

# Exploring New Business Models for Sustainable Initiatives



Sponsored by the IESO  
TREC Co-operative and the Clean Air Partnership



# Agenda

- What are Renewable Energy Co-ops?
- Opportunity for cooperation between Municipalities and Co-ops
- Introduction to the IESO Education and Capacity Building Project
  - Analysis of Community Energy Plans (CEPs)
  - Case studies from other jurisdictions
- Questions



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# Webinar Housekeeping

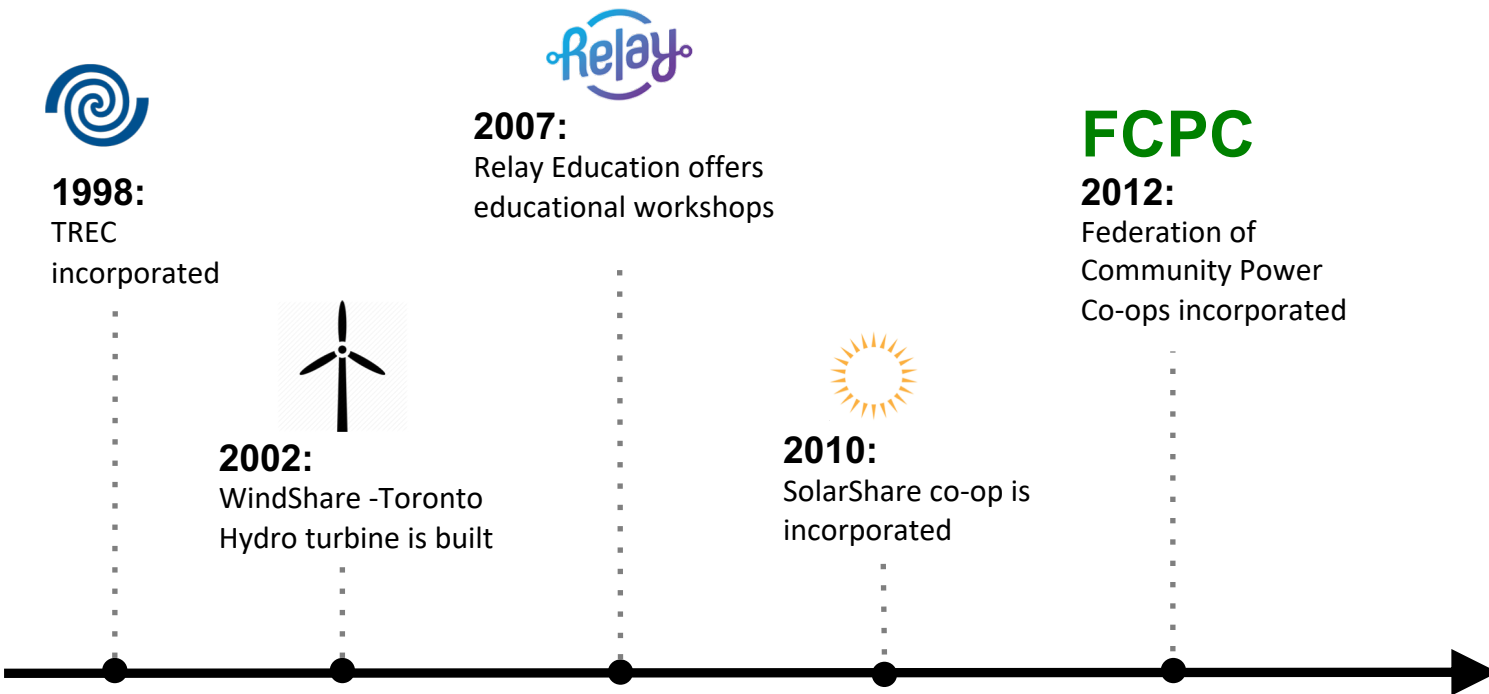
- This webinar will be 40 min followed by a 15 min Q&A session.
- To ask questions, please type into the chat box on the right hand side of your screen.
- During the session we will be launching several polls. Please input your answer when prompted.
- A copy of this presentation will be circulated to all participants following the webinar.

