

Advancing Municipal Energy Plans

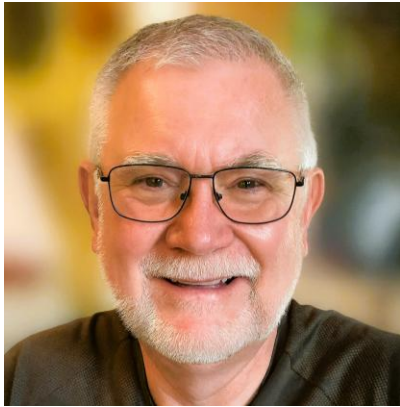
Stephen Dixon
KnowEnergy

Christian Tham
AMO/LAS



August 6th, 2026

Stephen Dixon



Stephen Dixon, Principal at TdS Dixon Inc., has over 45 years of experience delivering energy management services to industrial, commercial, institutional, and utility organizations. Widely recognized as a leader in energy management training, Stephen's mission is simple: empower organizations to use energy more effectively through skill development, best practices, and practical tools. His experience includes 950+ energy assessments, 3,000+ workshops, and inspiring over 45,000 individuals across 2,100 organizations.

Christian Tham



Christian Tham is a municipal sustainability and energy management professional with more than 20 years of experience helping communities reduce costs, energy use, and greenhouse gas emissions. He led the development of [Canada's first Net-Zero Fire Hall](#) and has worked extensively to promote energy efficiency and conservation in the municipal sector. He now serves as a Municipal Program Specialist with AMO/LAS, supporting municipalities across Ontario. Christian has contributed to international climate change discussions through the United Nations and holds graduate degrees in Environment & Sustainability and Environment & Development. Connect with him on LinkedIn.

Mandatory 5-Year Energy Conservation and Demand Management (CDM) Plans

Target: Municipal operations and public-facing facilities (e.g., arenas, admin offices, fire stations).

Voluntary Community Energy Plans (MEP)

Target: Broader community-wide energy usage, economic development, and GHG reduction across municipal boundaries

Mandatory **CDM** Plan Requirements (O. Reg. 25/23)

Energy Consumption: A summary of annual energy use and greenhouse gas (GHG) emissions across designated municipal facilities

Conservation Goals: Established targets and objectives for reducing energy consumption and managing demand.

Proposed Measures: Specific, actionable conservation measures planned

Estimates: Forecasted cost & savings estimates associated with the proposed measures.

Renewable Energy: A description of any renewable energy generation facilities operated by the municipality, including the amount of energy generated annually.

Voluntary Municipal Energy Plan (**MEP**) Funding

While comprehensive **community energy planning** is not mandatory, the Ontario Ministry of Energy provides grants to help municipalities understand local energy needs and develop long-term efficiency strategies:

Stream 1: Provides 50% of eligible costs (up to \$90,000) to create a new, comprehensive community-level MEP.

Stream 2: Provides 50% of eligible costs (up to \$25,000) to update or expand an existing energy plan.

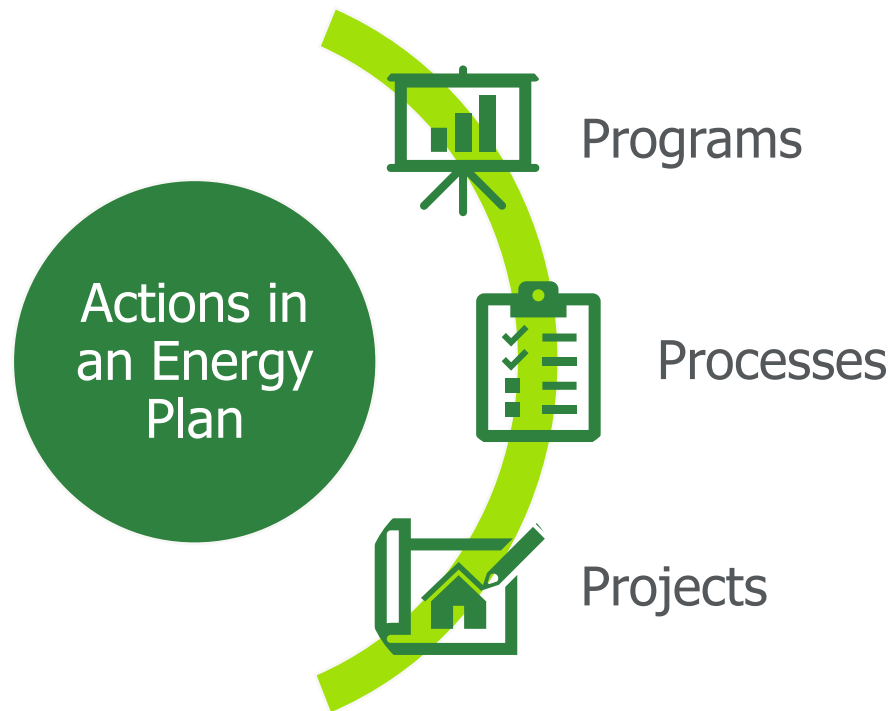
Considering the Role of the Electricity System

Municipal energy plans are most effective when they consider both local objectives and broader electricity system needs.



