NOVEMBER 14, 2024

Power purchase agreements and clean energy credits for industrial sites in Ontario
Information session

Emily Thorn Corthay, MASc., P.Eng, CDI.D, CEM, CMVP
CEO, Thorn Associates
Bob Griesbach, MBA, P.Eng., CMC
Senior Consultant, Thorn Associates

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Introductions and housekeeping

- CIET introduction
- Housekeeping items (acknowledgements, recording, chat, questions, etc.)
- IESO programs for businesses
- Presenter introductions
- Objectives and agenda

Save on Energy programs for businesses

Save on Energy's business programs provide incentives to help Ontario businesses of all sizes implement retrofits and other energy-efficiency projects to lower their energy costs. The programs include:

- Retrofit Program
- Instant Discounts Program
- Energy Performance Program
- Strategic Energy Management Program
- Existing Building Commissioning Program
- Training and Support

Introductions

Emily Thorn Corthay, MASc., P.Eng, CEM, CMVP, Founder and CEO of Thorn Associates

With a 20-year career in industrial decarbonization and energy management, she has assisted her clients in achieving over $100 million in implemented energy savings and reductions of over 500,000 tonnes of CO_2e, acting as project manager, technical reviewer and energy/ sustainability engineer for over 80 energy and decarbonization projects in 15+ countries.

Bob Griesbach, MBA, P.Eng., CMC, Senior Associate at Thorn Associates

40-year career in consulting for the electric power and broader energy sectors, clients include major electric utilities, large energy users, regulators and government agencies. Experience on supply side through Integrated Resource Plan work and alternative supply mechanisms and a wide range of Clean Development Mechanism (CDM) assignments for large industrial and commercial sites.

Information session – objectives and agenda

- Understand what a power purchase agreement (PPA) is
- Develop familiarity with the rationale for large industrial sites in Ontario to sign corporate PPAs for a portion of their electricity requirements:
  - Ontario acts and regulations (O. Reg 429/04 proposed amendments)
  - Interface with other programs impacting the costs and usage patterns of grid supplied electricity
- Overview of Clean Energy Credit (CEC) program

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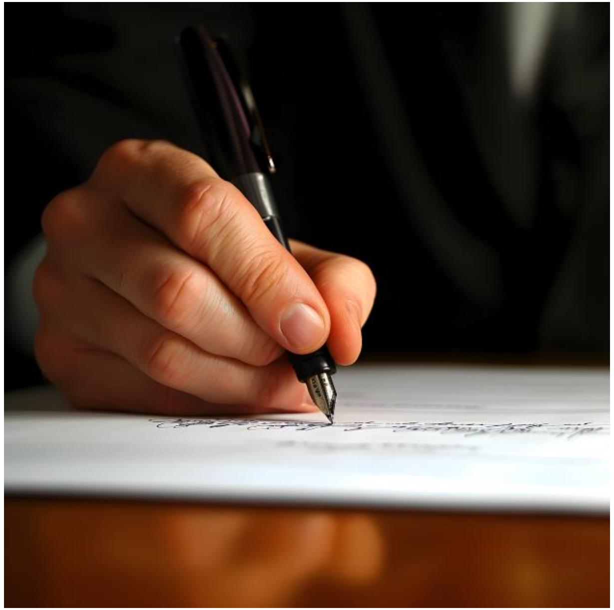
What is a power purchase agreement (PPA)?

- A PPA is a type of bilateral contract
- It is an agreement between an electricity producer and an electricity buyer or user
- The electricity producer is often referred to as an independent power producer (IPP)
- The buyer, often referred to as the "off taker", is often an electric utility, but it can also be an individual large electricity user
- The PPA typically relates to the power produced by an individual power plant that is not supported by other power plants



What are the primary components of a PPA

- First and foremost, a PPA specifies the target amount of electricity to be provided, which can be in both MWh/year and firm MW or just MWh/year
- It specifies the point of production, the point of delivery as well as the physical means and responsibility for moving the power between the two points
- It specifies the expected reliability of production and the implications for the producer if the latter cannot meet the specified levels
- The buyer is normally expected to receive power on a take-or-pay basis
- The PPA specifies the prices to be paid for the electricity provided and the details of the technical, commercial and legal conditions that apply

Energy objectives of large industry tend to include

- Operate safely to always ensure the well-being of staff, contractors and the public at large
- Compliance with all government requirements related to industrial operations
- High availability and reliability of the required energy supplies
- Achieve energy costs that are as low as possible
- Improve energy efficiency (and therefore productivity)
- Reduce greenhouse gas (GHG) emissions in line with, or greater than, corporate targets and any applicable guidelines of organizations the corporation participates in

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How can PPAs support energy objectives?

