



## 20 MINUTE CANADA PRESENTATION

Mathieu Côté – Canadian Renewable Energy Association

6R<sup>nd</sup> Task 1 Meeting 2024-11-21 [Bora Bora, French Polynesia]



In the spirit of reconciliation, I acknowledge that I live and work on unceded Indigenous lands on the island of Tiohtià:ke, now known as Montréal. This land has for innumerable generations served as a site of meeting and exchange amongst many nations. A prominent example is the great peace of Montreal, signed in 1701. In the present day, the Kanien'kehá:ka Nation is recognized as the custodians of the lands and waters which are now my home.

I would also like to acknowledge that my formative years were spent on the lands of the 1850 Robinson-Huron treaty, in the territory of the Nippising First Nation, and on the N'Dakimenan of the Teme-Augama Anishnabai, and that my heart still resides there.

# Canada | General information

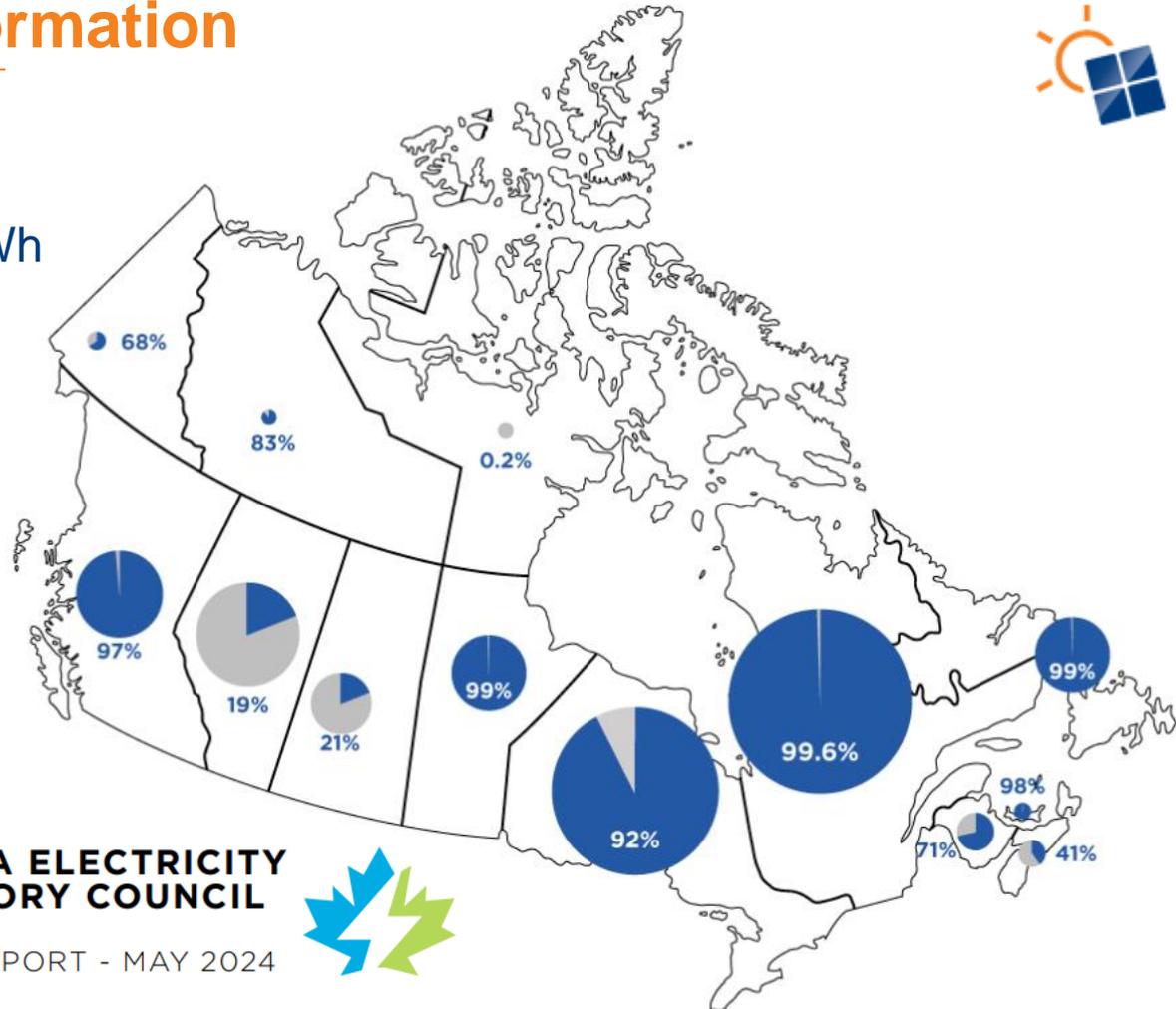


- Population – 41,288,599
- Electricity demand ~ 560 TWh
- Share of solar generation
  - 0.8 % (2023)
  - 0.98 % (H1 2024)



