



Retrofitting Buildings for GHG Reduction & Deeper Energy Savings

Climate Change Series Discussion Paper

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Introduction
How Buildings Fit into GHG Reductions
The Municipal Role in Building Retrofits & Energy Savings4
Improving Energy Usage in Community Housing Stock
Addressing Local Energy Poverty
Improving Other Municipal Buildings7
Deep Energy Retrofits for Buildings7
What Has Been Done So Far
Current Situation
Background: Property Assessed Clean Energy (PACE)9
Access to Funding
Residential PACE and Commercial PACE11
AMO/LAS Interest and Program Development11
Ontario's PACE Experience
Potential Risks and Barriers to an Ontario PACE Program12
Next Steps: Council Considerations and Recommendations12
Appendix: PACE Programs in Canada14
Endnotes



As the Association of Municipalities of Ontario (AMO) and Local Authority Services (LAS) we work to achieve shared goals and meet common challenges. One of these challenges is how to better integrate infrastructure investment, climate change and social policy into a municipal Council's decision-making process.

The shift toward thinking of infrastructure, the environment, and social policy as complementary, rather than competing interests has created a more holistic approach to policy and decision making. Ontario municipal governments support this shift and have requested that AMO provide a series of Climate Change discussion papers to help municipal Councils manage the outcomes of climate change and reduce greenhouse gases (GHGs).

As part of the AMO series on municipal responses to Climate Change, this paper will consider the role municipal governments can reduce GHG emissions due to the heating and cooling of buildings and offer other actions that can result in long term cost savings.

How Buildings Fit into GHG Reductions

Buildings are estimated to be responsible for about 40% of GHGs in the Ontario context. Below is a figure from the Environmental Commissioner of Ontario 2014 report¹ which shows a detailed breakdown of GHG emissions in Ontario. The purple wedge represents GHGs from buildings.



Figure 2: Ontario's 2014 Greenhouse Gas Emissions by Sector

Source: Environment and Climate Change Canada, National Inventory Report 1990-2014: Greenhouse Gas Sources and Sinks in Canada, Part 3, Table A11-12, (2016), p.55.



The bar graph below shows a snapshot of Ontario GHG emissions by sector in five- year increments. From 1990 to 2017 in mega tonnes (MT) of Carbon Dioxide (CO₂e). This report is focused on the green part of the column, approximately 35 MT of CO₂e. Note that while total GHG emissions have decreased in Ontario from 180.0 MT of CO₂e in 1990 to 158.7 MT of CO₂e in 2017, the contribution from buildings has not.

The intensity of the emissions has sharply decreased due to higher building standards; however the number of dwellings has increased offsetting any improvements. Current building standards, including the push for net zero buildings has reduced GHG emissions from new housing stock. This still leaves older dwellings as a source of GHGsⁱⁱ.



The Municipal Role in Building Retrofits & Energy Savings

Municipal governments both own buildings and influence the community. They are uniquely positioned to lead and lead by example. For some municipal governments this has meant the development of GHG policies, <u>energy plans</u>, and declaring a climate emergency. The challenge has been how to turn these intentions into actions.

As municipal governments have little influence over commercial, institutional, or industrial buildings, this paper is about municipally-owned and operated buildings and private residential buildings. The majority of GHGs from these buildings are related to the use of natural gas for heating/cooling, however, this paper will also include consideration of other energy uses like lighting or equipment that can be retrofitted to create savings.

It is important that the policy positions of a local government can be implemented in a meaningful way. Advice from those who are working on reducing GHG's from buildings suggest:

- Measure GHG and energy
- Benchmark progress and identify gaps
- Develop a local energy plan/roadmap to transition, priority buildings and programs.
- Think in terms of scale... bulk purchase, campus size renovations (economy of scale)
- Integrate other goals like boosting the local economy, social goals etc.

Improving Energy Usage in Community Housing Stock

In 2018, the IESO released a paperⁱⁱⁱ regarding energy use by municipal governments. At that time about 60% of municipal governments had implemented some best practices for energy management and over 75% had undertaken energy saving projects. The relative breakdown of where or what types of municipal assets have the greatest share of energy costs can identify where the next priority for retrofits should be. The breakdown below shows that retrofits of the community¹ housing stock could have a significant impact.



