

ECO Information Request to Ministry of Energy for 2018 ECO Energy Report

Net Metering

Net Metering Background:

The 2017 Long-Term Energy Plan (LTEP), released October 26, 2017, committed to further enhancing Ontario's net metering framework, including developing and proposing legislative and regulatory amendments to:

- Enable third-party ownership of net-metered renewable generation facilities while ensuring appropriate consumer protection measures are in place; and
- Provide flexibility for distributors to enable virtual net metering demonstration projects via participation in a targeted Independent Electricity System Operator (IESO) administered program.

Proposed legislative amendments to the Ontario Energy Board Act, 1998, required to expand the scope of eligible net metering ownership models, were tabled on November 14, 2017 through Bill 177, Stronger, Fairer Ontario Act (Budget Measures), 2017.

On November 28, 2017, ENERGY posted three regulatory proposals related to the 2017 LTEP commitments on the Environmental and Regulatory registries. The postings will be open for public comment for a 50-day period ending January 18, 2018. They are as follows:

- Proposed Amendment of Ontario Regulation 541/05: Net Metering, or a new Regulation (To Be Determined), to be made under the Ontario Energy Board Act, 1998 to make TPO and VNM demonstration projects eligible for net metering.
- Proposed Amendment of Ontario Regulation 389/10: (General), to be made under the Energy Consumer Protection Act, 2010, to introduce new and enhanced consumer protections that would support the introduction of third-party ownership arrangements under Ontario's net metering framework.
- Proposed New Regulation to be made under the Electricity Act, 1998, to ensure that prescribed types of renewable energy generation facilities are sited appropriately.

ENERGY will consider feedback received through the EBR/RR on the regulatory postings and finalize regulatory drafting with an aim to seek Cabinet approval in early 2018 and, pending approvals, to have regulation in force by July 1, 2018.

ENERGY hopes the following, along with the three regulatory postings that were posted November 28, 2017, will help to inform the Environmental Commissioner of Ontario's (ECO's) upcoming 2018 Annual Energy Conservation Progress Report.

- 1. What barriers does the Ministry of Energy envision to uptake of net metering, and how, if at all, does the Ministry plan to address these?**

Net Metering uptake, unlike the Feed-in-Tariff (FIT) and microFIT programs, is not driven by targeted procurements, and instead, relies on a number of factors affecting the choice of electricity customers to invest in renewable generation to participate in net metering. These factors include the cost of purchasing, installing and maintaining renewable generation equipment, as well as what benefits a customer can receive by generating electricity on-site for their own use. Under net metering, benefits are derived from a reduction in the amount of electricity a customer uses from the grid and the value of any bill credits earned by exporting electricity to the grid at times when the customer is generating more than they consume on-site. As there is no payout to the customer by the utility under net metering, all financial benefits to the customer are in the form of electricity bill savings.

A number of barriers could exist for customers who are interested in net metering, and these barriers can vary between individual customers. They include technical and economic barriers, as follows:

- **Affordability of renewable generation systems:** Installing a renewable generation system, such as solar PV, carries a high upfront capital cost, which may not be affordable for every electricity customer.
- **Inability for the customer to host a renewable generation facility:** In order to host a renewable generation facility on-site, a customer would require appropriate space and legal entitlement to install the equipment, including meeting all environmental or other applicable regulatory requirements. For example, to host a solar photovoltaic (PV) system, a customer would require adequate roof space without shading and fulfill all legal requirements to install the equipment.
- **Connection capacity constraints:** Generation systems intended to participate in net metering, like all generation intended to feed electricity onto the grid at times, must undergo an assessment by the local distribution company (LDC) to ensure that connecting the new generation capacity is within all technical and safety limitations of the grid.

Third-party ownership of net-metered facilities can help to address affordability of renewable generation systems by providing more options to electricity customers to participate in net metering. Under a third-party arrangement, a customer could host a renewable generation system that is owned and operated by a third party. The customer could avoid the high upfront cost of owning a renewable generation system by instead purchasing the electricity from the generation system under a power purchase agreement, which the customer can then use to be net-metered by their LDC.

ENERGY's proposed regulatory changes to the Net Metering Regulation (O. Reg. 541/05), if approved, would enable eligibility of third-party ownership arrangements. For more details on the proposed regulatory changes, please see EBR Registry Number: 013-1913.