Statistics  
Canada

Statistique  
Canada



**CANADA ELECTRICITY  
ADVISORY COUNCIL**



FINAL REPORT - MAY 2024

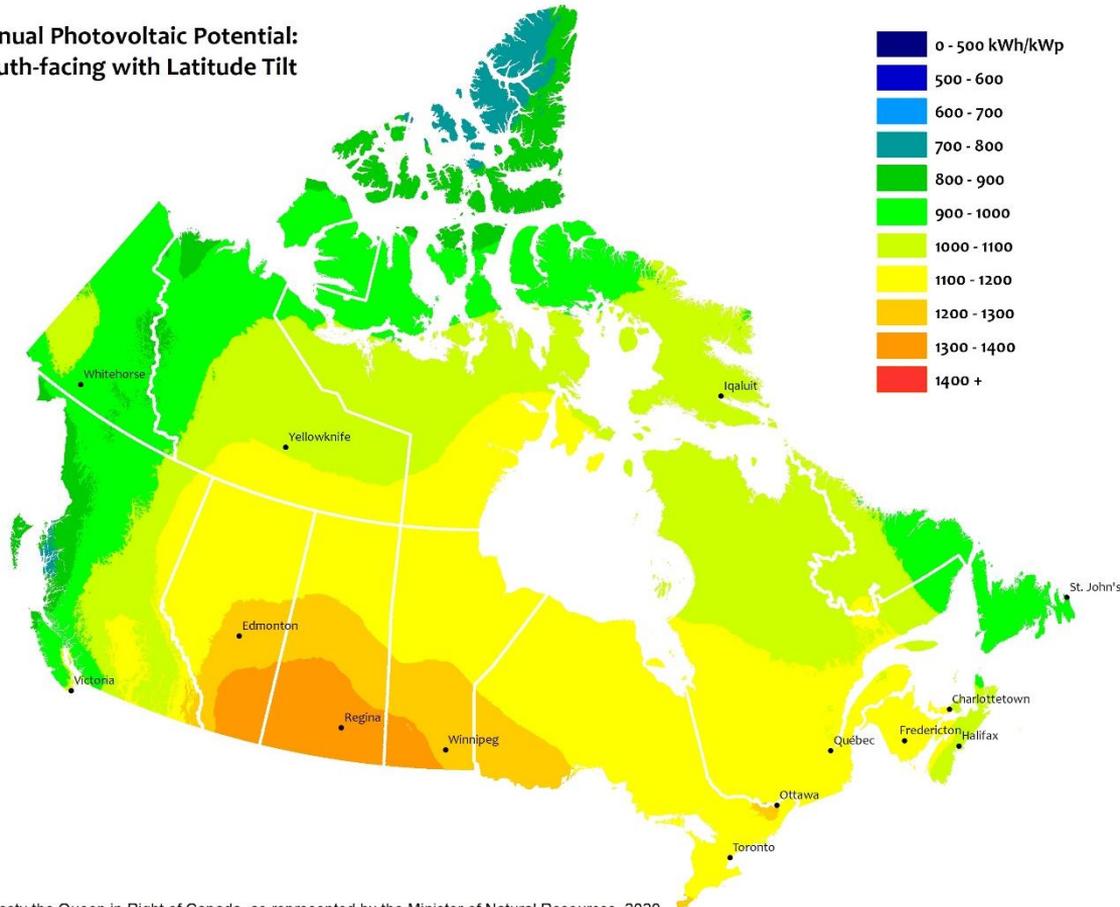


- 13 separately regulated electricity jurisdictions
- Approximately 150 independent utilities
- Natural resource-based economy with an electricity system that is currently over 84% non-emitting.
- Significant geographic, climatic, economic, cultural, and historical differences including major influences from the U.S.
- Federal government has jurisdiction over Federal lands and many environmental considerations. Provinces and territories have jurisdiction over electricity.