IESO, Ontario Municipal Energy Profile, 2018

In Ontario, municipal governments, along with non-profit agencies, are responsible for community housing. All together there are over 265,000 household units across more than 1,400 community housing providers. According to the Housing Services Corporation, the majority of community housing buildings across the province are over fifty years old, with newer stock typically over twenty years old. These housing units, due to their age and the advances in energy efficiency standards are a significant opportunity for improvements.

For example, it is estimated about half of community housing is electrically heated, often with inefficient baseboard technology, resulting in high utility bills, the bulk of which are paid directly by the housing providers in larger buildings, and by tenants in single family buildings. High utility costs negatively impact sector operating budgets and reduce housing providers' capacity to complete capital repairs and energy upgrades and provide healthy homes to those in need.

There has been a significant gap in community housing energy use data. However, a recently released report, *Trends in Energy Consumption & Building Stock in Ontario Social Housing Multi-unit Buildings: 2016-2018*, by Housing Services Corporation, confirms the need and opportunity for energy retrofits in community (social) housing.

Any improvements to community housing, not only better protects the municipal asset, but it benefits the people living in these units. Several recent projects by municipal providers such as Ottawa Community Housing, Windsor Essex Community Housing, CityHousing Hamilton, Toronto Community Housing, as well as smaller organizations such as Kenora District Social Services Board, have focused

¹ Community housing refers to both social and affordable housing.



on optimizing whole building energy savings through deep energy retrofits and new construction projects that combine electricity, natural gas, and water savings. At present there is a funding program from the federal government but administered through the <u>Federation of Canadian Municipalities</u>. <u>The Sustainable Affordable Housing initiative is delivered through FCM's Green Municipal Fund</u>.

Addressing Local Energy Poverty

Local policy can address 'energy poverty', where paying energy bills uses too much of a monthly income. It can look to using retrofit materials that emit fewer GHGs as they are manufactured. These policies can set the tone, not only for municipally-owned buildings but for the private sector as well. Furthermore, there is an opportunity for partnerships as private and public interest align on this topic. Engaging homeowners has proven to be the most difficult because:

- 1. "They don't know how much of their energy consumption that they can cost-effectively reduce.
- 2. They don't know how to design, procure or install cost-effective energy-efficiency measures.
- 3. They perceive energy efficiency as a negative act of restriction meant to limit their capacity to act or lower their level of comfort.
- 4. They don't know who to trust and who to ask for support.
- 5. They are unwilling to use their borrowing capacity for long-term future gains in a short-term competitive business environment.
- 6. They are too busy.

To join the energy transition effort, municipalities can leverage their reputation, access to capital, and policies and institutional structure to facilitate the implementation of energy-efficiency and renewable-energy projects." Quest, 2019 (<u>https://questcanada.org/project/how-can-municipalities-become-energy-transition-leaders/</u> February 25, 2021). For municipalities to influence private homeowners to take up programming, addressing these barriers needs to be part of the program.



For Arenas:

Use high efficiency condensing ice resurfacing hot water heaters.

Use outdoor air temperature sensors on condensing units (part of the ice making system) to control operation.

Maintain ice thickness around 1". Thicker ice takes more energy to keep frozen, and thin ice is harder to maintain.

Installing sensors for ice temperature, timers on equipment, thermostats on spectator seating (or better yet, no heat for spectators), insulate water and brine piping.

Even something as simple as the reflectance of the paint used on walls and ceilings in the arena will impact energy.

Improving Other Municipal Buildings

For other municipal buildings there are a number of areas that could be considered to reduce energy costs and GHGs. Heat recovery can be effective but it does not work for all buildings. When considering a recreation centre, if there is a pool and ice rink, there is an opportunity to use the heat removed from the ice rink area to keep the pool area/water warm. Also, there is potential for exhaust fan heat recovery ventilators (HRV) or energy recovery ventilator (ERV) combined with timers or programmable thermostats for areas of the building that are only used periodically. Other retrofits include replacing aging motors on compressors and circulation pumps with premium efficiency models. Install a wastewater heat-recovery system to pre-heat incoming makeup water for pools or HWH systems (ice rink flood water, showers, etc.).

LAS

Deep Energy Retrofits for Buildings

What do the needed types of retrofits look like and where are they most needed? Buildings in Ontario represent about 27% of building emissions for the entire country. Research undertaken by the Canada Green Building Council ^{iv} recommends recommissioning of large buildings (between

25,000 and 200,000 sq.ft.) and deep retrofits for older buildings (over 35 years old) as key targets to achieve GHG reductions. Buildings built before 2000 are responsible for 85% of building emissions.

