
Ontario's Net Metering Program

November 2016

Purpose

1. Provide an overview of Ontario's current net metering program and a proposed updates to this program.
2. Present analysis on the financial and technical feasibility of solar PV and energy storage technology, in the context of Ontario's Climate Change Action Plan.

Key Terms

Net Metering

- A billing arrangement that allows customers to generate renewable energy onsite for their own use, and receive bill credits for any surplus electricity sent to the grid.

FIT and microFIT

- Ontario's Feed-in Tariff (FIT) program is a generation purchasing program for renewable energy generation facilities up to 500 kilowatts (kW). The program provides a guaranteed price for 100% of electricity provided to the grid over a 20-year contract term.
- The microFIT program is a stream of the FIT program that is designed specifically for homeowners and other eligible participants to install projects 10 kW and less in size.

Grid Parity (Residential and Small Consumer Perspective)

- The point when the cost to a consumer of installing and operating a solar PV system over its lifetime equals or falls below the customer's cost of paying their electricity bill over the same period of time.

Ontario's Current Net Metering Program

- Ontario has had a Net Metering Regulation (O. Reg. 541/05) in place since 2005, which requires all electricity distributors to offer net metering to customers on request.
 - Electricity exported to the grid is valued at retail rates (currently Tiered Pricing rates) and credited to the customers electricity bill.
 - Bill credits can be carried forward for up to 11 months at which point they are reset to zero.
- A generator is eligible to net meter if:
 - Electricity is primarily for generator's own use.
 - Electricity is from a renewable system <500 kW.
 - Electricity is conveyed directly to load.
- Uptake of net metering has been relatively limited since the launch of the FIT programs in 2009, although there has recently been a small increase in uptake:
 - In 2015, 2 megawatts (MW) of net metering capacity was installed, for a total of 9 MW in the province.
 - About 60% of projects have been solar PV.

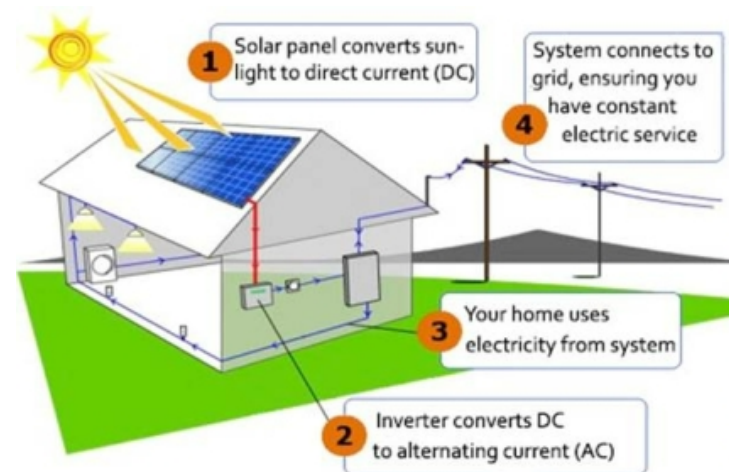


Figure: A typical net metering configuration. Renewable energy is first consumed onsite, and any surplus generation is sent to the grid. The customer draws from the grid when their onsite needs are not met by the renewable system.

Updating the Net Metering Program

- Ontario's 2013 Long-Term Energy Plan (LTEP) committed to "examine the potential for microFIT to transition from a generation purchasing program to a net metering program."
- The decision to examine updating the net metering program was informed by:
 - Reductions in solar PV equipment costs (99.9% of microFIT systems are solar PV).
 - The opportunity to reduce local electricity demand and related infrastructure needs by helping match generation to local demand – aligning with Ontario's Conservation First policy.
- The existing net metering program remains available and the microFIT program will accept applications until December 31, 2017.

Program Objectives

- In July 2015, ENERGY established a Net Metering Advisory Working Group, composed of agency, local distribution company (LDC) and solar industry representatives, to provide early input and to guide program development.
- Between August 2015 and October 2015, ENERGY conducted stakeholder consultations on options for updating the net metering program.
- The following **program concept proposal** was put forward:
 - The net metering program will offer a long-term framework for the development of small-scale renewable energy systems in Ontario that aligns with value to the electricity system, and fairly allocates costs and benefits among all ratepayers.
- The following **program objectives** were established:
 1. Reduce ratepayer costs associated with small-scale renewable generation, with the ultimate goal of achieving a self-sustaining program.
 2. Support Ontario's Conservation First policy by ensuring systems are right-sized and sited close to load.
 3. Reflect the costs and benefits of integrating net metered generation into the electricity system, and recover the costs efficiently and equitably.
 4. Continue to offer consumers choice to offset their load using renewable energy, subject to system need and cost considerations.