- Electricity demand in Ontario is growing; municipal decisions today can help manage future energy costs and infrastructure needs.
- Municipal facilities are major electricity users. Energy planning can influence how much electricity is used, when it is used, and how efficiently it is used. Energy efficiency, demand management, commissioning, controls, and equipment upgrades can reduce both operating costs and electricity system impacts.
- Save on Energy programs help municipalities implement projects that deliver:
 - Lower energy costs
 - Improved facility performance and occupant comfort
 - Reduced electricity consumption and peak demand
 - Progress toward energy and climate objectives

A Holistic Approach to Actions in an Energy Plan



Programs, Processes & Projects – Mapping an Action Plan

	Process Improvement	Program Implementation	Projects
Energy Data Management	✓ Establish Key Performance Indicators ✓ Bill optimization & verification ✓ Energy Tracking	✓ Load management	✓ Energy Service Company opportunities
Energy Supply Management	✓ Corporate energy reserve procedures	✓ Solar photovoltaic rooftop leasing ✓ Renewable electricity procurement ✓ Supply management awareness	✓ Solar photovoltaic projects
Energy Use in Facilities	✓ Town building standard ✓ Equipment inventory ✓ Preventative and corrective maintenance procedures ✓ Shutdown procedures	✓ Energy conservation incentive programs ✓ Commissioning & recommissioning procedures ✓ Phantom power program	
Equipment Efficiency	✓ Energy efficiency procurement standards ✓ Incorporate life cycle costing	✓ Interior lighting designs	✓ Recreation facility lighting retrofits ✓ LED/Induction streetlight pilot ✓ Daylight sensor controls ✓ Waste heat recovery project
Organization Integration	✓ Incentive tracking ✓ Energy reporting and feedback	✓ Energy awareness campaign ✓ Building automation system (BAS) training	✓ Energy management training

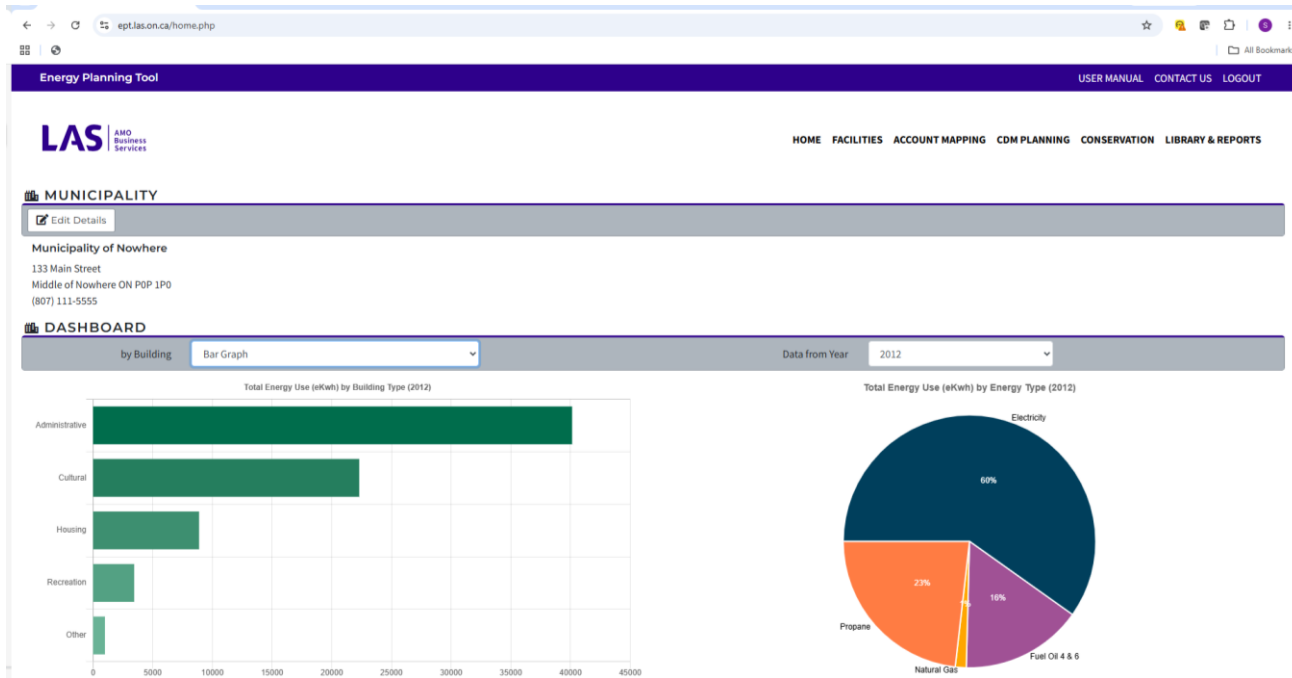
Town of Caledon – Corporate Energy Management Plan

Before Building Your Energy Plan

- ☐ Understand your energy use
- ☐ Establish a baseline for energy, cost, and emissions
- ☐ Engage key stakeholders across departments
- ☐ Align with asset renewal and capital plans
- ☐ Define clear goals and performance targets
- ☐ Identify available incentives, funding, and support programs

Successful energy plans are built on good data, stakeholder buy-in, clear objectives, and a practical path to implementation.

