Net Metering for Ontario Municipalities

Federation of Community Power Cooperatives (FCPC)

Funding provided by the Independent Electricity System Operator (IESO)

Today's Briefing

- Drivers for change and Reg. 588/17
- Current energy planning and power supply mix
- The state of the renewable sector/technologies
- Net metering and virtual net metering
- Key considerations
- Resources

About IESO

- Independent Electricity System Operator is a not-for-profit corporate entity established in 1998 under the Minister of Energy.
- Manages the grid system in real-time.
- Buys power from many sources.
- Forecasts and plans for the province's future energy needs.
- Leads regional energy planning.
- Administers energy awareness programs.

About FCPC

- Non-profit organization of Renewable Energy Cooperatives from across Ontario.
- Established in 2012.
- Fosters growth in the "Community Power" sector.
- Promotes local community engagement and local ownership.

Presentors

Sally McIntyre – An environmental planner with expertise in policy development, governance, and operational effectiveness. A former municipal manager, Sally works with municipalities in the fields of water, wastewater, solid waste, surface water, and energy planning, management, and communications.

Johan Hamels – Co-founder of Ecopower, a renewable energy co-op in Belgium which generates enough power to service 40,000 homes. Johan has a degree in Accounting and Financial Planning and advises municipal and upper tier governments on good governance.

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

Energy Management Planning since 2011

O. Reg. 397/11: Energy Conservation and Demand Management (CDM) Planning under *Green Energy Act*, 2009

- Municipalities must report annual energy use and greenhouse gas emissions.
- In 2014 municipalities published their 5-year Energy CDM Plans that included:
  - conservation goals and objectives
  - proposed conservation measures
  - cost and savings estimates
  - a description of renewable energy generation facilities, including the amount of energy generated annually (primarily LFG, WW co-gen, and Feed-in-Tariff (FIT) solar projects.)
- Five-year updates required beginning in 2019.

NEW - Asset Management Planning (AMP) for Municipal Infrastructure

O. Reg 588/17 Key requirements

- Strategic asset management policies to be in place by July 1, 2019.
- AMP for “core” assets due by July 1, 2021.
- AMP for all other municipal assets including green infrastructure due by July 1, 2023.

NEW - Asset Management Planning (AMP) for Municipal Infrastructure

O. Reg 588/17 Energy Management considerations

Definitions

- "operating costs means the aggregate of costs, including energy costs…over its service life"

Asset Management Plans

- "The current performance of each asset category…such as those that would measure energy usage and operating efficiency…"
- To include "mitigation approaches to climate change, such as greenhouse gas emission reduction"

Levels of Service

- "The proposed performance of each asset category…such as those that would measure energy usage and operating efficiency."

A lifecycle management and financial strategy

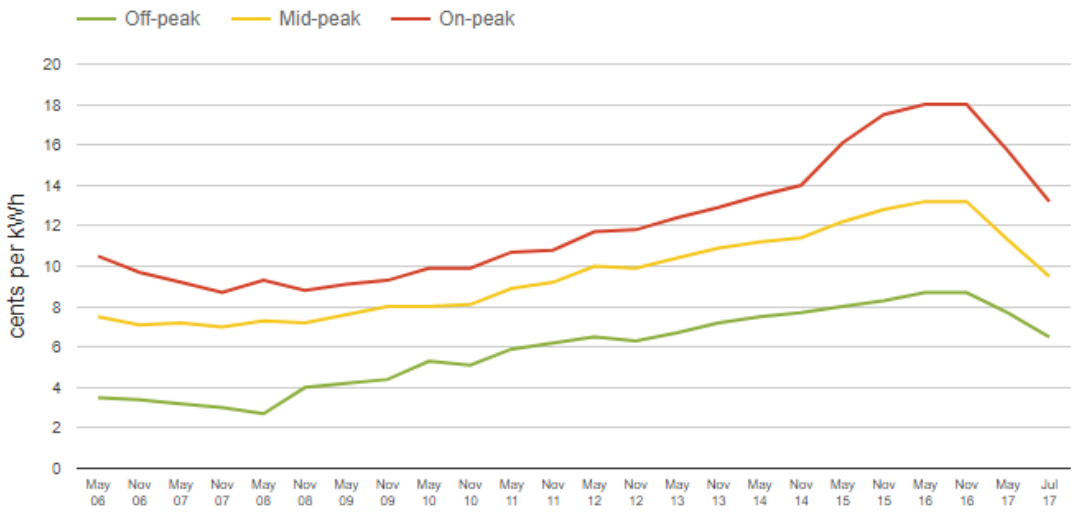
- Identify activities "to provide the proposed levels of service …for the lowest cost"
- An estimate of the "annual costs separated into capital expenditures and significant operating costs."