# Clean Air Partnership

- **CAP** is a charitable environmental organization whose goal is to help municipalities become more sustainable, resilient, and vibrant communities where resources are used efficiently, the air is clean to breathe and greenhouse gas emissions are minimized.
- CAP serves as the secretariat for the Clean Air Council and facilitates the Partners for Climate Protection Program in Ontario



# TREC: A 20-Year Commitment to Community Power



# IESO Education and Capacity Building Program

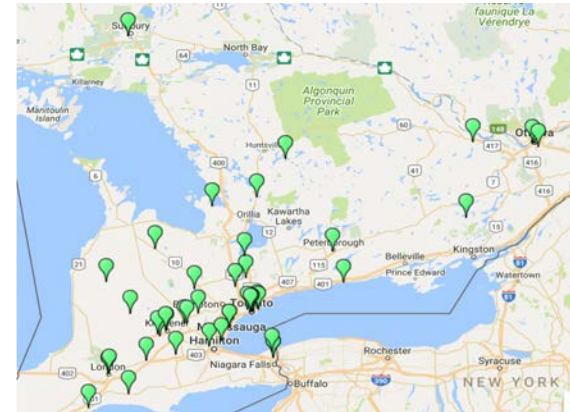
Find viable business models and innovative financing tools

- to keep energy dollars within communities
- to empower communities to forge their own energy futures
- And to grow Ontario's Low Carbon Industry



# Opportunity for Co-operation between RE Co-ops and Municipalities

- Broaden and deepen energy engagement in communities.
- Find untapped resources and skills to resolve Community Energy Plan (CEP) implementation challenges.
- Tap into financing at the Federal level, particularly for building and transportation.
- 46 Actively registered Co-ops in Ontario.



# What is Community Financing?





# A Changing Policy Landscape

- In December 2017, the Feed-in-Tariff Program came to an end.
- Evolving regulatory environment with respect to new net-metering policies.
  - Third-party ownership & virtual net-metering
  - Incomplete and/or confusing information



# Moving forward

What we need to do:

- Form partnerships between key players
- Mobilize champions in the energy sector
- Recognize specific energy needs

We believe the first step is:

- Assess levels of interest for sustainable initiatives across jurisdictions in Ontario



# Analysis of Community Energy Plans in Ontario

We researched 6 focus areas:

- District Energy
- Demand Response
- Energy Efficiency Retrofits
- Energy Storage
- Community Solar Farms
- Transportation Electrification



# Municipal-level Analysis: Example of Vaughan

| Sustainable Energy Type    | Highlighted in CEP | Level of Interest | Active Co-op Present in Region | LDC Owned by Municipality                       | Detailed Action Plans | Feasibility Studies Conducted | Pilot Projects Undertaken | Opportunity for Scaling | Available Funding Sources |     |
|----------------------------|--------------------|-------------------|--------------------------------|---|-----------------------|-------------------------------|---------------------------|-------------------------|---------------------------|-----|
| District Energy            | Yes                | Medium            | Yes                            | Alectra Utilities (99% owned by municipalities) | Yes                   | Yes                           |                           |                         |                           |     |
| Demand Response            | Yes                | Low               |                                |   |                       |                               |                           |                         |                           |     |
| Energy Efficiency          | Yes                | High              |                                |   | Yes                   |                               | Yes                       |                         | Yes                       | Yes |
| Energy Storage             | Yes                | Medium            |                                |   | Yes                   | Yes                           |                           | Yes                     |                           |     |
| Community Scale Solar      | Yes                | Low               |                                |   |                       |                               |                           |                         |                           |     |
| Sustainable Transportation | Yes                | Medium            |                                |   | Yes                   |                               | Yes                       |                         |                           | Yes |

