Québec's 2026–2050 integrated energy resource plan: Capital build-out, timelines, and market opportunities

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Québec's 2026–2050 Integrated Energy Resource Management Plan (PGIRE) is the province's first fully integrated long-term energy planning framework. It was adopted following a multi-year legislative, regulatory, and consultation process initiated in 2024–2025 and seeks to operationalize the provincial government's new statutory mandate to coordinate energy policy, system planning, and decarbonization objectives under a single governance instrument.

Key highlights

- Total additional investments by 2050: approximately 87 billion dollars (real, 2024) to deliver the targeted transition, including generation, transmission, distribution, bioenergy, hydrogen and carbon capture and storage-enabling infrastructure, and customer-side efficiency and flexibility
- New renewable energy: near 150 TWh by 2050 (electricity ~100 TWh; bioenergy ~50 TWh), plus about 50 TWh of electric efficiency gains to reduce system costs and peak pressures
- Electric supply trajectory: ~15 TWh by 2030; ~60 TWh by 2040; ~100 TWh by 2050 (Hydro-Québec), with diversified portfolios and increased storage and demand-side flexibility
- Capacity build: wind 12–16 GW by 2040 and 21–25 GW by 2050; solar 1–3 GW by 2040 and up to 5 GW by 2050; hydro uprates/modernizations and new complexes (about 15-year development cycle)
- Peak and flexibility: potential need for up to 22 GW of additional peak coverage by 2050, drawing on bi-energy, demand response, storage (including pumped storage and grid-scale batteries), behind-the-meter storage, and vehicle-to-grid as it matures
- Bioenergy: cumulative addition of 11 TWh by 2030, approximately 30 TWh by 2040, and approximately 50 TWh by 2050; forest bioenergy alone targeted at approximately between 18 and 20 TWh by 2050
- Hydrogen and renewable gases: measured growth to 2050; hydrogen need could reach about 9 TWh; progressive greening of the gas network with renewable natural gas (RNG) and other renewable gas

- Network development: long-term transmission plan aligned to the distributor's supply plan; Hydro-Québec signals eventual addition of about 1,000 km of new lines and five substations
- Governance and timing: Hydro-Québec and gas distributors must file 10- to 15-year supply plans consistent with the PGIRE; the Régie de l'énergie's mandate now expressly includes enabling an orderly, least-cost transition and maximizing economic, social, and environmental benefits

Québec's PGIRE: An overview

The PGIRE originates directly from *An Act to ensure the responsible governance of energy resources and to amend various legislative provisions* (Bill 69), adopted on June 7, 2025, which formally required the government to establish and implement a long-term integrated energy plan to guide supply, demand, and investment decisions across all energy vectors.

This act repositioned both the Ministry of Economy, Innovation and Energy and the Régie de l'énergie, expanding their mandates to align tariff-setting, infrastructure planning, and procurement decisions with long-term energy transition objectives.

The PGIRE sets a long-term roadmap centered on energy security, affordability, and an orderly transition, anchored by approximately 87 billion dollars (in 2024 dollars) in additional investments to 2050.

The plan targets roughly 150 TWh of new renewable energy by 2050 (about two-thirds electricity and one-third bioenergy), complemented by about 50 TWh of electricity efficiency gains. Hydro-Québec is tasked with adding about 100 TWh of new electricity supply by 2050 (near 295 TWh total after efficiency), sequenced through intermediate milestones in 2030 and 2040, alongside significant grid reinforcements, storage and peak management tools.

The plan also contemplates expanded wind (up to 21–25 GW by 2050), solar (up to 5 GW by 2050), new hydro (with 15-year lead times), thermal options as system insurance, growth of bioenergy (about 50 TWh by 2050, including 18–20 TWh forest bioenergy), and measured development of hydrogen and gas of renewable origin.

Transmission and distribution planning is to be integrated into 15-year cycles, with Hydro-Québec indicating the transport plan may add about 1,000 km of transmission lines and five new substations over time.

What this means for energy producers (developers, IPPs, OEMs, utilities, storage providers)

- Pipeline visibility and scale:
    - Sequenced targets to 2030, 2040 and 2050 for new electricity, bioenergy create line-of-sight for large-scale wind, solar, hydro refurbishments or new builds, and storage (batteries and pumped storage) projects.
    - Ramping up of wind and solar implies sustained procurement, local manufacturing opportunities, and partnerships under community-

participation models adopted by Hydro-Québec in recent wind procurement.