Improving energy performance is perhaps the first and easiest step. Energy is often used as a proxy for carbon as a performance metric because it is more readily available and relates directly to costs. However, evaluating a building's energy performance alone fails to consider the amount of carbon emissions. That said, carbon output will differ throughout the province depending on energy sources. As energy audits for municipal buildings are already in place, using these as a first step to consider both GHG reduction and overall energy savings should be a first step.

Recommissioning generally involves improved control and operation of existing assets – making the best of systems already installed. The re-commissioning process begins with an in-depth investigation of existing system design, controls, and operational performance. The resulting optimization recommendations (typically related to control adjustments, maintenance) and is a matter of continual improvement.



Retrofits need to ensure that key building systems such as lighting, HVAC, water usage (especially hot water) and envelopes are upgraded for energy savings and reduction in GHG emissions. They are typically best pursued during building renewal events such as envelope and major equipment replacement, new ownership or occupancy, and green building certification. For new buildings it could mean attaining high performance standards such as LEED to achieve GHG reductions.

As stated, reduction in energy use does not always equate reduction in GHG emissions. Other retrofits needed to lower GHGs are fuel switching to greener sources where possible. This may include a switch from natural gas to electricity which is largely green in Ontario (4% of electricity is generated from natural gas or biomass sources). Or it could mean developing a combined heat and power plant for a building or campus of buildings, solar or wind energy (perhaps with battery storage

LEED®, or Leadership in Energy and Environmental Design, is the most widely used green building rating system in the world, available for virtually all building, community, and homeproject types. LEED provides a framework for healthy, highly efficient, and costsaving green buildings.

to make it more efficient), or other local generation projects. Where electricity is based on 100% hydro or other green generators, it can emit 36% less GHG than that same building relying on natural gas.^v There are some barriers to fuel switching from gas to electric. The price of natural gas is more favourable than electricity currently in the Ontario. In some instances, fuel options are limited and propane, battery or other storage are options. Also, there are some instances where gas is a more reliable option than electricity. Municipal governments could undertake return on investment studies to determine how to transition to lower carbon options.

What Has Been Done So Far

AMO has been very active in asking both provincial and federal governments for energy retrofit programs. These programs not only save money but as they use less energy, they in turn reduce GHG emissions.

For many years municipalities and Local Distribution companies have been making a difference. Changing from incandescent/sodium fixtures to LED lighting, whether in a building or outside, is an energy saving action municipalities have undertaken. Over the past eight years, the LAS Streetlight program has achieved the following:

- 189 municipalities participated in this program alone. It is estimated that 95% of those municipalities that have streetlights, have upgraded them to LED through LAS or on their own.
- Average energy savings ranged from 50% to 75%. Total over 107M kWh saved (enough to power almost 12,000 homes). This translates to about 3,160 MT GHG using the 2018 Ministry of Energy coefficients.
- Savings on maintenance costs of 80%+
- \$17 million in incentives used (now no longer offered as LED streetlights have become the standard). It is expected that other incentives for LED streetlighting will be terminated as the technologies become mainstream.

Many municipalities have started looking at building lighting, but there is still long way to go. These retrofits are not complicated, but they are not yet commonplace. Currently available incentives cover approximately 5% to 10% of the upgrade cost. LED lighting will cut lighting consumption by approximately 55% ^{vi}.



Furthermore, recently municipalities have created deep energy retrofit programs (click on links):

- City of <u>Burlington</u>
- City of <u>Kingston</u>
- City of <u>Windsor</u>
- City of Toronto, (Tower Renewal)

Space heating and heating hot water are the two greatest energy users in residential units, accounting for about 60% of the GHGs dwellings emit^{vii}. There is financial help from <u>the Canada Infrastructure</u> <u>Bank</u> for all municipalities in Ontario and <u>The Atmospheric Fund</u> if located in the GTHA. As well Enbridge offers <u>retrofit program</u>s, including one for <u>affordable housing</u>.

Current Situation

While great strides have been made to lower GHG and generate savings for municipal budgets in some parts of the asset portfolio, municipalities need to keep working on this. There is still 'low hanging fruit' in terms of employee behaviours. As well there is an opportunity to dig deeper and undertake more profound retrofits to municipal building assets.