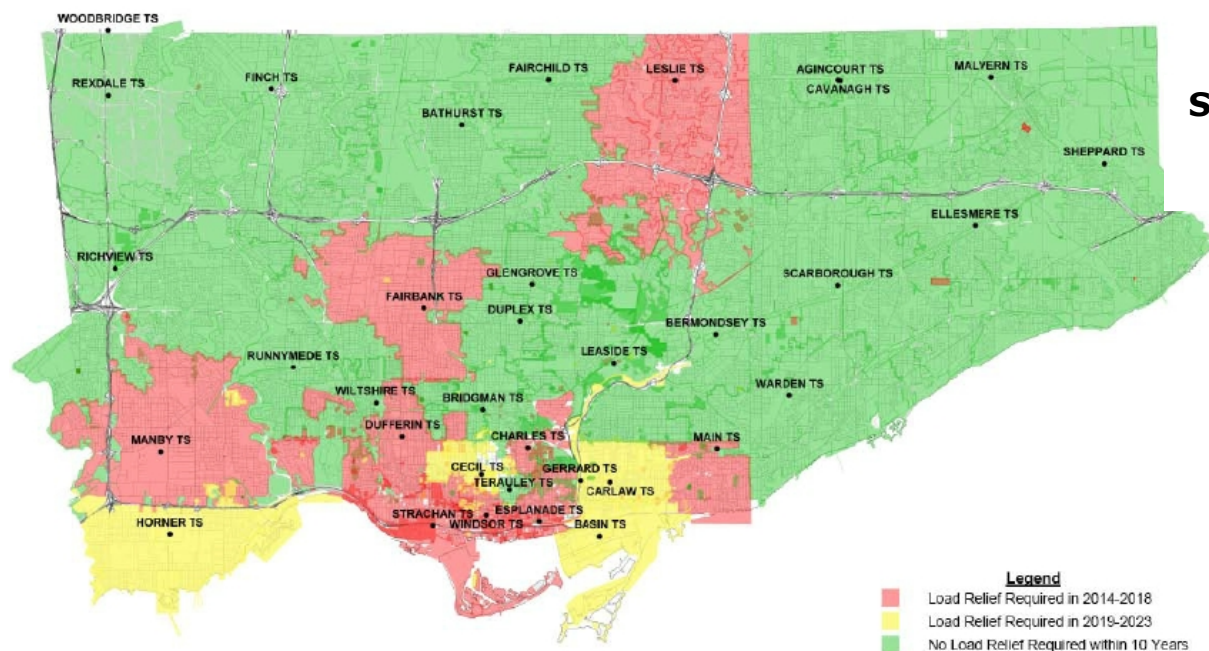
See Appendix A for additional detail on program guiding principles

Customers Compensated for Exports at Retail Rates

- Following stakeholder consultations, a decision was made by the ministry to continue to compensate customer exports to the grid to be credited at retail rates (same as current Net Metering Regulation). It was also decided that in locations where solar PV generation has value to the system above retail rates, LDCs can apply to the Ontario Energy Board (OEB) to offer additional compensation through distribution rates (see next slide).
- LDCs will lead program delivery and connect facilities upon request.
- Retail rate compensation will remove broad ratepayer-funded incentives during a period of provincial surplus, while allowing LDCs to target specific operational/regional needs.
- Retail rate compensation meets the objective of reducing ratepayer costs of small-scale renewables procurement; however, retail rates likely reflect a small subsidy to generators in many areas of the province.
- Lower uptake compared to microFIT/FIT is expected due to lower proponent return in initial years.
- As Ontario moves beyond grid parity, uptake may increase which could lead to stranded assets and cost-shifting to other customers (see Appendix B for a discussion of these issues in context of net metering).
 - Regular net metering program review could evaluate the need to revisit compensation in future years.
 - Uptake could become an issue in mid/late 2020s as Ontario moves beyond grid parity. Other factors – connection availability, rate decisions, storage costs – will affect uptake/impact.

