

# BEHIND THE METER GENERATION



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# NOTE TO READER

*Please note the following slides are for your information only and may not be referred to as a legal document. Official program rules and Hydro One contracts prevail the contents of the slides herein.*

# AGENDA

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- Introduction
- Process & Systems Upgrade Program
- Behind the Meter Generation (BMG)
- Screening BMG Projects
- Gross Load Billing
- Fossil Fueled CCHP – July 1 Application Deadline
- Eligibility of BMG Projects post July 1 Deadline
- Islanding BMG Projects
- New Guidelines
- BMG Application Process
- Frequently Asked Questions (FAQ)

# Hydro One at a glance

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**640,000 km<sup>2</sup>**  
service territory



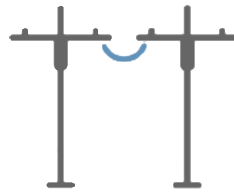
**30,000 km** of high-voltage  
transmission lines



**306**  
transmission stations



**1.3 million** residential  
and business customers  
across Ontario



**123,000 km** of local  
distribution lines



**1.6 million**  
distribution poles

## Conservation and Demand Management (CDM)

**Every \$1 we invest in energy efficiency avoids \$2 in costs to the electricity system.**

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The Ministry of Energy's 2015-2020 Conservation First Framework has a goal of reducing electricity consumption by 8.7 TWh; working towards a conservation target of 30 TWh in 2032.



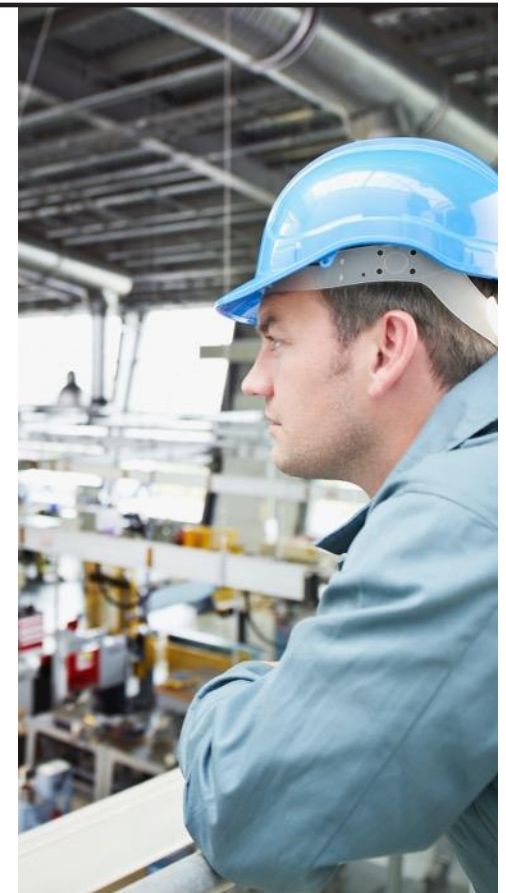
The Independent Electricity System Operator leads and oversees conservation efforts across Ontario and reward all eligible costs to local distribution companies for the design, development and delivery of CDM plans.



Save on Energy works collaboratively with Hydro One and other local distribution companies to achieve energy reduction targets through conservation programs. Save on Energy is the program run by the IESO.

## Process & Systems Upgrade Program

- Get technical expertise financial incentives to upgrade complex systems
- Industrial, large commercial, agricultural and multi-residential customers can qualify for projects saving more than 100 MWh/year
- Behind the Meter Generation (BMG) projects can qualify when they meet the program requirements
- Available incentives in the program help identify, implement and validate upgrades



# BMG Types

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- The following types of BMG projects may be eligible under PSU program pursuant to the Energy Conservation Agreement:
  - **Waste Energy Recovery (WER)** projects that means the generation of electricity primarily from heat or fuel that is a waste by-product of the Facility.
  - **Conservation Combined Heat and Power (CCHP)** projects that means the simultaneous production of electrical and thermal energy where both forms of energy are productively and efficiently used within the Facility and/or its processes.

