

Renewables, electrification and green hydrogen in Canada

Winterwind 2025, Skellefteå

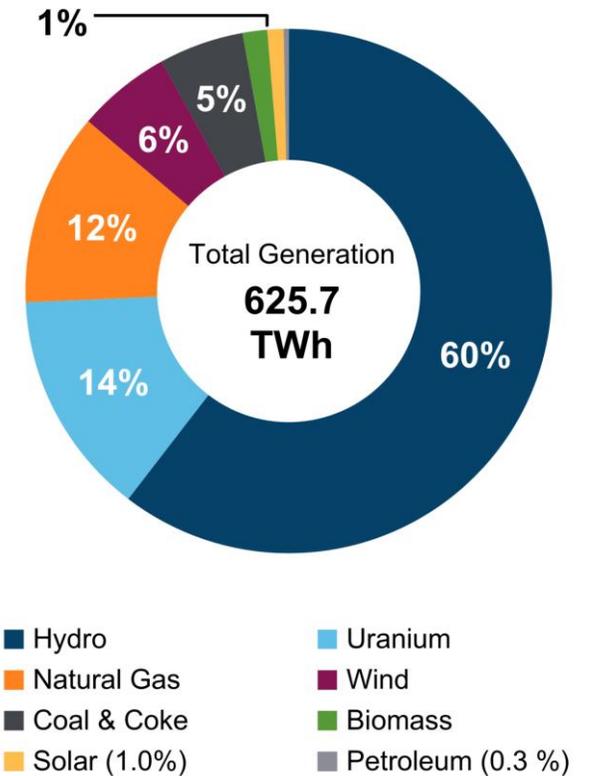
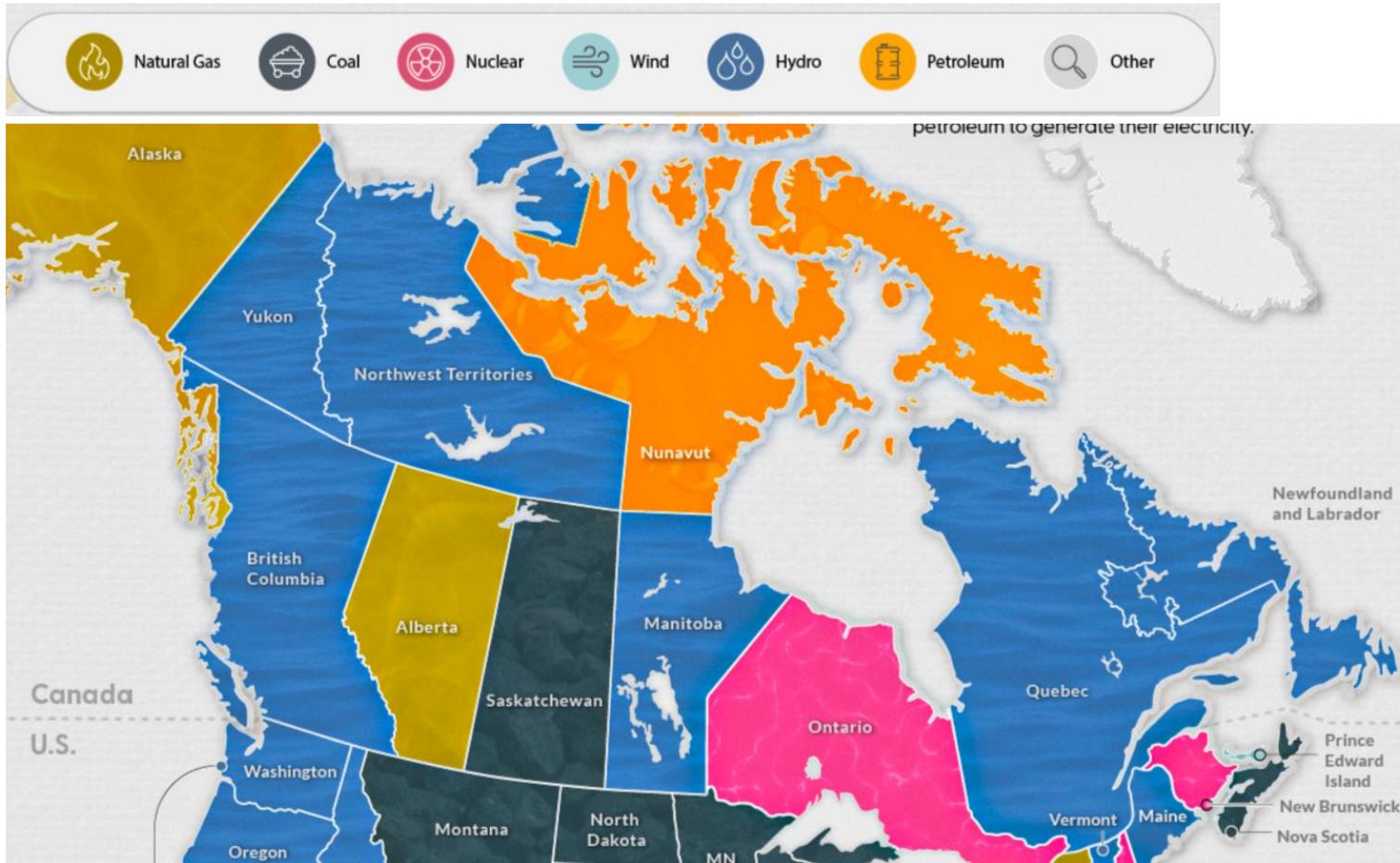
February 3, 2025

