade and international relations and by advances in artificial intelligence. More than ever, economic growth will depend on the availability of energy and on our ability to use it more efficiently and with greater sobriety. The industrial fabric will evolve, due in part to widespread interest in the processing of critical and strategic minerals and the growing needs of the digital data sector. The development of clean and renewable energy pathways, especially from local resources, will drive wealth creation and give us the means to achieve our ambitions. The investments required across all sectors will have to be directed so as to maximize economic benefits in Québec, support regional development and community vitality, and build energy autonomy and resilience, both through infrastructure deployment and through the economic activity enabled by the availability of energy, a growing share of which will be produced locally. This availability will also help attract foreign investment.

2. A prudent and pragmatic approach to planning

The IERMP takes a gradual approach that ensures the security, resilience and reliability of energy systems. It is based on maintaining and upgrading existing infrastructure, strengthening the power system and preserving strategic assets, including gas systems and petroleum product supply chains, to ensure the accessibility, availability and continuity of service during the transition period and in the event of disruptions across Québec. This approach incorporates risk management, particularly with respect to peak demand, critical dependencies and the impacts of climate change.

3. Optimal allocation of energy resources

The IERMP aims to guide energy uses toward the forms of energy best suited to each context, based on the specific needs of each sector, operational constraints and costs to the community. This pursuit of system-wide efficiency entails diversifying solutions and ensuring complementarity among energy pathways. In practice, this may involve the use of hybrid approaches, such as dual-energy systems in buildings, to respond optimally to peak demand challenges and more restrictive operating conditions.

4. A structuring energy transition toward decarbonization

The targets and initiatives Québec has adopted in recent years in various areas—including the target of reducing GHG emissions by 37.5% below 1990 levels by 2035 and the cap-and-trade system for GHG emission allowances—reflect its ambitions for decarbonizing its economy, with a view to achieving carbon neutrality by 2050. The IERMP is consistent with the principles and objectives of the climate change framework policy and with the greenhouse gas emissions reduction target. Underpinning energy system transformation are efforts to promote energy sobriety, improve energy performance and modernize equipment in the construction, transportation and industrial sectors, and replace fossil fuels with renewable energy. This transformation calls for sustained investment and a gradual reconfiguration of energy production and consumption patterns.

Québec's economic and energy objectives: an interdependent relationship that creates wealth and new opportunities

To meet its economic challenges, Québec must properly adjust and plan its energy production in order to decarbonize its economy, fuel the growth of Québec businesses, increase its attractiveness and foster its energy autonomy.

In doing so, Québec will ensure a promising future for young people today as well as future generations. It will create new opportunities for workers and businesses in all of its regions. The availability of energy will support the growth of Québec SMEs and continue to build a strong Québec.

The economic and energy development projects carried out as part of the IERMP's implementation will be levers of growth for the regions and First Nations and Inuit communities, through sustainable partnerships that will enable us to build the future of our nations together.

By replacing an increasing share of imported energy, growth in local energy production will contribute to Québec's energy autonomy, economic resilience, and an improved trade balance.

Energy will thus continue to play its dual economic role: as a catalyst for investment, know-how and innovation in the energy production and energy transition value chains, and as a driver of development and growth through its availability to businesses.

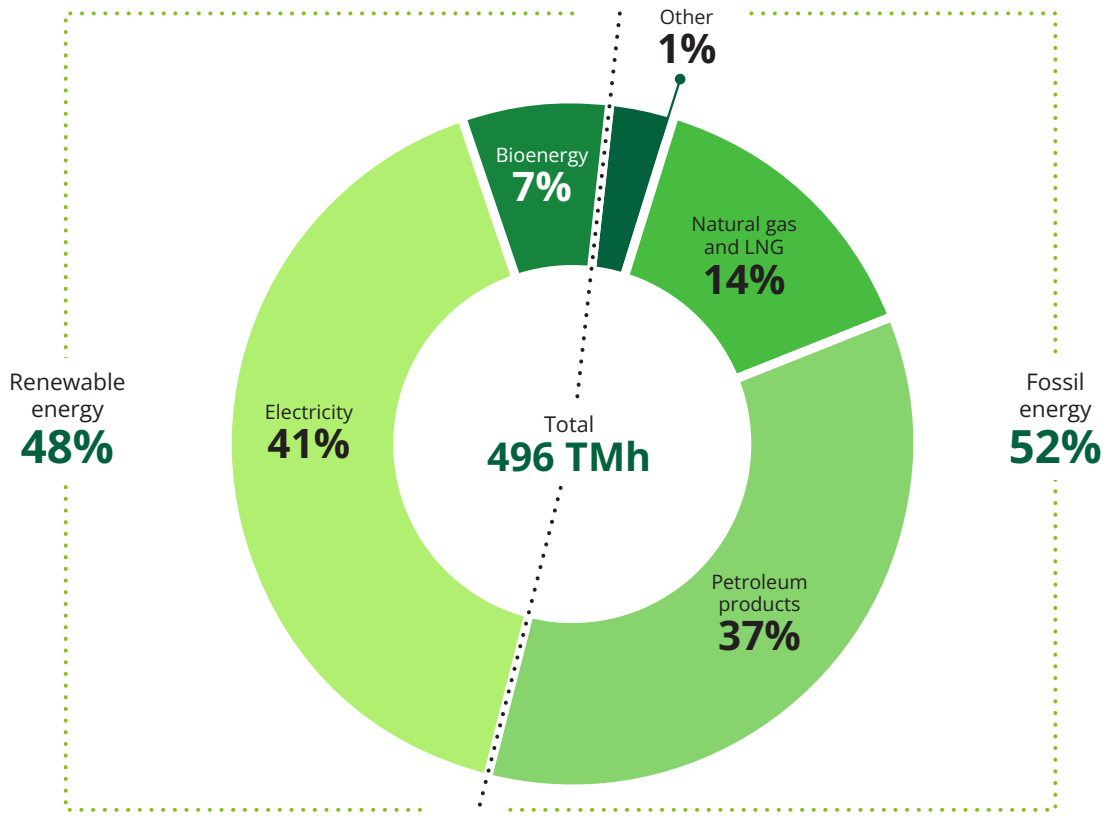
QUÉBEC'S CURRENT ENERGY SYSTEM

The following overview summarizes Québec's energy situation. More detailed data are available in the preliminary report prepared for the establishment of the IERMP (in French only). To facilitate the presentation of the results, the natural units of measurement for the various energy sources have been converted into equivalent terawatt-hours.

Overview of Québec's energy consumption

Thanks to the strategic decisions of its builders, Québec now enjoys an enviable energy mix. Nearly half of the energy consumed comes from sources that are not only renewable, but local as well, an additional asset. Despite this favourable position compared with other jurisdictions, whose decarbonization plans must first focus on decarbonizing electricity generation, the fact remains that approximately **52%** of the energy consumed by Quebecers comes from **fossil sources**, most of which is imported (see Figure 2).

Figure 2: Final energy consumption by form of energy in 2022[4]



LNG: Liquefied natural gas

4. 2022 is the reference year used for the modelling work that guided the decision-making. This is the last historical data available at the time of analysis.

Electricity accounts for 41% of final energy consumption, a share that has remained relatively stable in recent years. This firm footing reflects electricity's central role in Québec's energy system. It rests on a strong legacy that provides households and businesses alike with access to clean energy at rates among the lowest in North America. This comparative advantage has fostered the establishment and development of industries at the heart of Québec's economic growth, thereby consolidating electricity's structuring role in Québec's economy. It has also made electricity the most widely used energy source in buildings.

Petroleum products derived from crude oil account for 37% of Québec's final energy consumption. They are primarily used as transportation fuels, including gasoline, diesel fuel and aviation fuel. In the industrial sector, they are used both as an energy source for processes and as inputs for non-energy purposes. This dual use explains their continued significant presence in the energy mix and adds an additional barrier to the challenge of eliminating them.

Natural gas accounts for approximately 14% of final energy consumption in Québec and is used primarily in industry, where it meets significant, specific and continuous energy needs. It is also used in the building sector, mainly to heat large residential buildings, commercial buildings and large institutional buildings, such as offices, hospitals and schools. In a climate marked by harsh winters, it complements electricity as an energy source, helping to distribute energy demand and ease pressure on the power grid throughout the winter, especially during peak demand periods.

Bioenergy accounts for approximately 7% of final energy consumption in Québec. It comes mainly from solid biofuels, such as wood pellets or firewood, which make up the largest share, followed by liquid biofuels such as ethanol and, to a lesser extent, gaseous biofuels, including renewable natural gas. In industry and the building sector, solid biofuels are used primarily for heat production, for both processes and heating. Liquid biofuels have applications in industry and transportation, as do gaseous biofuels, although to a more limited extent.

Requirements for integrating low-carbon-intensity content into gasoline and diesel fuel

Since 2023, the Regulation respecting the integration of low-carbon-intensity fuel content into gasoline and diesel fuel (LSCR, Chapter P-30.01, r. 0.1) has required gasoline and diesel fuel distributors to include a minimum proportion of low-carbon-intensity content such as ethanol, biodiesel or synthetic fuels in the total volume they distribute each year. This proportion will increase periodically until it reaches 10% in diesel fuel and 15% in gasoline in 2030.

Obligations respecting the distribution of GRS

Since 2019, the Regulation respecting gas from renewable sources (CQLR, chapter R-9.01, r. 3.01) has required natural gas distributors to supply, on an annual basis, a specified proportion of GSR relative to the total volume of gas they distribute for end use within the territory covered by their exclusive distribution rights. This proportion is set to increase gradually.

Other energy sources, such as coal, propane and recovered waste heat, account for approximately 1% of final energy consumption in Québec. Coal is used primarily in specific industrial processes, such as steel manufacturing, where replacing coal remains difficult in the short term. Recovered waste heat, for its part, still plays a marginal role, but it is increasingly being considered as a complementary option to recover useful energy and improve system efficiency, particularly through the development of thermal energy networks.

Thermal energy networks

The basic principle of thermal energy networks—or *energy loops*—is that one or more energy production or heat recovery facilities supply nearby buildings or industrial sites through a network of insulated pipes. Such infrastructure can meet the thermal needs of those buildings and industrial sites for processes, heating or cooling. These networks are a concrete alternative for meeting Québec's significant thermal needs and can help reduce pressure on the electric power distribution system.

There are several examples of this type of infrastructure currently in operation in Québec. For example, the La Cité Verte project in the city of Québec, launched in 2009, uses a district heating system powered by forest biomass to meet the energy needs of more than 800 housing units, including condominiums, townhouses, apartments and affordable housing units.

Together, these forms of energy, many of which produce emissions and are imported, met the equivalent of 496 TWh of demand in 2022. Their complementarity and distribution across Québec support energy security by helping to manage consumption peaks, particularly in winter, and address uncertainties and risks, thereby strengthening the system's resilience. Established over many years, their mature and structured supply chains help make Québec's energy system more reliable and robust. Québec's desire to rely increasingly on renewable energy must not overlook the contribution of other energy sources. It is essential to properly sequence the transition to solutions that will ensure an equivalent level of security.

Origin of energy sources

The overview of Québec's energy supply highlights the importance for Québec of consolidating its local production capacity in order to increase the resilience of its energy system. Québec produces 42% of its energy supply locally. It therefore remains dependent on imports, mainly fossil fuels.

