



# Cedarline Greenhouses Cogeneration Unit

## Power & Plants

Proposed Cogeneration Project

Virtual Public Community Meeting

February 14, 2023

# AGENDA

## Meeting Overview

- Background Cedarline Greenhouses
- Demand for additional power generating capacity in Ontario
- Overview of Cogeneration gas reciprocating engine technology
- Proposed Project – up to 12MW natural gas Cogeneration Plant
- Q&A Discussion





# LAND ACKNOWLEDGEMENT

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- In the spirit of reconciliation, we respectfully acknowledge that we are operating Cedarline Greenhouses within the traditional territory of the Three Fires Confederacy of First Nations, comprised of the:
  - Odawa;
  - Potawatami; and
  - Ojibwe.
- Cedarline Greenhouses honours all First Nations, Inuit and Metis peoples and their valuable past and present contributions to this land and thank them and other Indigenous peoples for sharing this land with us.



# Cedarline Greenhouses - History

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- Established in 2003
- Locally owned and operated private company
- 16 acre greenhouse producing bell peppers
  - Expansion plan in place to add an additional 30 acres of greenhouse capacity
  - Subsidiary company operates a 90 acre state of the art greenhouse operation located in Chatham which is devoted to the production of tomatoes
- Headquartered in Dresden, Ontario
- Combined with its subsidiary company, Cedarline Greenhouses employs ~300 employees between its Chatham and Dresden locations
- Currently own and operate ~5MW of IESO approved Cogeneration power capacity at its Dresden Greenhouse





# Cedarline Greenhouses Power & Plants

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- Cedarline Greenhouses:
  - Provides safe and reliable:
    - Electricity to the Province of Ontario
    - Sweet bell peppers domestically and internationally
      - Through a subsidiary company produces tomatoes domestically and internationally
  - Green and Energy Conscious;
    - The existing cogeneration unit utilizes at least 50% of the Waste Heat generated for its greenhouse activities;
    - Through a Subsidiary Company the Company has a Joint Venture with a Ethanol Company. Waste heat and CO2 generated to convert corn into ethanol are directed and utilized by the Company's greenhouse operations.
      - Waste Heat is needed to maintain a constant environment to grow plants;
      - CO2 is needed to achieve optimum plant growth and production.



# Cedarline Greenhouses Power & Plants

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- Environmental Highlights
  - Cedarline Greenhouse currently operates a 5 MW cogeneration unit. Electricity and hot water are produced simultaneously from a single energy source being natural gas.
  - The natural gas reciprocating engines generate electricity for the grid and waste heat for the greenhouse.
  - Approximately 50% of the output is in the form of electricity and 50% is in the form of hot water.
  - Hot water from the cogeneration unit is used to heat the greenhouse. This hot water displaces the heat that would normally be produced by our boilers for the greenhouse operations.



# The Growing Demand for Electricity in Ontario



- Ontario's Independent Electricity System Operator

- Independent Electricity Systems Operator "(IESO)" is responsible for planning and operating Ontario's electricity grid.
- The IESO forecasts increased demand and supply to ensure that Ontario rate payers have a reliable and affordable supply of electricity to meet consumer demands.
- IESO obtains a portion of its electricity supply through a competitive bidding process.

- The Need for Power in Ontario in the Future

- Ontario's demand for electricity is continually increasing:
  - Electrification vehicles
  - Expansion in the mining, industrial and agricultural sectors, including greenhouses
  - Population growth
- Ontario's supply of electricity will decline in the short-term:
  - Expiration of existing contracts
  - Slated retirement of the Pickering Nuclear Generating Station
  - Bruce Nuclear refurbishment outages
- IESO has identified that the largest increase in demand will be the Southwestern Ontario and Toronto regions of the province.