LAS Energy Planning Tool (EPT)



LAS Energy Planning Tool – Descriptive Plan Elements

The screenshot displays the LAS Energy Planning Tool web application. The browser address bar shows ept.las.on.ca/cdm/. The page has a purple header with the text "Energy Planning Tool" on the left and "USER MANUAL CONTACT US LOGOUT" on the right. Below the header, the LAS logo (LAS AMO Business Services) is on the left, and a navigation menu (HOME FACILITIES ACCOUNT MAPPING CDM PLANNING CONSERVATION LIBRARY & REPORTS) is on the right. A progress bar below the navigation menu shows stages: Commitment, Understanding (selected), Planning, Execution, Evaluation, Validation, Complete (C), Pending (P), Mandatory (M), and Optional (O). The main content area is titled "Organizational Understanding" and contains three sections, each with an "EDIT" button:

- Our Municipal Energy Needs**
 - Response**
We need reliable, low-cost, sustainable energy sources delivering energy to the most efficient facilities and energy-consuming technology feasible.
 - Accountability:** Updated 2014-09-25 by
- Stakeholder Needs**
 - Response**
Internal (municipal) stakeholders (Council, CAO, staff) need to be able to clearly communicate the corporate commitment to energy efficiency, and to develop the skills and knowledge required to implement energy management practices and measures. We will make regular reports on energy consumption to council and committees of council. External stakeholders (the Province, community citizens and groups) need the municipality to be accountable for energy performance and to minimize the energy component of the costs of municipal services
 - Updated 2015-05-04 by
- Municipal Energy Situation**
 - Response**
(Strengths, Weaknesses, Opportunities and Threats): Our assessment of organizational capacity for energy management with respect to energy policy; organizational structure; employee awareness, skills and knowledge; energy information management; communications; and investment practices indicates the following high, medium and low priorities for development.
 - Updated 2015-05-04 by

LAS Energy Planning Tool – Action Tracker

LAS
AMO
Business
Services

CONSERVATION MEASURES
+ Add Edit Delete Documents

Type	Description	Facility	Con
Behavioural	Soft drink machines		
Organizational	Lunch and Learn		
Organizational	Data Reporting		
Technical	Boiler Retrofit	Town Hall	
Technical	Streetlight Conversion	Streetlights	
Technical	Rink Lighting Retrofit	Arena	Step

Edit Conservation Measure

Conservation Information

Description

Rink Lighting Retrofit

Measure Type

Technical

Category

Ongoing

Facility

11 1st st [Arena]

Contact

Stephen Dixon, Consultant

Start Date

2012-01-10

End Date

2018-03-26

Details

Status

Completed

Percent Complete

100

Last Updated

2018-03-26

Financial Information

Life (years)

9

Est Cost (\$)

45,000.00

Simple Payback (y)

3.0

Est Saving (\$)

15,000.00

Est Saving (eKwh)

120,000.00

IRR (%)

32.8471

Actual Saving (\$)

0.00

Actual Saving (eKwh)

0.00

NPV (\$)

90,000.00

Inflation (%)

2.00

Discount (%)

2.00

CLOSE

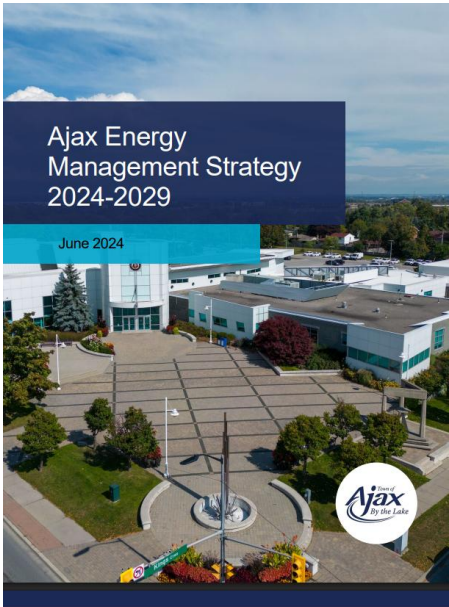
SAVE CHANGES

The Role of Demand-Side Management (DSM) in Municipal Energy Plans

- DSM helps municipalities move from planning to implementation.
- Energy plans identify priorities for reducing energy use, costs, demand, and emissions.
- Save on Energy delivers DSM programs that provide incentives, technical support, training, and energy management resources to help implement those priorities.
- Local Distribution Companies (LDCs) promote programs, engage local customers, and connect municipalities with available support and opportunities.
- DSM can support a range of municipal objectives, including:
 - Energy efficiency and retrofits
 - Asset renewal
 - Operational improvements and commissioning
 - Energy management capacity and staff engagement

Town of Ajax Energy Conservation and Demand Management Plan

Town of Ajax Energy Management Strategy



Ajax Energy Management Strategy 2024-2029

Ajax Energy Management Strategy 2024-2029

Appendix: Long Range Capital Forecast (LRCF) Projects 2019-2023

The following are energy conservation measures which were included in the 2020 Capital Budget and 2021-2024 Long Range Capital Forecast. They are listed based on specific buildings, the year of implementation and associated costs.

Table 2: Energy conservation measures from 2020 Capital Budget and 2021-2024 Long Range Capital Forecast with implementation status.

Facility	Project	Year	Cost	Project Status
Ajax Community Centre	Replacement of 7 Air Handling Units (Phase I)	2020	\$ 500,000	Completed
	Replacement of 7 Boilers	2021	\$ 600,000	Completed
	Facility LED Lighting Retrofit (Phase II)	2022	\$ 240,000	Completed
	Install Demand Control Ventilation	2024	\$ 110,000	In progress
	Replacement of 5 Air Handling Units (Phase II)	2024	\$ 385,000	In progress

Town of Ajax – Recent Projects Incited by Save on Energy

Project Name	Project Cost	SOE Incentive	Energy Savings (kWh)
Ajax Library Lighting Retrofit	\$ 290,000	\$ 9,400	75,479
Ajax Community Centre - Installation of new Variable Frequency Drive (VFD) for the supply & return air fans of the three air handling units.	\$ 26,000	\$ 9,456	70,900
McLean Community Centre - Installation of new Variable Frequency Drive (VFD) for the supply air and return fans.	\$ 9,200	\$ 3,152	23,633

Town of Ajax – Incented Custom Retrofit Projects



VFD units on AHUs at Ajax & McLean Community Centres



Lighting Upgrade at Ajax Library

Project Benefits

- These initiatives delivered a wide range of benefits:
 - Improved lighting quality, leading to better visibility and enhanced occupant safety.
 - Significant energy and cost savings.
 - Enhanced comfort and indoor air quality.