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NERGICA Renewable
Energy Research
and Innovation



Electricity generation in Canada (2021)



2

Biggest Sources of Electricity by State and Province:

<https://elements.visualcapitalist.com/biggest-sources-of-electricity-by-state-and-province/>

Canada Energy Regulator, 2021

NERGICA

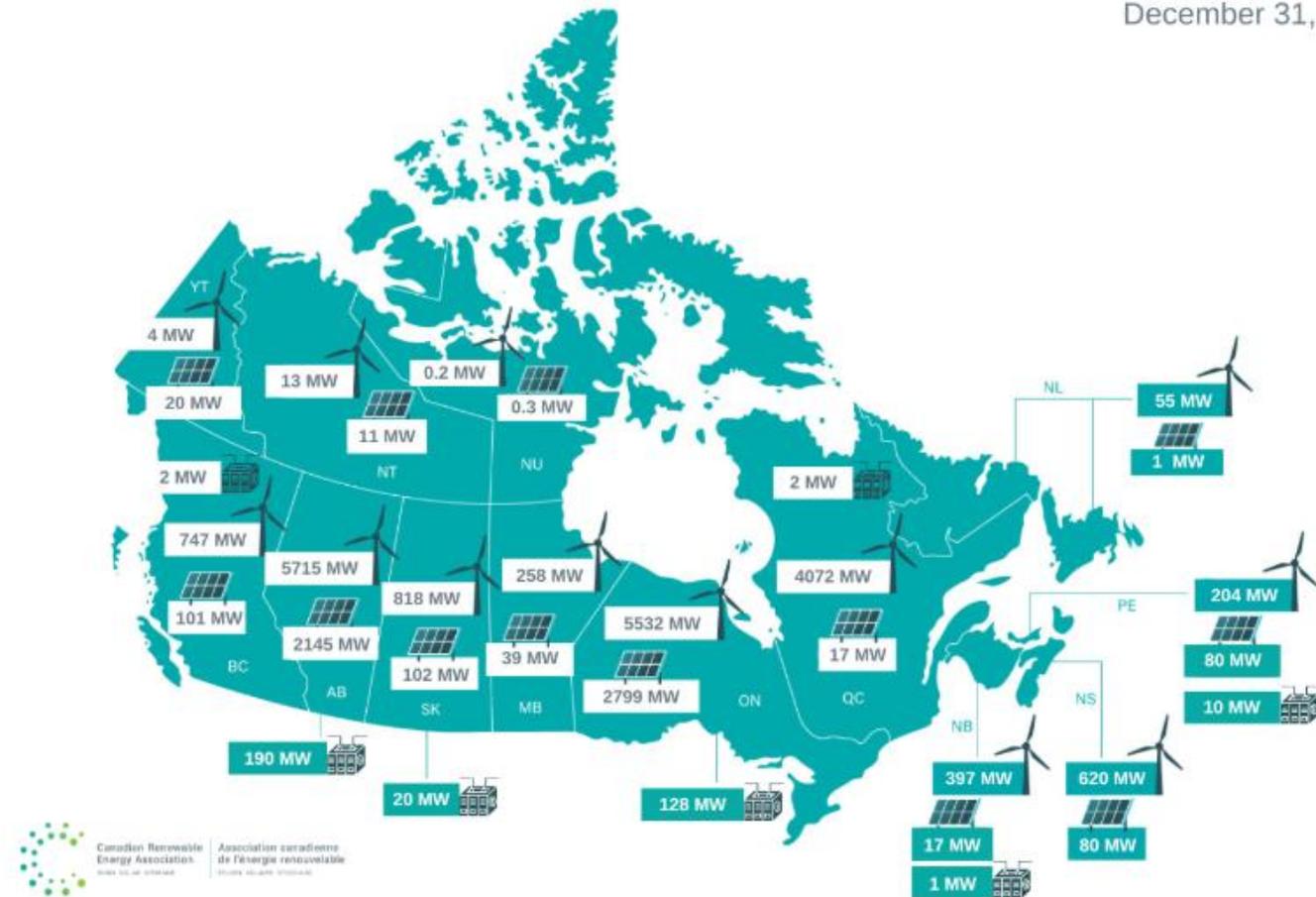
Renewable Energy in Canada

At the end of 2024, there were 24 GW of wind energy, solar energy and energy storage installed capacity across Canada.

Canada's total wind, solar and storage installed capacity grew 46% in the past 5 years (2019-2024).

Canada's current installed wind, solar and energy storage capacity

December 31, 2024



Renewable energy: what's next?

British Columbia

B.C. announces 9 new wind projects to power equivalent of 500,000 homes

Majority of projects are in Interior and north and will add about 8% to power supply, government says

The Canadian Press · Posted: Dec 09, 2024 9:43 PM EST | Last Updated: December 10, 2024



The Bear Mountain wind energy project in Dawson Creek, B.C. (Andrew Kurjata/CBC)

BC: 9 wind farms, 5 GW

Calgary

Alberta releases new rules and no-go zones on wind and solar projects

Wind projects will no longer be allowed within specific 'buffer zones,' province says



Lisa Johnson, Jack Farrell · The Canadian Press ·

Posted: Dec 06, 2024 6:22 PM EST | Last Updated: December 6, 2024



The Alberta government is introducing new rules around renewable energy. (Kyle Bakx/CBC)

Alberta: change in policies slowing wind development

Renewable energy: what's next?