# IESO's Procurement Process Underway

- The IESO is seeking 4,000 MW of new electrical production capacity;
  - 2,500 MW will be procured under the *Long-Term 1 RFP*
  - 1,500 MW will be procured under the *Expedited Long-Term Request for Proposal ("RFP")* process with:
    - 600 MW of natural gas generating expansion and
    - 900 MW of battery storage expansion
    - Independent Electricity Systems Operator "(IESO)" is responsible for planning and operating Ontario's electricity grid.
  - Project bids are required to be completed by February 16, 2023.
  - The contract length for natural gas projects is 15 years.
  - Under the Expedited Long-Term Request for Proposal, projects must be operational by May, 2026
  - Cedarline Greenhouses expects to bid into the IESO's, Expedited Long-Term Request for Proposal.

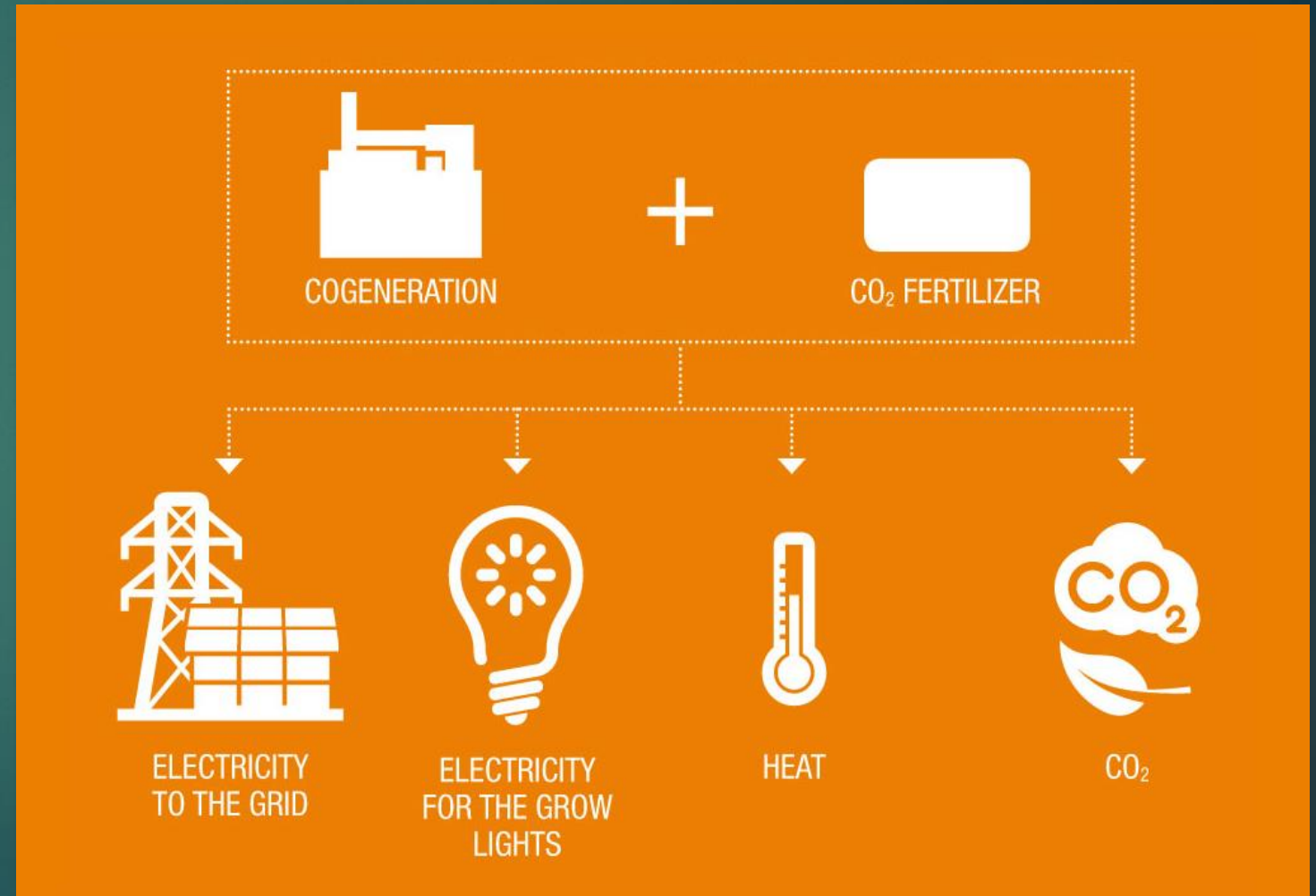


# Why Natural Gas Generation makes sense at a Greenhouse?

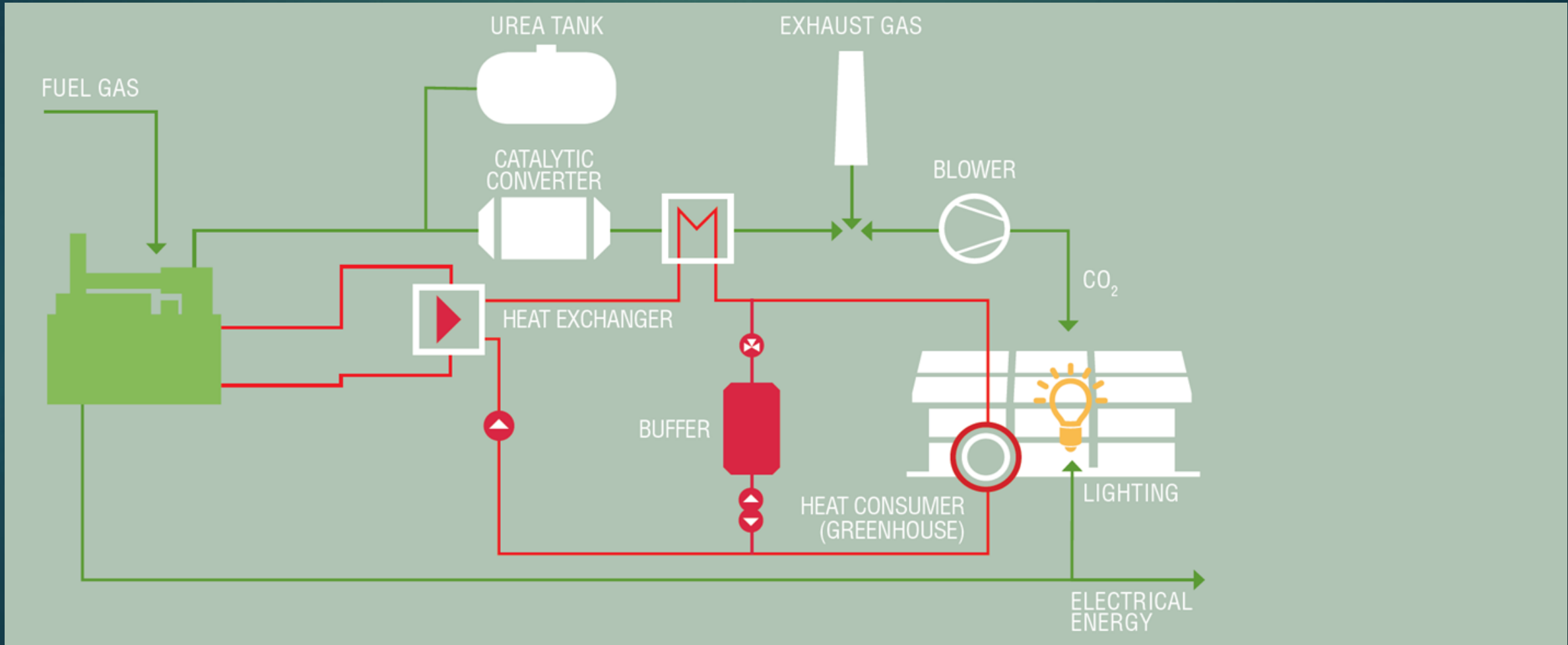
- Natural Gas Cogeneration achieves the following:
  - Electrical power generation for the grid
  - CO<sub>2</sub> byproduct can be utilized by the adjoined greenhouse
  - Waste heat produced can be utilized by the adjoined greenhouse