Retrofit Program overview

The Retrofit Program helps Ontario businesses save energy, lower costs, and increase productivity by providing financial incentives for energy-efficient equipment upgrades. Eligible participants include commercial, industrial, institutional, multi-residential, and agricultural businesses.

Key benefits:

- Reduced electricity costs
- Operational and maintenance savings
- Up-to-date, energy-efficient equipment and technology
- Greater employee comfort and productivity



Learn more at: saveonenergy.ca/retrofit

Adders and incentives

- **Regional adders:** Double incentive for non-lighting prescriptive measures in constrained areas (Niagara, Kingston, Pembroke, Kenora, Waubesaushene, Barrie/Muskoka, Elmira, and Peterborough/Belleville)
- **Social housing:** Incentives up to two times the regular prescriptive rates (max 50% of project cost)
- **Advance incentive:** Up to 50% of total estimated prescriptive incentive (plus social housing adder, if any) payable to the Social Housing Provider, upon request

Staff Engagement: Getting Facilities Buy-In

Dollar to \$ense Training Incentive

The Corporate Energy Management Workshop brought together a diverse group of 30 employees from across the Town of Ajax fostering active staff engagement in exploring energy-saving strategies and cultivating a culture of sustainability.

Impact & Outcomes:

- Cross-departmental participation fostered new ideas and shared ownership of energy goals especially due to active involvement of senior decision-makers and operational staff.
- Interactive sessions covered practical approaches to energy efficiency, including behavioral changes and operational improvements.
- Save on Energy incentives helped in offsetting the costs (**up to 75% of the training cost**), sparking interest in future training opportunities.
- Staff feedback was overwhelmingly positive, with many expressing enthusiasm for continued involvement in sustainability efforts.

Town of Caledon Corporate Energy Management Plan

Town of Caledon Energy Management Strategy

Energy Achievements 2014 – 2018



140
energy
conservation
measures
complete



\$248,039
of utility incentives
have been received
from saveONenergy and
Enbridge Gas



12.6%
reduction
of facility energy
consumption in
2018 compared
to 2012 levels



11
energy audits
completed between
2016-2017



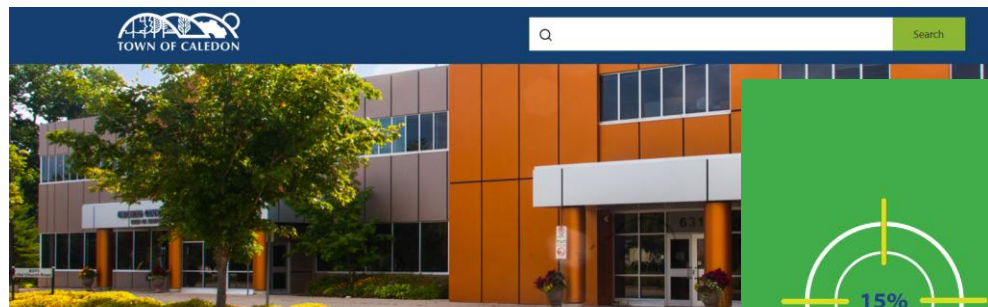
Established a Corporate
Energy Revolving
Fund and spent
\$171,567
on energy retrofits



Established a
Corporate Energy
Team and held
15 meetings

https://www.caledon.ca/en/resources/images/Environment/Corporate-GHG-Reduction-Framework_WEB.pdf

Targets are Important



Energy

Energy consumed in Town facilities represent the largest source of the Corporation's greenhouse gas (GHG) emissions. Learn what the Town is doing to reduce its energy consumption below:



The Town is adopting a target to conserve 15% or 2,306,555 ekWh of facility energy use by 2024 below 2017 levels.



Summary of Caledon Strategy

- Energy Management & Performance Tracking
- Retrofit, Renewal & GHG Reduction
- Facility Operations and Maintenance
- Purchasing, Procurement & Standards
- Education & Engagement

Strategy	Tasks	Responsibility
Equipment Asset Management	▪ Maintain and update inventory of building systems and facility equipment ▪ Explore potential to consider lifecycle costing in asset management program	▪ Asset Management ▪ Energy & Environment ▪ Facility staff
Whole systems approach to scoping projects	▪ Consider building envelope, building automation and lighting upgrades as part of mechanical and other major system renewal projects	▪ Energy & Environment ▪ Facility staff
Commissioning and performance verification	▪ Implement commissioning process to verify design standards of new facilities and major renovations ▪ Undertake remedial action where necessary	▪ Energy & Environment ▪ Facility staff ▪ Purchasing & Risk Management

Excerpt from Caledon Strategy

Strategy	Tasks	Responsibility	Timeline	Tools	Key Performance Indicators	Co-Benefits
Equipment Asset Management	- Maintain and update inventory of building systems and facility equipment - Explore potential to consider lifecycle costing in asset management program	- Asset Management - Energy & Environment - Facility staff	Medium - Long-term	- Asset Management Program (2019) - Building Condition Assessments - Energy Audits	Percent of facility equipment kept up to date	- Better planning of equipment replacement and alternative low-carbon technologies - Support for building the business case for energy retrofit projects - Improved understanding of the lifecycle cost of
Corporate Energy Revolving Fund	- Continue to manage the Energy Revolving Fund and recommend projects to Council - Explore opportunities to expand the parameters of the Energy Revolving Fund business case to better support GHG reduction projects	- Energy & Environment - Facility staff - Purchasing & Risk Management - Finance - Senior Management - Council	Immediate	- Corporate Energy Team - Energy incentive - Solar microFIT sites	- Number of natural gas projects funded through the Energy Revolving Fund - Total amount of Energy Revolving Funds dispersed and associated energy savings	- Energy projects funded independent of the tax-base - Demonstrated value of renewable energy projects and Corporate Energy Team - Energy and GHG savings associated with projects - Enhanced staff skill-set to prepare business cases for potential projects

Alignment with Asset Renewal

Recommendation: Add energy impact as a prioritization criterion in municipal energy plans.