- A PPA with an independent power producer (IPP) of clean energy can tick several of the boxes in the list of energy objectives
- Bilateral contracts (i.e. PPAs) have been an option for industrial energy users since market opening in 2002, but they have not been extensively used
- For most grid-connected Class A electricity consumers, the tariff components of Hourly Ontario Energy Prices (HOEPs) and the global adjustment (GA) have discouraged the use of corporate PPAs
- This is because HOEPs have generally been relatively low and clean energy PPAs, other than those behind the meter, do not impact GA charges

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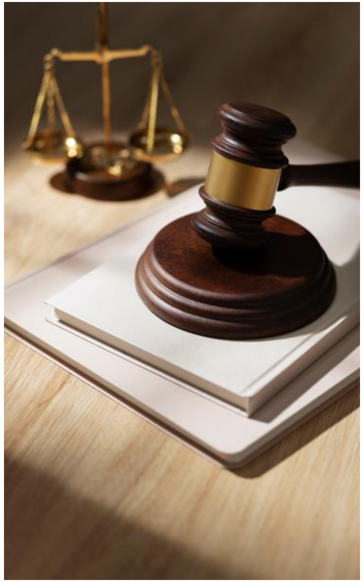
Proposed amendments to O. Reg 429/04

- In November 2023, the Ontario government proposed amendments to O. Reg 429/04, a regulation under the Electricity Act of 1998
- The key aspect of the proposed amendments is that corporate PPAs with acceptable clean electricity producers would allow an industrial consumer to offset demand, in the top five peak hours, by the contracted amount supplied in those hours without needing to have behind the meter generation
- The period for industry comment closed in December 2023 and, in May 2024, the government issued revisions for further stakeholder comments
- The comment period ended in June, and it has been announced that the effective date for the final amendments will be May 1, 2025



Proposed amendments to O. Reg 429/04 continued

- The proposed amendments would result in the development of additional clean electricity facilities in the province to the extent industrial customers participate
- However, there are several aspects of the second version of the proposed amendments that were released for comment in May 2024 and that may limit industry interest
- These amendments exclude battery energy storage systems, have a requirement to be a Class A market participant (this excludes local distribution company customers) and the requirement to give the IESO a copy of the PPA
- It remains to be seen how the final amendments will be worded, which will determine the attractiveness of the program to industrial consumers

Corporate PPA factors (not O. Reg 429/04 dependent)

- Ontario is heading into a significant gap in generation adequacy versus forecasted provincial demand
- Despite large scale IESO procurement plans, some industrial consumers may wish to reduce uncertainty by means of a PPA with an IPP
- Uncertainty on the implementation of locational marginal pricing (LMP) and application of global adjustment
- In addition, Emissions Performance Program projects can increase a site's load above what can be delivered
- For sites that are not grid connected, declines in the costs of renewable generation and battery energy storage systems (BESS) could increase the incentive for local PPAs

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Clean Energy Credits (CEC) Registry

- Following a policy directive from the Ministry of Energy, the IESO established the CEC Registry for Ontario
- The CEC Registry allows Ontario electricity customers to achieve Scope 2 emission (indirect GHG emissions during the production of the purchased electricity) reduction targets by formally linking the power they consume to the environmental attributes of clean energy resources in the province
- This Registry fills a gap by establishing an official centralized system to track the creation of CECs and trading between generators and energy consumers in the province
- The Registry is expected to support new investment in clean energy
- Many bordering US states have similar programs in place

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How does the CEC Registry work

- The CEC Registry was initiated in March 2023 under O. Reg 39/23
- Electronic CECs are tracked and managed by the Midwest Renewable Energy Tracking System (M-RETS).
- M-RETS manages similar CEC registries across the US and thus presumably has the experience to avoid the double counting of CECs, which could be the case without a formal monitoring system
- The IESO offers a user guide establishing eligible participants, a registration process and financial parameters for the program, which is voluntary but could become more important in demonstrating compliance with GHG targets

Double counting CECs - residual grid emissions factor

- In 2023, 87% of the electricity generated in Ontario was from non-emitting sources; natural gas-based generation accounted for 13%.
- Natural gas-based generation is expected to increase in the short term, but generation on the grid will continue to have a relatively low component of GHG emitting content
- However, to the extent CECs held by the IESO and Ontario Power Generation are sold to third parties, consumers of grid power will in effect be receiving power that is supported by a lower proportion of CECs (i.e., power purchased directly from the grid could be deemed to have a higher emissions content due to the absence of the CECs that have been sold)
- The procedures for calculating the residual grid emissions factor for Ontario have not yet been established; these are needed to avoid double counting

Future Clean Electricity Fund

- The Ontario government has also created the Future Clean Electricity Fund (FCEF)
- The FCEF will hold the proceeds from the sale of CECs held by the IESO and OPG
- In the case of the IESO, these CECs resulted from the provision in some, if not all, of its past clean energy procurements where the IESO was buying the physical electricity generated as well as the environmental attributes of its production

- A broker (Karbone Inc.) has been engaged to support the early sales of IESO-owned CECs; an auction-based system is under consideration
- The government intends for the funds raised by the sale of these CECs to be directed to new clean energy projects; the procedures are being prepared

Save on Energy program support

Retrofit Program
retrofit@ieso.ca

Energy Performance Program
info@energyperformanceprogram.ca

Instant Discounts Program
info@instantdiscounts.ca

Existing Building Commissioning Program
EBCx@ieso.ca

Strategic Energy Management Program
SEM@ieso.ca

Training Opportunities
trainingandsupport@ieso.ca

Thank you!

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