

New Business Models for Municipalities and Co-ops



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



Agenda

- Introduction to the TREC Co-operative and the Clean Air Partnership
- 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

Webinar Housekeeping

- This webinar will be 40 min followed by a 15 min Q&A session.
- To ask questions, please type into the chat/question box on the left hand side of your screen.
- If you would like to ask your question via audio raise your hand or send me a chat letting me know.
- During the session we will be launching several polls. Please input your answer when prompted.
- A copy of this presentation and a recording of this webinar will be circulated to all participants following the webinar.



Clean Air
Partnership

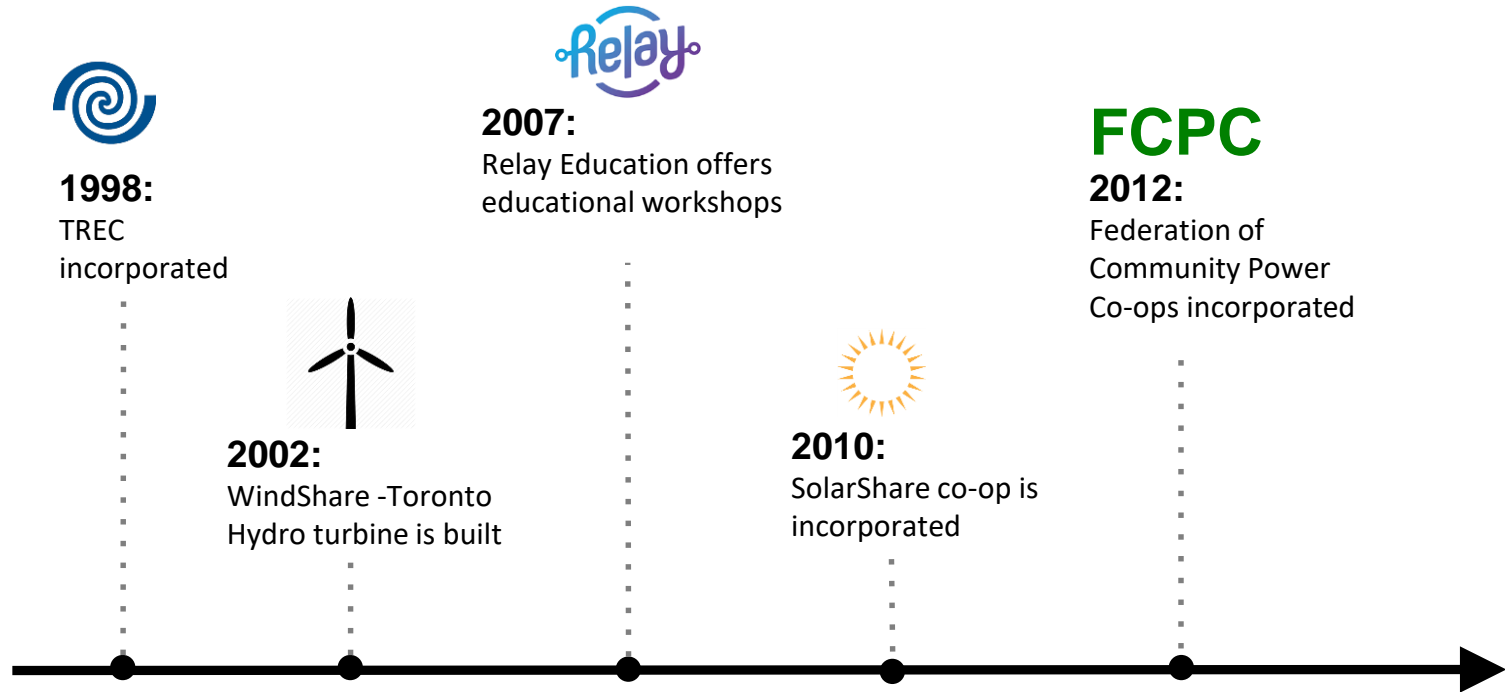


Clean Air Partnership