For example, high ranking criteria could be:

- Energy performance is $> 20\%$ original manufacturer design
- Assets responsible for $> 10\%$ of total facility energy consumption



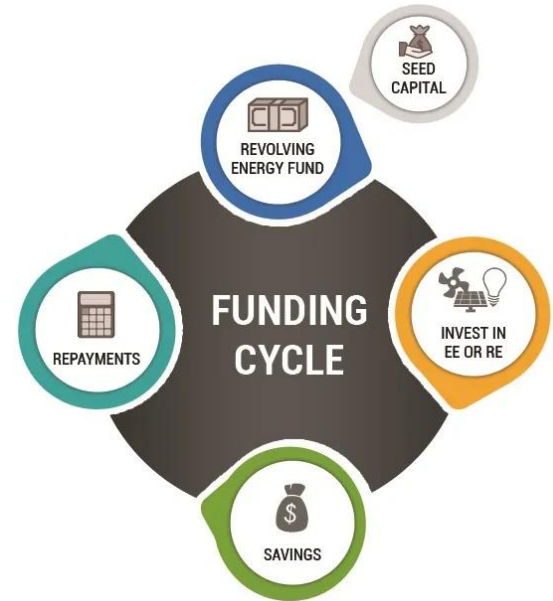
Caledon Energy Revolving Fund

- Managed by the Corporate Energy Team
- Revenue into the to fund includes:
 - three Town-owned solar sites,
 - energy savings from projects implemented
 - energy incentives received grow the fund and are the largest revenue
- The fund is used to pay for energy retrofit projects with a payback period of 10 years or less.
 - Cost savings from the projects are diverted back into the fund until the project is paid back in full
 - 25% of the savings being diverted to help grow and sustain the fund.
- The Caledon Energy Revolving Fund is one tool that the team in Caledon use to get buy in from town council.

<https://www.caledon.ca/en/town-services/energy.aspx#Energy-revolving-fund>

What is a (Green) Revolving Fund (GRF)?

- A GRF is an internal fund that provides financing to parties within an organization to implement energy efficiency, renewable energy, and other sustainability projects that generate cost savings.
- Savings are tracked and used to replenish the fund for the next round of green investments.
 - Establishing a sustainable funding cycle while cutting operating costs and reducing environmental impact.
- Green revolving funds provide benefits beyond one-time investments, including promoting hands-on learning, enhancing reputation and building the business case for sustainability.

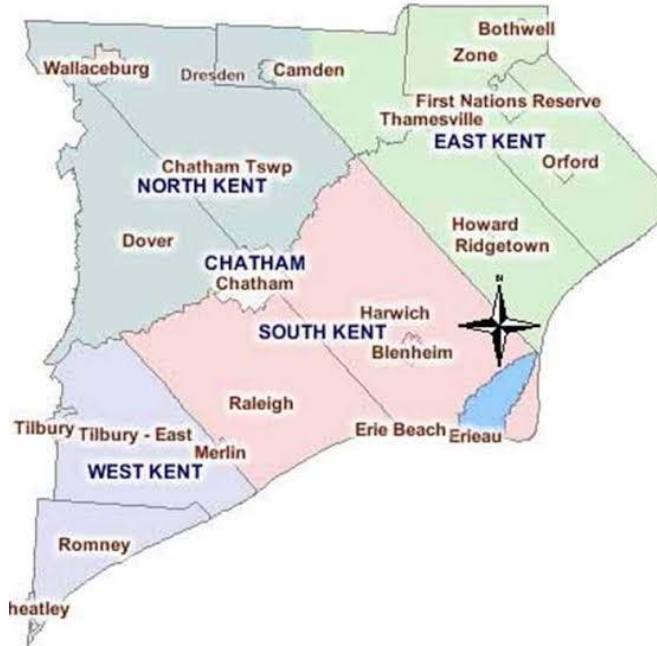


Graphic: <https://www.pdx.edu/sustainability/green-revolving-fund>

https://greenbillion.org/wp-content/uploads/2015/07/GRF_Full_Implementation_Guide.pdf

Chatham-Kent Community Energy Plan

Chatham-Kent CDM Plan



Map of Municipality

Focus of CDM in two-fold:

- CDM & community energy plans (CEP)
- Focus of CDM plan on energy reduction in municipal facilities
- Replacement of incandescent lamps, CFL & linear fluorescent since 2011
- Recent LED upgrades & incentives received

Lighting Retrofits

Riverview Gardens (RVG)



- Retrofit Measure
- 320 –bed Long term care facility
- 3300 existing fixtures/lamps
- CFL/T8/T12/
- Project cost - \$457,100
- Total Incentives - \$49,000
- Projected energy savings - \$115,000