The Company's Mission is achieved:

*Harvesting the byproducts of energy generation for the benefit of greenhouse production combines "Power & Plants".*



# Cogeneration Powerplant Diagram for a Greenhouse





# Natural Gas Generation

- IESO Short to Medium Term Objectives:
  - Without an immediate increase of natural gas fired cogeneration, the IESO would be reliant on emergency actions, such as load curtailment and/or blackouts, per the IESO Resource Eligibility Interim Report.
  - To ensure reliability the IESO has highlighted the importance of long duration run times, meaning greater than 4 hours at a time.
- IESO Short to Medium and Long-Term Objectives:
  - Obtain reliability through the procurement of natural gas fired generation to support the transition adding flexibility in Ontario's power generating mix.
  - Transmission costs and upgrades can be reduced as natural gas expansion can be located nearby demand centers.
  - Electrification, reliability and economic growth initiatives can be achieved by using the more nimble natural gas power production for Ontario.

# Cedarline Greenhouse Cogeneration Unit

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- Located at 11080 Baseline, Dresden, Ontario at the Cedarline Greenhouses
- Existing Cogeneration unit per adjacent image.



# Cedarline Greenhouse Cogeneration Unit

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- City of Dresden and County of Chatham-Kent
- Located at 11080 Baseline, Dresden, Ontario at Cedarline Greenhouses
- Existing Natural Gas Cogeneration Unit generates ~5MW of electricity
- Cedarline Greenhouses began operations in 2003 with the cogeneration plant coming on-line in 2020



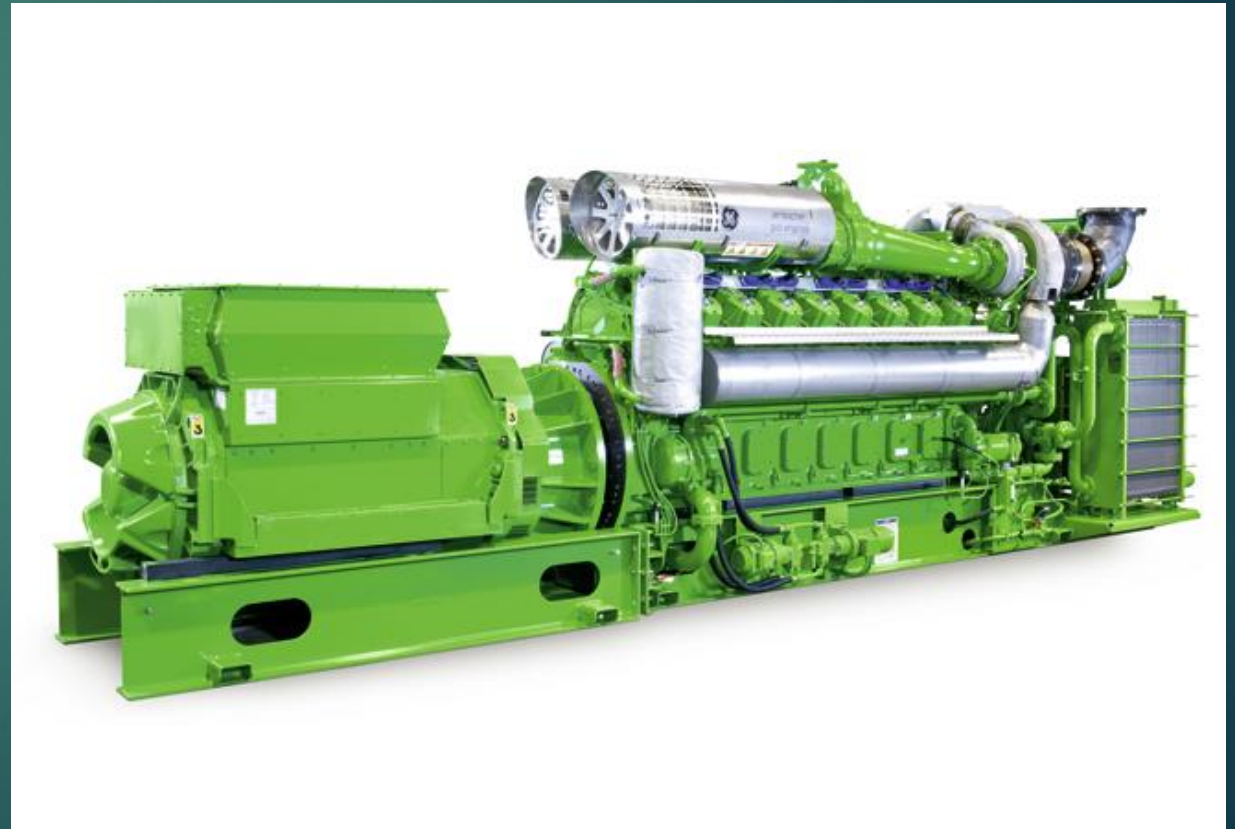
- West of current Cedarline Greenhouse and Cogeneration Unit
- Located within the Cedarline Greenhouse property boundaries
- Expansion of the existing Cogeneration Unit will be:
  - Cost effective as natural gas capacity and transmission lines installed for the existing 5MW CoGen Unit were built with the necessary capacity for a 12MW CoGen expansion.
  - Environmentally conscious means of producing electricity as the waste heat and CO2 produced will be used by the Greenhouse infrastructure in place as well as planned future greenhouse expansion.