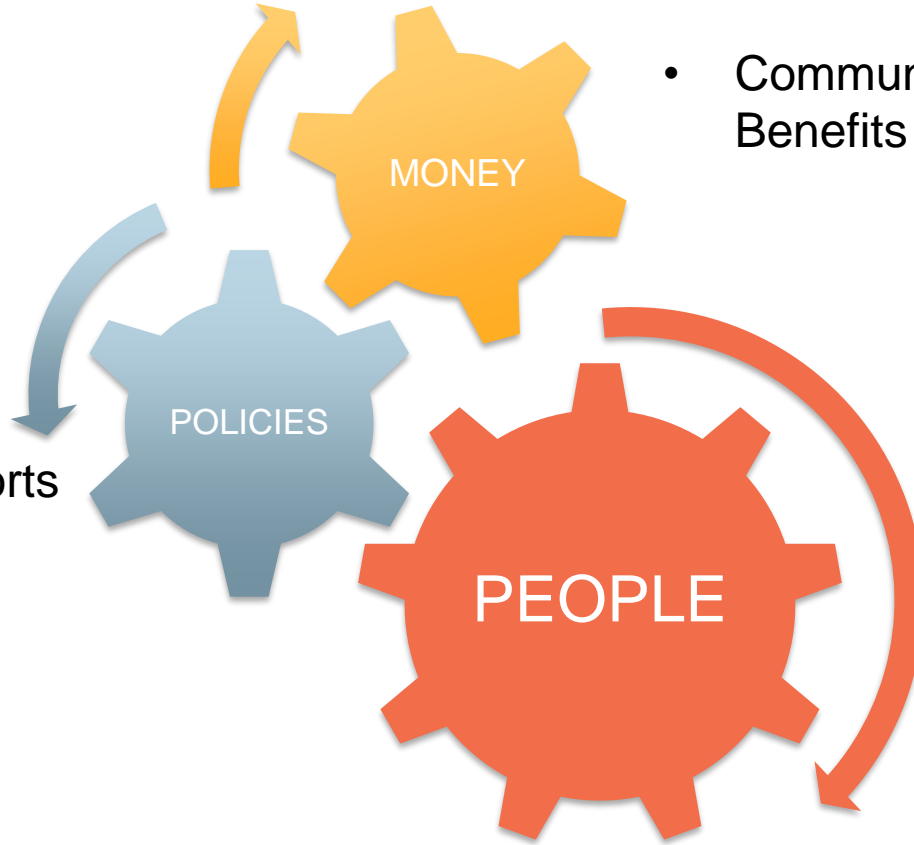
- **CAP** is a charitable environmental organization whose goal is to help municipalities become more sustainable, resilient, and vibrant communities where resources are used efficiently, the air is clean to breathe and greenhouse gas emissions are minimized.
- CAP serves as the secretariat for the Clean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



TREC: A 20-Year Commitment to Community Power



- Advocacy
- Program Supports

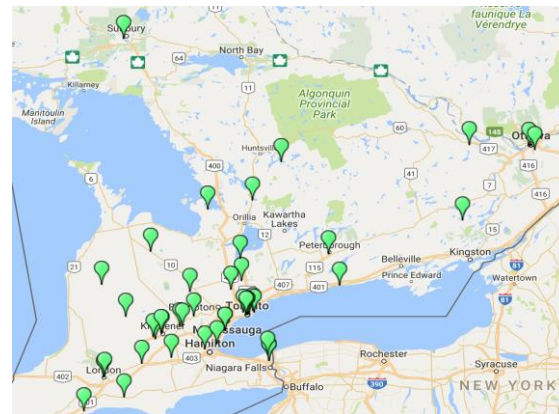


- Community Economic Benefits

- Champions
- Capacity Building
- Collaboration

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.
- Develop new financing options based on shared business models.
- Tap into financing at the Federal level, particularly for building and transportation.
- 46 Actively registered Co-ops in Ontario.