Regions Where Distributed Renewable Energy Could Have Value Above Retail Rates

- Regional planning is underway for the 21 planning regions across the province. It seeks to identify local needs and develop a strategy to address those needs.
- The Independent Electricity System Operator (IESO) has advised that calculating locational incentives based on system value would need to be explored on a case-by-case basis through regional and distributor planning processes.
- Local system needs can exist in pockets of a region and not others (see map of sub-distribution level load relief needs in Toronto below).



**Sub-Distribution Level
Load Relief Needs in
Central Toronto**

Ontario's Climate Change Action Plan

Context:

- Ontario's Climate Change Action Plan (CCAP) is expected to commit to reduce building-related emissions by 15 per cent by 2030, including by supporting the creation of net zero emission communities powered by renewable energy technologies.
- Net metering can assist in developing net-zero buildings and communities by allowing customers to generate clean electricity onsite, while maintaining access to a reliable electricity supply.
- Several factors would need to be considered if there is a desire to provide financial incentives to promote net metering uptake to help develop a pathway to net-zero.

Considerations

- NZE homes have an incremental cost \$60,000-\$85,000 (solar PV most costly component).
- Net metering does not mean self-sufficiency: both a home with a solar PV and a PV-storage system will rely on the grid for a reliable electricity supply, especially during cloudy winter days.
- Targeted locational incentives could reduce the electricity rate/system impacts expected in the near-term, due to the strong supply situation.
- In the long term, a large increase in NZE buildings (typically involves switching to electric heating) is expected to increase peak demand, increasing reliance on natural gas generation.
- Without significant investments in new protection systems and technology, connection limits will prevent the wide emergence of net-zero buildings and communities.
 - Connection limits would have to be clearly communicated as part of any new program.
 - If customers couldn't connect and instead installed energy storage, no payback is expected over system lifetime based on 2018 equipment costs and electricity rates.

Appendices

A: Program Guiding Principles

B: Net Metering Jurisdictional Scan

A: Program Guiding Principles

Guiding Principles:

1. LDCs would connect and compensate generators at a value that reflects system costs and benefits.
2. Conservation would be considered first by the appropriate sizing of systems to customer needs.
3. Compensation would be set transparently and predictably.
4. The program would be flexible and responsive to changing system needs.
5. The process for eligible customers to participate in the program would be streamlined.
6. The program would allow for the integration of net metered renewable energy systems with innovative technologies, such as energy storage.
7. The program would incorporate best practices and lessons learned from other jurisdictions.

B: Net Metering Jurisdictional Scan

- A guiding principle in updating Ontario's net metering program is that the program will incorporate best practices/lessons learned from other jurisdictions.
- There is a general trend towards the use of net metering programs in other jurisdictions, where electricity is first consumed on-site before exported to the grid (as opposed to Feed-in Tariff programs where 100% of electricity is exported to the grid and compensated).
- However, net metering approaches continue to evolve in response to concerns that net-metered customers do not pay their fair 'cost of service,' shifting costs to other customers:
 - In 2015, 24 U.S. states formally examined or resolved to examine the costs and benefits of distributed solar. Results vary in terms of whether there is a net cost or benefit.
 - Two states (Hawaii and Nevada) recently reduced compensation below retail rates, due to reaching state capacity targets (Nevada) and system/cost-shifting challenges (Hawaii).
 - In January 2016, the California Public Utilities Commission issued a decision on its net metering program, which will maintain retail rates pending the results of more comprehensive proceedings on the value of distributed energy resources.
- U.S. utilities continue to propose or implement increased fixed charges, minimum bills or new charges on solar customers.
 - In 2015, 61 utilities in 30 states proposed increasing fixed charges for all residential customers – the most frequent policy proposal impacting distributed solar.*
- There are contextual differences to bear in mind when considering the experience in other jurisdictions: the U.S. offers renewable energy tax incentives equal to 30% of eligible project costs. Many U.S. jurisdictions also have higher solar resource and higher retail electricity rates.

*Source: NC Clean Energy Technology Center "The 50 States of Solar: 2015 Policy Review."