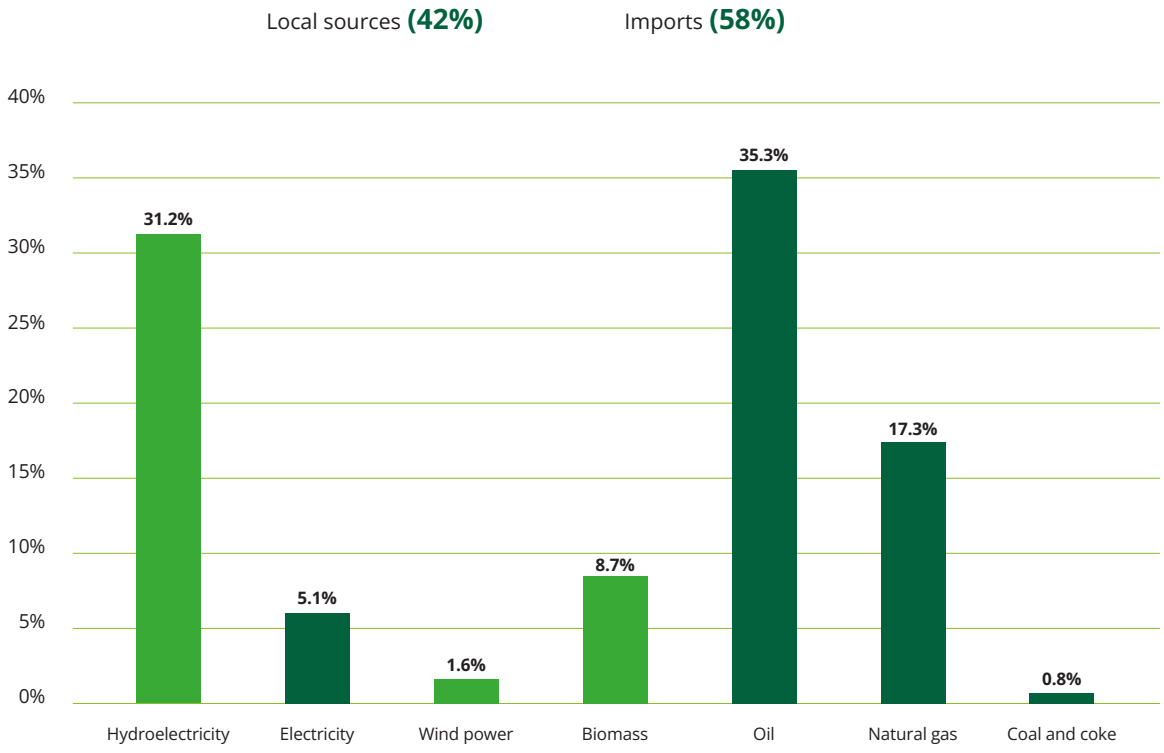
Local sources are dominated by hydroelectricity, which alone accounts for nearly one third of the energy supply. Biomass and wind power also contribute to diversifying the energy portfolio and increasing the share of renewable energy.

On the import side, oil is predominant, accounting for approximately one third of total supply, followed by natural gas.[5] These sources remain essential for certain uses, especially in transportation and industry, where alternatives are still being deployed, and for heating large buildings, particularly in cold weather. In this regard, Québec has local refining infrastructure that can transform crude oil, which comes entirely from Canada and the United States, into petroleum products and ensure fuel supply throughout Québec. More marginal contributions also come from propane, coal and imported electricity.

5. Since 2025, Énergir, which distributes more than 95% of the natural gas consumed in Québec, has obtained almost all of its natural gas from Canadian producers (99.5%), either through contracts entered into directly with those producers or through brokers that confirm the Canadian origin of the natural gas.

Overall, this distribution between local production and imports helps ensure continuity of energy supply. It is accompanied by an energy trade deficit, valued at $14 billion in 2022, reflecting the volume of hydrocarbon imports. This external supply also exposes Québec to the effects of energy shocks that may arise in an uncertain international geopolitical context, particularly for fossil fuels. In this regard, recent tensions in energy markets, supply chain disruptions and price volatility are prompting many countries to strengthen their energy security, including by pursuing greater energy autonomy and more diversified energy sources.

Figure 3: Availability of Québec's primary energy sources[6] 2022

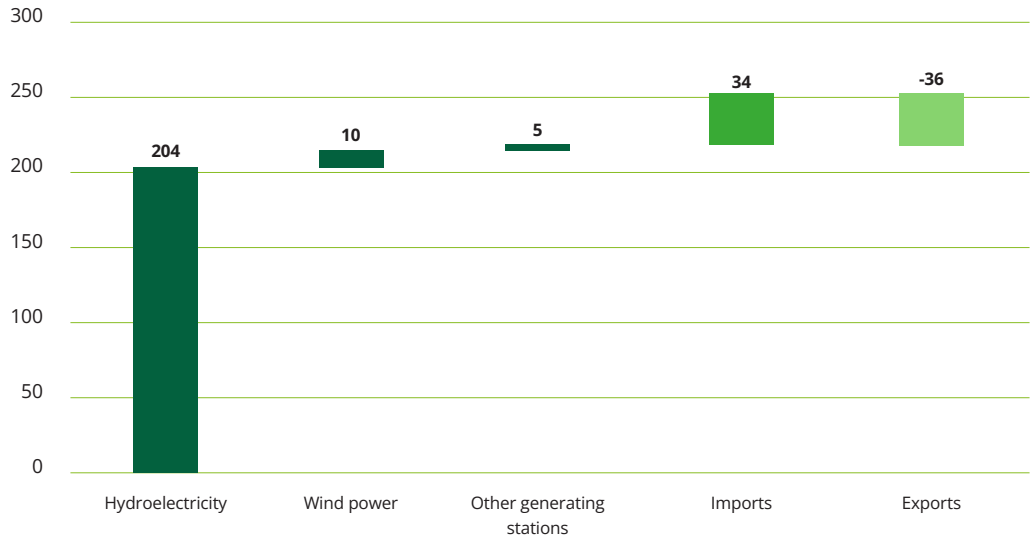


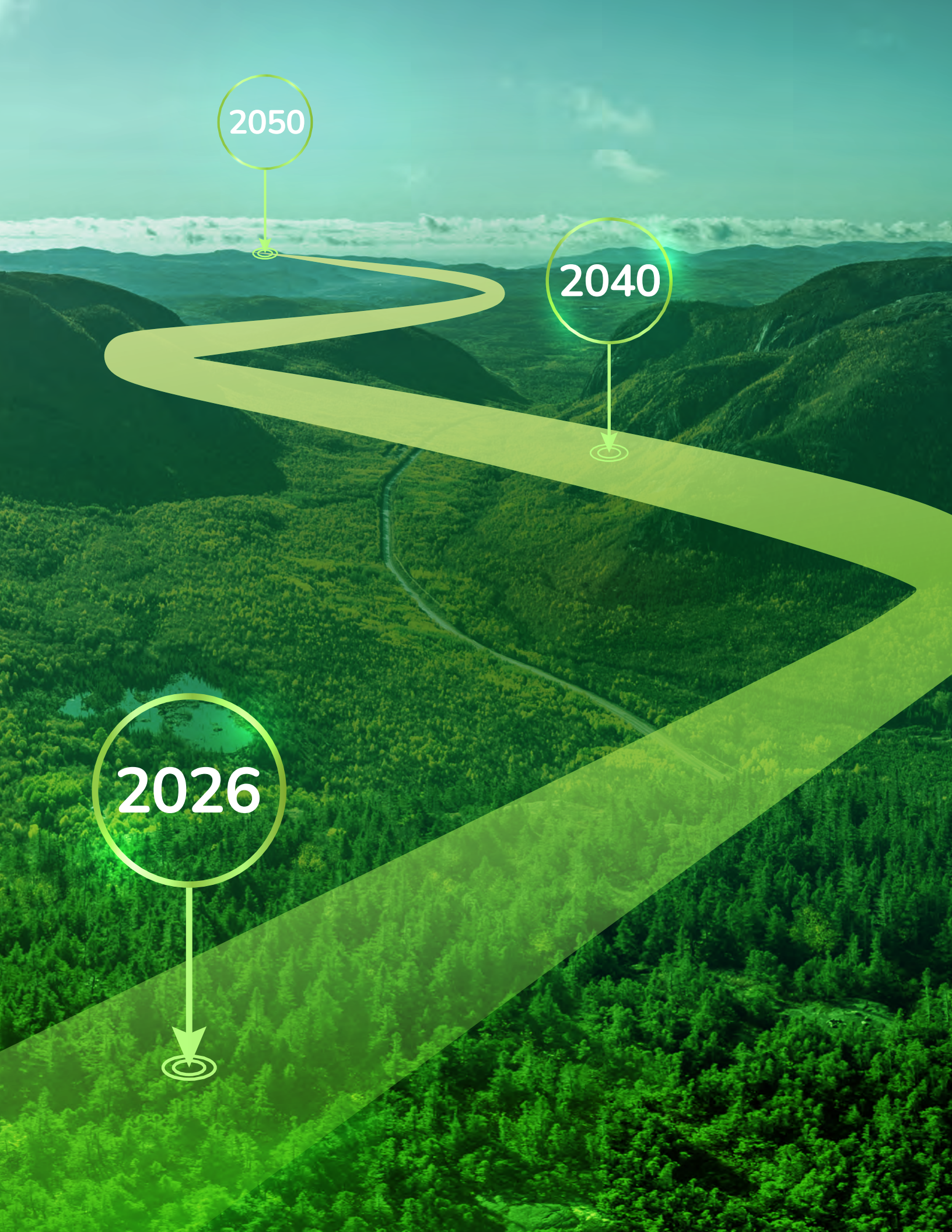
6. Primary energy sources are forms of energy available in nature, such as running water, wind, sunlight, crude oil and biomass, before any transformation.

Electricity supply

In 2022, Québec's electricity supply relied primarily on local generation, dominated by hydroelectric power (204 TWh), which remains the cornerstone of Québec's electric power system. This local generation also included a smaller share of variable sources, namely approximately 10 TWh of wind power, along with other supply sources, including 5 TWh from thermal power plants. This local generation was supplemented by electricity exchanges with neighbouring markets, with imports totalling 34 TWh and exports reaching 36 TWh. Taking all of these inputs into account, Québec's total electricity supply stood at 217 TWh in 2022.

Figure 4: Electricity supply in 2022 (TWh)




2050
2040
2026

POLICY DIRECTIONS AND ENERGY TRAJECTORY TO 2050

The forward-looking exercise conducted to establish the IERMP, together with the input received through the consultation and participation process, served as the basis for identifying an energy demand trajectory that the Government of Québec considers structuring: one that will support its ambitions for economic development, energy autonomy and the energy transition.[7] The government thus anticipates a demand trajectory in which the industrial fabric will evolve, as will energy demand in transportation and buildings, in line with changing demographics and technologies and the climate transition, while taking into account measures already implemented to control demand growth, including by the government.

Why is total energy demand declining?

Of course, energy efficiency and sobriety play a major role. But the contribution of electric technologies, which offer far superior energy efficiency compared with their fossil-fuel-powered equivalents, should not be overlooked:

- An electric vehicle consumes an average of **15 to 20 kWh**/100 km.
- One litre of gasoline is equivalent to 8.9 kWh of electricity.
- A gasoline-powered vehicle consumes an average of 7 to 10 litres/100 km, **equivalent to between 62.3 and 89.0 kWh**.

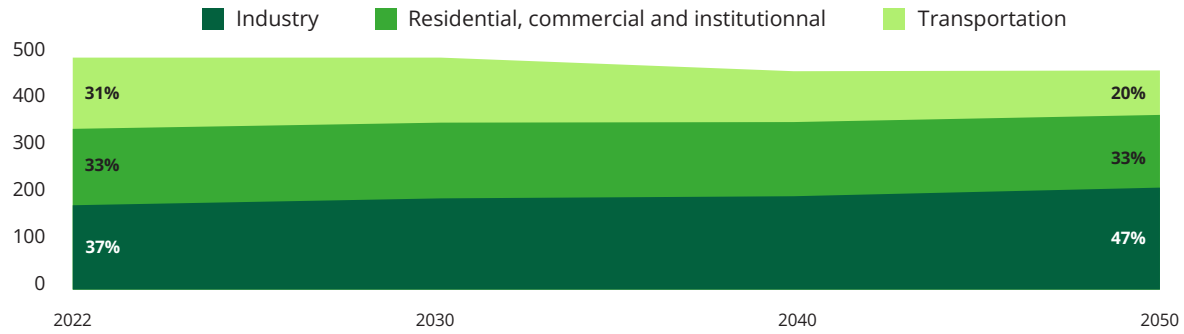
It's easy to see how total energy demand is expected to decline.

Projected energy need

It is estimated that energy consumption will decrease from 496 TWh in 2022 to 470 TWh in 2050, a decline of just over 5%. Indeed, the impact of economic growth on energy demand will be offset primarily by the electrification of uses and energy efficiency gains, which will enable energy to be used more efficiently. The main change in energy consumption will lie in how it is distributed across sectors. Transportation, which accounted for approximately 30% of total consumption in 2022, will see its share gradually decline to 20% in 2050, in particular due to the adoption of more energy-efficient electric vehicles. The share used by buildings will remain stable at one third of total energy consumption, owing to the adoption of more efficient equipment. Over the longer term, this trend will be offset by a significant increase in industrial energy consumption, driven in particular by the digital economy and advanced technologies, including data centres, the battery sector and natural resource processing industries.