# BMG Incentive

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- The Project Incentive equals to the lowest of the following:
  - 70% of the Estimated Eligible Costs of the WER Project or, in the case of a CCHP Project, 40% of such Eligible Costs;
  - the product of the estimated Annualized Electricity Savings multiplied by \$200/MWh;
  - the amount that would provide a Project Payback of one year for a Project.
- BMG Application Process:
  - To be reviewed at the end of this presentation



# BMG Facility Eligibility

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- In addition to any criteria set out in the applicable Program Rules, the proposed BMG project must:
  - be connected to the LDC's Distribution System, unless otherwise approved by the LDC. Should the Participant elect to connect to the LDC's Distribution System at a later date, they must contact their LDC and adhere to all applicable procedures for connecting generators to the LDC's Distribution System.
  - As of July 27, 2017, IESO modified the Program Rules to allow eligible BMG projects to also receive the incentive if they operate in an islanded mode.
    - Hydro One considers a BMG project operating in an islanded mode when both the generator and the associated loads that it supplies are never connected to the grid.

# BMG Project Eligibility

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- In addition to any criteria set out in the applicable Program Rules, the proposed BMG project must:
  - a. have a Gross Nameplate Capacity of less than **10MW**;
  - b. not be used for the sole purpose of reducing electricity demand during the **five critical system-peak hours**;
  - c. in the case of a WER project, demonstrate that natural gas or propane purchased from or otherwise supplied by a third party to the Participant does not exceed 10% of the Fuel Energy Input;

# BMG Project Eligibility – Cont'd

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- d. in the case of a CCHP project, meet the following additional criteria:
  - i. use **natural gas or propane** as its sole fuel, unless otherwise approved in writing by the IESO;
  - ii. be designed and operated in a manner that the CCHP project achieves a minimum annual **Total System Efficiency of 65%**; and
  - iii. not use the thermal output from the CCHP project to generate electricity;
- e. not be the subject of ... power or capacity purchase contract ... with the IESO, the Ontario Electricity Financial Corporation or the Government of Ontario or any other agency of the Government of Ontario; and
- f. not be split across multiple applications for the purpose of circumventing the 10 MW limit on Gross Nameplate Capacity.

# BMG Screening

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- All BMG project applications are subject to screening:
  - a. LDC/Hydro One Screening:
    - i. Short Circuit Capacity at Transformer Station (TS)
    - ii. Thermal Capacity at TS
  - b. IESO Screening that includes CDM and non-CDM projects in the planning stage:
    - i. Short Circuit Capacity at TS
    - ii. Thermal Capacity at TS
    - iii. Area Congestion Test
      - If it fails, there's a waiver mechanism when the Program Administrator Cost (PAC) of project is 1+

# BMG – Gross Load Billing (GLB)

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- As per the OEB approved Hydro One distribution rate order, Gross Load Billing (GLB) is a mechanism for recovering costs incurred to build and maintain distribution assets needed in order to meet the customer's maximum demand. GLB is only applicable to the Hydro One Sub Transmission rate classification.
- GLB is triggered if the generation facility contains at least one single generating unit:
  - equal to or greater than 1 MW with non-renewable generation
  - equal to or greater than 2 MW for renewable generation

# BMG – Gross Load Billing (GLB) – Cont'd

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- What charges are billed at Gross Demand?
  - Distribution Delivery Charges
  - Transmission Line & Transformation Connection Charges
- What charges are billed at Net of Generation?
  - Transmission Network Service Charge
  - Commodity, Global Adjustment, Debt Retirement & Regulatory Charges
- Fully islanded BMG systems are not subject to GLB. However, bypass charge may apply if an existing load is being islanded.

# Application Timeline for CCHP

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- Beginning **July 1, 2018**, CCHP projects that use supplied fossil fuels to generate electricity will no longer be eligible to apply for incentives under the saveONenergy program.
- The following deadlines apply to project applications for fossil-fueled CHPs that are submitted to Hydro One:
  - ✓ Complete Project Incentive (PI) applications should be submitted by **May 1, 2018**.
  - ✓ Complete Small Capital Project (SCP) applications should be submitted by **June 1, 2018**.

# Application Timeline for CCHP

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- The timeline is set to give the customer/consultant enough time to revise the application package and get it reviewed by July 1, 2018 if the Independent Electricity System Operator's Technical Reviewer (IESO-TR) does not deem the application complete at the submission time.
- In order for IESO-TR to deem a project application complete, the following documents are often needed:
  - ✓ A complete and signed application form
  - ✓ A screenshot of Hydro One's online capacity calculator at the Transformer Station
  - ✓ Metered electricity and thermal data
  - ✓ Complete engineering study that meets the PSU program rules



# Eligibility of BMG post July 1, 2018

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- Two types of BMG systems will stay eligible for incentive:
  - ✓ Waste Energy Recovery
  - ✓ Non Fossil-fueled CHP
- Incentive up to 70% of the project cost is available from the LDC
- Eligible CHP systems that displace both electricity and natural gas might receive incentive from LDC and Natural Gas utility
  - Example: biomass CHP