# Planned Cedarline Cogeneration Unit – Layout & Design

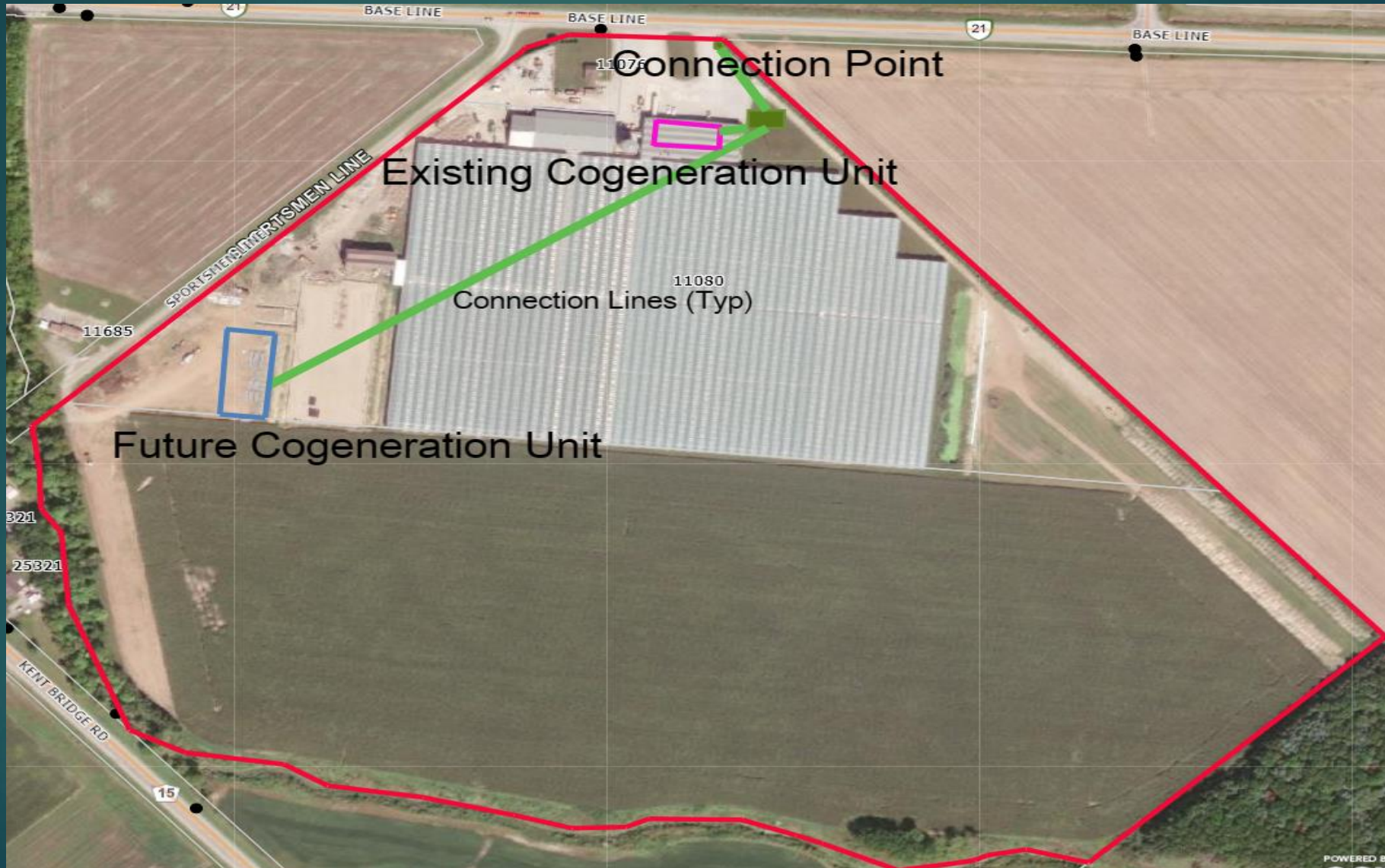
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- Cedarline is proposing to install reciprocating gas engines to generate up to 12MW of power with the following configuration:
  - 2 X Ecomax 33; +
  - 2 X Ecomax 27
- The units would be enclosed in a to be constructed building enclosure.
- Cogeneration unit will be capable of using base fuels of natural gas, renewable natural gas (“RNG”) and Hydrogen.