# Municipal-level Analysis

| Municipal Energy Plan | District Energy | Demand Response | Energy Efficiency | Energy Storage | Community Scale Solar | Sustainable Transportation |
|-----------------------|-----------------|-----------------|-------------------|----------------|-----------------------|----------------------------|
| Ajax CDM              |                 |                 |                   |                |                       |                            |
| Burlington CEP        |                 |                 |                   |                |                       |                            |
| Chatham-Kent CEP      |                 |                 |                   |                |                       |                            |
| Guelph CEP            |                 |                 |                   |                |                       |                            |
| East Gwillimbury CEP  |                 |                 |                   |                |                       |                            |

# Municipal-level Analysis

| Municipal Energy Plan                    | District Energy | Demand Response | Energy Efficiency | Energy Storage | Community Scale Solar | Sustainable Transportation |
|--|-----------------|-----------------|-------------------|----------------|-----------------------|----------------------------|
| Halton Hills CEP                         | High            | Medium          | High              | None           | Medium                | Medium                     |
| Hamilton Community Climate Change Plan   | Medium          | None            | High              | None           | Medium                | High                       |
| Kingston Climate Action Plan             | Medium          | None            | High              | None           | Medium                | Medium                     |
| London: Community Energy and Action Plan | High            | None            | Medium            | None           | None                  | Medium                     |
| Markham Energy Management Plan           | High            | Medium          | High              | None           | Medium                | None                       |

# Municipal-level Analysis

| Municipal Energy Plan                                   | District Energy | Demand Response | Energy Efficiency | Energy Storage | Community Scale Solar | Sustainable Transportation |
|---|-----------------|-----------------|-------------------|----------------|-----------------------|----------------------------|
| Niagara Region: Energy Conservation and Management Plan |                 |                 | Green             |                | Orange                |                            |
| New Market CEP Plan                                     | Green           |                 | Green             |                | Green                 | Orange                     |
| Oakville: Conservation and Demand Management Plan       | Orange          |                 | Green             |                | Green                 | Orange                     |
| Ottawa's Community Energy Transition Strategy           | Green           |                 | Orange            |                | Green                 | Green                      |
| Oxford County 100% RE Plan                              |                 |                 | Green             | Orange         | Green                 | Green                      |

# Municipal-level Analysis

| Municipal Energy Plan                          | District Energy | Demand Response | Energy Efficiency | Energy Storage | Community Scale Solar | Sustainable Transportation |
|--|-----------------|-----------------|-------------------|----------------|-----------------------|----------------------------|
| Peterborough: Community Sustainability Plan    |                 |                 | High              |                | Medium                |                            |
| Stratford CEP                                  |                 |                 | High              |                |                       | High                       |
| Vaughan MEP                                    | Medium          |                 | High              | Medium         |                       | Medium                     |
| Wawa Energy Plan                               |                 |                 | High              |                | High                  | Medium                     |
| Waterloo Region: Community Investment Strategy | High            |                 | High              | Medium         | High                  | High                       |



# Municipal-level Analysis

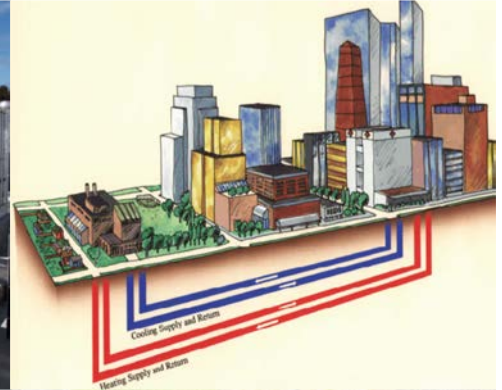
| Municipal Energy Plan | District Energy | Demand Response | Energy Efficiency | Energy Storage | Community Scale Solar | Sustainable Transportation |
|-----------------------|-----------------|-----------------|-------------------|----------------|-----------------------|----------------------------|
| Woodstock CEP         | Orange          | White           | Green             | White          | Green                 | Green                      |
| Windsor CEP           | Green           | White           | Green             | White          | Orange                | Green                      |