7. The selected trajectory is based on that of the intermediate demand scenario D2 presented in the preliminary report prepared for the establishment of the IERMP (in French only).

Figure 5: Projected energy demand by sector (TWh)

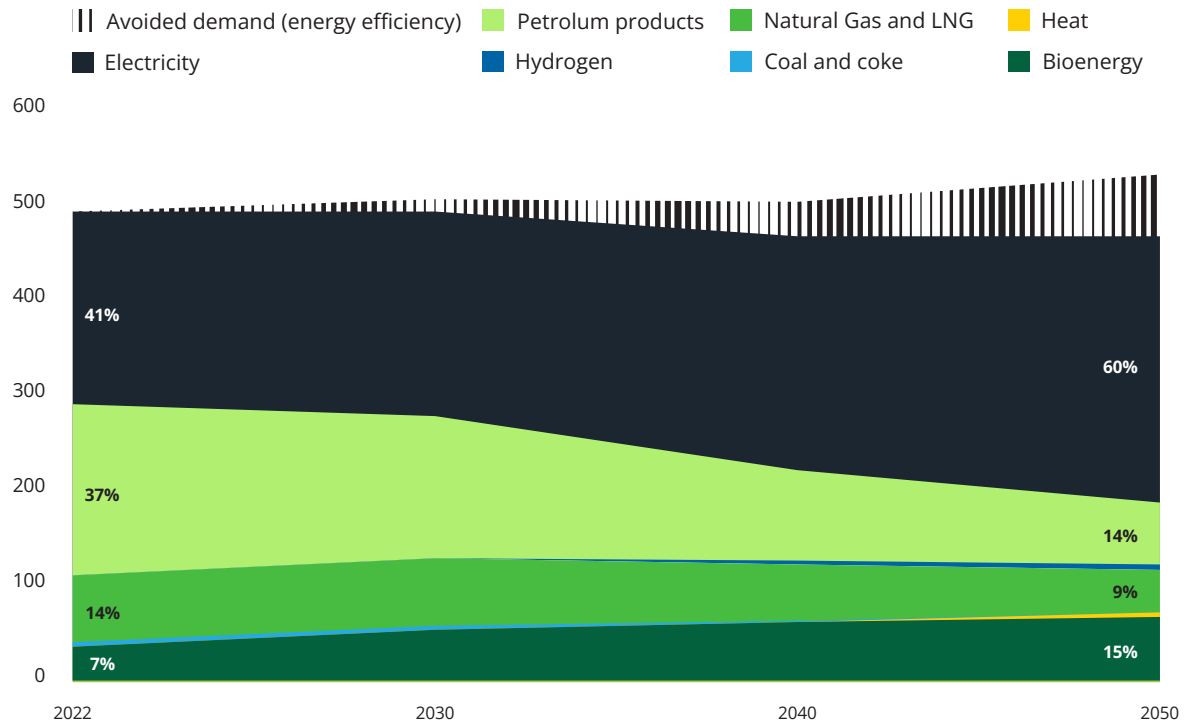


In addition to a decline in total consumption, the projection shows that renewable energy will make a significantly greater contribution. Final electricity demand will rise significantly over the entire period, reaching approximately 281 TWh in 2050, compared with nearly 200 TWh in 2022, representing an increase of approximately 40% from current levels. At that time, electricity will continue to be Québec's main renewable energy source, accounting for nearly 60% of total energy consumption.

Demand for bioenergy will double, bringing its contribution to approximately 15% of energy needs. Despite this increase, fossil fuels, including natural gas and petroleum products, will still account for nearly 23% of final consumption. Consumption of fossil-source natural gas will decline gradually, with an overall reduction of approximately 42%, while consumption of petroleum products will decline by 64% between 2022 and 2050. This residual fossil fuel consumption will include, in particular, applications for which low-carbon alternatives remain difficult to deploy on a large scale, such as aviation fuels and non-energy uses.

Hydrogen and thermal energy networks will play a larger role in the energy mix. Although their contribution will remain modest, at approximately 2% of total energy demand, this represents a notable and structured increase compared with 2022.

Figure 6: Projected total energy demand in Québec in 2050



This trajectory will therefore involve structuring changes in the energy mix. This dynamic calls for the parallel development of various clean energy pathways that can meet a range of varied and complementary needs. In this context, it is important to focus on the deployment of energy efficiency measures, such as the use of more efficient technologies, waste heat recovery and improvements to building envelopes, as well as on greater integration of flexibility solutions, all of which are essential levers for optimizing energy use.

Government objectives for the energy transition

In the coming years, the government intends to accelerate the energy transition. However, the current and future energy situation, particularly in light of the expected growth in demand for clean energy, requires that certain parameters be established and priorities set. Against this backdrop, the government is establishing five objectives to guide its action on the energy transition and environmental protection:

- Strengthen government action and alignment on energy transition by directing public policies and investment toward energy efficiency and sobriety and through greater use of legal and regulatory frameworks.
- Optimize Québec's renewable energy potential and energy resilience by building on local characteristics, mobilizing municipal actors, First Nations and Inuit, and taking into account climate change-related risks.
- Ensure a just energy transition by reducing energy insecurity and supporting stakeholders.
- Optimize living environments and passenger and freight transportation networks to reduce their energy consumption and move toward decarbonization.
- Rethink how goods and services are produced by focusing on the circular economy, supporting the evolution of business models and stimulating research and innovation.

The directions, objectives and targets of the IERMP are consistent with the government's objectives in energy transition, which stem from the climate change policy framework.

Given that 2050 is a distant horizon, and in light of the considerable uncertainty surrounding the evolution of the economic, energy and technological situation, the actual pace at which projects will be deployed, and the behaviour of households and businesses, the first IERMP adopts a prudent and pragmatic approach based on regular review of the energy trajectory. This approach is intended to prioritize no-regret measures,[8] while making it possible to prepare for the integration of solutions whose maturity remains uncertain. It is therefore not possible to identify today all the technologies that will be able to meet future needs. Québec will remain vigilant and adapt and review its approach at most every six years, as provided for in the Act respecting the Ministère de l'Économie, de l'Innovation et de l'Énergie, in particular to take new technologies into account and choose the best options for meeting demand.

The trajectory as outlined in the first IERMP is thus a first step toward carbon neutrality that calls on the most robust and proven means of achieving that goal in the short and medium terms. It nevertheless leaves room to evolve, allowing emerging solutions such as carbon capture and sequestration (CCS) or advanced biofuels to be integrated gradually as their technological development, competitiveness and deployment potential become clearer. This gradual approach will make it possible to adjust and enhance the means set out in future iterations of the IERMP in order to define a trajectory fully aligned with the objective of carbon neutrality.

This evolving approach also applies to climate change adaptation. How projected impacts on energy demand, energy production and risks to energy infrastructure are assessed will be refined and updated to reflect changes in observed and projected climate change. This will ensure that the energy trajectory is deployed from a climate resilience perspective, aligned with the climate change policy framework objectives.

8. No-regret measures are measures that have already been proven, whose benefits are clear in an energy transition scenario, and whose technological or economic uncertainties are low.

Investments to transform the energy mix

Overall, the additional investments required to implement the energy trajectory selected under the IERMP are estimated at $87 billion in cumulative real terms[9] by 2050. This includes the development of new generation capacity, mostly in the form of electricity, as well as the investments required to strengthen and develop electricity transmission and distribution networks. These investments also include the deployment of new infrastructure and networks associated with emerging and complementary pathways, including bioenergy, hydrogen and CCS.

They will profoundly transform Québec's energy mix and increase the share of renewable energy, from approximately 48% today to nearly 77% in 2050. In addition, they will contribute to emissions reductions in the sectors that are most difficult to decarbonize, in order to achieve the selected energy and climate trajectory for 2050.

They also include additional efforts to decarbonize uses across the economy. In the building sector, the additional efforts are primarily focused on commercial and institutional buildings, where further emissions reductions are still required. In road transportation, more extensive electrification of the vehicle fleet will be required to reduce fossil fuel consumption. In modes of transportation that are more difficult to electrify, such as marine, rail and heavy road transportation, the integration of liquid biofuels and hydrogen will help accelerate decarbonization. In industry, bioenergy will have a central role to play, particularly in energy-intensive industries such as ferrous metal production and non-metallic mineral production, as well as across the manufacturing sector.

Maximizing the economic benefits of energy development and the energy transition and creating wealth in all regions

The energy transition is a strategic lever, and decisions relating to the energy ecosystem must aim to sustainably increase wealth creation and the standard of living of Quebecers. Investments in the order of $87 billion are required to follow the selected energy trajectory[10]. These investments will generate significant economic benefits for Québec. By 2050, economic activity in Québec could increase by an additional $14.2 billion,[11] or approximately 1.7% more than if Québec were limited to pursuing the climate and energy policies already in force and achieving the GHG emission reduction target for 2035.

These benefits can be explained largely by the increase in the productive capacity of Québec's economy, that is, the capacity of businesses and economic sectors to maintain and develop higher value-added production of goods and services through more efficient equipment, more effective processes, innovation and the integration of new technologies. This transformation will help modernize Québec's economy, increase the competitiveness of businesses and strengthen their positioning in international markets with higher strategic value. It will also foster the emergence of skilled jobs and new opportunities for young people and future generations, enabling them to fulfil their potential and build their future in Québec in an economy aligned with the major technological and industrial transformations under way worldwide.

The energy transition should also generate positive benefits for Québec households by increasing their disposable income. This improvement will be mainly due to greater productivity in the economy and to the energy savings associated with the gradual replacement of equipment powered by fossil fuels with electric technologies, which are generally two to four times more energy efficient. For an equivalent level of service, households will therefore consume less energy for heating, travel and other household uses.

As a result, lower energy expenditures will broadly offset some of the costs associated with the transition and help maintain consumers' purchasing power. It is therefore estimated that Quebecers could benefit, on average, from an increase of approximately $1,089 in their disposable income in 2050, supporting both household consumption and economic activity. This would mean an estimated $8.5 billion increase in household consumption, thereby contributing to the vitality of sectors of Québec's economy.

9. In billions of 2024 dollars.
10. However, the energy transition will require much larger investments. These additional investments are over and above the investment costs of a trajectory limited to pursuing existing climate and energy policies and achieving the 2035 GHG emission reduction target. Capital investments for energy production are estimated at $365 billion. In addition to this, investments may be required to improve the quality of service of the electrical grid, which are not included in the capital costs as they stand.
11. The main assumptions used to assess the economic impacts of the additional investments are presented in Appendix 2.

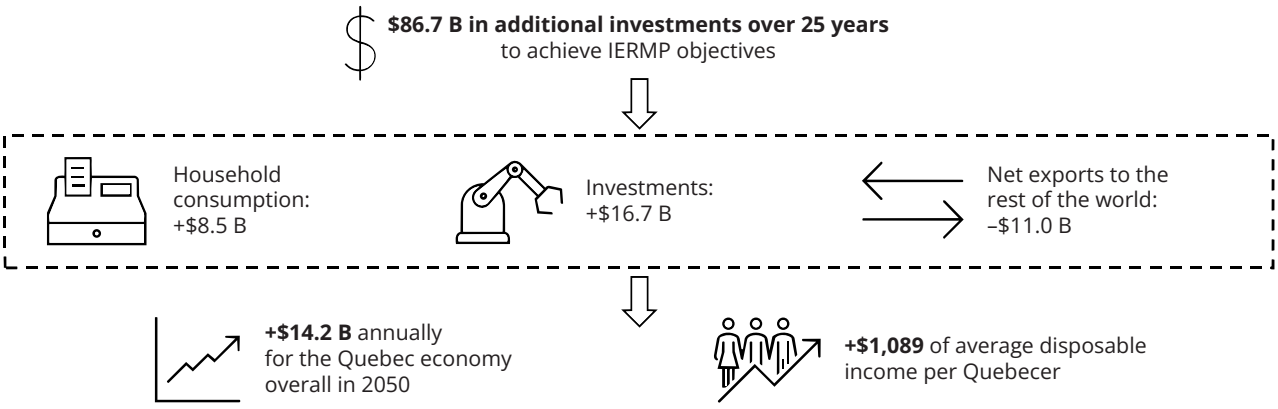
This growth in economic activity is attributable to a $16 billion increase in investment, the vast majority of which will come from the private sector ($9.6 billion). These investments will mainly go toward energy, increased industrial production capacity, and building improvements or the construction of higher-performance buildings that emit fewer GHGs. A significant share of these investments will also support the adoption of advanced technologies, particularly in automation, digitization and artificial intelligence, improving businesses' energy and material efficiency.