Why the focus on energy?

2008 Association of Municipalities of Ontario (AMO) study with the Independent Electricity System Operator (IESO)

Ontario's 444 Municipalities

- Spend $680 million annually on electricity
- Consume 6.6 billion kilowatt hours of electricity per year
- Represent 4.3% of Ontario's total electricity consumption
- Study included 37 Eastern Ontario municipalities representing 65% of population



Sources: https://www.amo.on.ca/AMO-PDFs/Reports/2008/Ontario_Municipalities-An_Electricity_Profile_Janu.aspx and https://www.oeb.ca/rates-and-your-bill/electricity-rates/historical-electricity-rates (2018/04/08)

Opportunities for Change

2008 Association of Municipalities of Ontario (AMO) study with the Independent Electricity System Operator (IESO)

- Municipalities can reduce electricity consumption by 12% through:
  - Increased energy efficiency
  - Increased demand response capacity
  - Municipal power generation
- Full implementation of best practices combined with the above potentials would reduce annual electricity costs by approximately 20%.

Source: https://www.amo.on.ca/AMO-PDFs/Reports/2008/Ontario_Municipalities-An_Electricity_Profile_Janu.aspx

Municipal Energy Generation

- In 2008 the “generation potential was assessed at 314,326,345 kWh…with landfill gas, digester gas, wind and solar” as common sources.
- Since then, consumers are demanding:
  - Greater price stability and certainty
  - Increased consumer choice and control
  - Protection from major new infrastructure (pipelines, floodways, power plants)
  - Reduced environmental impacts and risks
  - Resiliency to grid failures
- Renewable power technologies have evolved significantly over the past 30 years.

The business case for renewables has changed significantly in recent years.