# Top-level Table

| Sustainable Energy Type    | Ajax CDM | Burlington CEP | Chatham Kent CEP | Guelph CEP | East Gwillimbury CEP | Halton Region CEP | Hamilton Climate Change Plan | Kingston Climate Action Plan | London Energy Management Plan | Markham Energy Management Plan | Niagara Region CDM | New Market CEP | Oakville CDM Plan | Ottawa Energy Transition Strategy | Oxford County 100% RE Plan | Peterborough Sustainability Plan | Stratford CEP | Vaughan MEP | Wawa CEP | Waterloo Community investment Strategy | Woodstock CEP | Windsor CEP |      |
|----------------------------|----------|----------------|------------------|------------|----------------------|-------------------|------------------------------|------------------------------|-------------------------------|--------------------------------|--------------------|----------------|-------------------|-----------------------------------|----------------------------|----------------------------------|---------------|-------------|----------|--|---------------|-------------|------|
| District Energy            | Low      | High           | Low              | Medium     | High                 | High              | Medium                       | Medium                       | High                          | High                           | Low                | High           | Medium            | High                              | Low                        | Low                              | Low           | Medium      | Low      | High                                   | Medium        | High        |      |
| Demand Response            | Low      | Low            | Low              | Low        | Low                  | Low               | Low                          | Low                          | Low                           | Medium                         | Low                | Low            | Low               | Low                               | Low                        | Low                              | Low           | Low         | Low      | Low                                    | Low           | Low         | Low  |
| Energy Efficiency          | Medium   | High           | High             | High       | Medium               | High              | High                         | High                         | Medium                        | High                           | High               | High           | High              | Medium                            | High                       | High                             | High          | High        | High     | High                                   | High          | High        | High |
| Energy Storage             | Low      | Low            | Low              | Low        | Low                  | Low               | Low                          | Low                          | Low                           | Low                            | Low                | Low            | Low               | Low                               | Medium                     | Low                              | Low           | Medium      | Low      | Medium                                 | Low           | Low         |      |
| Community Scale Solar      | Low      | Low            | Low              | High       | High                 | Medium            | Medium                       | Medium                       | Low                           | Medium                         | Medium             | High           | High              | High                              | High                       | Medium                           | Low           | Low         | High     | High                                   | High          | Medium      |      |
| Sustainable Transportation | High     | Medium         | Medium           | Low        | Low                  | Medium            | High                         | Medium                       | Medium                        | Low                            | Low                | Medium         | Medium            | High                              | High                       | Low                              | High          | Medium      | Medium   | High                                   | High          | High        |      |

# Exploring Opportunities: Case Studies

- Some cases shared are projects which did not involve a municipal or co-op player but the model has the potential for such involvement
- Jurisdictional scan of policies & regulatory environment
- Financial viability



# District Energy

## Regent Park Community Energy System

- Regent Park's DE system provides heating and cooling to more than 800 residential units.
- Saves more than 400,000 tonnes of GHG emissions over 30 years.
- While this project did not involve a co-op, it is the type of project for which a co-op could feasibly raise community investment.

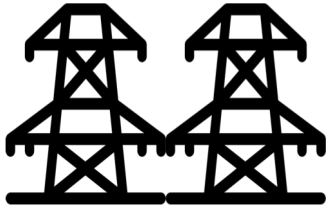


# Voting Session

Please indicate your level of interest in developing district energy within your municipality:

# Understanding Behind the Meter

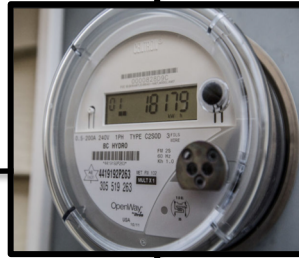
In Front of the Meter



In front of the meter:

- Highly regulated and centrally controlled
- Meter is the 'edge of the grid'

Meter



Behind the Meter



Behind the meter:

- An unregulated space
- Potential for disruption of traditional utility models

# Demand Response

## POWER.HOUSE Energy Storage Pilot

- Alectra Utilities launched the POWER.HOUSE pilot program (funded by the IESO Conservation Fund).
- Goal was to evaluate the benefits that residential solar storage can bring.
- Results demonstrate the technical and commercial potential that residential solar storage can achieve.