The COVID-19 pandemic has altered energy use in municipal buildings. Many workers have worked from home for over 12 months, reducing heating and lighting in many municipal buildings. On the other hand, residential energy use has increased. No study has yet been completed to ascertain if the energy savings at government buildings have been offset by additional energy use in home offices. However, there is an opportunity to consider making working from home a permanent arrangement for a number of reasons. Some of these are explored more deeply in the AMO Broadband paper, <u>The Transformation of the Municipal Workplace</u> through Broadband Connectivity.

Equally, there is a need to help homeowners and businesses do their part. Some businesses may wish to be a partner to the extent they help others along. Some may need some stimulus to get started. Homeowners may need even more assistance to understand their energy consumption, factors which can reduce that consumption and ways to pay for the upgrades. Some homeowners need this help to lift them out of energy poverty. The next section will discuss how this help can be delivered. 'Low hanging fruit' includes low/no cost and short payback measures such as eliminating waste and phantom loads (turning off things when not in use), using power bars, simple thermostat controls, lighting upgrades/controls/ sensors. Also includes different processes such as closing blinds on hot days. These are generally easy to implement and nonintrusive, requiring little capital and resulting in fast paybacks/ROIs.

Background: Property Assessed Clean Energy (PACE)

Property Assessed Clean Energy (PACE) financing enables property owners to make their homes and businesses more energy efficient and resilient. Access to public and private financing for building retrofits will be critical as municipal, provincial, and federal governments work to address climate targets and local climate emergency declarations. PACE financing has the potential to unlock private capital for building retrofits, resulting in energy and emissions reductions, more resilient buildings, economic development, and job creation.

How can a PACE program in Ontario work? Provincial enabling legislation through amendments made to the local improvement charge (LIC)^{viii} regulation was the first step in supporting the development



of PACE financing programs in Ontario. In 2012, Ontario Regulation 322/12 amended the LIC regulation under the *Municipal Act, 2001* to permit energy efficiency, and renewable energy projects as eligible projects under the definition of LIC work. AMO and LAS both supported broadening the use of Ontario Regulation 596/06 – Local Improvement Charges to allow for PACE programming opportunities that would increase uptake of deep energy retrofits as part of reducing the overall energy footprint in Ontario.

A PACE approach to building retrofits is innovative as the loan is connected to the property, not the individual. For example, when a home is sold that still has outstanding loan payments remaining, the new homeowner assumes the responsibility of repaying the loan (unless the LIC is paid out as a condition of sale) and receives the benefits of the energy improvements.

Access to Funding

Limited uptake in offering PACE programs for home energy improvements is primarily due to a lack of dedicated funding and resources for municipalities to initiate these programs. Although the LIC regulation change in 2012 enabled the development of PACE programs in Ontario, these are only now beginning to emerge as a result of recent federal funding commitments.

To date, the option to offer homeowners home energy improvement loans through a PACE program has been used by one municipality, the City of Toronto. Though there are incentives and rebates available to homeowners to install retrofits through Enbridge and the IESO, as well as other financing options such as loans or a line of credit, public uptake to improve homes with energy upgrades has not been significant.

In 2020, the Federation of Canadian Municipalities' (FCM) launched the \$300 million <u>Community</u> <u>Efficiency Financing (CEF)</u> initiative delivered through its Green Municipal Fund and funded by the Government of Canada. The initiative provides municipalities across Canada with the opportunity to deliver energy efficient financing programs for lowrise residential properties. PACE, LIC financing, and utility on-bill financing are examples of financing models that could be used by municipalities delivering residential energy programming through CEF.

The 2021 Federal Budget is providing \$4.4 billion for CMHC zero interest loans to homeowners and up to \$40,000, for deep energy retrofits on existing housing stock to reduce energy consumption and GHG emissions. AMO is interested in further details on this program and how the Federal Government intends to address matters such as equity and prioritizing low income citizens that may have challenges accessing financing for home retrofits. The CEF provides funding and learning resources to help municipalities achieve the following:

- Create, launch and expand homeenergy upgrade financing programs for low-rise residential energy projects.
- Generate triple-bottom-line benefits.
- Reduce GHG emissions, create energy savings and contribute to climate adaptation, water conservation and health and safety outcomes.
- Accelerate energy cost savings, improve housing affordability and keep the local economy moving.
- Increase home comfort, health and quality of life for residents.