- Grid and interconnection:
  - Hydro-Québec's 15-year transmission plan aligned with supply expansion, including planned additions of lines and substations, pointing to ongoing interconnection and network upgrade opportunities.
  - Interties with neighbouring systems (Ontario, Maritimes, U.S. Northeast) remain strategic for seasonal exchanges.
- Gas and low-carbon fuels: Growth of renewable gas (notably RNG) leverages existing gas networks; hydrogen growth and potential dedicated distribution where justified present project pathways and offtake structures for industrial heat, mobility, and synthetic fuels.
- Bioenergy scale-up: Targets for forest and other bioenergies signal demand for feedstock aggregation, conversion facilities, logistics, and combined heat and power projects; intermediate milestones in 2030 and 2040 support staged development.
- Storage and flexibility: System need for substantial peak coverage and flexibility underpins requirements for storage, aggregated demand response, behind-the-meter assets, networks, and vehicle-to-grid pilots scaling over time.

Practical takeaways for energy producers

- Prepare for multi-track procurements with community participation features.
- Build Québec content and supply-chain strategies tied to PASQÉ-type platforms (plateformes d'approvisionnement stratégique québécoise en électricité) and local manufacturing.
- Anticipate permitting and social acceptability requirements; early municipal and Indigenous partnership structuring is critical. Recent wind procurement models formalized municipal and Indigenous partnerships to enhance acceptance and benefit-sharing.
- For hydro and transmission, plan on long lead times and staged approvals; align project critical paths to the 15-year plan cycles.

What this means for industry and large energy users (mining, metals, battery value chain, data centres, manufacturers, services)

- Capacity access and sequencing:
  - Confirmation that Québec aims to maintain and deepen its strategic advantage linked to the reliable generation of clean and affordable electricity for businesses operating in Québec. This reinforces the confidence that the electricity-based hypotheses behind any long-term investment by private parties in Québec are reliable, which is especially important in the context of growing regulatory tools aimed at promoting low-carbon production and penalizing high-carbon production entering a territory (for instance, in Europe).
  - Energy availability and peak management are central; electrification will be prioritized where it yields the highest system value, while transitional

roles for gas and renewable gases persist to manage winter peaks and hard-to-electrify loads.
    - Tariff evolution under the Régie de l'énergie may differentiate by use and sector to reflect marginal costs and policy priorities (that is, examples already filed for data centres and blockchain uses).
- Efficiency first:
    - Electric efficiency of about 50 TWh by 2050 and targeted gas efficiency reduce connection sizes, mitigate peak charges, and can accelerate connection timelines.
    - Actions: ISO 50001 adoption, advanced controls, waste-heat recovery, participation in demand response and bi-energy options; evaluate thermic networks in campuses and industrial parks. The plan highlights thermic networks as strategic assets to reduce electric peak and valorize local heat.
- Fuel-switching and low-carbon fuels: Growth in bioenergy and hydrogen creates alternatives for high-temperature heat, off-grid or remote operations, and heavy transport, with progressive greening of the gas mix through RNG.
- Reliability planning: Peak constraints are material (additional coverage up to 22 GW by 2050), pointing to on-site storage, behind-the-meter generation, and flexible operations as competitive necessities.
- Long-term needs: the announced investment cycle visibility and scale allow manufacturers to rely on energy-related long-term needs in Québec to plan investments in Québec (such as plant opening, or upscaling production).

Practical takeaways for large energy users

- Map expansion plans against Hydro-Québec's supply and transport plan milestones; secure capacity reservations early.
- Explore long-term offtake with independent power producers for renewable electricity (Power Purchase Agreement, or PPA) and RNG.
- Integrate social acceptance and community benefits into site development to streamline permitting.

What this means for construction contractors

- Coherence with precedent announcements: Québec's PGIRE confirms a clear signal that major long-term infrastructure investments, and therefore construction needs, are upcoming. This justifies investments in developing relevant construction skills in various energy-related fields (notably, wind, solar, hydro, transmission and distribution, industrial plants).
- Red tape and streamlining: legislative and regulatory changes will be considered to tackle the long delays observed in projects realization.
- Reinforcement of made-in-Québec supply chains: the desire to develop industrial capacities in Québec to respond to diversified needs as anticipated with the project pipelines creates an opportunity to grow local procurement, and therefore, a more reliable, resilient and reactive supply chain.

By

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