Lighting incentives now provided through
Instant Discounts program

Chatham Court House

425 Grand Ave. W. Chatham, ON.



- Retrofit measure
- 2241 fixtures identified
- T8 & CFL's
- Replaced with 1'x2'/2'x4'/2'x2' LED troffer fixtures
- Project cost - \$271,000
- Total incentives \$21,000
- Project savings - \$28,500

Police Headquarters

24 3rd Street, Chatham, ON



- Retrofit Measure
- Total of 558 fixtures in facility
- 132 already upgraded to LED
- 426 total fixtures to be replaced (CFL/T8/T12's)
- Project cost - \$83,500
- Total incentives - \$10,000
- Projected Savings - \$23,150

Total 2019 Energy Consumption & Expenditure**

Inventory Element

Corporate CK Value

Corporate Energy Consumption (GJ)	456,829
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Energy Cost	\$12,831,332
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Instant Discounts overview

Upfront, point-of-sale discounts for energy-efficient lighting products to help businesses lower energy costs and improve their space. No paperwork required.

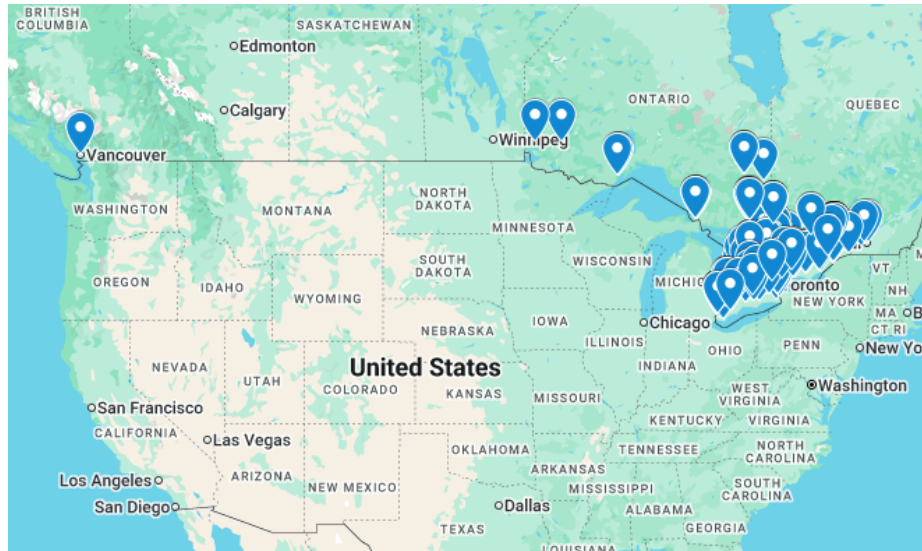
Who's eligible?

- Existing commercial, agricultural, industrial, institutional, and multi-unit residential buildings in Ontario
- Only for retrofit projects; not eligible for new construction

Instant Discounts overview

How does it work?

- Visit a participating distributor or dealer (discounts available at 133 main distributors and 450+ branches across 52 Ontario cities; see map at saveonenergy.ca/instantdiscounts)
- Purchase eligible lighting and provide business details at checkout
- Receive your discount instantly

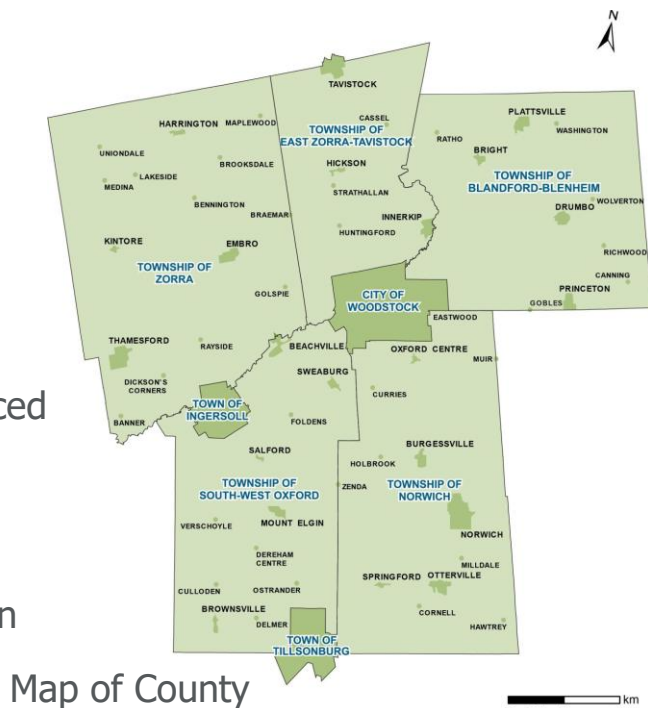


Oxford County Energy Management Plan

Oxford County CDM Plan & Incentives

Energy consumption in 2025

- County facilities: 50.9 ekWh
- Total energy cost: \$5.4 million
- Energy cost increased 9.8% since 2015
- Energy Management Plan projects significantly reduced energy use intensity:
 - Buildings and minor assets: 16.8% reduction
 - Water-wastewater treatment plant: 2.7% reduction



Map of County

Demand Ventilation Control at Woodingford Lodge

Woodingford Lodge LTC



- Retrofit measure: Sensors and controls on 8,500 CFM kitchen exhaust hood
- Variable speed drives on air handling unit supply and exhaust
- Project cost: \$35,000
- Save on Energy incentives: \$12,200
- Cost savings: \$13,600 per year

Existing Building Commissioning at Woodingford Lodge

160-bed Long Term Care Home



- Existing building commissioning of a 121,000 ft² residential facility
- 40+ year old building with building automation system - indicators that EBCx may achieve significant performance improvements
- Review facility requirements with actual controls & operations
- Project cost: \$126,000
- Incentives: \$12,600
- Cost savings: \$13,900/year

Existing Building Commissioning (EBCx) Program overview

EBCx helps commercial and institutional building owners, operators and managers improve energy management through better operations and maintenance practices.