Residential PACE and Commercial PACE

In North America, PACE programs are offered to residential, commercial, and industrial property types (or any property that pays property taxes). Residential (R-PACE) and Commercial (C-PACE) programs share a common program administration foundation that enables a property owner to finance the up-front cost of eligible improvements and apply that loan to the property and then pay the loan back over time through energy savings via a surcharge on their property tax bill.

However, R-PACE and C-PACE are different in the business planning and capacity to manage their retrofits. As such, R-PACE and C-PACE require distinct and separate approaches to meet the different needs of each sector. For the time being, focus has been placed on developing R-PACE programs for single, residential dwellings as financing through FCM's CEF initiative targets those homes specifically. Commercial and industrial properties have historically been served from the IESO and utility efficiency programs but as those funding sources dwindle, developing C-PACE programs that focus on commercial, industrial, and multi-use buildings will be needed.

AMO/LAS Interest and Program Development

As mentioned, the AMO Board of Directors has prioritized municipal Climate Change and GHG reduction efforts. Integrating infrastructure investments, addressing Climate Change, and advancing social policy are key AMO strategic objectives that align with the benefits of PACE programming. The facilitation of PACE programs in the province improves the energy efficiency of homes with ancillary benefits of local job creation particularly as the economy emerges into recovery from the COVID-19 pandemic. To be successful, PACE programs must be equitable and accessible to all Ontario residents, flexible in program design and delivery, and serve the goal of increasing public awareness and uptake of home energy upgrades.

AMO and LAS have developed a PACE program proposal for a Home Energy Improvement Program that would enable municipalities to provide participating homeowners with loans through municipal LIC authority. This program specifically targets small, rural, northern, and remote municipalities that are interested in the PACE concept but do not have the capacity to deliver a program. Program administration would be facilitated by either AMO/LAS or a third party with the municipality managing the upkeep of the property tax rolls to reflect homeowners that participate in the program. Financing provided to homeowners would be used to install energy improvements/retrofits on properties. AMO and LAS have faced similar barriers as municipalities in terms of accessing financing to deliver the program concept. While there is general interest in the program by AMO members and other parties, accessing funding for the program remains a challenge. AMO/LAS continue to work with interested partners to identify funding opportunities to deliver a PACE program for members.

Ontario's PACE Experience

In 2012, the Province of Ontario passed amendments to the LIC regulation to enable municipalities to establish PACE programs. Despite the enabling legislation, Ontario has only two PACE programs, both in the City of Toronto: the <u>Home Energy Loan Program (HELP)</u> and the <u>High-Rise Retrofit Improvement Support Program (Hi-RIS)</u>. The HELP program is limited to single-family homes and has a \$75,000 cap. The value of the loan cannot exceed 10% of the current value assessment of a property or \$75,000, whichever is less. The Hi-RIS program is limited to apartment building for measures that reduce energy and water consumption, and renewable energy projects. Hi-RIS provides up to 10% of a building's assessed value (up to a maximum of \$2 million per building). Both HELP and Hi-RIS offer fixed interest rates between 2.05% to5.26% with repayment terms between 5 to 20 years.^{ix}





Municipalities are still seeking clarification from the provincial government about the impact of PACE on municipal debt ceilings, whether PACE qualifies as bonusing for commercial buildings, and the authority of cities to use a third-party administrator of which AMO/LAS are currently exploring with partners.[×] With the launching of FCM's CEF initiative, more municipalities in Ontario are beginning to explore PACE financing for capital projects to deliver home energy retrofits including the Town of Halton Hills, the City of Vaughan, the City of Ottawa, and others.^{×i}

Potential Risks and Barriers to an Ontario PACE Program

The following risks have been identified in the research to a potential PACE program:

Mortgage Lender Issues

Mortgage lenders have raised concerns about the LIC priority lien and borrowers' ability to pay back loans. Various laws and policy also appear to impede the willingness of the Canadian Mortgage and Housing Corporation (CMHC) to extend mortgage insurance to cover LICs. These barriers may prevent property owners with default insured mortgages from participating in the program. To offset these concerns, an adequate provincial loan/loss reserve should be established if homeowners participating in a PACE program default. Based on the United States experience, there is no evidence that a PACE program has increased mortgage default rates over current market levels but establishing a loan/loss reserve could ease mortgage lender concerns. If a loan/loss reserve is not possible, receiving mortgage lender consent to participate in the program may be required for certain households. Template mortgage lender consent forms can be developed as part of a turn-key approach to a PACE program should a municipality require residents to submit a form.