Virtual net metering, depending on how it is implemented, can provide options for customers that may not be able to host their own renewable generation, such as residents of multi-unit residential buildings. A customer could purchase ownership in a renewable generation facility or purchase electricity from a renewable generation facility, which can then be "virtually" net-metered against their electricity consumption, as if the customer were hosting the generation on-site.

ENERGY's proposed regulatory changes to the Net Metering Regulation (O. Reg. 541/05), if approved, would enable virtual net metering demonstration projects to help inform future net metering policy. As proposed, the regulation would require that in order for an LDC to facilitate a virtual net metering demonstration project, the project must be participating in an IESO program that will be developed as

part of the IESO's 2017 LTEP Implementation Plan. For more details on the proposed regulatory changes, please see EBR Registry Number: 013-1913.

Connection capacity will always be a technical consideration for proposed net metered generation facilities. Virtual net metering demonstration projects, and other renewable distributed generation initiatives, will be explored through an IESO program and help to inform efficient integration of renewables into local grids and the broader electricity system.

2. What level of uptake (e.g., # of projects, MW of capacity) is the Ministry projecting will occur under the new net metering framework? Is this expected to change significantly once third party ownership is fully enabled?

Net metering data is reported to the Ontario Energy Board (OEB) by LDCs annually as part of LDC licensing requirements. There was approximately 12 MW of net-metered generation capacity in Ontario at the end of 2016, representing 983 facilities. This represents about a 30% increase from facilities and capacity reported by LDCs in 2015 (approximately 9 MW of capacity and 684 facilities were reported as of 2015).

This table reflects net metering facilities and capacity by renewable energy type reported to the OEB as of the end of 2016:

Type	Number of Net Metering Facilities (2016)	Total Net Metering Installed Capacity (kW, 2016)
Biomass	3	100
Solar PV	851	9,387
Water	2	10
Wind	127	2,693
TOTAL	983	12,190

Recent enhancements were made to Ontario's net metering regulation to lift the cap on size of eligible generation facilities, clarify the ability to pair renewable systems with storage technologies, and extend the carry-over period for net metering credits from 11 months to 12 months. These changes only took effect July 1st, 2017. These changes are expected to drive greater interest in net metering because they help to expand eligible customers as well as broaden project configurations with the addition of storage.

ENERGY is working with the IESO to assess net metering uptake and impacts over time. However, given the level of speculation involved with future net metering projections as a result of many factors influencing the business case for net metering, and the nature of ongoing work to determine

appropriate methods and assumptions to estimate future net metering uptake, it is not possible to provide an estimate at this time.

Regarding how the introduction of third-party ownership models will affect net metering uptake, it is also premature to speculate at this time. Although it is expected that introducing third-party ownership models will expand the potential for net metering within the Ontario's customer base, it may not necessarily result in a relative increase in uptake. Other factors, such as the cost of solar PV, will affect uptake.

3. Has the Ministry assessed the economics of net metering from the customer perspective (e.g. payback period considering electricity bill savings and cost of solar installation)? If so, please provide this analysis. Please clarify whether the estimates of electricity bill savings are based on rates that include the 25% "Fair Hydro" discount.

The economics of net metering from the customer perspective can vary highly depending on customer loads, electricity rates, size of generation and other factors. Notably, the availability of any incentives for solar PV under the Green Ontario Fund would significantly impact individual business cases for net metering. At this time, any analysis on the economics of net metering from the customer perspective would be speculative.

4. Does the Ministry plan to introduce any restrictions on ground-mounted net metered projects on prime agricultural land, as was done for projects receiving a FIT contract?

The Feed-In Tariff (FIT) program rules included siting restrictions for Non-Rooftop Solar PV Facilities to protect prime agricultural land. The FIT program will no longer be accepting applications.

As part of supporting the enhancements to Ontario's net metering framework, ENERGY posted a regulatory proposal on the Environmental Registry on November 28th, 2017 for comment and review. The proposed regulation would ensure the appropriate siting of renewable energy generation facilities going forward. For more details on the proposed regulatory changes, please see EBR Registry Number: 013-1916.

Miscellaneous

5. Is the Ministry currently doing any pilots to test smart charging technologies for electric vehicles? If so, please describe.

The Government estimates that there will be 50,000 electric vehicles (EVs) in Ontario by 2020. Increased EV uptake can impose pressures on distribution systems throughout the province.