VIDEO – State of Renewables **(3 min)**

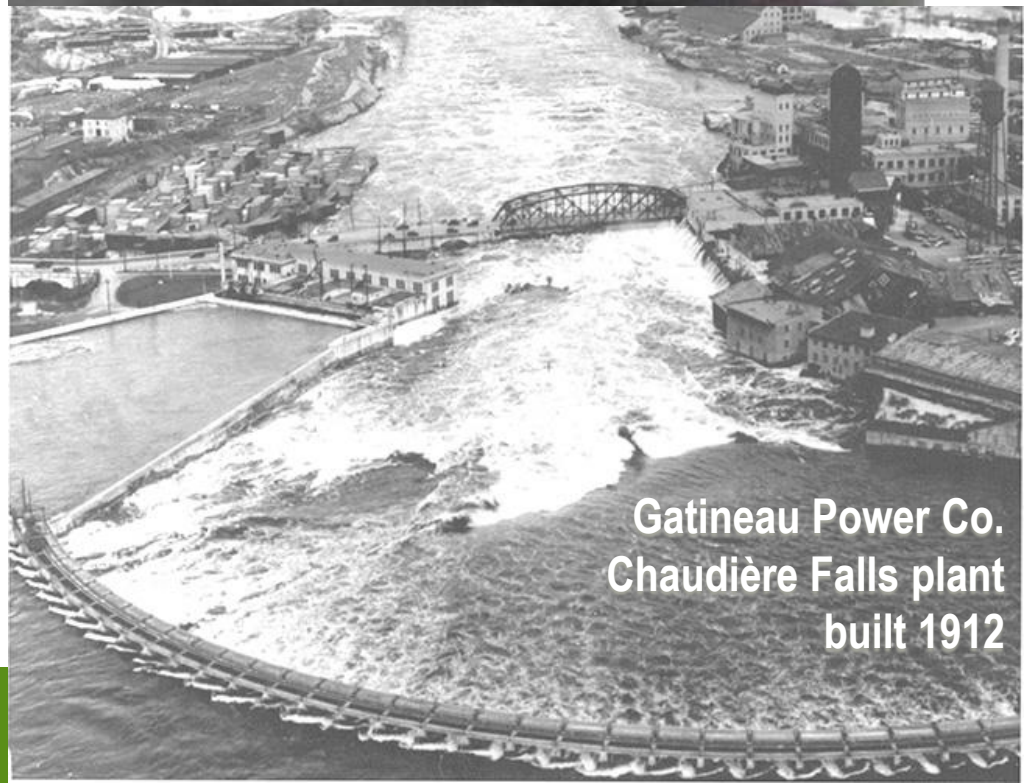
Evolution in Ontario's Power Supply

- Historical context
- Current service delivery

Evolution in Ontario's Power Supply

Until early 1900s

- Local generation and management
- Hydro, coal, and gas



Sources: https://www.cityofkingston.ca/residents/environment-sustainability/environmental-improvement-projects/coal-gasification-plants and http://www.histoireforestiereoutaouais.ca/en/a2/#4