# Why Islanding BMG?

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*Note: The following information apply to Hydro One customers only; they may or may not apply to other LDCs' customers.*

- A potential solution when:
    - a. Project fails the short-circuit capacity test
    - b. Parallel connection cost is too high
  - Points to consider:
    - a. In case of islanding an existing load, does the project pass the Thermal Capacity test?
    - b. Does the benefit of BMG justify the cost to island it, especially for existing loads where electrical reconfiguration is needed?
    - c. Is the customer comfortable with not having the grid as a back-up for portion of the facility being supplied by islanded BMG?
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# Load Consideration

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- **When BMG displaces an EXISTING LOAD:**
  - If the BMG reduces the customer's load, Hydro One may **reduce the customer's assigned capacity** at the distribution facility in accordance with our Conditions of Service.
    - If the customer wants to connect more load in the future, they would have to apply for it.
  - The customer may be asked to pay Hydro One a **By-pass compensation** if the existing load displaced by the BMG is islanded from the distribution system.
  - Project will not be subject to short-circuit capacity test, but still has to **pass the thermal capacity test**.
  - Form B (Connection Impact Assessment) required. However, no upfront application fee is requested until Hydro One reviews the application and advises the customer of the application cost.

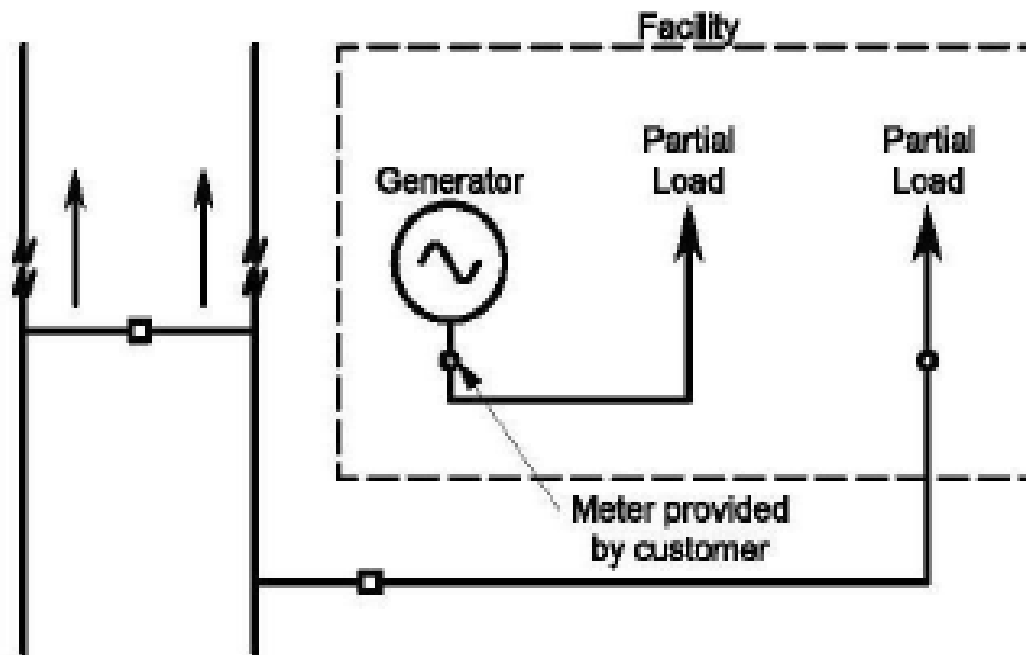
# Load Consideration – Cont'd

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- **When BMG displaces a NEW LOAD:**
  - Examples include expanding the building or adding more production lines
  - A new load, if islanded, will not be subject to short-circuit capacity or thermal capacity test
  - Form B (Connection Impact Assessment) required. However, no upfront application fee is requested until Hydro One reviews the application and advises the customer of the application cost.
- **Impacts of Islanding on other Incentive Applications:**
  - If the load is subject to receiving incentive from other programs, refer to that program's incentive contract to avoid any claw back of incentive due to islanding the load. For example, a lighting retrofit needs to realize savings for 4 years under Retrofit program.