Nova Scotia

Suggested areas for offshore wind around N.S. swell in size

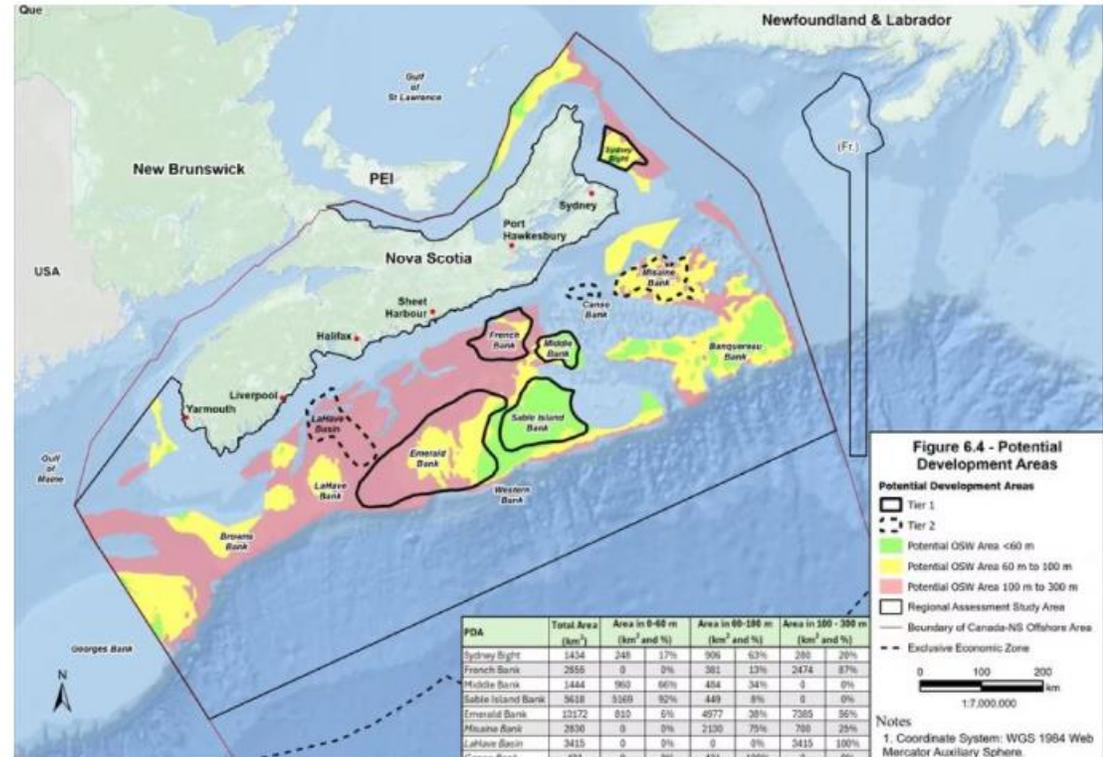
Fish harvesters are worried about expansion of potential offshore development areas



Taryn Grant · CBC News · Posted: Nov 19, 2024 5:00 AM EST | Last Updated: November 19, 2024



Wind turbines are seen off the coast of Sussex in Brighton, England. There are no offshore wind farms around Nova Scotia yet, but the provincial government wants to open bids for the first round of offshore wind licences next year. (Mike Hewitt/Getty Images)



A map of potential development areas for offshore wind on the Scotian Shelf, identified by the regional assessment committee in its draft final report, released Oct. 31, 2024. (Regional assessment committee)

Renewable energy: what's next?

Montreal

Hydro-Québec will develop large-scale wind farms to meet growing energy demand

As province moves away from fossil fuels, Crown corp is diversifying its power sources

CBC News · Posted: May 30, 2024 5:09 PM EDT | Last Updated: May 30, 2024



There are already some smaller scale wind turbine sites in Quebec, such as this one in Cap-Chat, in the Gaspé region. (Sandra Fillion/Radio-Canada)

Montreal

Hydro-Québec announces new wind farm generating up to 1,000 MW in eastern Quebec

No fixed timeline for \$3B project's completion

CBC News · Posted: Oct 16, 2024 4:34 PM EDT | Last Updated: October 16, 2024



The wind farm will span 700 sq. km in Quebec's Lower St. Lawrence region. (Wayne Parry/Associated Press)

Green hydrogen investments in Atlantic Canada

Politics

Canada, Germany commit \$600M for hydrogen export in Atlantic Canada

Germany assures it is committed to supporting Canada's clean hydrogen production



David Thurton · CBC News · Posted: Jul 31, 2024 12:50 PM EDT | Last Updated: July 31, 2024



Canadian Prime Minister Justin Trudeau and German Chancellor Olaf Scholz applaud as Natural Resources Minister Jonathan Wilkinson and Robert Habeck, Germany's vice-chancellor, shake hands after signing a hydrogen agreement in 2022. Both governments announced Wednesday they would each commit \$300 million for hydrogen projects in Eastern Canada. (THE CANADIAN PRESS/Adrian Wylid)