# Voting Session

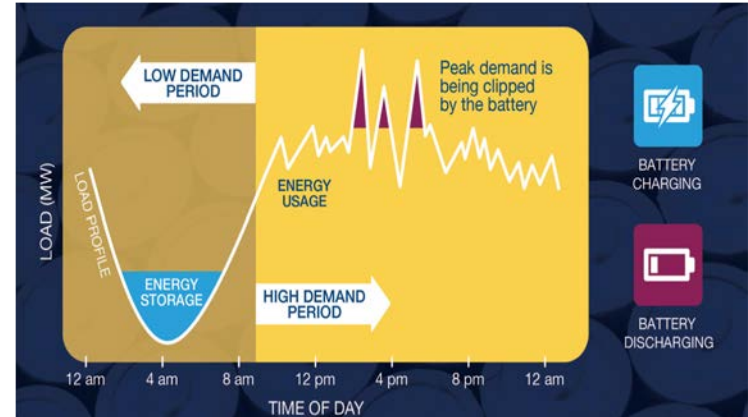
Please indicate your level of interest in developing a demand response program within your municipality:



# Energy Storage

## Community Battery Program in Firestone, Colorado

- United Power Cooperative and SoCore Energy announced plans to build the largest energy storage facility in Colorado.
- The 4 MW, 16 MWh battery storage system will store energy generated over night and discharge it during the day.
- The system is part of its “community battery” strategy. Like a community solar program, customers subscribe to the program and get credits to offset their peak demand.



# Voting Session

Please indicate your level of interest in developing energy storage within your municipality:

# Energy Efficiency

## Pajopower Co-op Street Light Retrofit

- Issues shares to community members and invests in energy efficiency projects - “Adopt a Streetlight” campaign.
- Pajopower issued 900 shares at 250 Euros each and provided the municipality with a soft loan to make the investment.
- Retrofitted 445 public streetlights in a community near Brussels.
- This model could be replicated to retrofit municipally owned buildings as well. Co-ops could contribute third party financing to existing municipal energy efficiency programs.



# Voting Session

Please indicate your level of interest in developing energy efficiency retrofit projects within your municipality:

# What is Net Metering?

| Monthly Utility Bill           | Month 1   | Month 2   |
|--------------------------------|-----------|-----------|
| YOU generate electricity       | 1,200 kWh | 2,500 kWh |
| Use what you need              | 2,000 kWh | 2,000 kWh |
| Get billed for what you bought | 800 kWh   | 0         |
| Get credit for the difference  | 0         | 500 kWh   |

# Community Solar

## Community-Scale Solar in Nelson, B.C

- Bullfrog Power and the City of Nelson launched a Community Solar Garden Project.
- Project uses “virtual net-metering” to support renewable energy community projects.
- The 60 kW solar array was projected to generate 70-75,000 kWh/year.
- Goal is to test the model for potential future expansion.
- This model would work well in a scenario where the municipality owns the utility.



# Voting Session

Please indicate your level of interest in developing community solar projects within your municipality:

# Sustainable Transportation

## Electrification of Buses: Minnesota Co-ops launch Electric School Bus Pilot

- Two power co-ops partnered with a school bus manufacturer in Canada to send children to school in an electric bus.
- Buses cost approximately \$325,000 but there are costs savings of approximately \$170 per month (\$2,000 annually).
- This model could be replicated to electrify an existing fleet of municipal vehicles.
- Examples: Emergency response, maintenance, public transit, etc.





# Voting Session

Please indicate your level of interest in electrifying transportation within your municipality:

# Next Steps

- Explore municipal and co-op connection opportunities (2-3 models)
- Accept 6 municipalities into the program
- Municipalities and co-ops will be invited to workshops based on case studies they have expressed interest in
- Project Outcomes

# Contact Information

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# Q & A