The changes arising from the creation of new economic activities and the transitions required in certain sectors of the economy could require particular attention to workforce training and qualifications. These transformations will need to be accompanied by stronger training offerings and measures to support skills development and workforce adaptation to new business needs.

During the economic transformation phase, Québec will need to import goods, technologies, materials and services in order to develop the infrastructure and acquire the equipment required for the energy transition, which will have a negative impact on its net exports by 2050 (-$11.0 billion).

However, the energy transition will also gradually improve Québec's trade balance over the long term. By increasing local renewable energy production and reducing its dependence on imported fossil energy products, Québec will gradually reduce energy imports as a share of its overall trade. This shift will strengthen Québec's energy autonomy while improving its trade balance over the long term. As a result, the impact on net exports is expected to be positive over the long term, once the IERMP-related investments have been made.

Figure 7: Impacts of additional investments on Québec's economy by 2050 (in 2024 dollars)



The economic benefits of these investments will nevertheless vary by sector. The largest gains are expected to occur in the services and construction sectors, driven by needs arising from energy infrastructure, building renovations and the deployment of new equipment. The manufacturing sector will also benefit from these impacts, especially energy-intensive industries and processing sectors. The electricity sector will, of course, benefit from this growth, particularly as a result of increased economic activity and the need to operate and manage new energy infrastructure.

Lastly, investments under the IERMP will help increase Québec's energy productivity by 48% compared with 2022 ($497/GJ in 2050). By fostering the adoption of more efficient technologies, improved energy efficiency and changes in production processes, Québec's economy will be able to generate more wealth while consuming proportionally less energy. This improvement in energy productivity will strengthen the competitiveness of Québec businesses and support more sustainable economic growth over the long term.

In pursuit of energy productivity

To guard against pressure from energy costs, businesses will benefit from investing to improve their energy productivity and thereby their competitiveness.

Unlike energy efficiency, which is aimed primarily at reducing energy consumption while maintaining the same level of service, energy productivity seeks to increase the value created for each unit of energy consumed. It is defined as wealth created relative to such consumption, expressed in monetary units. Energy productivity is therefore based on an overall improvement in business performance, which may stem from innovation, automation, operational optimization, organizational changes or changes in the business model.

Energy efficiency measures are an important lever for improving energy productivity, as they reduce losses and optimize energy use in processes and buildings. Initiatives such as *Transformation énergétique numérique*, which is designed to support manufacturing SMEs in improving their energy performance through the adoption of digital technologies and practices, will help increase Québec's energy productivity.

The same is true of the ISO 50001 international standard for energy management systems, which has not yet been widely implemented in Québec, and the many energy efficiency measures that can be introduced in businesses.

Beyond their economic benefits, these investments will help affirm Québec's place as a modern, innovative and resilient economy built on renewable, competitive and locally produced energy sources. By supporting the development of strategic industries, technological innovation and the creation of skilled jobs in all regions, the energy transition will help create favourable conditions for Québec's sustainable prosperity. It will thus help provide future generations with a dynamic economic environment and the means to achieve their full potential in Québec.

Energy targets to be achieved

Québec's energy mix through to 2050 will undergo a structuring transformation to meet needs. The distribution of energy sources will shift toward a greater role for energy efficiency and sobriety, as well as renewable energy, particularly electricity and bioenergy, which will become pillars of the energy transition.

The government is establishing a set of structuring targets to meet projected energy demand. These targets reflect the government's vision of adapting energy production to support Québec's decarbonization, economic growth and energy autonomy. They will guide the development of local pathways in order to strengthen the resilience of the energy system, stimulate investment, and ensure a reliable supply for the benefit of businesses and regions.

The targets presented express, for each of the three milestones in the period, the additional needs relative to 2022[12] and therefore form part of a cumulative progression.

Energy targets	2022 Starting point	2030	2040	2050	Total in 2050
Energy efficiency					
Energy efficiency in electricity (TWh)	0	7	30	50	50
Energy efficiency in natural gas (TWh)	0	3	9	14	14
Supply					
Hydro-Québec's new electricity supplies (TWh)[13, 14]	195[15]	15	60	100	295
New supplies and tools to meet peak needs[16] (GW)	43	2	12	22	65
New bioenergy supplies (TWh)	40	11	30	50	90

To ensure the transition is consistent with this trajectory, everybody's actions will need to align with the policy directions and objectives set out in the following pages and summarized in Appendix 3.

12. 2022 is the reference year for the modelling work that guided the decision-making, and was the most recent year for which a GHG emissions inventory was available when that work was carried out.
13. The Act to ensure the responsible governance of energy resources and to amend various legislative provisions, assented to in June 2025, set an interim target of 255 TWh for Hydro-Québec's electricity supply as at January 1, 2035. This interim target is replaced by the official IERMP target: an additional electricity supply of 100 TWh in 2050 compared with 2022, for a total of 295 TWh.
14. Hydro-Québec's electricity supply includes power it generates itself, in partnership, under supply contracts and by any other means of meeting electricity needs, but excludes energy efficiency gains.
15. In 2022, electricity supply reached 217 TWh, of which 195 TWh was supplied by Hydro-Québec. The remaining 22 TWh came from self-generators and independent private producers. This trajectory could also be supplemented by a growing contribution from local private generation, which is expected to evolve based on sectoral trends and economic conditions.
16. Peak electricity needs, or *peak demand*, refer to the maximum level of electricity consumption on the system at a given time. The trajectory for this target reflects compliance with the Northeast Power Coordinating Council (NPCC) capacity reliability criterion in each period.


H_2

POLICY DIRECTION 1 – MAKE QUÉBEC AN EXEMPLARY ENERGY CONSUMER

Energy efficiency is a central lever in Québec's energy trajectory and reflects the intention to prioritize it as a leading source of supply for households and businesses alike. With pressure growing on available renewable energy, this policy direction prioritizes capturing energy savings before adding new generation capacity, with 2050 energy efficiency targets of 50 TWh for electricity and 14 TWh for natural gas.

By optimizing consumption and reducing demand at the source, energy efficiency and energy sobriety limit the need for new generation and transmission infrastructure, thereby helping to improve energy resilience and reduce the required investments and impacts across Québec. They can also generate significant economic benefits.

In addition to technological advances and improvements in the energy performance of the building stock, particularly through renovations, achieving this target will depend on a structural transformation of consumption habits and better land use planning. This shift will involve regulations, incentives and innovative financing to support coherent collective choices.

Energy efficiency, which is becoming a true source of supply on the same basis as other pathways, is a priority strategic lever. The anticipated gains show its potential to be deployed quickly across all sectors, at a lower cost and on a large scale. To achieve this target, the right levers will need to be put in place to ensure that all actors, including households, businesses and industries, adopt the right solutions at the right time.

Improving energy efficiency depends on investments in building retrofits, waste heat recovery and the adoption of more efficient technologies. It helps optimize and reduce consumption, making Quebecers key actors in the energy system. By reducing both overall and peak demand, energy efficiency helps ease pressure on generation capacity and optimize the use of available resources. Upstream, energy sobriety is a structuring lever based on systemic, collective and individual choices that reduce demand at the source.

Complementary approaches to reducing demand and peaks

Sobriety: reducing our energy demand by lowering needs at the source. It involves rethinking our consumption habits and is based on individual and collective choices that limit energy demand.

Efficiency: a way of optimizing energy consumption through improved use of available energy to achieve better energy performance. It means using less energy to produce the same good or deliver an equivalent level of service.

Energy management: a structured, systematic approach to monitoring, measuring and continuously improving an organization's energy consumption, whether it is a business, institution or municipality. It helps reduce energy costs through better management and the deployment of a set of best practices and tools.

Objective 1.1: Create the conditions to unlock the potential of energy efficiency as a source of supply in its own right

Energy efficiency projects face a number of barriers that hinder their development, including lack of knowledge, significant investment costs, immature technologies and simple lack of interest. Accelerating the adoption of behaviours, lifestyles and individual or business solutions that lead to more optimal use of energy and capacity will require a variety of levers.

One way to unlock the potential of energy efficiency is to improve consumers' understanding of energy issues.

- **Run awareness and information campaigns and tools developed jointly with representatives of the target audiences, to deepen their understanding of Québec's energy challenges.** Consumption habits directly influence the number of new energy projects to be implemented and the investments required and, as a result, the cost of energy. This reality is not widely understood.

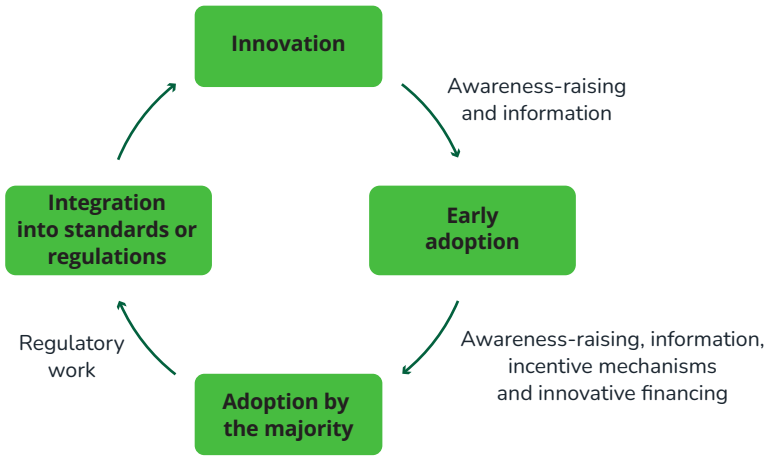
A second way is to create conditions that encourage more responsible choices.

- **Use incentive mechanisms, including rate-based mechanisms, that encourage more efficient use of available energy or consumption at different times, for example by supporting the adoption of high-performance or digital technologies.** Coordination between energy distributors and the government remains essential to ensure strong coherence across interventions. The analysis of energy efficiency efforts will have to take into account the non-energy benefits of programs, both economic and social, in order to better reflect their overall value to society.

A third approach is to make best practices or state-of-the-art equipment available, and, in some cases, mandatory.

- **Carry market transformation cycles through to the adoption of the most efficient technology or construction technique, for example, and then begin the cycle again.** This means preparing the ground for future innovations through targeted support for research and transition measures, while propelling mature technologies toward large-scale deployment. Regulatory actions that bring these cycles to completion will lock in the energy gains achieved through the efforts made, for example by modernizing the standards applicable to buildings and appliances to incorporate technological advances and encourage energy-efficient construction and retrofits.

Figure 8: The market transformation cycle



Innovation in energy efficiency financing mechanisms will also be essential. The Société de financement et d'accompagnement en performance énergétique (SOFIAC), an energy efficiency financing vehicle that offers private businesses a turnkey service with no upfront investment, is a strong example of innovative financing. Launched with support from the Québec government in 2021, SOFIAC now supports energy efficiency initiatives across Canada, and its model has even been adopted in France.

More systemically, optimizing land use and urban planning are other structuring levers. By factoring energy considerations into the design of living environments, they maximize infrastructure efficiency and give citizens access to practical solutions for better managing their energy demand. The government's land use planning policy directions set out Québec's vision in this regard.

The development of adapted energy infrastructure, such as thermal energy networks, or *energy loops*, makes it possible to structure a more efficient offering that is better integrated across Québec and, among other things, facilitates the recovery of local waste heat, while supporting the deployment of pathways such as community geothermal energy and renewable heat production. This approach also helps reduce electricity capacity needs.

Lastly, relying on the circular economy is a complementary lever for reducing energy demand at the source. Measures that support the circular economy will make a significant contribution to energy efficiency and sobriety gains by maximizing the use of resources already in circulation while reducing the energy needs associated with production cycles. In practical terms, this approach will help avoid energy expenditures associated with resource extraction and processing, while supporting solutions such as heat recovery, energy recovery from residual materials, ecodesign and industrial symbiosis.

Circular economy

A system of production, exchange and consumption that seeks to optimize resource use at every stage in the life cycle of a good or service, based on a circular model, while reducing the environmental footprint and contributing to the well-being of individuals and communities.