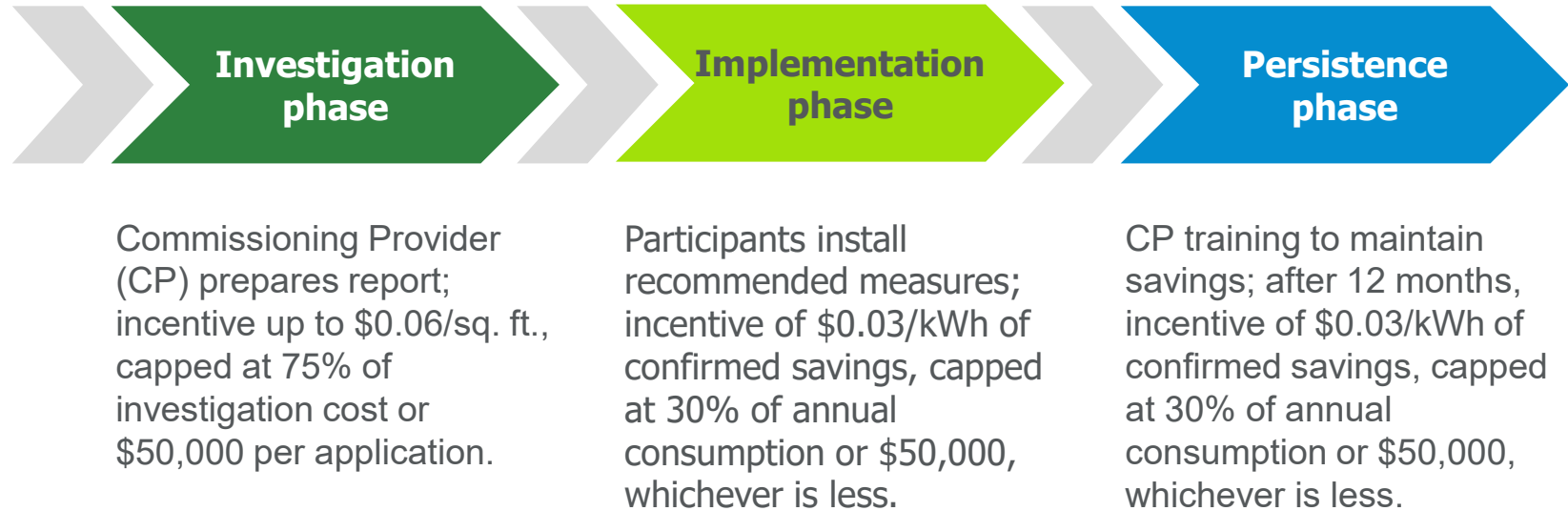
Benefits

- Lower energy waste and costs
- Enhanced occupant comfort
- Improved operational efficiency
- Increased profitability



Learn more at saveonenergy.ca/ebcx

How it works



Eligibility

Participants must:

- Have at least 12 months of consecutive electricity consumption data
- Consume a minimum of 750,000 kWh per year (excluding industrial or manufacturing process energy)
- Maintain baseline models that meet program standards
- Not have completed a commissioning exercise in the past two years
- Not be enrolled in a building accreditation system that requires EBCx as a pre-requisite
- Be connected to, or behind the meter of, an electricity customer on the IESO-controlled grid or a local distribution system

Woodstock Wastewater Treatment Plant

Project details

- Industrial facility (WWTP Biogas project)
- Minimum electrical savings required.
- Project cost: \$4.2 million
- Industrial program incentive: \$400,000
- Cost savings: \$289,000/year
- Today this would be candidate for the XLerate program