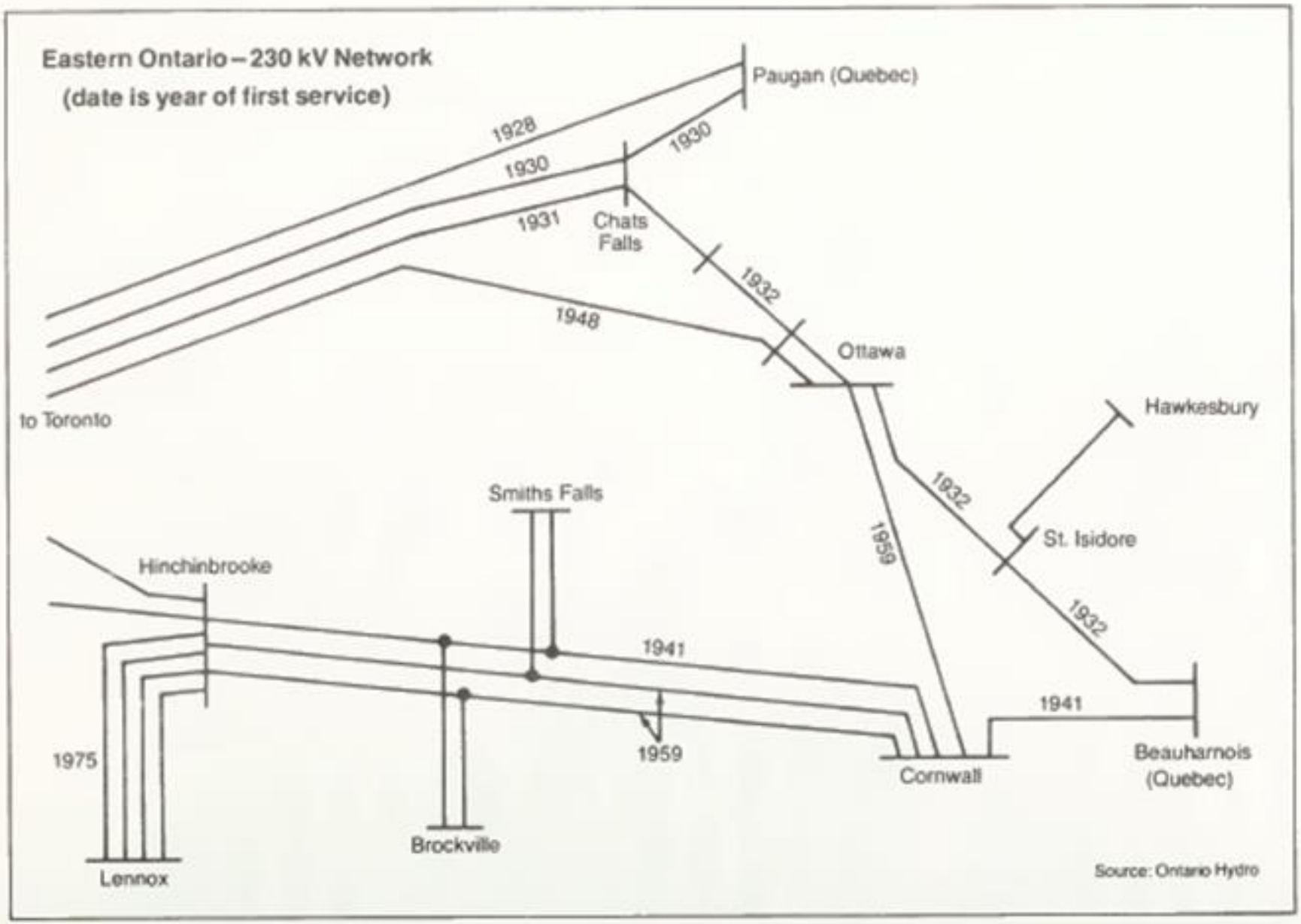


FIGURE 2.2

Source: Royal Commission on Electric Power Planning: Report on the need for additional bulk power facilities in Eastern Ontario, 1979.

Early 2000s

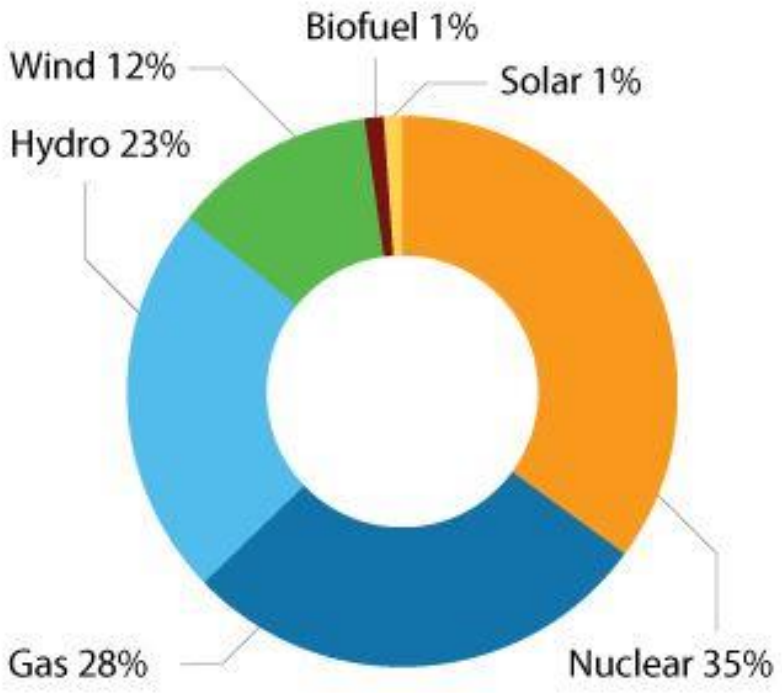
- Grid expansion
- Grid dependency
  - Extreme weather events
  - Cyber-threats
  - Nuclear refurbishment – service continuity and price
- Mitigating GHG emissions
  - Decommission coal fired plants
- Improving reliability
  - Grid design and refurbishment
  - Distributed energy generation
    - Renewables FIT and microFIT

Source: https://globalnews.ca/news/1045228/looking-back-at-the-ice-storm-of-1998/

Today

- Feed-in tariff (FIT) program is over.
- **Net metering** is the new approach.
- *Green Energy Act* requires Municipal Energy Conservation and Demand Management Plans.
- Ontario's *Long-term Energy Plan* focuses on demand management and fuel switching.
- Both federal and provincial policy encourage community energy planning, AND
- O.Reg 588/17 requires consideration of energy costs in asset management.