# Canada | Solar Potential

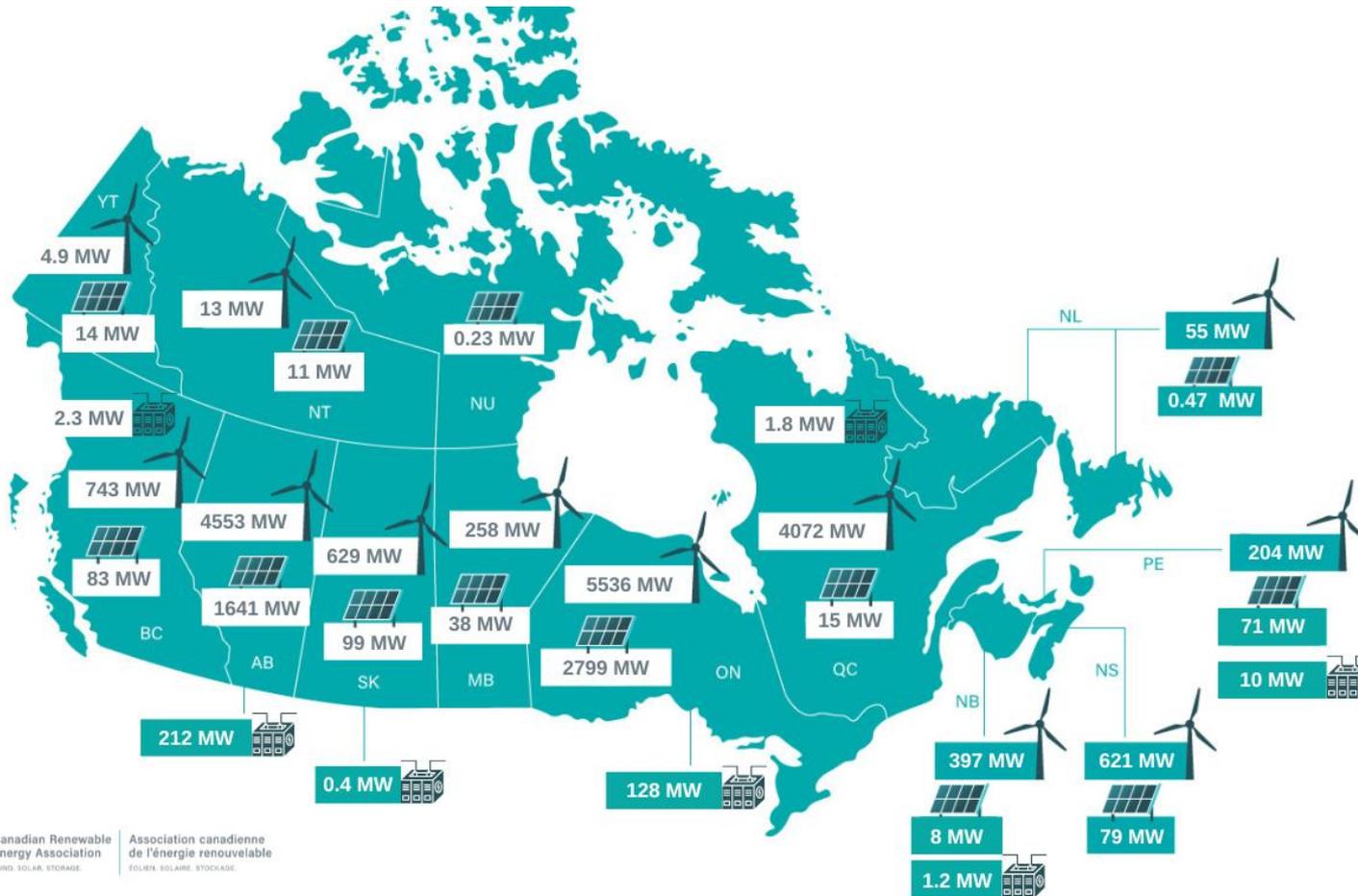


Annual Photovoltaic Potential:  
South-facing with Latitude Tilt