Proposed wind project in western Newfoundland gets \$128M federal development loan

World Energy GH2 project is undergoing provincial environmental assessment



Mike Moore · CBC News · Posted: Feb 28, 2024 3:14 PM EST | Last Updated: February 28, 2024

X [59 comments](#)



World Energy GH2 CEO Sean Leet, left, and Labour and Seniors Minister Seamus O'Regan announced \$128-million credit facilities agreement for a proposed wind-to-hydrogen project on Newfoundland's west coast. (Adrian Wylid/The Canadian Press)

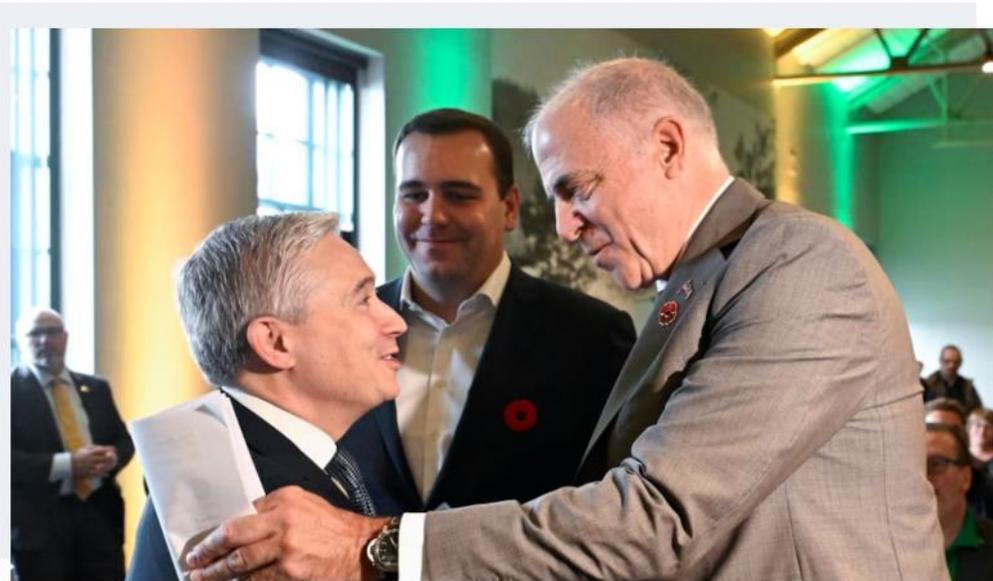
Green Hydrogen: Large scale projects announced

Montreal | News

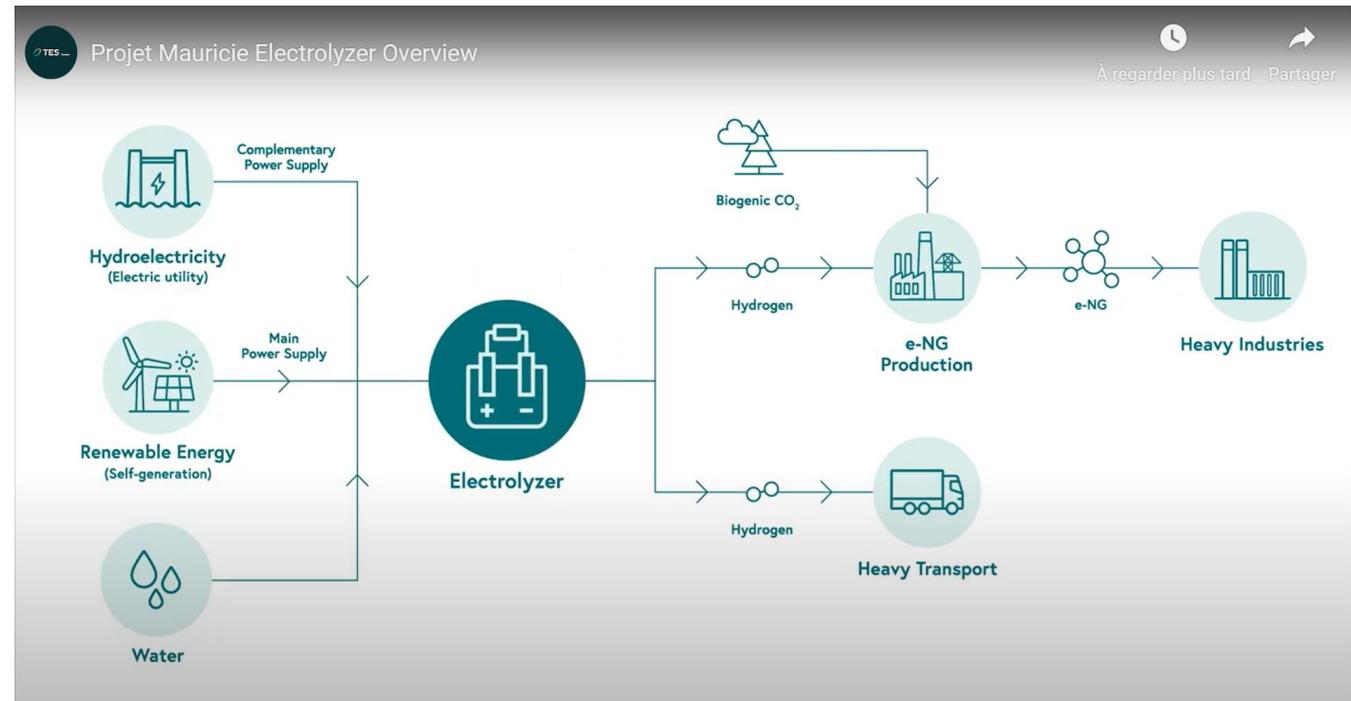
A \$4B green hydrogen plant will be built in Quebec

