



BTM Solar: Canadian Market Outlook

How Behind-the-Meter (BTM) solar can contribute to Canada's net-zero future

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Report by:



About & Acknowledgements



The Canadian Renewable Energy Association (CanREA)

is the voice for the wind energy, solar energy and energy storage industries in Canada. CanREA represents more than 300 companies active in these industries across the country, including manufacturers, installers, developers, service providers and supply-chain partners. Through stakeholder advocacy and public engagement, CanREA works to create the conditions for a modern energy system, in which clean, low-cost, reliable, flexible and scalable solutions play a central role in transforming Canada's energy mix.

For more information about CanREA, please visit renewablesassociation.ca

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Executive Summary

Canada has committed to achieving economy-wide net-zero greenhouse gas emissions (GHG) by 2050. To achieve this ambitious goal, the country must prioritize the widespread electrification of buildings, transportation, and industry, which is estimated to require doubling electricity demand by 2050 to approximately 1,200 TWh.

Most net-zero pathways studies conducted to date do not consider the contribution of behind-the-meter solar (BTM). However, of the ones that do, **BTM solar consistently appears as part of the least-cost pathway to meeting net zero by 2050, with a need to contribute between 24 - 48 TWh (about 2 - 4% of the total electric demand in 2050) to Canada's total electricity demand in 2050.** While this contribution may seem small, Canada must recognize the importance of this contribution as critical to achieving net-zero GHG emissions in a cost-effective manner, as well as the challenge ahead in achieving those targets, considering that BTM solar merely serves 1.5 TWh, representing about 0.2% of Canadian electricity demand today.

For a net-zero-aligned trajectory, Canada must scale up BTM solar capacity by 20-40x today's levels by 2050.

This report represents the first comprehensive national market outlook for BTM solar potential in Canada that demonstrates the need for BTM solar on a net-zero trajectory and the potential growth in market uptake between 2023 and 2050 under various market conditions. Specifically, the study explores three scenarios that reflect varying levels of policy support.

- ▶ **Business-As-Usual (BAU):** Current policy commitments such as the Greener Homes program, Investment Tax Credit (ITC), Accelerated Capital Cost Allowance (CCA) and provincial/municipal programs across the country.
- ▶ **Expanded Financial Support (BAU+\$):** Expanded policy support through additional and expanded financial support through federal, provincial and municipal incentives and access to low-cost financing options.
- ▶ **Market Transformation (BAU+\$ + Transformation):** Expanded policy support through additional financial support, market transformation efforts through permitting and interconnection process enhancements, and mandates for solar deployments on newly constructed homes.

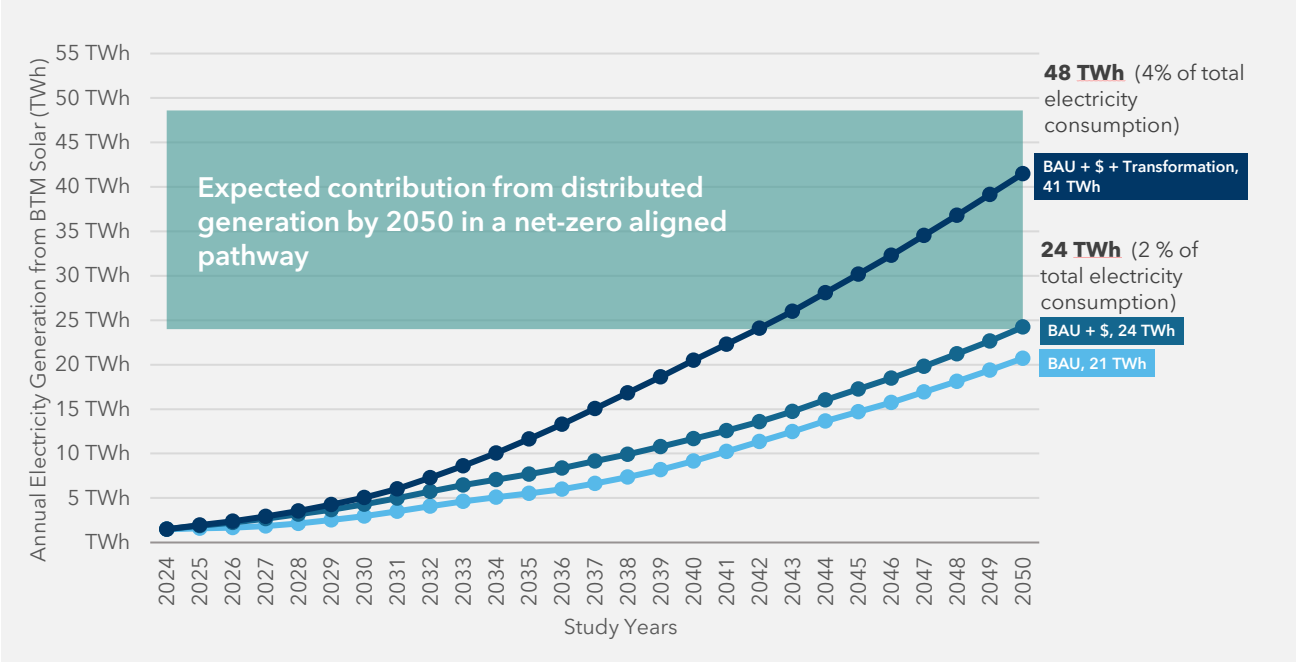
As shown in Figure A, our analysis highlights that **Business-As-Usual** policies result in significant market growth but fall short of the required deployment of BTM solar to support net-zero by 2050. **Expanded Financial Support**, offering additional and extended financial incentives at all levels of government, can accelerate market growth; however, it meets the bare minimum required to support net zero by 2050.