POLICY DIRECTION 2 – ENSURE A SAFE, RESILIENT ENERGY SYSTEM THAT ADAPTS TO CHANGING ENERGY NEEDS

Achieving a safe, resilient energy system adapted to new energy needs and climate change demands a diversified and mostly renewable energy mix structured around complementary and flexible energy pathways and running on robust infrastructure and networks.

The complementarity of energy networks is a central lever for optimizing access to energy at a lower cost, while strengthening the system's reliability, resilience and flexibility. From this perspective, making full use of existing energy infrastructure, including electricity and natural gas distribution systems, is strategic. Similarly, petroleum product distribution infrastructure will need to be adapted to support the gradual integration of liquid biofuels, including through changes in storage capacity, and, of course, to ensure a safe and reliable supply for the uses required during the transition.

To this end, it is important to support investments in the various networks. It is also important to continue greening the gas system and to support the growth of GRS production in Québec in order to maximize its economic, environmental and operational benefits. The system's resilience and security also depend on the growing use of flexible levers to meet needs during periods of peak electricity demand, including the capacity contribution of supply resources, demand management, and the use of complementary resources and storage solutions. These measures will make it possible to cover a larger share of peak demand, which could reach up to an additional 22 GW in 2050.

Taking projected climate change into account in generation planning and in infrastructure design and maintenance will also help ensure the security and resilience of the energy system.

Capacity needs are a central issue in energy planning in Québec because of its climate, which is characterized by high winter consumption peaks that continue to extend over several hours and are expected to evolve with global warming and new summer demand pressures. Ensuring the ability to meet demand at all times, particularly during periods of intense and persistent cold, remains essential to the reliability of the power grid and is a high priority for Québec.

A rigorous analysis of winter peak issues was conducted to assess how capacity needs will evolve and the means required to meet them. This exercise made it possible to estimate the potential contribution of the various levers that can be mobilized to meet needs during peak periods, including a reserve to comply with the NPCC capacity reliability criterion. On that basis, additional capacity needs could reach nearly 2 GW by 2030 and approximately 12 GW by 2040. This analysis also shows the need to make better use of peak management solutions.

While natural gas makes a tangible contribution to security and resilience, GRS will gradually offer a sustainable alternative. GRS includes all fuel gases produced from organic matter or renewable energy, including gaseous bioenergy such as RNG, biogas, renewable synthetic gases and renewable hydrogen.

The gradual addition of thermal energy networks will help limit growth in demand during periods of peak electricity demand, while promoting energy efficiency, the development of renewable thermal energy pathways and the diversification of the energy system. By 2050, the energy distributed through this type of infrastructure could potentially reach up to 4 TWh, reflecting the deployment of numerous networks of varying sizes across Québec's regions.

Lastly, changes in the energy mix will require resilient energy networks, especially as climate change places increasing stress on our energy infrastructure and a growing share of Québec's energy supply depends on that infrastructure. It is therefore important to invest in this strategic infrastructure in order to ensure reliable, safe service that meets Quebecers' expectations. This will involve not only developing new infrastructure, but also maintaining, modernizing and adapting existing distribution networks for all forms of energy consumed in Québec, in order to preserve their performance and their ability to meet future needs.

Objective 2.1: Maintain and further develop a diversified energy system by building on the strengths of each energy pathway

Diversifying the energy mix by leveraging complementarity among energy pathways is a central lever for strengthening energy security and improving peak management. It depends, in particular, on increasing the share of non-electric energy pathways in order to provide local alternatives suited to thermal needs and reduce pressure on the power grid during critical periods. From this perspective, making use of forest biomass, agricultural residual materials and wastewater will help increase the supply of bioenergy and support sustainable diversification of the energy mix while generating regional economic benefits. The gradual addition of thermal energy networks, which are still uncommon in Québec, will capitalize on these thermal energy pathways while increasing the resilience of the energy system. To that end, new business models that complement regulated networks will need to be developed, in collaboration with local communities, to support the supply of thermal energy to customers. Market operators that undertake to build and operate these thermal energy networks will help provide a new secure energy supply solution.

In addition, the development of solid, liquid and gaseous bioenergy will help broaden the options available for a range of uses. This approach is intended to draw on each energy pathway according to its comparative advantages and the uses involved, within an integrated framework based on energy system complementarity and resilience.

Lastly, the development of green hydrogen will not only support the decarbonization of sectors that are difficult to electrify, such as heavy transportation,[17] and certain industrial processes, but also contribute to the production of bioenergy and synthetic energy, or *electrofuels*, such as synthetic methanol, renewable propane and sustainable aviation fuels. By 2050, the need for this versatile energy carrier could reach 9 TWh.

Leveraging and adapting energy infrastructure

Investment costs can be optimized through gradual, pragmatic planning for the deployment of energy pathways, making full use of existing infrastructure, adapting it where needed, and gradually ramping up local production. This approach will not only limit the investments required, but also strengthen the resilience and flexibility of the energy system.

Electricity infrastructure will therefore need to play a dual role: increasing the amount of energy available on an annual basis and ensuring sufficient capacity to meet needs during peak periods. This can be achieved through a variety of supply solutions, from local power generation to imports through commercial agreements.

RNG already benefits from an existing distribution system that can be leveraged to limit additional investment in the power grid and reduce the overall cost of the transition. Similarly, the gradual greening of liquid fuels, including diesel and gasoline, will rely on the integration of biofuels and the adaptation of existing storage and distribution infrastructure.

The advantages of the gas system and thermal energy networks

The gas system and thermal energy networks offer valuable energy supply and storage capacity in a northern climate, where heating needs increase energy demand in winter. This infrastructure also provides an alternative energy solution during temporary incidents, such as power outages, helping to maintain front-line services and make communities more resilient to extreme weather events.

17. Hydrogen is an alternative for electrifying heavy road transportation, a use case in which charging time and battery weight are examples of operational constraints faced by trucking industry. According to the International Energy Agency, there were more than 15,000 hydrogen trucks on the road in 2025.

Territorial resilience and decentralization of the energy system

The deployment of decentralized energy generation solutions is a structuring lever for strengthening the resilience of the energy system while supporting regional economies.

This objective of diversifying the energy mix is intended to promote the use of resources available across Québec, such as forest biomass, solar energy and GRS, and to develop local networks adapted to the varied realities of the regions while making use of local expertise. These networks will help strengthen energy security and generate economic benefits distributed across Québec.

Bringing production closer to consumption sites within a regional energy ecosystem will:

- promote a better match between energy supply and needs;
- reduce losses and costs associated with energy transmission and contribute to a more balanced distribution of loads across networks;
- improve the system's ability to withstand climate hazards and external shocks by providing alternatives to the main grid and limiting the distances to be covered;
- generate synergies, such as local recovery of waste heat from a cogeneration plant that uses a region's forest biomass to actively contribute to electricity generation in Québec.

Objective 2.2: Increase flexibility and optimize energy system operation

Flexibility levers are essential to balancing the power grid. They are used to temporarily adjust or modulate energy generation, consumption or storage. Consumers will now play an active role in operating the grid, beyond their traditional role as users. To increase flexibility and optimize the operation of the energy system, the targeted actions are based on:

- the deployment of flexibility solutions such as dual-energy systems, storage—including pumped-storage generating stations and grid-scale battery farms—behind-the-meter storage solutions and emerging technologies, such as bidirectional electric vehicle charging, commonly referred to by its abbreviation V2G;
- the use of innovative solutions to support the development of regional energy ecosystems and microgrids, make use of existing capacity and limit the need for new infrastructure;
- strengthening complementarity between the electricity and gas systems, as well as with neighbouring systems;
- consumer-based solutions in which consumers become key contributors to energy system flexibility and resilience, including by modulating their consumption during peak periods and contributing to energy production.

Electrical flexibility is a key component of the energy system's efficiency and stability. It refers to the ability to adjust electricity generation, distribution and consumption in response to fluctuations in demand and supply on the power grid.

Demand response reduces or stops consumption in real time or on a scheduled basis without any requirement to resume consumption later.

Load modulation uses smart solutions such as Hydro-Québec's Hilo service to optimize consumption.

Self-generation and the net metering option allow customers who generate electricity to meet some or all of their needs to inject their surplus electricity into Hydro-Québec's grid.

Complementarity between the electricity and gas systems

Complementarity is an approach that seeks to optimize the value and use of electricity and gas infrastructure based on the specific characteristics of Québec's energy ecosystem, through coordinated planning and implementation. It can be achieved in various ways, including through dual-energy systems, virtual power plants, or any other solution that supports the continued use of existing infrastructure. The IERMP therefore encourages gas distributors and Hydro-Québec to continue working together to maintain existing solutions and develop new, innovative ones that could potentially avoid between 1.5 and 3.5 GW in electricity peak-period needs in 2040 and between 3.5 and 5.5 GW in 2050.

In this regard, consistent with the government policy directions already presented, energy efficiency regulations and standards, as well as rates and conditions of service, will need to incorporate capacity demand management in order to support the deployment of solutions that optimize consumption profiles and reduce needs during peak periods.

Objective 2.3: Anticipate and structure investments to support future energy needs, strengthen system resilience and ensure adequate reliability

Investments in transmission, storage and distribution systems must be guided by a long-term perspective, consistent with Québec's energy transition targets and economic ambitions. Integrated planning over a horizon of 25 or more years will help anticipate structural demand growth, industrial transformation and changes in energy use. Such an approach supports optimal resource allocation, ensures that future supply and demand are aligned, and limits the risk of late or suboptimal investments. With this in mind, supply plans, the electric power transmission system development plan and natural gas distribution system adaptation strategies will help guide and support network development in high-growth areas, whether that growth is associated with changes in demand or the potential for generation development.

Ensure a stable investment framework and strengthen infrastructure resilience

Infrastructure resilience will depend on modernization, reducing the frequency and duration of outages, and better preparation for climate hazards and asset ageing. Improving service quality will require a sufficient, predictable and sustainable financing framework to support the development of reliable, flexible and resilient networks. As the impacts of climate change continue to grow, it is also important to strengthen the resilience of generation, transmission and distribution infrastructure to extreme events, for example through better vegetation management. Anticipating structural risks and external shocks based on their likelihood is essential to strengthening the robustness of the energy system and ensuring service continuity in a changing environment. The Régie will therefore have to ensure that, in analyzing the various applications submitted by the electric power carrier and distributor, it takes into account the priorities identified, including in Hydro-Québec's strategic plan approved by the government and in the transmission system development plan prepared by Hydro-Québec.

During the transition period, it will be imperative to ensure the proper operation of all transmission and distribution infrastructure in order to avoid service interruptions and ensure the resilience and security of energy supplies. Accordingly, despite gradual reductions in the consumption of fossil fuels, including petroleum products, propane and natural gas, investments will remain necessary during the transition to maintain and adapt the strategic infrastructure of these energy pathways.

Energy challenges in northern Québec

Although its population represents only 1.5% of Québec's total, northern Québec faces distinct energy challenges:

- High energy intensity and greenhouse gas emissions compared with southern Québec;
- Dependence on petroleum products to supply remote communities that are still powered by off-grid systems, often by marine transportation, creating logistical risks and high costs;
- An industrial base that accounts for more than 80% of energy consumption and GHG emissions north of the 49th parallel;
- Increased climate change risks due to thawing permafrost, which affects infrastructure stability and causes erosion.

Electrifying these communities' off-grid systems using decentralized renewable sources will increase their energy security and resilience while providing benefits and opportunities for economic diversification.

Support for innovation to foster decarbonization in industry will also generate lasting socioeconomic benefits, diversify the economy, and preserve the environments of northern Québec.

POLICY DIRECTION 3 – SUPPORT THE DEVELOPMENT OF RENEWABLE ENERGY PATHWAYS

Renewable energy will play an increasingly important role in the energy trajectory, which means Québec will need to step up the development of these pathways in order to meet growing energy demand. Despite expected energy efficiency gains, current production will be insufficient to meet energy needs by 2050, making it necessary to accelerate the development of renewable energy pathways. Electricity demand is expected to grow steadily, while bioenergy consumption is expected to double. By 2050, Québec will therefore need to increase its electricity supplies by 100 TWh as well as its bioenergy supply by 50 TWh, which will support the recovery of local residual biomass. Within this overall target, forest bioenergy will play a strategic role, with a production objective of approximately 20 TWh in 2050, making it a specific and structuring component of the bioenergy sector as a whole.

Québec's ability to transform its energy system in this way will depend on creating conditions that support the growth of the various pathways, maintaining and strengthening their supply chains, and integrating the innovation and technological solutions needed for an optimal energy transition.