Municipalities are back in the business of managing energy!



Installed capacity on transmission system

Source: http://www.ieso.ca/learn/ontario-supply-mix/ontario-energy-capacity (2018/04/08)

NOTE: Excludes embedded energy unless part of FIT or microFIT program.

How net metering can work for municipalities

Net metering

- Generate electricity
- Use what you need
- Get credit for the rest

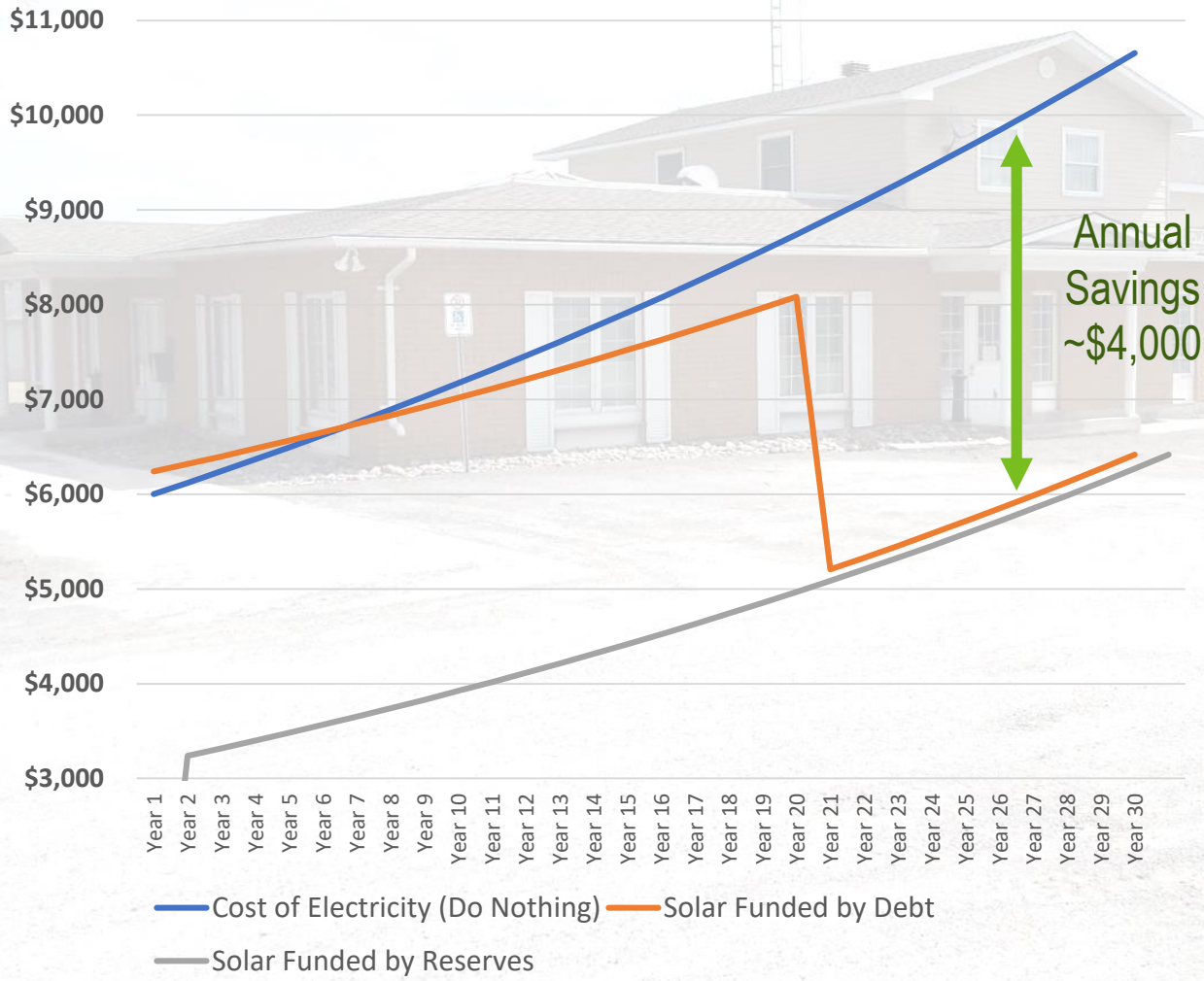
Benefits

- Reduce overhead costs in power and heat