IESO Education and Capacity Building Program

- Find viable business models and innovative financing tools to keep energy dollars within communities, empower communities to forge their own energy futures, and grow Ontario's Low Carbon Industry
- **Examining 6 focus areas:**
 - District Energy
 - Demand Response
 - Energy Efficiency Retrofits
 - Energy Storage
 - Community RE projects
 - Sustainable Transportation



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Power to Ontario.
On Demand.

A Changing Policy Landscape

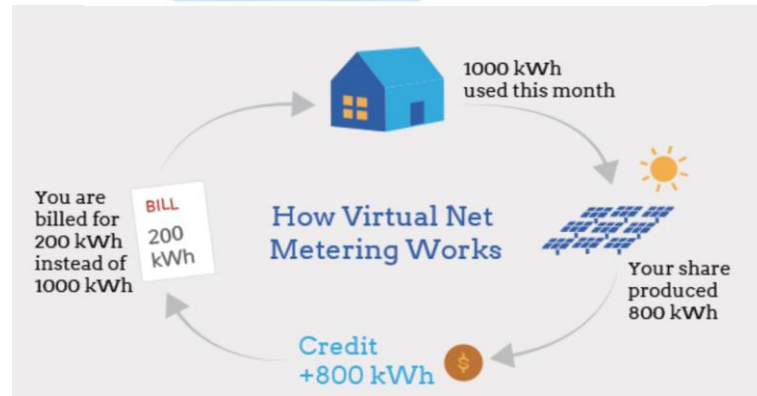
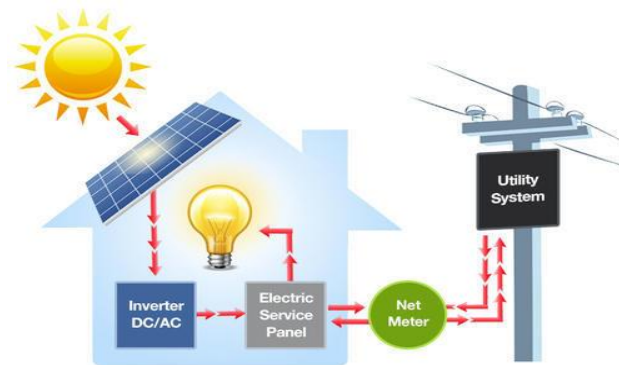
- In December 2017, the Feed-in-Tariff Program came to an end.
- The launch of Ontario's new Long Term Energy Plan ushers in a new opportunity for RE co-ops to continue to engage communities in sustainable energy.
- Uncertain regulatory environment with respect to new net-metering policies:
 - Third-party ownership & virtual net-metering
 - Restrictive clauses in current regulations
 - Incomplete and/or confusing information