Insufficient Marketing

Public uptake in home energy improvements is only successful if homeowners are aware of the program, how it works, and the overall benefits of installing improvements. Communicating the program as simply as possible so homeowners can fully comprehend the concept of PACE financing as well as the application process will be essential. Sufficient marketing resources, including promoting incentives and rebates from the natural gas companies and LDCs, will be necessary to effectively promote and communicate the benefits of the program to homeowners. All partners will be involved in promoting the program and increasing public awareness of this financing option for home energy improvements.

Other Sources of Financing

There are alternative financing methods available to homeowners beyond PACE loans including lines of credit from banking institutions or specialized loans from companies willing to finance home energy improvements. All may offer competitive rates of interest. Any PACE program will be competing against these financing alternatives.

Next Steps: Council Considerations and Recommendations

Inventory building assets: This may be part of the asset management plan or it may require additional work. Is it a matter of recommissioning or retrofitting? Each building will have some unique needs, like arenas, but some upgrades may apply to many buildings and bulk purchases for upgrades are possible.



Explore opportunities for energy retrofits in community and social housing. Take stock of the age of social housing, inventory heating space and water heating technologies and insulation.

Identify municipal opportunities. Are any municipal buildings going to undergo any type of work in the near future? Is there an opportunity to upgrade or deal with energy wasting features? Is there an opportunity to fuel switch? Undertake a return on investment study to determine how/if to transition to a lower carbon options.

Look for a way council can incentivize retrofitting non-municipal dwellings. Get a staff report on how a PACE program could be established. Does this program address barriers to uptake on the program? Consider on-bill financing as an approach or perhaps a third-party PACE delivery model if a municipality does not have resources or capacity to deliver one in its own. Create local policies that address "energy poverty" by exploring private-public partnerships/finding where interests align.

Consider how new construction projects could be incented to include innovation or energy saving measures.

Publicize programs such as FCM for social housing retrofits, Canada Infrastructure Bank, The Atmospheric Fund, or a funding for a municipal PACE program through FCM's CEF initiative.

Monitor and improve energy performance through use of energy audits for municipal buildings – considering both GHG reductions and overall energy savings.

Ensure that municipalities local energy plan/roadmap to transition prioritizes retrofitting and recommissioning buildings and programs. Make sure other goals like boosting the local economy, social goals etc. are part of that prioritization.

Educate employees to change their behavior to save energy in municipal buildings.

Seek out education, funding, and partner opportunities to change behaviour of homeowners and businesses who are a significant source of GHG emissions.

Advocate for changes to Commercial, Industrial and multi-use buildings. Over time, council may wish to develop PACE program for all buildings. Further advocacy with other levels of government to help fund these programs will be required.

Municipalities as owners of buildings and influencers of homeowners and businesses can leverage many tools and actions to reduce GHG emissions and save municipalities money.



Appendix: PACE Programs in Canada

In most Canadian provinces, mechanisms are already in place to allow municipalities to recuperate the costs of public infrastructure upgrades (e.g. improved roads, sidewalks) by adding an LIC to the property taxes of adjacent properties. However, changes in provincial legislation are generally required to authorize municipalities to use such mechanisms to finance upgrades to a private property (such as energy efficiency upgrades). Once enabling provincial legislation is established, municipal governments can determine the program specifications and implement PACE through bylaw amendments. The following section summarizes the state of PACE in provinces with PACE-enabling legislation (Nova Scotia, Ontario and Alberta) and the context for the development of PACE legislation in British Columbia.^{xii}

Nova Scotia

In 2010, Nova Scotia amended section 81A(1)(d) of the *Municipal Government Act* to authorize municipal PACE programs. Ten PACE programs are operating in the province. Seven are administered by <u>Clean Foundation</u>, a not-for-profit third-party administrator, while three are administered directly by the municipality or through a procured program administrator. These include the Halifax Regional Municipality (HRM), the Town of Berwick, and the Municipality of the District of Shelburne.^{xiii}