- Allow money saved to be reinvested within the community
- Provide improved resiliency and ability to respond to emergencies
- Enable job creation in renewable power, a growing sector
- Demonstrate readiness to potential businesses

Video 2 – Saving energy costs through net metering **(5 min)**

Administrative Building, Montague Township

Annual Electricity costs: Status quo versus Net Meter options



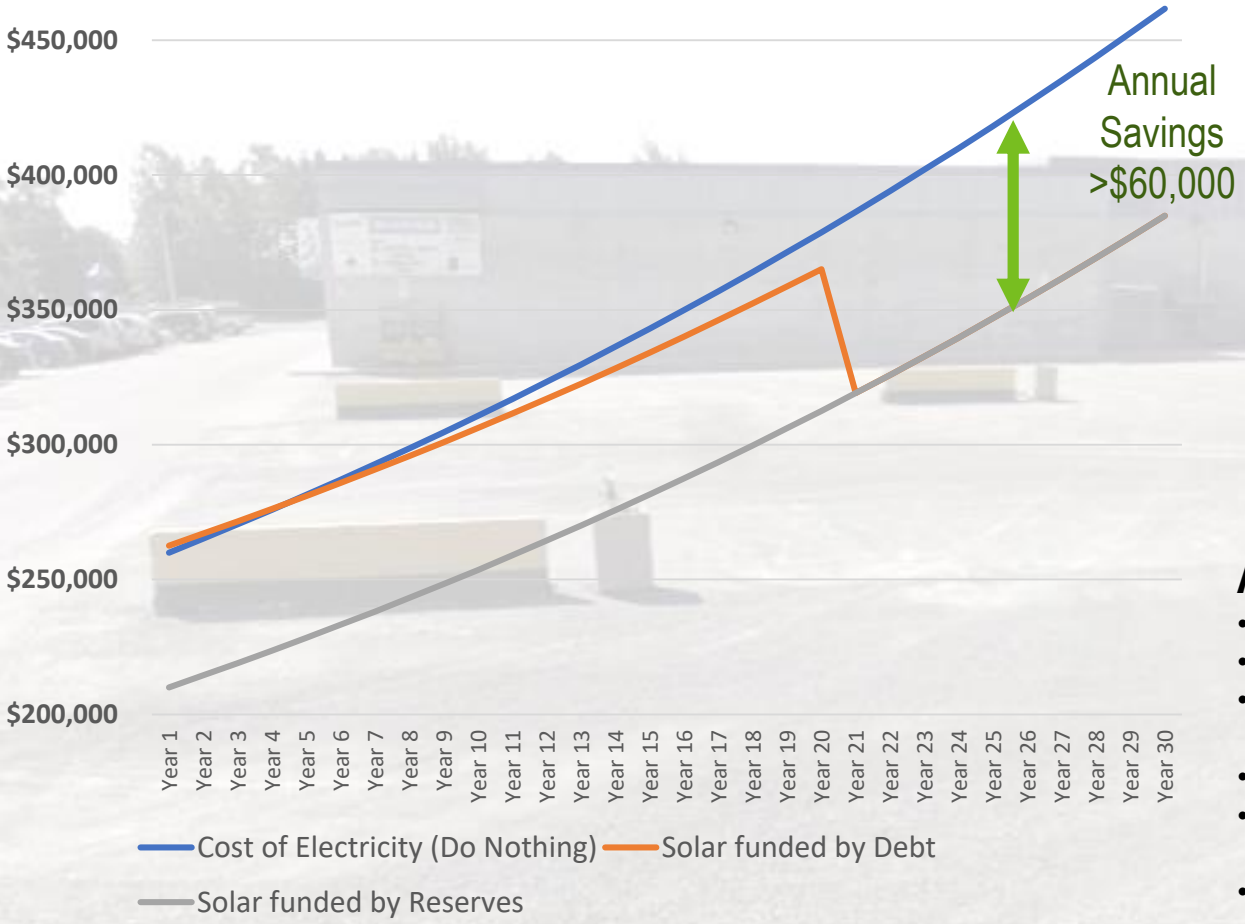
$38,000 capital or ~$250/month amortization cost