	Today	2050		
		BAU	Expanded Financial Support	Market Transformation
Total Installed BTM Solar Capacity (GW)	1.2 GW	18.8 GW	22 GW	37 GW
Residential Solar Penetration (single-family homes)	1 in 200 homes	1 in 12 homes	1 in 9 homes	1 in 3 homes
% of Non-Residential Load Met through BTM Solar	0.5%	3.2%	3.3%	3.7%

Achieving Canada’s 2050 net-zero goals requires a holistic Market Transformation Scenario that combines expanded financial measures with policy levers that address non-financial barriers.

Specifically, in addition to expanded and sustained financial incentives, permitting and interconnection process enhancements and mandates for solar deployments on newly constructed homes are critical to ensure that the BTM solar market is on a net-zero aligned trajectory.

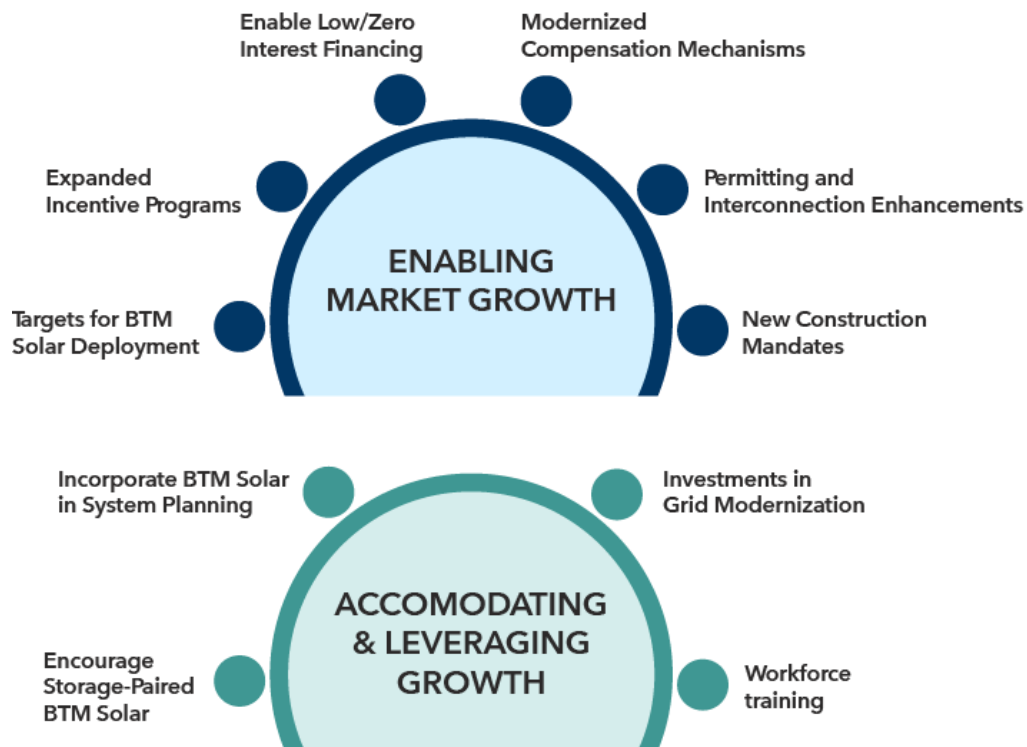
Forecasted BTM solar contribution under modeled scenarios



A rapid expansion of BTM solar installations, as envisioned in the Market Transformation scenario, will do much more than reduce GHG emissions; Canada will also secure significant benefits with respect to a reduction in energy burden for adopting customers, cost savings in the electricity system and economic development opportunities. For instance, under the Market Transformation scenario, BTM solar deployment is forecasted to support 20,000 jobs in 2030 and more than 80,000 jobs by 2050, over 60% of which will be direct local jobs in installation, engineering, and sales services.

Federal, provincial, and municipal governments, as well as utilities and industry, must take urgent action to enable, accommodate and leverage the growth of BTM solar capacity in Canada.

To unlock this potential, Canada needs a comprehensive policy framework that can enable the BTM Solar market to grow in-line with a net-zero pathway. Such policy frameworks must be holistic (through a package of financial and non-financial measures that address key barriers), sustainable (ensuring long-term certainty for the industry) and carefully phased-out (to avoid “boom-and-bust” cycles of past policy programs). In tandem, we must ensure that our electricity systems can accommodate and take advantage of such growth.





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