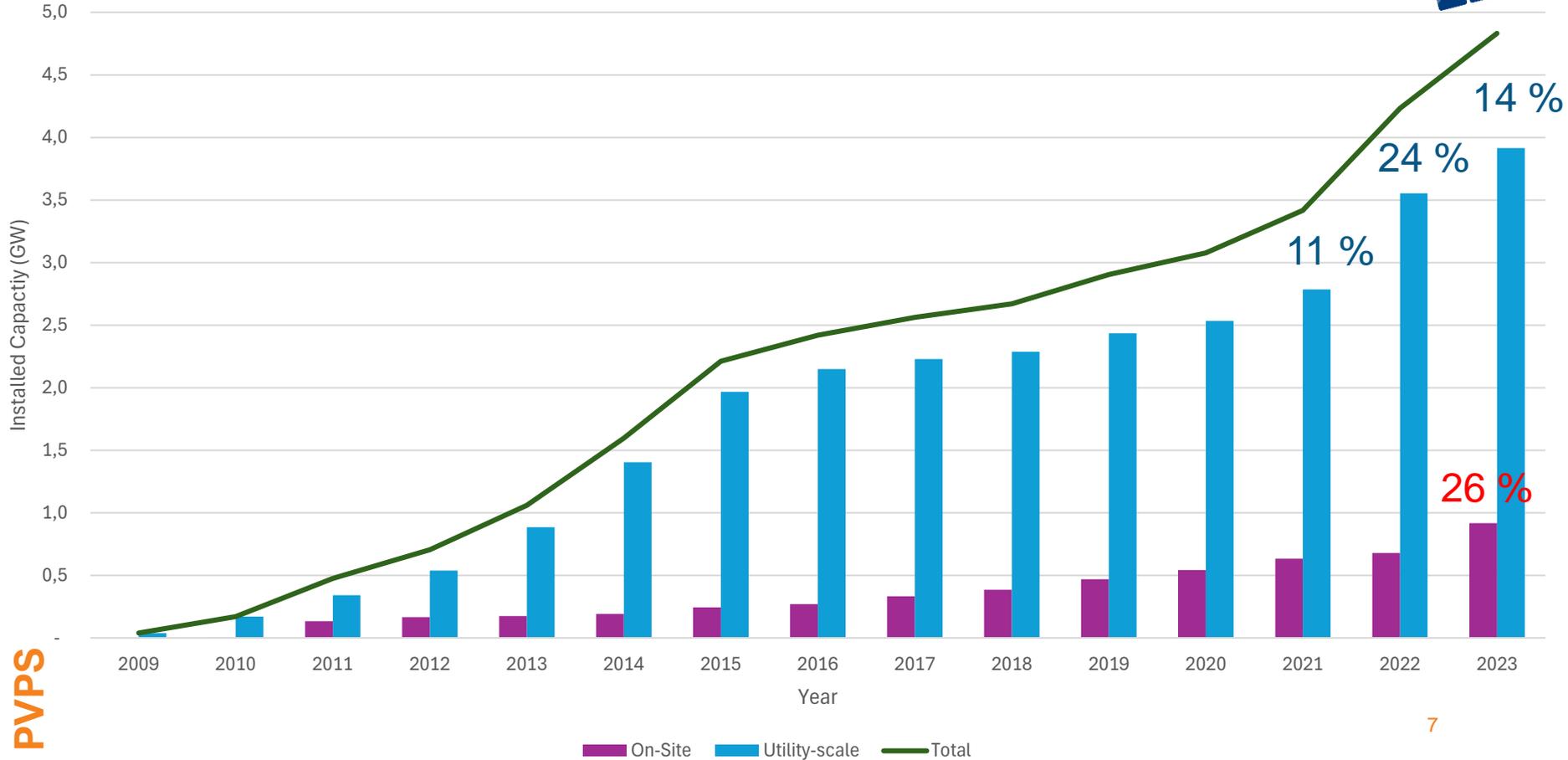


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# Canada | Installed Wind, Solar, Storage Capacity