Assumptions:

- 2%/year rate increases
- 5%/year interest rate over 20 years
- 0.5%/year decline in solar production over 30 year lifecycle
- Static demand at 46,000 kWh/year
- Solar production rate comparable to other installations in Eastern Ontario.
- Excludes any required roof upgrades and ancillary works.
- Savings on consumption fees only.

Nick Smith Centre, Town of Arnprior

Annual Electricity costs: Status quo versus Net Meter options



$667,322 capital or ~$4,385/month amortization cost

Assumptions:

- 2%/year rate increases
- 5%/year interest rate over 20 years
- 0.5%/year decline in solar production over 30 year lifecycle
- Static demand at 1,500,000 kWh/year
- Solar production rate comparable to other installations in Eastern Ontario.
- Excludes any required roof upgrades and ancillary works.
- Savings on consumption fees only.

Calculating Production

Used actual production rates from three projects developed and operated by Ottawa Renewable Energy Cooperative (OREC).

- Maurice Lapointe High School (190 kW AC) – flat roof
- Hovey Industries (383 kW AC) – shallow slope roof
- Dunrobin Storage Facility (250 kW AC) – steep slope roof

Right-sizing a facility and calculating savings

Electricity	
488 kWh Off-peak (lowest price) @ 8.700 ¢/kWh	0.00
127 kWh Mid-peak (mid price) @ 13.200 ¢/kWh	0.00
135 kWh On-peak (highest price) @ 18.00 ¢kWh	0.00
Delivery	0.00
Regulatory Charges	0.00
Debt Retirement Charge	0.00
Your Total Electricity Charges	**0.00**
H.S.T.	0.00
8% Provincial Rebate	**(0.00)**
Total Amount	**$0.00**

Opportunity for savings

Source: https://www.oeb.ca/sites/default/files/twosampleelectricitybills_large_1.png (2018/04/12)

Getting started

Consider during Asset Management planning

- What land and buildings do you have?
- What is the energy performance of those assets?
- What opportunities are there to reduce demand?

Identify and assess generation opportunities

- What is the generation capacity?
- What is your asset renewal program?
- What are future energy needs?
- Right-size the installation and calculate paybacks/annual savings.

Include generation opportunities in 2019 update of the Energy Conservation & Demand Management (CDM) Plans

Where possible, make contributions to capital reserves to minimize debt charges and maximize savings

Funding Opportunities

FCM program: Green Municipal Fund (GMF)

- Brownfields Sector Funding
- Energy efficiency and recovery funding – feasibility analysis, pilots
- New construction – feasibility studies, pilot projects and capital projects

Province / IESO

- Municipal Energy Plan aka community energy planning grant
- Education and Capacity Building Program IESO
- Energy Manager Program varies by LDC

How Renewable Energy Cooperatives can help

Community owned and operated

- Assessment – explore opportunities for generation and energy efficiency (EE)
- Planning and approvals – spearhead and track processes
- Subsidies – find and support grant applications
- Financing – cooperatives front-end investment
- Design, Construction and Operations – hands-free management of renewable energy system.

What are the opportunities in your community?

Thank you

ARNPRIOR

Township of Montague

Country living at its best!

North Grenville

For more information

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