By [The Canadian Press](#)

Published: November 11, 2023 at 12:19PM EST



Francois-Philippe Champagne, left, Minister of Innovation, Science and Industry, shakes hand with Quebec Economy and Innovation Minister Pierre Fitzgibbon, as Eric Gauthier, General Manager, TESCanada H2 inc., looks on, in Shawinigan, Que., Friday, Nov. 10, 2023, at the announcement of a green hydrogen project. Totalling \$4 billion in investments for the region, the Projet Maurice consists of the construction of an electrolyzer and renewable energy production assets. THE CANADIAN PRESS/Jacques Boissinot



Electrification: Massive investments in supply chain

VW's battery plant deal changes Canada's auto sector. Whether it's worth \$13B in subsidies is debatable

Government support for Volkswagen's massive new plant in Ontario is unprecedented

 Pete Evans · CBC News · Posted: Apr 22, 2023 4:00 AM EDT | Last Updated: April 22, 2023



Volkswagen's new battery plant in St. Thomas, Ont., could soon be making up to 100,000 battery packs a week. The plant will be used across the company's supply chain, including at this VW plant in Detroit. A worker is attaching an EV battery to an electric vehicle. (Liesä Johannssen-Koppitz/Bloomberg)

EV battery giant Northvolt to build multibillion-dollar plant in Quebec

Trudeau in Montreal to welcome Sweden's Northvolt Thursday morning

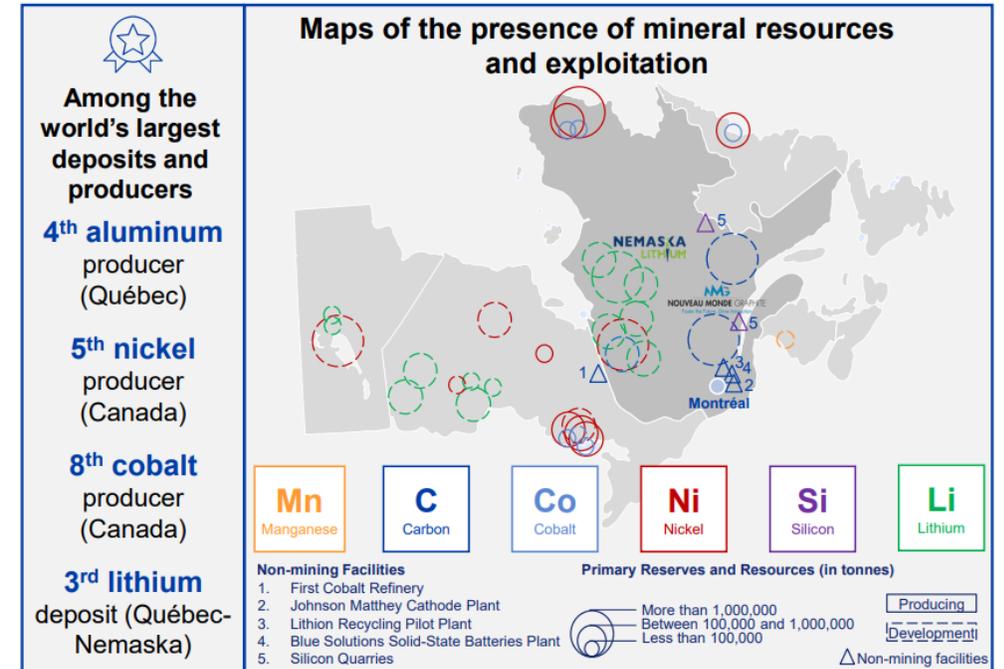
 Sabrina Jonas · CBC News · Posted: Sep 28, 2023 10:33 AM EDT | Last Updated: September 29, 2023



Quebec, Canada bet billions on an EV battery plant east of Montreal

1 year ago | 2:07

Northvolt, a Swedish battery manufacturing giant, says it will build a new multibillion-dollar electric vehicle battery plant east of Montreal. Quebec leaders are calling it the largest private investment in the province's history — along with billions in public funding — but others say it carries no guarantees it will pay off for taxpayers.