# Canada | Solar Installed Capacity growth

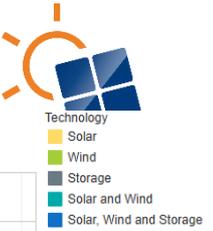




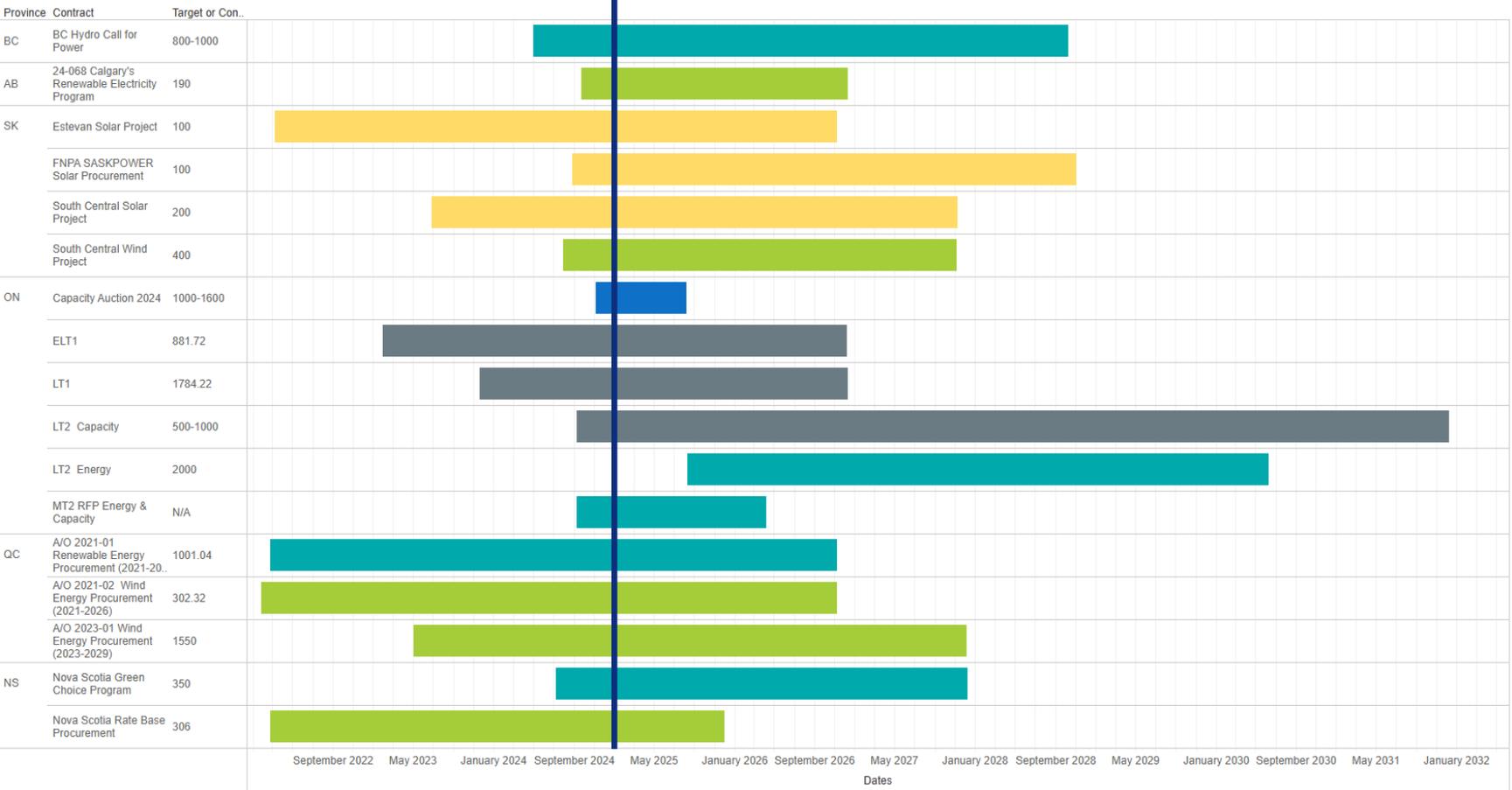
As noted in the 2024 Trends Report:

- Tenders and PPAs in the utility segment accounts for the majority of solar PV installed capacity.
- Challenges of stop-and-go policies and jurisdictional disagreements are also notable.
- Canada added 567 MWac to reach 4.6 GWac cumulative capacity.
  - Distributed – 207 MWac
  - Centralized – 367 MWac
- 13 Jurisdictions who all report data in different ways make aggregating data a real challenge

# Canada | Procurement calendar



CanRE's clean energy procurement calendar (Updated: Oct. 22, 2024)





- Clean Electricity Regulations drafted and under debate. Aimed at a 2035 milestone for a non-emitting grid and 2050 net zero economy
- Federal Investment Tax Credit is now law (retroactive to March 2023) tax incentive program (10 to 40% for solar, depending on a number of factors). Intended to compete with the U.S. IRA.
- Canada Infrastructure Bank low interest loans.
- Smart Renewables and Electrification Pathways Program (SREPs)
- Alberta 8 month pause on renewables followed up by market redesign causing disruptions to the industry. Viewscape acceptability, grid reliability, environmental concerns, among others.