Together, electricity and bioenergy will represent nearly 150 TWh of new renewable energy supplies by 2050. This will be supplemented by approximately 50 TWh from electricity efficiency gains, for a total of nearly 200 TWh of additional available energy. Bioenergy will represent one-third of new renewable energy supplies by 2050, underscoring the importance of unlocking its potential for local production. Derived mainly from forest and agricultural biomass, as well as waste and residual materials, bioenergy will be a structuring lever for supporting the diversification of regional economies as they evolve over the coming decades. Its deployment follows a gradual growth trajectory based on planning milestones aimed at reaching a potential of 50 TWh by 2050, compared with 2022 levels. To this end, interim targets of 11 TWh in additional supplies by 2030 and 30 TWh by 2040 have been established to structure the pathway's growth and development, for a cumulative total that could ultimately reach 90 TWh.

Growth will be reflected in increased use of solid, liquid and gaseous bioenergy across all sectors. Solid bioenergy will predominate in the industrial and building sectors, while liquid bioenergy will be used mainly in transportation. Gaseous bioenergy, including RNG, will play a growing role in both industry and buildings, where it will mainly contribute to the decarbonization of thermal uses.

Bioenergy and green hydrogen

The emergence of the bioenergy pathway represents a strategic opportunity for Québec, strengthening both its economic vitality and its energy autonomy and security. By making use of regionally available resources, such as forest biomass and agricultural, agri-food or municipal residue through circular economy projects, this pathway will ensure a sustainable energy supply while delivering tangible environmental and economic benefits.

Taking RNG production as an example, a 2025 study on the economic benefits of Québec's renewable energy sectors, commissioned by the Association québécoise de la production d'énergie renouvelable, estimates that the nearly $1.3 billion in announced investments will generate $675 million in added value for Québec's economy during the construction period. Once in production, these sites could generate nearly $170 million in added value and support nearly 500 jobs annually in Québec.

GRS production, including green hydrogen, is expected to grow gradually by 2050, helping to structure sustainable pathways and strengthen local supply capacity.[18]

Forest biomass is a strategic resource that can diversify markets for the forest industry while generating economic benefits for the regions. Strengthening the forest bioenergy value chain will be central to that effort. Planning milestones are therefore established to guide the pathway's gradual development, with additional forest bioenergy production of 1 to 2 TWh in 2030 and 8 to 10 TWh in 2040, with a view to reaching a target of 18 to 20 TWh by 2050.

Electricity accounts for two thirds of the new renewable energy supplies being considered. Electricity supplies include both generation within Québec and new energy exchanges with markets outside Québec. A target of 100 TWh of new electricity supply by 2050 is therefore established for Hydro-Québec after accounting for energy efficiency gains. This target is intended to meet growing demand driven by population growth, economic development, and the decarbonization objectives of the energy transition. It is also important to note that private generation, which was already significant in 2022, plays a real role in the current ecosystem and is fully reflected in the planning process. This contribution could evolve over time and be added to the volumes planned for the electricity distributor.

The various electricity generation pathways in Québec do not contribute equally to available capacity. Not all energy sources have the same generation profile: some are dispatchable and can generate power at all times, such as hydroelectricity and thermal generating stations powered by natural gas, forest biomass or another fossil fuel, while others generate variable output over time, such as solar and wind power.

18. GRS production is currently based mainly on first-generation methanization using municipal and agricultural organic matter, but is gradually shifting toward second – and third-generation pathways, such as forest biomass gasification and the production of synthetic gas by methanation using renewable electricity and biogenic CO_2. At the same time, renewable, or green, hydrogen is produced primarily by water electrolysis, although other sources, such as biomass gasification and geological hydrogen, offer complementary potential in Québec.

Each pathway contributes to the electricity mix with specific advantages and limitations, including in terms of cost, volume of energy generated, capacity contribution and reliability. These strengths and weaknesses can complement or reinforce one another, which is why a diversified electricity mix must be planned. The level of deployment planned for each electricity pathway therefore closely depends on the others. For this reason, the IERMP establishes a target for new electricity supplies by 2050, without prescribing in detail the composition of the electricity mix needed to achieve it. The interim targets defined for 2030 and 2040 are planning milestones intended to support steady growth in supplies over the period, while giving the distributor the flexibility needed to determine, over time, the optimal combination of the various electricity pathways as needs, technologies, costs and market conditions evolve.

The deployment of new electricity supplies will thus need to reach approximately 15 TWh in 2030 and 60 TWh in 2040 in order to remain on a trajectory consistent with achieving the 2050 target, bringing Hydro-Québec's supplies, after energy efficiency gains are taken into account, to nearly 295 TWh.

Hydroelectricity

Existing hydroelectric assets have significant potential. That is why Hydro-Québec is investing to increase the capacity of its facilities, either by adding new turbines to existing generating stations or by modernizing its turbine-generator units. However, the construction of new hydroelectric complexes will also likely be necessary. This source of supply meets long-term needs, since it takes approximately 15 years to build a new hydroelectric complex. The installed capacity of this pathway could represent between 7 and 11 GW in 2040, and between 8 and 12 GW in 2050.

Wind power

Québec enjoys particularly favourable wind conditions. However, the pathway's contribution during peak periods is imperfect, since the wind does not always blow "at the right time." Wind power remains the preferred form of electricity generation for quickly adding low-cost energy to complement existing infrastructure. As a result, installed capacity could reach between 12 and 16 GW by 2040, and between 21 and 25 GW by 2050. Since the IERMP relies heavily on wind power to meet significant energy needs, storage capacity will need to be increased and management tools integrated to meet capacity needs during peak periods.

Solar power

Québec will develop its solar potential over the coming years, owing, in particular, to the wide range of possible sites and the speed and modularity of projects. However, because solar generation is low during winter peaks, it must be supported by other sources of capacity supply.

Large-scale solar farms will play a role that complements wind power and will be tied to residual capacity on transmission and distribution systems to make use of otherwise unused spaces. Their installed capacity could reach between 1 and 3 GW in 2040 and up to 5 GW in 2050. Solar power also has a distinct advantage: it can be installed quickly at smaller scales, particularly on rooftops and in parking lots, which should lead to strong growth in decentralized behind-the-meter systems.

Thermal generation

Thermal generating stations generally provide a complementary capacity and energy option, used in particular when conditions or constraints limit the deployment of other solutions. They are especially valuable where bioenergy can be converted into both electricity and heat. Where other solutions prove difficult to develop, or where the variability of wind and solar power and the risks associated with low water availability must be offset, thermal generating stations are a proven technology. Their reliability means they can serve as an insurance policy to stabilize electricity supply. They also help diversify supplies and increase energy security by making thermal energy available to meet local energy needs while supplying Québec with renewable electricity.

Nuclear power

No nuclear reactor has been built in Canada since 1993, and many uncertainties remain regarding the pathway's cost effectiveness and the maturity of emerging technologies, particularly small modular reactors.

Québec must nevertheless continue to monitor the development of this pathway in case the other pathways do not develop as planned. Strengthening expertise and a specialized supply chain remains strategic in order to position Québec businesses in external markets, while maintaining the flexibility needed to adapt energy choices as the technological and economic context evolves.

Storage and management tools

Flexibility measures are essential to respond effectively to the dual challenge of consumption and generation that vary over time. They rely in particular on better demand management by shifting or reducing consumption during peak periods, as well as on supply-side solutions such as energy storage. The required flexibility is directly tied to the composition of the electricity mix. The more variable energy is deployed, the more storage tools and peak management solutions will be needed.

Each storage and flexibility solution has its advantages and disadvantages. Batteries are designed more for short-duration storage and can be installed quickly, while pumped-storage generating stations provide longer-duration storage and require more complex installation. For flexibility, there are many customer-side technologies that can shift or curtail electricity consumption during peak periods. These technologies range from smart thermostats, which may or may not use thermal or battery storage strategies, to dual-energy systems, which replace electric heating during peak periods with another form of energy, such as natural gas from fossil or renewable sources, forest biomass or diesel fuel. Thermal energy networks also contribute to the overall flexibility of the energy system. Together, these solutions help balance the system and strengthen its ability to meet capacity needs.

Objective 3.1: Create conditions that support the development of renewable energy pathways

Although necessary, the development of renewable energy pathways could face several barriers. The profitability of emerging pathways, the scale of the investments required, the availability of skilled labour, the fluidity of supply chains, and the social acceptability of energy production projects all pose risks to achieving the energy transition.

The contribution of the various actors in the energy sector will also be essential to financing new energy production and transmission infrastructure. The initial investments will be massive and will benefit from diversified sources of financing to spread risk and the financial burden and, in doing so, support better cost control. Private producers, municipal and Indigenous actors, venture capital and available government levers are examples of financing sources that can provide the momentum needed to grow emerging pathways and consolidate those that are already helping diversify the energy mix locally. Pathways that are still in their early stages will need support until markets evolve sufficiently to meet the objectives set.

Removing some of the barriers to the development of energy pathways will require legal or regulatory adjustments. Accordingly, various legislative and regulatory amendments could be considered over the coming years, to clarify the framework within which the energy transition will move forward, particularly with respect to energy supply, land use planning and sustainable mobility, and to help shorten project timelines. Similarly, adjustments to educational offerings will need to help ensure the viability of supply chains by aligning workforce training with the jobs to be filled in the energy transition sector.

It will also be important to plan for harmonious coexistence across Québec. Energy projects may be developed in inhabited areas, on agricultural land, or on public land used by a wide range of users. The government must seek a sustainable balance between energy development and various land uses, particularly with respect to the protection of agricultural land and consideration of environmental impacts. Agreements in principle on coexistence between developers and stakeholders affected by energy projects could help foster social acceptability, including by strengthening the protection of agricultural or forest environments and defining the general terms for energy development in those environments.

Lastly, determining projected generation ranges by pathway is intended to provide predictability for energy generation actors. By setting a clear direction and identifying priority pathways, these objectives will help align efforts, structure investments and maximize opportunities for collaboration, particularly in electricity generation and bioenergy production.

Energy development, social acceptability and local governance

Although renewable energy pathways generally enjoy strong social acceptability[19] in Québec, the implementation of generation or transmission projects in host communities may raise local issues that influence community support. Public participation is provided for under the environmental impact assessment and review procedure,[20] which allows the government, generally through the Bureau d'audiences publiques sur l'environnement, to assess the environmental and social acceptability of energy projects.

In addition to public participation, early community preparation for energy development remains crucial to the energy transition. Municipal and Indigenous bodies should therefore be able to engage with their populations to assess the appeal of the proposed avenues for energy production and economic diversification. Support for these bodies by the government and its partners upstream of project development, including through the dissemination of transparent information on the benefits and drawbacks of the various energy pathways, will contribute to the success of participatory processes and the establishment of promising partnerships.

In addition to the royalties generally paid to municipal bodies responsible for land use planning for certain pathways, community participation in projects fosters social acceptability by ensuring, on the one hand, that positive economic benefits are redistributed to the communities hosting these projects and, on the other, that those communities have greater control over the conditions under which projects are carried out. This participation, which can take several forms, such as financial involvement and the transfer of know-how and knowledge, will be decisive for social acceptability and the success of a just transition. The borrowing capacity and borrowing conditions of community partners will also be decisive in this regard.

In this respect, the community model introduced by the most recent wind energy calls for tenders has set a precedent in Québec by making partnerships between renewable energy developers, municipal bodies and Indigenous communities the norm. Hydro-Québec has adopted this model, making it a pillar of its wind development strategy.[21]

Lastly, whether for industrial parks or neighbourhoods pursuing energy autonomy, governance models involving host communities will also help foster the emergence of large-scale thermal energy networks, a strategic type of infrastructure whose deployment potential remains underused in Québec.

19. According to the CROP survey, the consultation questionnaire, the consultation report and the tour report.
20. For southern Québec. Special procedures are in force for the territory subject to the James Bay and Northern Québec Agreement and the Moinier region.
21. Hydro-Québec, Charting the Course toward Collective Success: Wind Power Development Strategy, 2024.

Objective 3.2: Strengthen renewable energy supply chains and industrial capacity

The deployment of energy pathways on a scale not seen anywhere in Québec since the construction of its large dams will place significant pressure on the supply chains for the components needed to build energy projects, as well as on the workforce required to carry them out. Québec's industrial and manufacturing base must be mobilized and integrated so that it can secure a strong position in the supply chains for these pathways, whether in energy production, transmission or distribution.