# Planned Cedarline Cogeneration Unit – Conceptual Layout & Design

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# Regulatory Consent

- If Cedarline Greenhouses were to be awarded a contract with the IESO, multiple permits and approvals will be required prior to project commencement, which would include:
  - Hyrdo One interconnection requirements
  - Environmental compliance consents
  - Environmental Assessment Act prerequisites
  - Local and Municipal approvals, through the:
    - Municipality of Chatham-Kent
    - St. Clair Conservations Authority
  - Where applicable, a key step to the process would be engagement by Cedarline Greenhouses of the local public and Indigenous communities .

# Regulatory Consent

- Future required analysis:
  - Cedarline Greenhouse's will require various analysis to be completed to inform of the project layout to support the regulatory consent.
  - This analysis will pinpoint elements that need to be environmental protection, monitoring or migration including:
    - Air quality
    - Noise pollution
    - Stormwater management
    - Heritage & culture implications
    - Land use assessments
    - Visual aesthetics
    - Environment and economic impacts

# Project Timelines

- Presuming that Cedarline Greenhouses is successful with the Expedited Long-Term Request for Proposal, than it would need to adhere to the following timeline schedule:

## KEY EVENT

## EXPECTED TIMELINE\*

1. Detailed Design Drawing Submittal	Week 16
2. Detailed Metering Plan Submittal for IESO Review	Week 20
3. Factory Testing of Generator Set	Week 30
4. Ready to Ship Ecomax CHP Container	Week 37
5. Ecomax CHP Container Project Site Arrival	Week 46
6. Completion of Project Site Construction	Week 55
7. Commissioning	Week 64

\* All dates are Cedarline Greenhouses' current expectations. The IESO is offering an early onboarding operator bonus for projects producing power from May 1, 2025 to April 30, 2026. Cedarline Greenhouses is expecting to achieve some or all of this bonus.

# Q&A Discussion

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# Building a Sustainable Future → Power & Plants

## CONTACT US

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