# Canada | Overview of market drivers - Distributed



- Distributed incentive programs
  - Greener Homes Loan - \$40,000 interest free for 10 years
  - ~~Greener Homes Grant — up to \$5,000 for solar PV system~~
  - See provincial programs below
- Customer choice
- Resilience and climate change
- Energy cost uncertainty
- Threat of tariffs on particularly Chinese manufactured equipment being discussed or in the works

# Canada | Overview of market drivers - Distributed



## Alberta

- City of Edmonton: The “Change Homes for Climate – Solar Program” is available for properties with four or more units at a rate of \$500/kW toward the cost of a rooftop solar system. These benefits are capped at \$4,000 per dwelling or \$100,000 per owner annually. Project funding will be available on a first-come-first-served basis. Details [here](#).
- The Town of Banff offers residents a rebate of \$750 per kW installed, to a maximum of 20 kW. Program information is [available here](#).
- The City of Medicine Hat solar rebate program is fully subscribed.
- EQUUS customers are eligible for a rebate of \$100 per kW installed, to a maximum of \$500. Program information is [available here](#).

## British Columbia

- Solar PV is HST-exempt in British Columbia, providing residential solar PV customers with a 7% savings.
- NEW: Beginning in July, eligible homeowners can apply for \$1,000 in rebates per kW of installed solar capacity, up to a maximum of \$5,000 (or 50% of project costs). Up to \$5,000 will also be available for battery storage. At publication, program details were not yet available. Please consult this [website](#) for details.

## Manitoba

Efficiency Manitoba’s Solar Rebate Program offers a rebate of \$500 per kW installed for residential and business solar PV (<100 kW), to a maximum of 10 kW and \$5,000. Program information is available [here](#).

## New Brunswick

Save Energy NB’s Total Home Energy Savings Program offers a rebate of up to \$200 per kW installed for residential solar PV up to a maximum of 10kW or \$20,000. Program information is available [here](#).

CanREA Go Solar Guide - <https://renewablesassociation.ca/go-solar-guide/>

# Canada | Overview of market drivers - Distributed



## Northwest Territories

The Arctic Energy Alliance offers rebates for off-grid residential solar PV, for 50% of the total eligible project costs or \$4,000 per kW (whichever is less), to a maximum of \$20,000. Program information is available [here](#).

## Nova Scotia

Efficiency Nova Scotia's Solar Homes program offers rebates of \$300 per kW installed up to a maximum of \$3,000.

First Nations, registered non-profits and charitable organizations, including churches, municipalities, universities and community colleges, are eligible for up to \$600/kW, to a maximum rebate of \$15,000.

Homeowners interested in participating in Nova Scotia Power's Home Battery pilot are eligible for \$300/kWh of installed total energy storage capacity, and a maximum rebate of \$2,500, up to 40% of eligible pre-tax system costs. Program information is available [here](#).

## Nunavut

The Nunavut Department of Environment's (DOE) Climate Change Secretariat (CCS) provides a grant of up to \$5,000 for solar PV installed at a cabin, defined as a structure in a remote location used for camping and/or traditional land use activities and not used as a primary place of residence. Program information is available [here](#).

## Ontario

The City of Toronto's Home Energy Loan Program (HELP) allows homeowners in Toronto to borrow up to \$125,000 for "home energy improvements," including battery storage. See [here](#) for more details.

Enbridge collaborated with the Greener Homes Grant on the Enbridge Gas Home Efficiency Rebate Plus program, which offers rebates of up to \$5,000 for installing solar panels or battery storage systems at homes. As of February 5, 2024, the program was fully subscribed and no new applications are being accepted. Program information is available [here](#).

CanREA Go Solar Guide - <https://renewablesassociation.ca/go-solar-guide/>

# Canada | Overview of market drivers - Distributed



<b>Prince Edward Island</b>	Efficiency PEI offers rebates of \$1,000 per kW installed, up to 40% of installed costs, to a maximum of \$10,000. Program information is available <a href="#">here</a> .
<b>Saskatchewan</b>	The City of Saskatoon offers a municipal grant of up to a \$6,000 grant for residents applying for solar funding through Home Energy Loan Participants (HELP). Program information is available <a href="#">here</a> .
<b>Yukon</b>	The Yukon Government solar rebate program of \$800/kW is on pause. Program information available <a href="#">here</a> .

# Canada | PV Industry – Manufacturers

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- Canadian Solar Solutions Inc.
- Fronius Canada Ltd.
- Heliene Inc.
- Hoymiles Power Electronics Inc.
- Ironcor Solar Structures Inc.
- Jinko Solar Canada Co. Ltd.
- LONGi Solar Technology (U.S.) Inc.
- Nextracker
- Morgan Solar
- Panasonic
- Polar Racking Inc.
- S-5!
- Stace Solar Solutions Inc.