Intensifying efforts in high-value-added sectors will also generate direct and indirect benefits through the development of expertise, the establishment of related industries and services, and the potential strategic presence in Québec of head offices of companies such as turbine manufacturers, project developers, electricity sector equipment manufacturers and pyrolysis system manufacturers. Government support, including from Investissement Québec International, and the implementation of support programs such as the Plateforme d'approvisionnement stratégique québécois en électricité (PASQÉ), administered by the Association de l'industrie électrique du Québec, are accelerating the deployment of technological solutions developed by Québec businesses among major contractors and first-tier suppliers. The Fonds d'électrification et de changements climatiques (FECC) encourages decarbonization of the industrial sector by financing renewable solutions in energy production or use. Other financial tools, such as the Fonds pour la croissance des entreprises québécoises, help the government support the growth of Québec equipment suppliers and manufacturers and ensure that expertise and control of intellectual property remain in Québec. The establishment of structuring partnerships and long-term collaborations will help secure competitive supplies while supporting the growth of the pathways.

Developing bioenergy in Québec offers major strategic advantages from environmental, economic and social standpoints. Given the need to develop this strategic sector, it is essential to structure all links in the bioenergy value chain. From raw biomass to end users, including infrastructure and processing plants, commercial synergies among actors must be encouraged. By making use of forest biomass and agricultural and organic residual materials, Québec can strengthen its energy autonomy, reduce its dependence on imported fossil fuels, and help create sustainable jobs in rural regions.

Objective 3.3: Promote innovation, demonstration and continuous improvement, and ensure coherence in the development and deployment of technological solutions that support the optimal energy trajectory

With its extensive expertise and recognized research ecosystem, Québec has everything it needs to play a major national and international role in innovation, demonstration and continuous improvement that supports the energy transition and wealth creation.

Innovation must therefore be fostered to improve service quality, pathway performance and the optimization of the energy transition, in order to increase energy reliability, production and efficiency. This will be achieved in particular through existing initiatives by the government and its partners that aim to:

- engage the energy innovation ecosystem, universities and research centres;
- strengthen ties among major contractors, solution providers and researchers;
- accelerate pilot projects, demonstration projects and experiments in order to disseminate best practices.

Optimizing existing technologies, developing new renewable energy production and storage solutions, and using artificial intelligence and smart grids, as well as geological hydrogen and carbon capture, utilization and sequestration technologies, are all areas where innovation will be essential for the energy transition to succeed. It is essential to act now, so that technological advances can bring the required energy solutions to a sufficient level of maturity for market penetration and economic viability if we are to achieve carbon neutrality by 2050.

To support innovation and continuous improvement, certain technologies should continue to be monitored and developed even if they are not expected to form part of the energy mix in the short term, given their potential contribution to decarbonization. This is the case for CCS and geological hydrogen development, areas of activity for which the government intends to establish a comprehensive legal and regulatory framework by 2035. The government's ambition is to ensure that a minimum of ten CCS research projects and five geological hydrogen research projects are implemented by the same deadline. Following the adoption of this legal and regulatory framework, the government expects seven or eight CCS projects, each representing an average of approximately 1 Mt EQ Co_2/year each, and two geological hydrogen development projects to be carried out by 2050.

All strategic players in Québec's energy ecosystem must be called upon to contribute. To that end, it has been determined that energy distributors must be able to structure new fundraising and capitalization mechanisms dedicated specifically to research, development and innovation. This capital will be allocated strictly to exploring and deploying cutting-edge technological solutions aimed at deep, effective and sustainable decarbonization of the uses and sectors they currently serve, thereby transforming their networks into true drivers of the energy transition.

POLICY DIRECTION 4 – PLACE ENERGY AVAILABILITY AND THE ECONOMIC BENEFITS OF THE ENERGY TRANSITION AT THE HEART OF DECISION-MAKING

Ensuring a sufficient energy supply is essential to supporting Québec's economic objectives and energy security. On the one hand, without sufficient capacity to quickly connect industrial, mining and manufacturing projects, as well as new electricity generation, ambitions for economic development and decarbonization will remain theoretical. On the other hand, if electricity capacity is not available, maintaining other pathways such as natural gas will be unavoidable in the short and medium terms.

That said, the energy transition is a structuring opportunity to strengthen energy autonomy by gradually replacing hydrocarbon imports with local, low-carbon renewable energy sources. This repositioning will improve the energy trade balance while generating wealth and strengthening productivity, including through increased investment and the development of Québec's resources.

The IERMP must therefore closely align future needs with supply and connection capacity, drawing on Québec's strengths, including its interconnections with neighbouring states and provinces, to ensure supply stability.

Flexibility will be required in the sequencing of the transition and the gradual deployment of generation and transmission infrastructure so that investments can be optimized and adapted as technologies evolve.

Québec's energy transition will therefore be based on a balanced approach that reconciles economic and climate objectives with the imperatives of energy security, resilience and supply continuity. Under the first IERMP, the transitional role of fossil fuels in maintaining the balance between supply and demand must be recognized, particularly amid uncertainty surrounding the pace at which emerging pathways and related infrastructure will be deployed, a pace that will depend in part on their social acceptability. Above all, this approach means maintaining and gradually transforming existing infrastructure and supply chains in order to support an orderly transformation of the energy system. It requires prioritizing electrification in applications where electricity offers the greatest added value, while taking into account other solutions for moving away from fossil fuels and their technological maturity.

This gradual, differentiated approach will ensure that each unit of energy used delivers the greatest collective value and supports a credible path to carbon neutrality. This means greater reliance on bioenergy and hydrogen, as well as maintaining a volume of natural gas and petroleum products to meet uses that are more difficult to electrify or to provide backup for electricity supply if necessary. Energy storage from renewable energy should be prioritized where possible to facilitate decarbonization of the grid.

Natural gas will thus remain part of the energy mix and will need to be decarbonized gradually, in an ordered sequence. The ability to leverage natural gas distribution infrastructure to support decarbonization over time gives this energy source a strategic role.

GRS and the greening of the gas system

GSR can be consumed locally, near production sites, or transported to consumption centres by various modes, primarily by pipeline, but also by truck, train or ship, in compressed or liquefied form. Its distribution method depends on its chemical properties. Continuing to green natural gas is key to achieving climate objectives. To support the growth of the GRS pathway in Québec and capture its economic benefits, the share of Québec-produced GRS in the distribution system should increase gradually. RNG, which is fully interchangeable with fossil natural gas, can be injected directly into the existing gas system without major modifications. The integration of hydrogen into this system remains constrained by technical limitations.

For GRS that is not distributed through the natural gas system, particularly hydrogen, dedicated transmission and distribution infrastructure may be necessary if warranted by economic and logistical conditions.

Consistent with a concern for pragmatism, realism and caution regarding changes in behaviour and technology, petroleum products will remain part of the 2050 energy mix despite a significant reduction in their use. They will primarily meet needs in the transportation sector, particularly heavy and air transportation, where fully competitive alternatives are not yet available at scale and will depend on the adoption of internationally integrated logistics chains. In this regard, Québec benefits from modern, efficient distribution and refining infrastructure that can adapt to changes in the energy landscape and diversify petroleum product output, provided it is given a sufficient transition timeframe to allow for a gradual and orderly transformation of its activities.

In the same spirit, gas distributors will need to incorporate suitable solutions into their supply plans that provide enough flexibility to meet foreseeable medium-term changes in energy needs, including by optimizing response capacity during gas consumption peaks. In this respect, the current legal framework allows natural gas distributors to have excess transportation capacity of up to 10% of the natural gas distributed annually in order to foster the development of industrial activities and support wealth creation in Québec.

Objective 4.1 – Ensure the availability and reliability of low-carbon energy pathways for all customer categories

A diversified energy mix built around low-carbon energy sources that are available in sufficient quantities must be prioritized over the long term to secure a sustainable energy future for generations to come. To that end, the sequencing of electrification must be guided by the principle of using the best energy source for the most appropriate uses. The replacement of petroleum products and natural gas with low-carbon alternatives must be based on pragmatic, gradual planning aligned with demand growth and operational realities on the ground.

Because energy is a critical input in value chains, its availability at a competitive cost is a strategic lever for industrial policies and regional economic development. This means fully integrating energy considerations into the planning of industrial and climate policies and regional economic development strategies.

Objective 4.2 – Leverage infrastructure and expertise synergies with neighbouring states and provinces

The ability to exchange electricity with neighbouring systems, especially those of other provinces, allows Québec not only to export its additional clean energy for the benefit of Québec society, but also to rely on its interconnections to import energy during peak periods or when market prices provide an economic advantage. Greater collaboration will support better planning of transmission systems and generation resources, making it possible to manage peaks more effectively, integrate variable energy and ensure the robustness and resilience of the energy system for the benefit of all grid users. Interconnections with neighbouring systems are therefore strategic assets for security and resilience.

By relying on energy exchanges, Québec can also make its energy infrastructure more profitable while improving the reliability and security of its supply. Lastly, creating favourable conditions for long-term interconnection agreements, together with the targeted addition of new interconnections, is essential to maintaining and consolidating Québec's role as an energy hub while reducing its energy dependence and vulnerability to external political and trade dynamics.

Interregional planning for transmission infrastructure and two-way electricity trade

Québec's power grid, one of the largest in North America, comprises nearly 34,900 km of high-voltage transmission lines and approximately 535 transformer substations. It is interconnected with neighbouring systems, including those in Ontario, the Maritimes and the northeastern United States, allowing surplus electricity generation to be exported to neighbouring markets and, conversely, energy to be imported during peak periods in Québec. These interconnections help balance supply and demand while creating opportunities to generate additional revenue through trade in interprovincial and international markets.

One strong example is the agreement between Hydro-Québec and Ontario's Independent Electricity System Operator (IESO), in force since November 1, 2024. The agreement provides for a seasonal exchange of 600 MW of capacity. Its objective is for Québec and Ontario to support each other during electricity consumption peaks. Twelve months before the start of each contract year, Hydro-Québec and the IESO may agree to increase the capacity exchanged based on energy availability.

POLICY DIRECTION 5 – CARRY OUT THE ENERGY TRANSITION AT THE BEST COST FOR SOCIETY

The IERMP proposes an energy trajectory that responds to Québec's economic ambitions and will guide it toward a more efficient, resilient and decarbonized energy system.

This trajectory is based on targets to be achieved and on certain objectives, constraints and obligations that must be met, primarily the availability of sufficient energy, energy security, and system reliability and resilience. It puts forward the solutions that will be most collectively advantageous in the short, medium and long terms to achieve our objectives and targets while minimizing total costs for society as a whole. Accordingly, "lowest cost" cannot be assessed solely on the basis of the lowest rate for consumers, since investments must be made to implement the identified solutions that will maximize overall value for society over the long term. New energy supplies must be recognized as collective investments that will pay dividends. Consider the social and economic benefits of the hydraulic works built in the 1950s.

In practice, the energy transition will require major investments in energy sobriety and efficiency, electricity generation, transmission and distribution, the maintenance and adaptation of the gas system, infrastructure resilience, bioenergy development, innovation, the deployment of flexibility technologies, the modernization of existing systems, and CCS. These investments will necessarily result in some cost growth, which could eventually create rate pressures. This means that rate-setting practices will need to evolve so that rates take into account the overall benefits for Québec.

The Régie is responsible for setting rates, taking the IERMP into account and promoting the maximization of the economic, social and environmental benefits generated by the required investments. The government will be responsible, where appropriate, for adjusting the policy directions, objectives or targets of the IERMP and for taking other measures to preserve rate affordability and competitiveness.