# Islanded BMG Configuration

- Complete islanding, where the generator and its associated loads never connect or remain parallel with the grid:



# New Guidelines

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In the next couple of weeks, IESO is expected to issue new guidelines to set out the parameters for the eligibility and reviewing the following systems for incentive under PSU program:

- New Construction BMG Systems
  - Facility must be one of the following:
    - i. a new facility;
    - ii. a new addition to an existing facility; or
    - iii. a major renovation that converts the facility to an alternative use;
- District Energy (DE) Systems
  - DE systems generally involve the use of a central plant to create steam, hot water, and chilled water that are supplied to neighboring facilities.

# BMG Application Process

Stage	PI/SCP Incentive Application Process
<b>Project Incentive Application</b> <sup>(1)</sup>	Submit <u>complete</u> Application package: <ul style="list-style-type: none"><li>• Signed Application Form</li><li>• Confirmation of available capacity to connect to grid (n/a for islanding)</li><li>• Supporting Study (Funded DES or Unfunded)</li><li>• 12 months of natural gas and electricity bill data</li><li>• Solvency Certificate (PI only)</li></ul>
<b>Technical Review</b>	<ul style="list-style-type: none"><li>• Technical Review team reviews the Application</li><li>• Consultant/Applicant supports with review information requests as needed</li></ul>
<b>Project Review (PR) Report</b>	<ul style="list-style-type: none"><li>• Tech Review issues Project Review Report</li><li>• Consultant/Applicant reviews and approves the report results</li></ul>
<b>Measurement and Verification (M&amp;V) Plan</b>	<ul style="list-style-type: none"><li>• Technical Review issues the M&amp;V Plan which details how the Project (Electricity Savings, system efficiencies, etc...) will be verified</li><li>• Consultant/Applicant reviews/approves M&amp;V Plan</li></ul>

(1) Highly recommended to submit Connection Impact Assessment (CIA) prior to submitting Incentive Application

# BMG Application Process – Cont'd

Stage	PI/SCP Incentive Application Process
<b>Project Incentive Contract</b> <sup>(1)(2)</sup>	<ul style="list-style-type: none"><li>Hydro One and Participant sign contract</li></ul>
<b>Measurement and Verification Reporting</b>	Based on M&V Plan details, the technical review team verifies the following: <ul style="list-style-type: none"><li>Confirms In-Service Date and start of reporting period</li><li>Issues M&amp;V Reports confirming Electricity Savings and TSE</li></ul>
<b>Payment</b> <sup>(3)</sup>	Payments are made when: <ul style="list-style-type: none"><li>M&amp;V Reports verify Electricity Savings</li><li>Project Eligible Costs are verified from Invoices</li></ul> <p>Payments are made in installments based on contract type</p>

(1) Hydro One will sign Incentive Contract once Connection Cost Agreement is signed (n/a for islanding Projects)

(2) Participant has up to 2 years from Contract date to implement the Project (no later than Dec 2020)

(3) For details on payments process reach out to your area's Conservation Account Manager



# FAQ - Application Process

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- How do I check that capacity is available for a BMG project?
  - Electrical: check online capacity calculator  
<https://www.hydroone.com/business-services/generators/station-capacity-calculator>
  - Natural Gas: check with Union Gas or Enbridge
  - Other fuels: check with vendor that continuous supply is available
- How do I get an estimate of the connection cost:
  - Submit Connection Impact Assessment (CIA) as soon as possible. Hydro One requires 2 months to review the application and issue the CIA report that includes estimated connection cost.
  - Customer will have 6 months to sign the Connection Cost Agreement (CCA) after Hydro One issues the CIA report.

# FAQ - Application Process – Cont'd

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- How do I ensure the application package is complete?
  - Review program rules and guidelines posted on Hydro One and saveONenergy websites
  - Reach out to Hydro One's Conservation Account Managers
- What steps need to be taken before signing a BMG project incentive contract with Hydro One?
  - ✓ IESO-TR reviews & recommends the incentive application
  - ✓ Hydro One approves the application
  - ✓ Customer and Hydro One sign the Connection Cost Agreement (CCA), unless the BMG is islanded
    - Customer has 6 months to sign CCA after Hydro One issues CIA report

# FAQ - Application Process – Cont'd

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- Is HONI Accepting DES applications for gas fired CHP now?
  - Generally no, unless there's a very good business case.
  - Applicants are strongly suggested to submit Project Incentive Applications and conduct the engineering study as part of the application process.

# Thank You!

Please type in your questions in the chat bar  
OR

Email them to the following address (to be replied later)

**[CDMIndustrial@hydroone.com](mailto:CDMIndustrial@hydroone.com)**