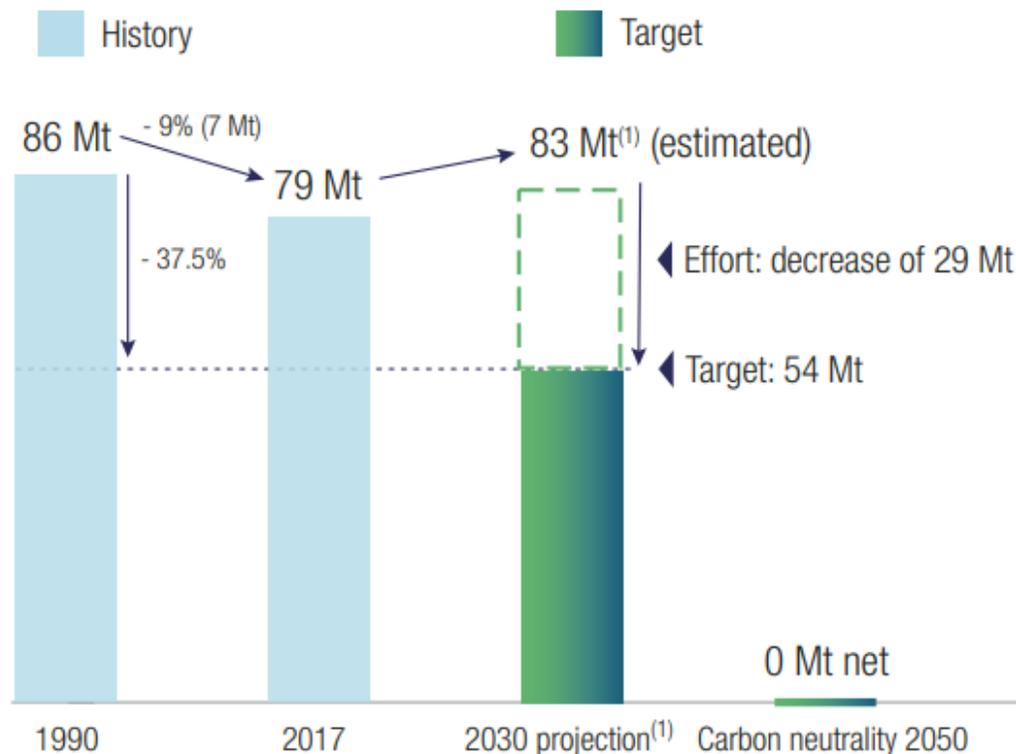
Provincial strategy: Quebec



Provincial strategy: Quebec

FIGURE 4

Estimated efforts needed to reach the 2030 target
(in millions of tons of CO₂ equivalent, unless otherwise indicated)



The action plan is structured around three main themes:

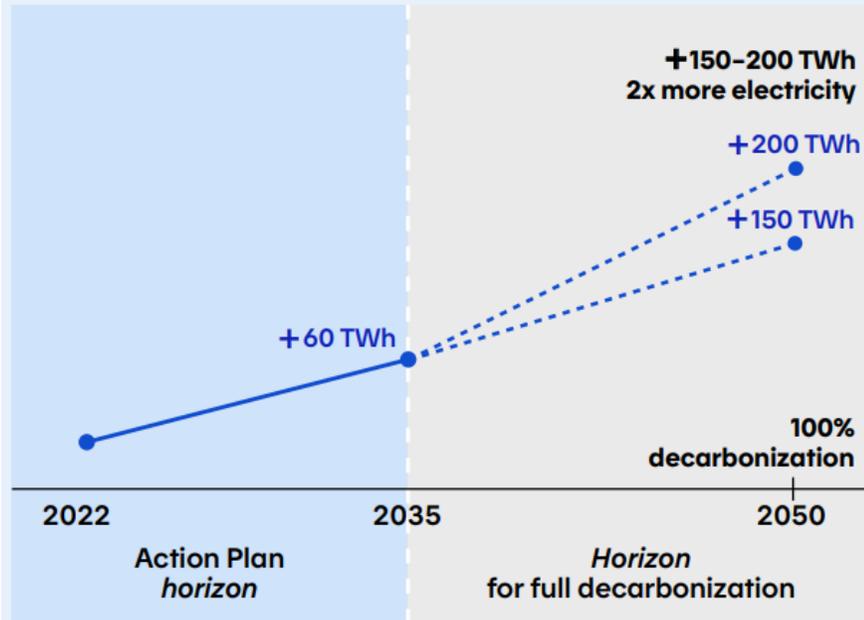
- 1- Reduce greenhouse gas emissions
- 2- Adapt to the impacts of climate change
- 3- Support the transformation of society and the economy