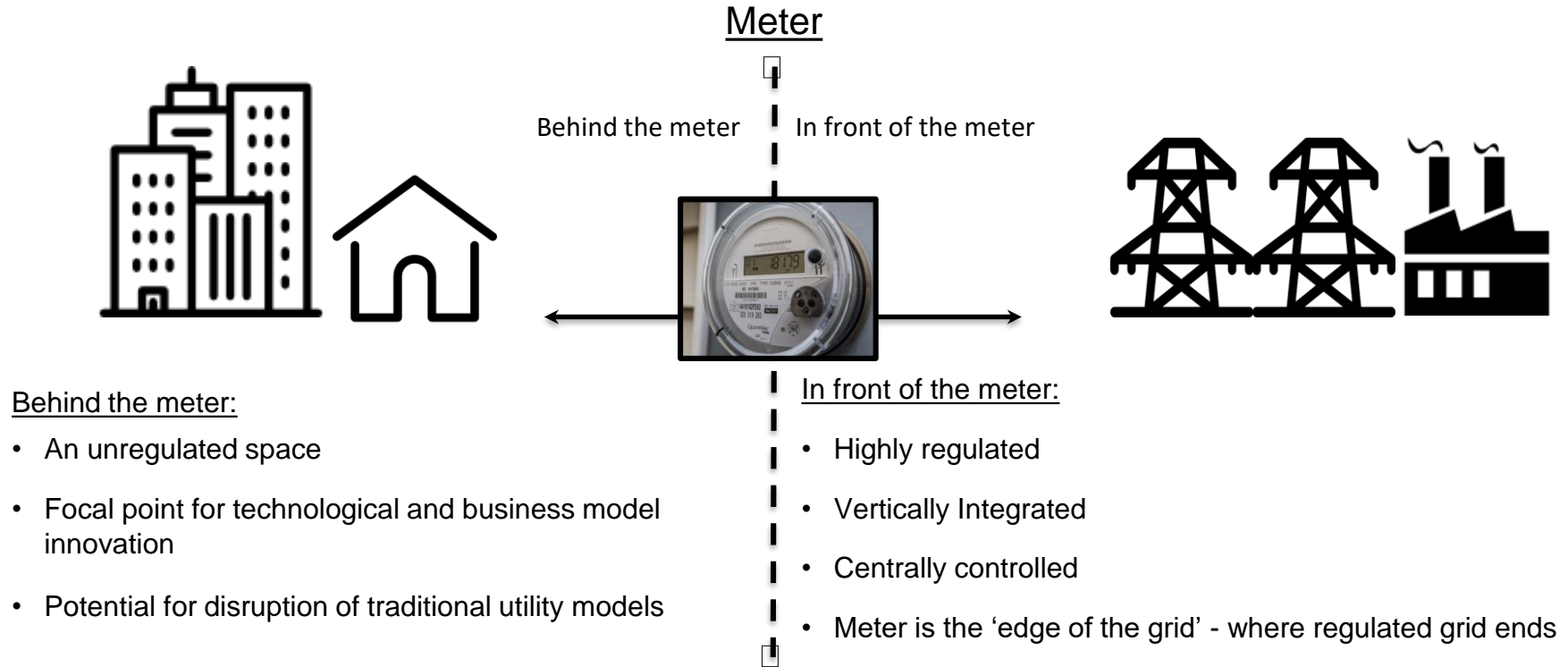
Net Metering and Virtual Net Metering

Single Entity Net Metering

Virtual Net Metering



Understanding the Needs of Consumers and Utilities



Behind the Meter Activities

Behind the Meter Systems

On-site Solar Generation



Storage

Internet of Things

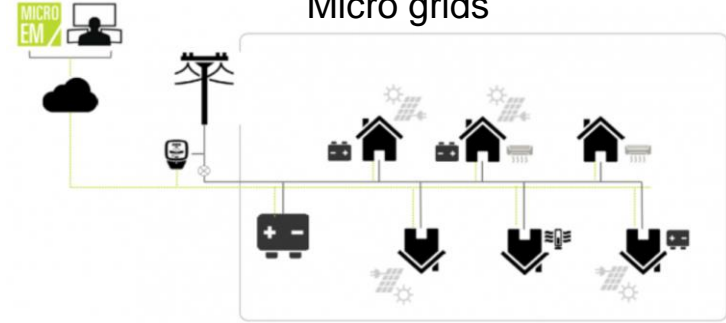


Adding Value In Front of the Meter

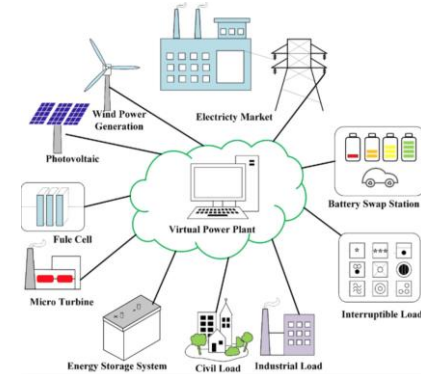
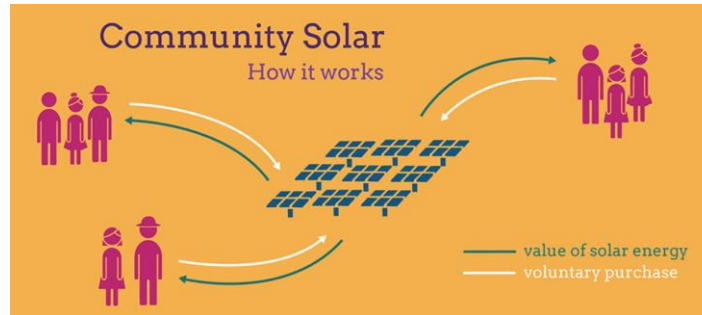
Community Battery Systems



Micro grids



Community Solar Systems – Virtual Net Metering



Virtual Power Plants



Moving forward

Issues: changing policy environment, regulatory hurdles, etc.

What we need to do to :

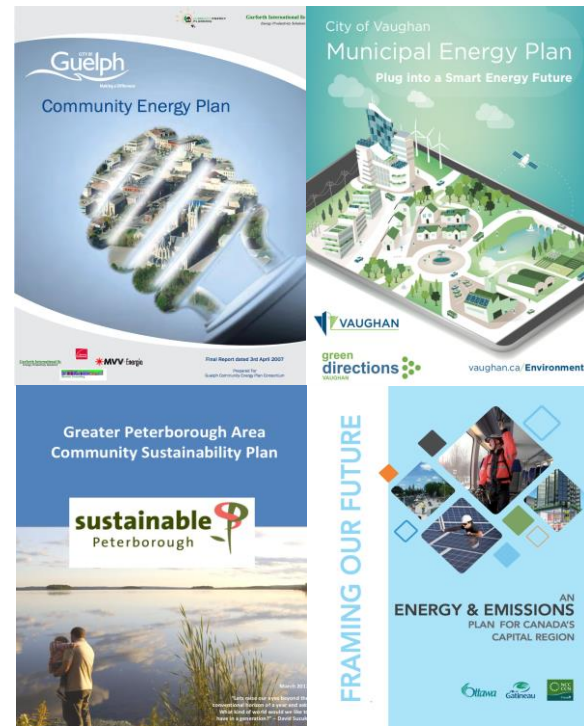
- Form partnerships between key players
- Mobilize champions in the energy sector
- Recognize specific energy needs
- Assess levels of interest for sustainable initiatives across jurisdictions in Ontario
- Establish a baseline level of interest



Analysis of Community Energy Plans in Ontario

Categories analyzed:

- LDC owned by municipality
- Presence of active Co-op in the region
- Detailed action plans/ Identified sites of interest
- Feasibility studies conducted
- Pilot projects undertaken
- Opportunities for scaling
- Evaluated available Municipal/ Provincial/ Federal Funding Sources



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	High	?	Alectra Utilities (99% owned by municipalities)	Yes	Yes			
Demand Response	Yes	Low							
Energy Efficiency	Yes	High			Yes				Yes
Energy Storage	Yes	Medium				Yes	Yes		
Community Scale Solar	Yes	Low							
Sustainable Transportation	Yes	Medium			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						
Hamilton Community Climate Change Plan						
Kingston Climate Action Plan						
London: Community Energy and Action Plan						
Markham Energy Management Plan						

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						
Newmarket CEP Plan						
Oakville: Conservation and Demand Management Plan						
Ottawa's Community Energy Transition Strategy						
Oxford County 100% RE Plan						

Municipal-level Analysis

Municipal Energy Plan	District Energy	Demand Response	Energy Efficiency	Energy Storage	Community Scale Solar	Sustainable Transportation
Peterborough: Community Sustainability Plan						
Stratford CEP (2008)						
Vaughan MEP						
Wawa Energy Plan						
Waterloo Region: Community Investment Strategy						