Objective 5.1 – Evolve rate-setting practices so they take into account the overall benefits for Québec

Rates for electricity and natural gas distribution, electricity transmission and GRS supply should be set in a way that:

- Allows distributors and the carrier to make the investments needed in the short, medium and long terms to develop, strengthen and maintain their systems and ensure they are reliable and resilient, in accordance with the policy directions, objectives and targets of the IERMP;
- Captures the benefits of local production, including energy security, reduced dependence on imported energy, regional economic development and improved environmental quality;
- Helps achieve a balance between the electrical grid and gas network and encourages flexible solutions (e.g., self-generation, smart homes, dual-energy systems) to ensure energy security and resilience;
- Is gradual and predictable and sends clear price signals that encourage energy efficiency and sobriety, peak management and energy productivity. In addition, progressive or tailored measures will need to be explored to encourage reduced consumption or discourage waste and mitigate the impact of increases on households and businesses:
  - For example, vulnerable and low-income customers must continue to benefit from energy efficiency support measures and targeted protection mechanisms, with a view to combating energy poverty;
- Remains competitive, to preserve Québec's clean energy advantage, and affordable, to protect household purchasing power;
- Evolves to reflect the strategic value of energy and the varying economic, environmental and social benefits in different industrial sectors:
  - This could include having different rates depending on use, customer category or industrial sector to account for government policy directions or societal choices, for example to reflect the marginal cost of supplying energy to new data centres and for cryptographic use in blockchains already filed with the Régie, or in other sectors to be determined.

The heritage pool

Introduced in 2001 as a social compact, the heritage pool electricity block was set at 165 TWh and reflects Quebecers' collective investment in developing hydroelectric potential in the past.

This social compact is a moral agreement under which Quebecers, having collectively assumed the financial risk of electricity nationalization, benefit in return from affordable electricity at uniform rates across Québec. The heritage pool gives legal expression to this compact through a reserve of electricity sold at an advantageous rate and protected from market fluctuations. Quebecers' investments in Hydro-Québec continue to provide universal and affordable access to electricity today.

MONITORING AND ACCOUNTABILITY

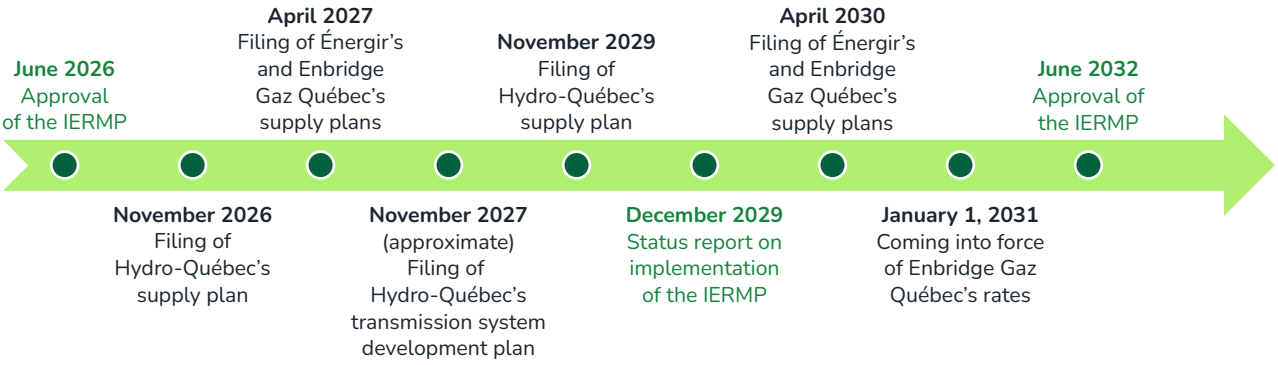
The law provides that a status report on implementation of the IERMP will be prepared every three years and that the plan will be updated every six years, so that its development can be aligned with the reviews of distributors' supply plans filed with the Régie every three years. The Minister may also revise the IERMP at any time where warranted by exceptional circumstances.

The IERMP will be accompanied by rigorous monitoring of energy demand and supply trajectories, as well as progress toward achieving the targets it establishes. This monitoring will be based on indicators developed specifically for each target in order to assess changes in results, the effectiveness of the measures implemented and the coherence of the energy trajectories with government policy directions.

Accountability will require close collaboration among a number of energy planning actors, including energy distributors, the government departments and bodies concerned, and other stakeholders involved in implementing the measures. The monitoring work will draw in particular on modelling exercises conducted by the government, on the evidence and information filed with the Régie by distributors, and on the annual monitoring of the various government plans through which the IERMP may be implemented.

The results from the monitoring and performance indicators will inform accountability reporting under the responsibility of the Ministère de l'Économie, de l'Innovation et de l'Énergie. They will be presented in the implementation status report to be published three and a half years after approval of the IERMP, and will provide an account of progress toward the targets, observed variances and, where necessary, the adjustments being considered to maintain alignment with the energy trajectory.

The IERMP will therefore be adaptable to changes in Québec society, its values and its energy needs, while taking into account technological advances and changing economic realities. These periodic or ad hoc revisions will help ensure that the plan remains pragmatic, reflects realistic but prudent planning for Québec's energy trajectory, and fully supports the commitment to carbon neutrality by 2050. This approach will allow the government to adjust its policy directions and objectives over time.



APPENDIX 1 – PARTICIPATORY PROCESS

Participatory approach

In accordance with the *Act respecting the Ministère de l'Économie, de l'Innovation et de l'Énergie*, and to ensure that the Integrated Energy Resource Management Plan (IERMP) reflects society's aspirations, a broad participatory process called Vision énergie (link in French only) was carried out between March 2025 and February 2026. A number of civil society stakeholders and representatives of the First Nations and Inuit were met with, and citizens were able to express their views through various participatory tools (see sidebar).[22] This dialogue, launched before the IERMP was developed, served to gather perceptions and expectations in order to foster support and make the IERMP a shared, mobilizing project for Québec society that will guide the transition and development of the energy sector.

Opinion of the Régie de l'énergie

On January 14, 2026, the Ministère de l'Économie, de l'Innovation et de l'Énergie sent the Régie a request for an opinion under section 14.3 of the Act respecting the Ministère de l'Économie, de l'Innovation et de l'Énergie for the establishment of the first IERMP. The requested opinion concerned, among other things, energy availability, diversification and the resilience of Québec's energy system.

Summary of the participatory process carried out to develop the IERMP

- **Vision énergie tour:**
  - 489 stakeholders representing interest groups in the energy sector;
  - 14 stops in Québec regions;
  - Parallel meetings with First Nations.
- **Idea wall:**
  - 197 ideas;
  - Citizens and tour participants.
- **Public consultation on the preliminary report prepared for the establishment of the IERMP:**
  - Responses to an online consultation questionnaire or submission of a brief;
  - 2,098 questionnaires and 21 briefs.
- **First Nations and Inuit participatory process on the preliminary report prepared for the establishment of the IERMP:**
  - Responses to an online consultation questionnaire or submission of a brief;
  - 7 questionnaires and 4 briefs.
- **Questionnaire on energy preferences (Boussole de l'énergie):**
  - 1,025 completed questionnaires.
- **Representative population survey on public perceptions of Québec's energy challenges and opportunities;**
- **Expert workshops (5):**
  - Energy demand in industry, transportation, buildings and agriculture;
  - Energy supply.
- **Québec–First Nations and Inuit table on strategic energy planning:**
  - 3 meetings.

22. All of these exercises were covered by summary reports made public on the Consultation Québec website (texts in French only), except those intended for the First Nations and Inuit, which remain confidential.

As part of this mandate, the Régie conducted a consultation exercise through which it received briefs from six experts recognized for their expertise in energy issues, mainly from academia, as well as 22 briefs filed by associations representing the various customer categories and interest groups concerned by those issues. The opinion (in French only) sent to the Minister on March 30, 2026, was based on an examination of those submissions, together with the analyses and findings developed by the Régie in carrying out its mission.

Summary of the Régie's opinion

The opinion makes 21 recommendations organized around three areas: energy security, the resilience of generation and transmission capacity, and energy affordability for the various customer categories. It identifies several converging policy directions:

- Energy security must serve as the initial filter for any trajectory considered for transforming the energy system. Before being assessed against other criteria, a trajectory must demonstrate that it meets minimum requirements for actual availability, peak capacity, delivery capacity, reliability and resilience.
- The need for planning in which supply and electrification choices are assessed in light of transmission and distribution capacity.
- The structuring importance of energy sobriety, energy efficiency and flexibility, which must be treated as true resources.
- Affordability, rate equity and economic competitiveness emerge as central considerations, particularly for associations representing industrial, commercial and residential customers.

APPENDIX 2 – MAIN MODELLING ASSUMPTIONS

Main assumptions considered for the energy modelling

The IERMP modelling work is based on a hybrid approach combining optimization and simulation modelling using the NATEM-QC model. The optimization model identifies, for each scenario examined, the most efficient and lowest-cost techno-economic trajectories for meeting Québec's long-term energy needs while respecting technological, environmental and economic constraints. This approach is supplemented by simulation modules that adjust the model to certain current realities and policies.

Common assumptions in the energy model include model calibration based on historical energy balances, projections of energy service demand, current policies, anticipated technological developments, and other sector-specific parameters.

The energy modelling is based on a wide range of assumptions, including:

- Rising temperatures will reduce heating demand (-3% in 2030 and -10% in 2050 compared with 2020). This assumes a warming trend between two of the main climate scenarios of the Intergovernmental Panel on Climate Change's (IPCC) main climate scenarios (RCP 4.5).
- The selected energy scenario includes a minimum 37.5% reduction in GHG emissions in Québec by 2035 compared to 1990 levels, enough to achieve Québec's GHG target without resorting to the purchase of emission reductions outside Québec through the carbon market shared with California.
- The maximum carbon storage limit was set at 15.9 Mt CO_2 per year by 2050. This estimate depends not only on total reservoir volume, but also on storage efficiency.
- Recovered forest biomass by 2050 is estimated at 9.9 million anhydrous metric tonnes (Mtma). This assumption is based on maximizing the useful life of durable goods while taking into account changes in the forest industry.
- The energy efficiency potential is based mainly on retrofit measures, equipment such as heat pumps and dual-energy systems, energy management systems, and the main programs identified by the distributors (Hydro-Québec, Énergir and Enbridge Gaz Québec).
- Signed contracts and the agreement in principle with Newfoundland and Labrador are taken into account in the modelling of electricity supplies.
- The selected demand scenario is based on industry-specific assumptions of changing energy service requirements, based primarily on observed historical trends. For industry, the average annual growth in demand for energy services across all sectors is 1.7%. For buildings, it is 1.6%, and for transport, it is 1.2%.

Main assumptions considered for the economic modelling

The economic modelling carried out under the Integrated Energy Resource Management Plan (IERMP) presents the overall effect of the additional investments required over the next 25 years to achieve the IERMP objectives, estimated at $87 billion.

It is based on various assumptions, such as:

- a significant degree of long-term support for the energy transition worldwide and stabilization of the global economic and political environment;
- long-term changes in the cost of technologies needed to carry out the energy transition;
- the investment and energy transition assumptions of the scenarios defined by the Ministère de l'Économie, de l'Innovation et de l'Énergie;
- the economic and financial forecast in the 2026-2027 budget prepared by the Ministère des Finances of Québec.

A significant share of the investments required under Hydro-Québec's Action Plan 2035 and other policies already planned is excluded from the modelling.

The environmental general equilibrium model of the Ministère des Finances of Québec (MEGFQ-E) was used to prepare the projections:

- It represents the main interrelationships in Québec's economy and takes into account the interactions between economic agents (households, businesses and governments) as well as feedback effects between markets.
- Prices and quantities adjust to ensure equilibrium across all markets simultaneously, including labour markets and goods and services markets.
- Households and businesses adjust their behaviour to changes in the economy.

APPENDIX 3 – SUMMARY TABLE OF POLICY DIRECTIONS AND OBJECTIVES

Policy direction	Objective
1 – Make Québec an exemplary energy consumer	1.1 – Create the conditions to recognize energy efficiency as a source of supply in its own right
2 – Ensure a safe, resilient energy system that adapts to changing energy needs	2.1 – Maintain and further develop a diversified energy system by building on the strengths of each energy pathway
	2.2 – Increase flexibility and optimize energy system operation
	2.3 – Anticipate and structure investments to support future energy needs, strengthen system resilience and ensure adequate reliability
3 – Support the development of renewable energy pathways	3.1 – Create conditions that support the development of renewable energy pathways
	3.2 – Strengthen renewable energy supply chains and industrial capacity
	3.3 – Promote innovation, demonstration and continuous improvement, and ensure coherence in the development and deployment of technological solutions that support the optimal energy trajectory
4 – Place energy availability and the economic benefits of the energy transition at the heart of decision-making	4.1 – Ensure the availability and reliability of low-carbon energy pathways for all customer categories
	4.2 – Leverage infrastructure and expertise synergies with neighbouring states and provinces
5 – Carry out the energy transition at the best cost for society	5.1 – Regularly review pricing practices to ensure they take into account the overall impact on Québec

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