As part of the Ministry's 2017 Long-Term Energy Plan commitments, the government has directed the Ontario Energy Board to examine and identify steps for pursuing cost-effective

opportunities for electricity distributors to facilitate access to residential smart charging for electric vehicles.

The Ministry will work with partners and stakeholders to develop a Vehicle Grid Integration roadmap that examines this technology and what it could mean for Ontario.

Ontario's Smart Grid Fund has also contributed to testing and advancing EV charging technologies. These include FleetCarma's ChargeTO Pilot, which provided EV owners with technology to schedule charging events during off-peak hours while ensuring that they had the power needed for driving their EVs. In another project, Tech Mahindra worked with Niagara-on-the-Lake Hydro to develop an integrated hardware-software solution that allows utilities to gather data on both EV charging patterns and local transformer performance. Lastly, the University of Ottawa developed solutions that incorporate secure payment systems with public EV charging, and provide EV owners with mobile apps to help locate charging stations.

6. Given the interactions between electricity conservation, gas conservation and low-carbon (GreenON) programs, what steps, if any will be taken to integrate the policy, planning, and delivery of these three program offerings in the future?

Steps to Support Integration

- The Minister of Energy wrote a letter to IESO on February 13, 2017 requesting that the IESO support the implementation and early adoption of Green Ontario Fund services.
- On August 4, 2017, ENERGY issued an amending direction to the March 31, 2014 Minister's direction establishing the CFF to enable IESO to enter into an agreement with MOECC to support the design and delivery of GreenON programs. The amending direction includes the following:
 - Enables IESO to enter into agreement(s) with MOECC and Green Ontario Fund and with third party vendors to support the design and delivery of the Green Ontario Fund programs identified in the TB submission and potentially new programs MOECC is considering to target on-reserve Indigenous customers and low-income customers.
 - Ensures IESO makes reasonable efforts to avoid marketplace confusion and makes prudent use of funds by avoiding duplication.
 - Ensures there are cost-effectiveness thresholds or requirements and EM&V of the associated energy savings.
 - Clarifies cost recovery for Green Ontario Fund programs.
 - Ensures IESO maintains a detailed accounting of costs, results and GHG emissions reductions.
 - Ensures IESO keeps ENERGY informed.
- The IESO's role as a partner in the delivery of certain Green Ontario Fund programs is intended to help promote an efficient and customer-focused approach and minimize duplication with existing programs.

- ENERGY is also working together with the Ministry of the Environment and Climate Change (MOECC) to ensure the new programs under the Green Ontario Fund build on the success of the province's existing energy efficiency programs (electricity, natural gas, other fuels) to achieve deeper energy and GHG savings.
 - Examples where coordination can leave to an expanded customer offering and higher energy and GHG savings are the home energy audit and retrofit programs delivered by Enbridge Gas Distribution and Union Gas. These programs, whose natural gas savings components were approved through the 2015-2020 Demand Side Management (DSM) Framework, have been expanded to all homes across all of Ontario, irrespective of how they are heated with incentives available for savings across different energy/fuel types. The collaboration has been made possible through funding from the DSM Framework, the Green Investment Fund (cap and trade proceeds), and the Conservation First Framework (CFF).
- Proposed program offerings under the IESO-MOECC Collaborative Agreement include: a province-wide smart thermostat rebate program; low carbon technology incentives for homes and multi-unit residential buildings as well as for small and medium sized commercial businesses; a direct install program for small and medium sized businesses; and programs targeting on-reserve Indigenous customers and low-income customers.
- As examples of developments underway, the IESO is exploring: how to add Green Ontario Fund funding to the new enhanced Home Assistance Program which will launch in 2018, and testing the integration of CFF-GreenON funding in the delivery of a new province-wide smart thermostat rebate.
- ENERGY staff are also working with MOECC, IESO and Green Ontario Fund to explore how to further integrate conservation and low-carbon technology programs for both electricity and fuels (e.g., stacking of incentives across frameworks, harmonization of incentives across programs, attribution and treatment savings).
- With a view to the second half of the 2015-2020 conservation framework terms, ENERGY will be looking to the reports and recommendations from the IESO and the OEB at the conclusion of the mid-term reviews of the Conservation First Framework and Industrial Accelerator Program, and of the Demand Side Management Framework. The scope of these reviews includes a study of the non-energy benefits adder for electricity and gas conservation, as well as alignment with climate change objectives.
- Beyond 2020, ENERGY will consider integration in the development of its energy conservation policy, and in any consultation and engagement activities.