Municipal-level Analysis

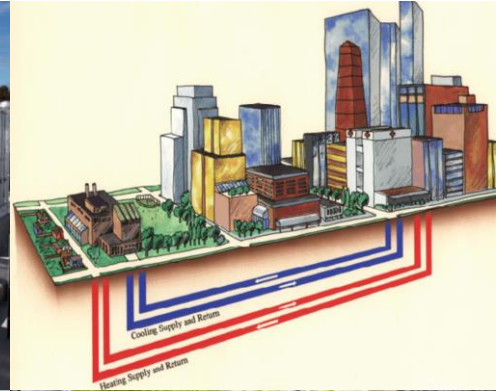
Municipal Energy Plan	District Energy	Demand Response	Energy Efficiency	Energy Storage	Community Scale Solar	Sustainable Transportation
Woodstock CEP						
Windsor CEP						

Top-level Table

Sustainable Energy Type	Ajax Sustainability Plan	Burlington CEP	Chatham Kent CEP	Guelph CEP	East Gwillimbury CEP	Halton Hills	Hamilton Climate Change Plan	Kitchener Energy	London Community Energy Management Plan	Markham Energy Management Plan	Niagara Region Energy Conservation & Management Plan	New Market CEP	Oakville CDM Plan	Ottawa Energy Transition Plan	Oxford County: 100% RE Plan	Peterborough: Community Sustainability Plan	Stratford CEP 2008	Vaughan MEP	Wawa CEP	Waterloo Region: Community Investment Strategy	Woodstock CEP	Wind sor CEP
District Energy	Low	High	Low	Medium	High	High	Medium	Low	High	High	Low	High	Medium	High	Low	Low	Low	High	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
Energy Efficiency	Medium	High	High	High	Medium	High	High	Medium	Medium	High	High	High	High	Medium	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	Low	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.



Demand Response

POWER.HOUSE Energy Storage Pilot

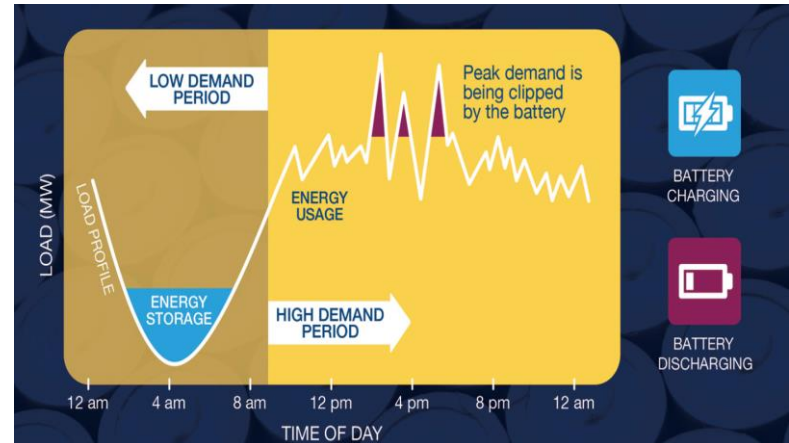
- Alectra Utilities launched the POWER.HOUSE pilot program (funded by the IESO Conservation Fund).
- Goal was to evaluate the benefits that residential solar storage can bring.
- Results demonstrate the technical and commercial potential that residential solar storage can achieve.



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.
- Model would work well where peak pricing exists.



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 ex. Better Building Partnership.



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.



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, for ex. Emergency response, maintenance, public transit.



EV Charging Infrastructure:

- Electric Co-ops in North Carolina planning to spend \$13.8 million settlement from Volkswagen.
- Charge stations located near tourist attractions and hotspots.
- Provides a solution for its gaps in infrastructure.



Next Steps

- Explore municipal and co-op connection opportunities
- Seek municipal and co-op possible pilot communities
- Municipalities and co-ops will be invited to workshops based on case studies they have expressed interest in
- Project Timeline
- Project Outcomes