Woodstock WWTP Biogas Utilization



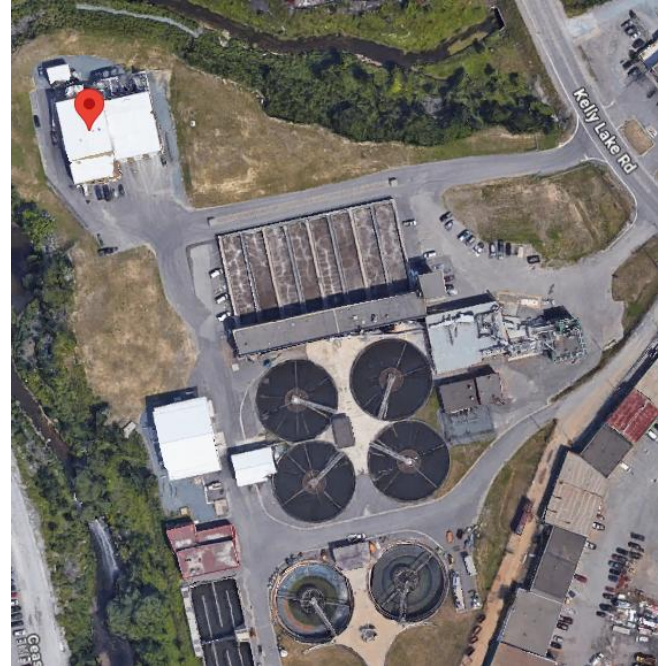
City of Sudbury Project Spotlight

City of Sudbury Wastewater Treatment Plant

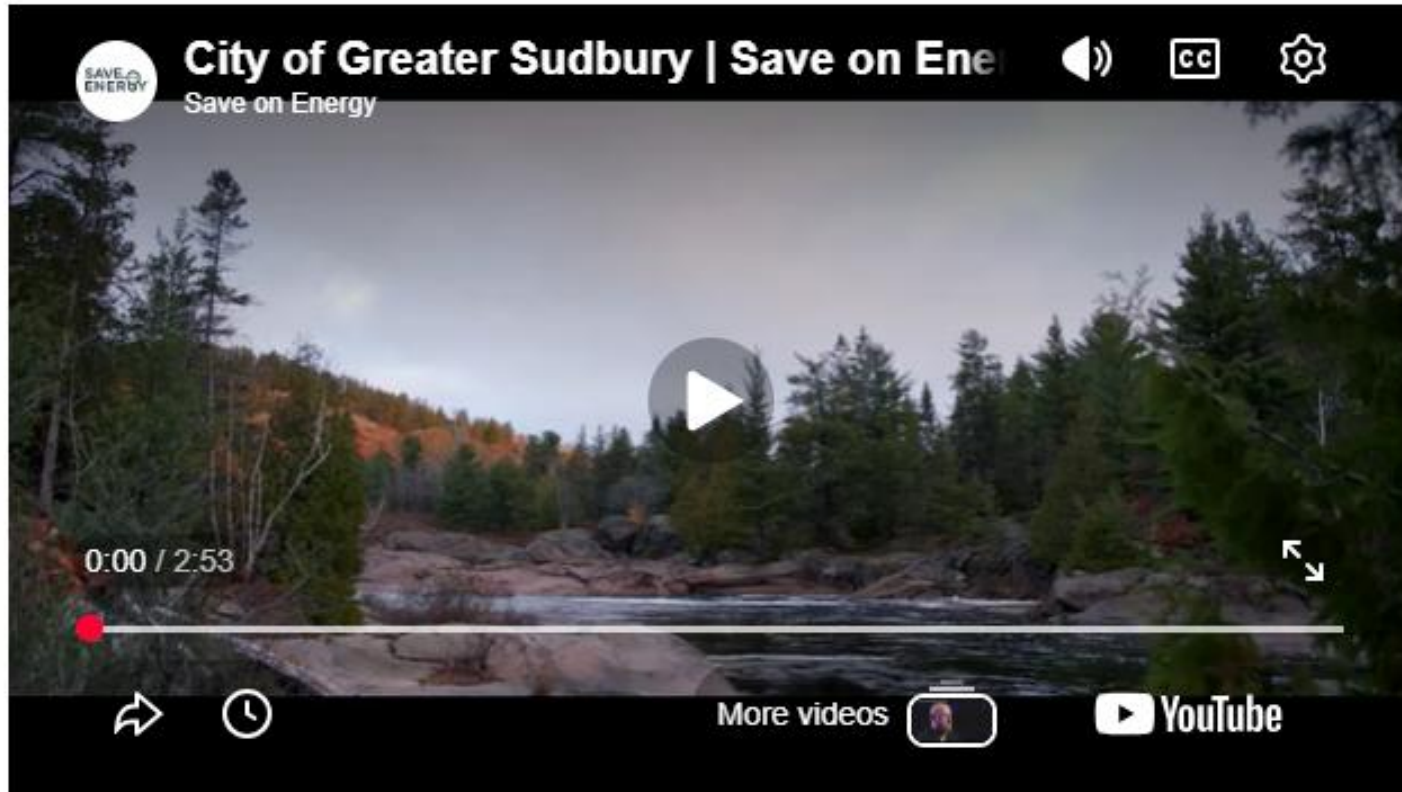
Aeration blower upgrade saving
\$54,000/year – payback under 10 years

Clarifying process updates saving
\$72,000/year – payback under 3 years

Pump and piping upgrades saving
\$200,000/year.



City of Sudbury



XLerate Program highlights

Incentives for large-scale energy-efficiency projects in support of an **industrial process**



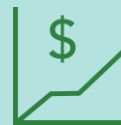
Project feasibility study

funding, 50% cost shared up to \$100,000



Comprehensive support services

from initial scoping to measurement and verification



Project incentives of **\$300/MWh** (or \$450/MWh in constrained regions), **up to 75% of eligible costs, up to \$15 million**

Key benefits of XLerate

- Manage rising energy costs
- Boost productivity and reliability
- Support facility growth
- Modernize operations
- Achieve performance goals



Turning municipal energy plans into action through EEM

Caledon, Oxford and Ajax have each set out CDM and community energy plans — the Expanded Energy Management (EEM) program helps municipalities achieve plan objectives and milestones with incentives and capacity building support.

- Municipal energy managers can participate in EEM to build the in-house capacity that leads energy reductions
- That support helps municipalities prioritize and move the action items already identified in their energy plans — from concept to completed retrofit.
- The slides that follow show how EEM works — energy manager support, benefits, and Strategic Energy Management.

Expanded Energy Management (EEM) program overview

The Expanded Energy Management Program (EEM) is offered by Save on Energy with financial support for industrial facilities from Natural Resources Canada (NRCan) as part of its Green Industrial Facilities and Manufacturing Program. It provides support for industrial, commercial and institutional facilities in Ontario to improve their energy performance with energy savings opportunities in four areas:

- Energy manager support
- Expanded Strategic Energy Management cohorts & curriculum
- Energy management systems (Industrial only)
- Energy practitioners training (Industrial only)



Learn more at saveonenergy.ca/eem

Thank you

[SaveOnEnergy.ca](https://www.saveonenergy.ca)

saveonenergy@ieso.ca



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