# Canada | Métis Crossing Solar Farm



- 4.86 MW community generation solar installation
- A portion of project revenue is dedicated to a community development fund to support other green energy and sustainable development in the area. Profits generated will be used to fund social and economic development initiatives and programs, benefitting Métis people across Alberta.



PVPS



# Canada | Old Crow Solar Farm



- This is the Old Crow Solar Farm
- 940 kW DC, 480 kW AC
- Microgrid
- Off-grid community, 100 % displacement of Diesel Generation



# Canada | Old Crow Solar Farm



# Canada | Solar in the non-emitting Power System

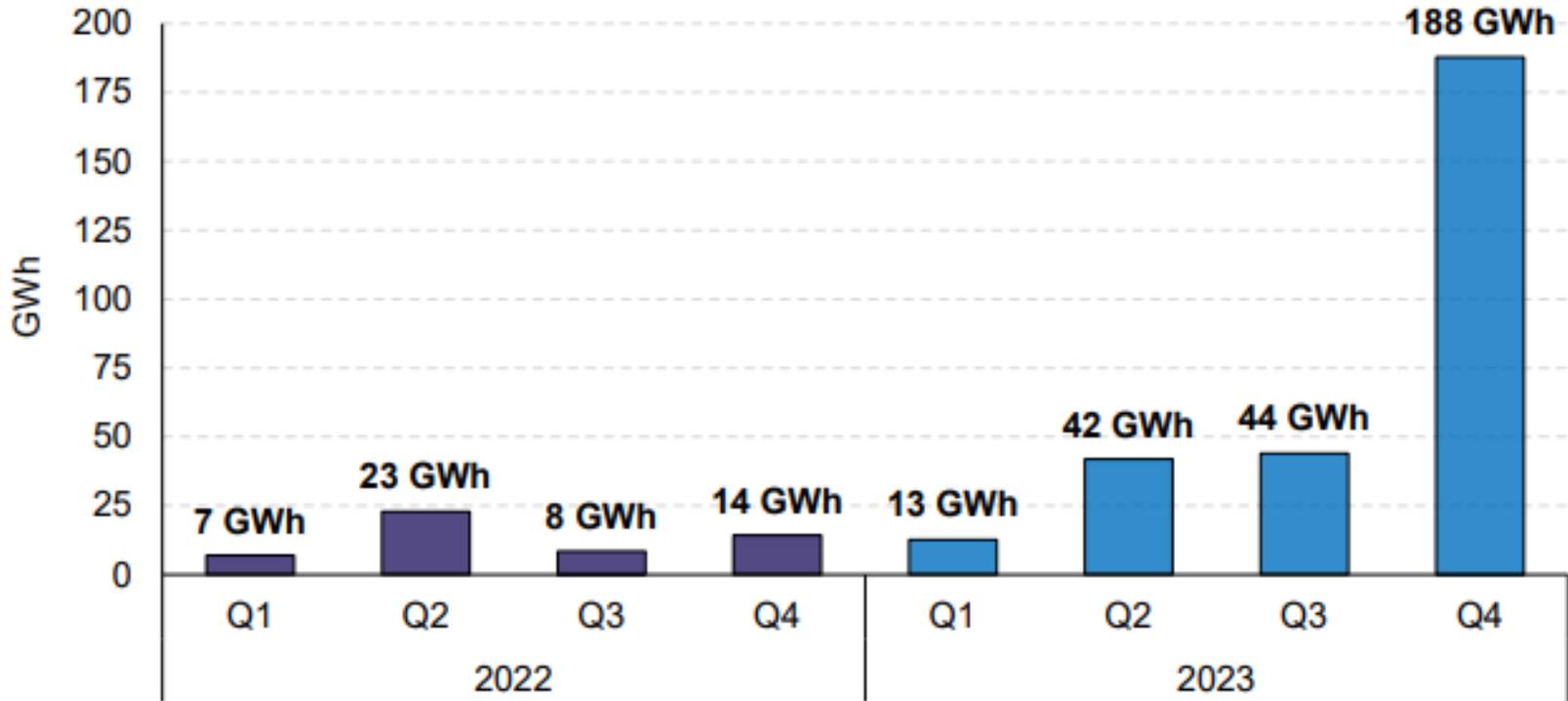


- Grid integration of inverter-based renewable energy is becoming a more significant focus for Canadian jurisdictions as integration levels pass 10% of demand.
- High variability in approach and experiences based on the local resources and the electricity market structure.
- Large hydro systems are already close to 100% RES and are focused on meeting 2-3x demand growth in the coming decades
- Fossil fuel powered systems are voicing challenges to getting to 100% RES with current targets for a 2035 non-emitting grid.