Towards a Decarbonized and Prosperous Québec

Action Plan
2035

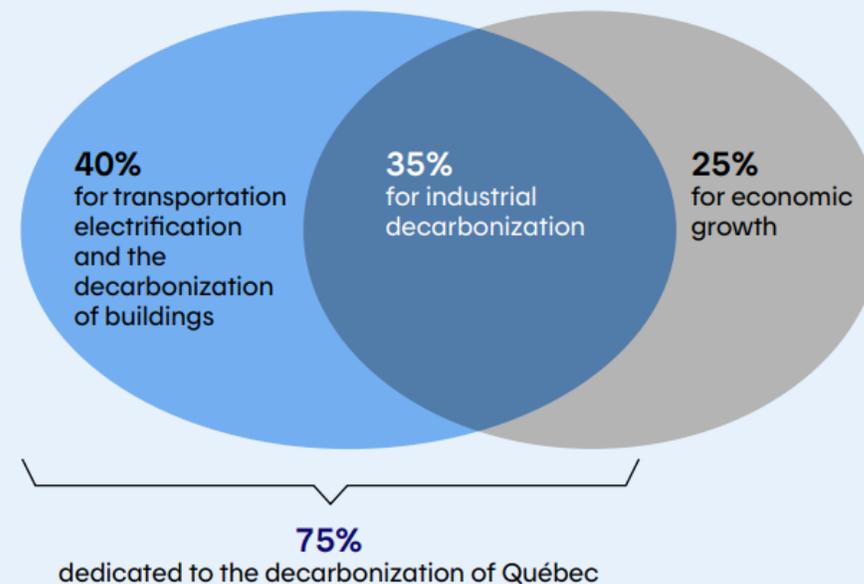


Projected trajectory of electricity demand by 2050¹



75% of new electricity generation dedicated to decarbonizing the environment

Breakdown of additional electricity use by 2035



Federal strategy



Government
of Canada

Gouvernement
du Canada

Powering Canada's Future: A Clean Electricity Strategy

Table of Contents

[Foreword - Clean Electricity Strategy](#)

[1.0 The Case for Clean Electricity](#)

[1.1 Laying Out a Clean Electricity Strategy for Canada](#)

[1.2 A Strategy informed by extensive engagement, electricity sector experts, and Indigenous energy leaders](#)

[1.3 Key Guiding Principles](#)

[2.0 Toward the Grid of the Future](#)

[2.1 Global Context](#)

[2.2 Canadian Context](#)

[2.3 Regional Context](#)

[3.0 Federal Action](#)

[3.1 Focus Area 1: Growing the Grid and Managing Demand](#)

[3.2 Focus Area 2: Providing Policy Certainty and Smoothing the Path](#)

[3.3 Focus Area 3: Collaborating on Tailored Approaches for Every Region](#)

[4.0 Next Steps](#)

[Annex 1 - Canada Electricity Advisory Council Recommendations](#)

[Annex 2 - Wah-ila-toos Indigenous Council Recommendations](#)

“This Clean Electricity Strategy builds on the Power Canada Forward vision, articulating the federal government’s role, focusing on three key areas:

1- Growing the grid and managing demand;

2- Providing policy certainty and smoothing the path; and

3- Collaborating on tailored approaches for every region”