# Canada | Transmission & Curtailment (Alberta)



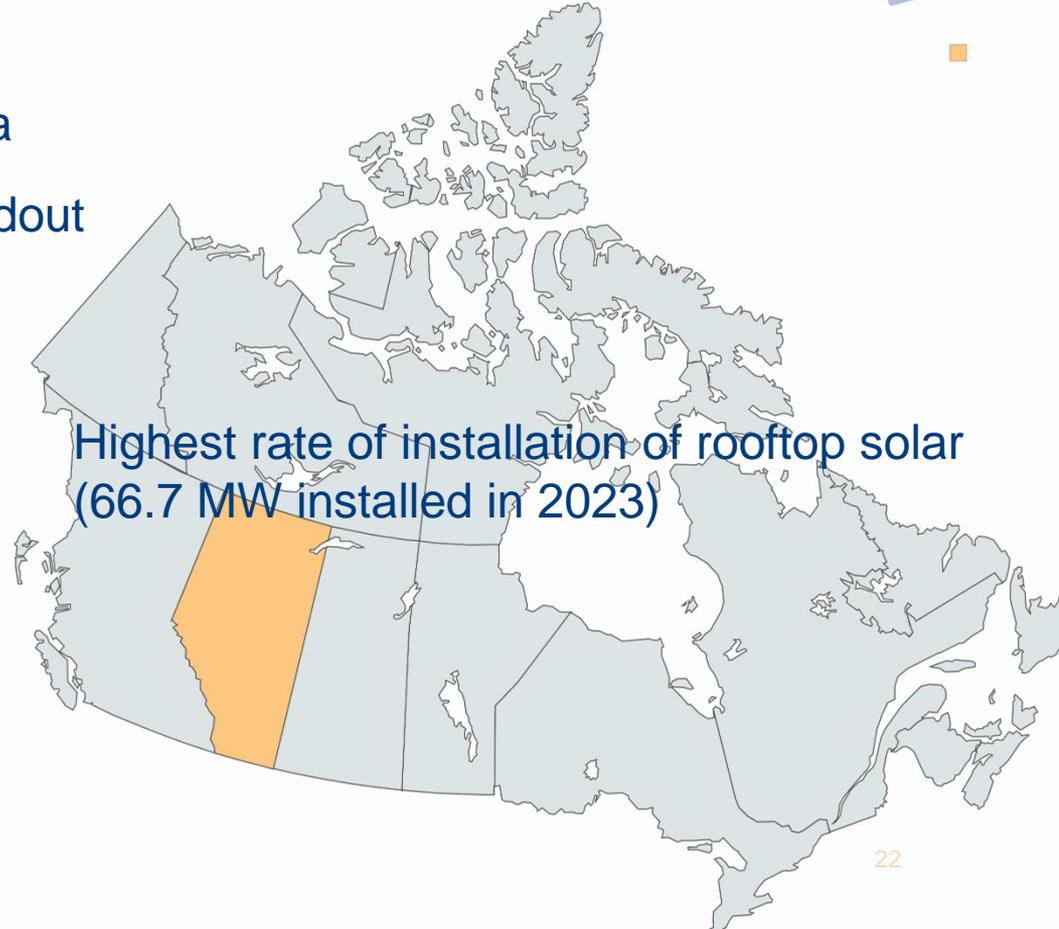
Figure 39: Quarterly total constrained volumes for wind and solar generation (2022 and 2023)



# Canada | Alberta paradox



- Highest emitting electricity grid
- Only open electricity market in Canada
- Over last 4 years has had biggest buildout of renewables
- Current government is hostile to renewables (8 month moratorium)
- Market redesign underway
- Higher electricity prices
- Best solar resource in the country



# Canada | Social acceptance



Canadian Renewable  
Energy Association  
WIND. SOLAR. STORAGE.

Association canadienne  
de l'énergie renouvelable  
ÉOLIEN. SOLAIRE. STOCKAGE.

- Varies by region, demographic, political inclination, etc
- Election of DJT to the south has many concerned about tariffs, prices, uncertainty
- CanREA working on national promotional campaign

PVPS

## Go Solar Guide 2024



**Merci – Thank you!**

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