Federal strategy

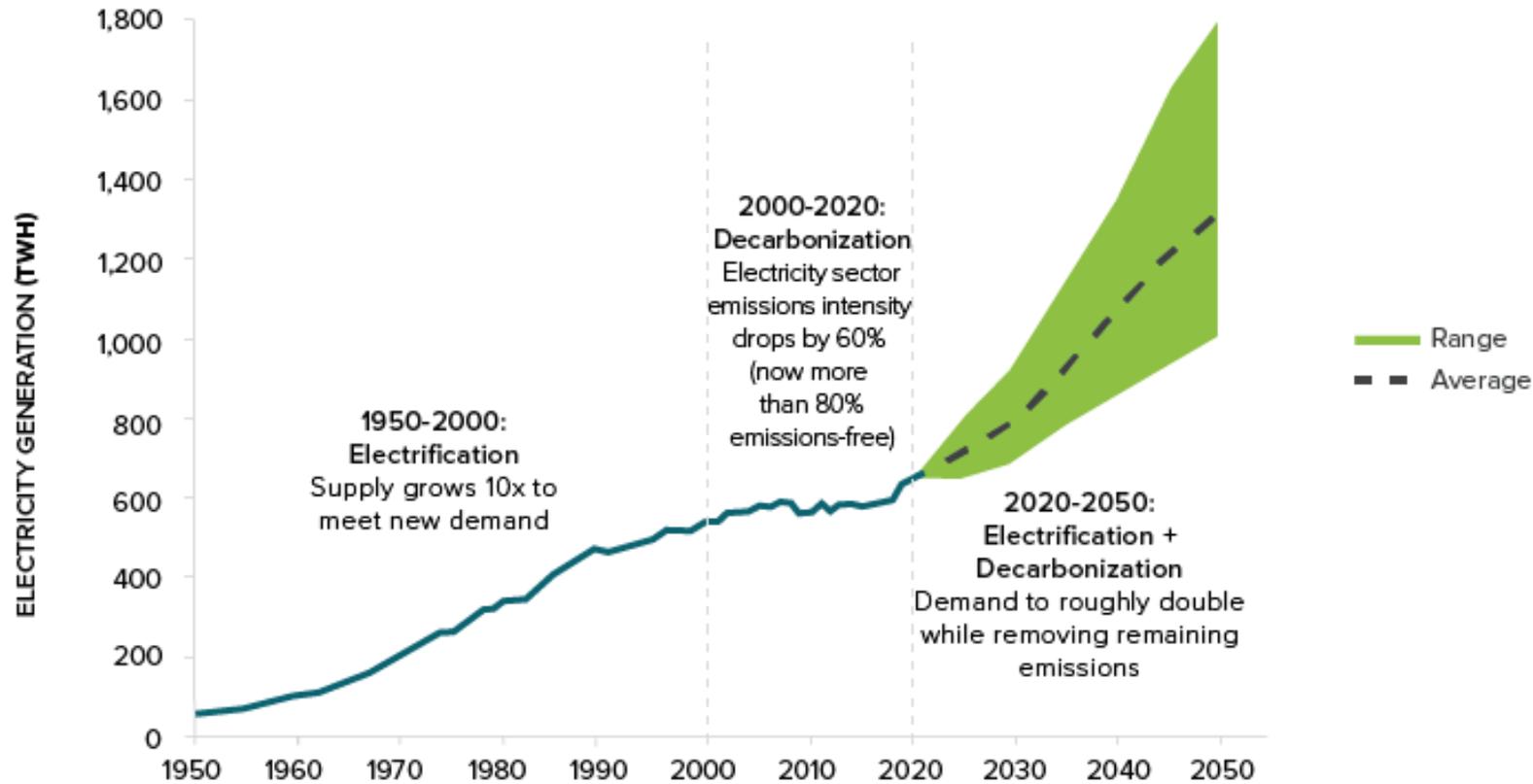
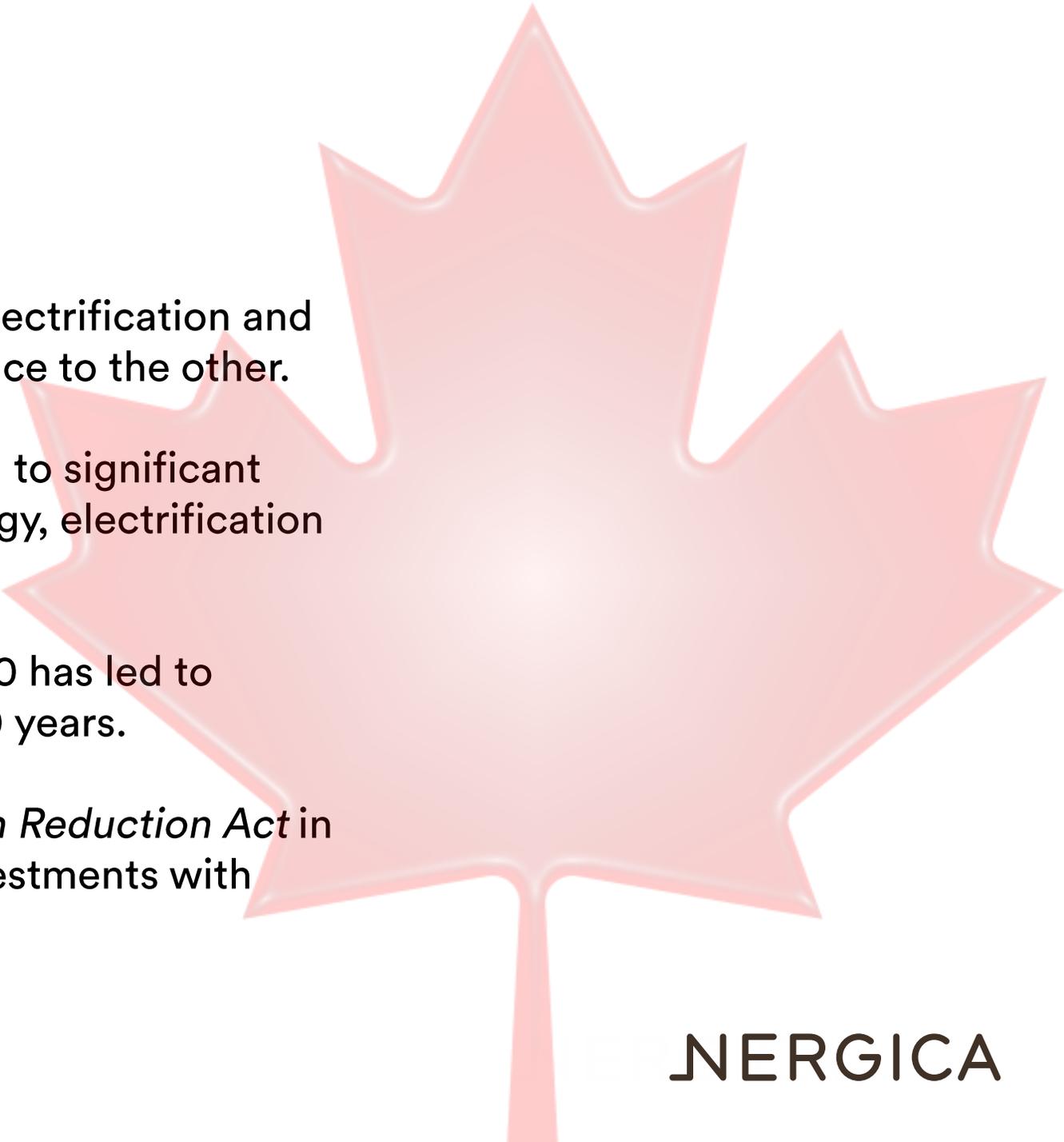


Figure 1. 100 Years of Electricity Generation in Canada

Summary



The Canadian federation renewable energy, electrification and energy transition sectors vary from one province to the other.

Both federal and provincial strategies have led to significant investment in various sectors: renewable energy, electrification and green hydrogen.

The target to a carbon neutral country by 2050 has led to action plans guiding actions in the next 5 to 10 years.

A lot measures were responses to the *Inflation Reduction Act* in the USA, some uncertainty around future investments with political changes.

Thank you for your attention!

Let's connect!

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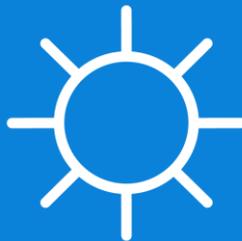
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Wind energy



Solar PV



Renewables integration

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