The programs administered by the Clean Foundation apply to single family homes with caps of up to \$20,000 with 10-year repayment terms. Homes participating in the Clean Foundation's PACE program reduced their total energy consumption by 33% on average.^{xiv}

HRM's "Solar City" is a PACE program for financing household solar energy systems. It offers financing for up to 80% of the home's assessed value and has repayment terms up to 10 years.^{xv}

The Town of Berwick implemented a PACE Program in 2013 for residences. In 2019, they expanded the program to include commercial buildings, making it the first C-PACE program in Canada. The program was administered by the municipality until 2019, when Equilibrium Engineering took over program administration. Customers can borrow up to 15% of the property's assessed value with 4% interest rates and repayment periods up to 10 years.^{xvi}

As of March 1, the Municipality of the County of Colchester has received \$8.3 million for its Expanding the Solar Colchester Program through FCM's Community Efficiency Financing Initiative.xvii

Alberta

In 2018, Alberta passed legislation to enable municipalities to develop and enact PACE bylaws and deliver retrofit financing. Energy Efficiency Alberta (EEA), an arm's-length government entity, was legislated to be the exclusive administrator of PACE programs on behalf of participating municipalities. As the administrator, EEA would provide customer support, work with municipalities to establish their respective bylaws, and set up the repayment mechanism through the municipal property tax system.^{xviii}

EEA's provincial funding was reversed by the new provincial government elected in 2019 and its role in administering Alberta's PACE programs is currently uncertain. In this context, the City of Edmonton, the Town of Devon, and the Town of Rocky Mountain House are continuing to develop plans to implement PACE. If the EEA does not have capacity to administer Alberta's PACE programs, the





municipalities would have to request permission to administer the program on their own through a ministerial order.xix

As of March 1, the Town of Devon and the Town of Rocky Mountain House were awarded \$1.3 million and \$1.395 million respectively through FCM's Community Efficiency Financing Initiative to implement Clean Energy Improvement Programs.^{xx}

British Columbia

British Columbia does not currently have PACE legislation, but municipalities in BC have called on the province to pass enabling legislation. The Union of British Columbia Municipalities (UBCM) has also passed resolutions supporting PACE in 2014, 2016 and 2019.^{xxi}

Some legal opinions highlight that R-PACE financing by local governments is already permissible under the BC Community Charter using Local Area Service Charges. The rationale being that while municipally-owned infrastructure has been the traditional application of Local Area Service Charges, significant reductions in GHG emissions and risks of oil spills (from heating oil systems) constitute direct community benefits and services and warrant the use of LICs for home energy upgrades. Under this premise, the City of Saanich intends to pilot a PACE program.^{xxii}

As of March 1, the District of Central Saanich received \$500,000 through FCM's Community Efficiency Financing Initiative to implement a pilot project for its Municipal Financing Program for Home Energy Upgrades.^{xxiii}

United States PACE Programs^{xxiv}

Residential PACE: California, Florida, Missouri.

Commercial PACE: Oregon, California, Nevada, Utah, Colorado, Nebraska, Texas, Arkansas, Missouri, Minnesota, Wisconsin, Illinois, Kentucky, Florida, Michigan, Ohio, Virginia, Pennsylvania, New York, Maryland, Delaware, Connecticut, Massachusetts, Rhode Island.



ⁱ Environmental Commissioner of Ontario, Facing Climate Change: Greenhouse Gas Progress Report, 2016, pg. 41. <u>http://media.assets.eco.on.ca/web/2016/11/2016-Annual-GHG-Report_Chapter-2.pdf</u>

ⁱⁱ Report of the Standing Senate Committee on Energy, the Environment and Natural Resources, Reducing Greenhouse Gas Emissions from Canada's Built Environment, 2018, pg. 25.

iii IESO, Ontario Municipal Energy Profile, Final Report 2018 <u>https://www.ieso.ca/en/sector-participants/conservation-delivery-and-tools/conservation-e-blasts/2018/05/municipal-energy-profile-report</u>

^{iv} From Canada Green Building Council, Roadmap for Retrofits in Canada, 2017, pg.9. <u>https://www.cagbc.org/cagbcdocs/advocacy/CaGBC_Roadmap_for_Retrofits_in_Canada_2017_EN_we</u> <u>b.pdf</u>

^v From Canada Green Building Council, Roadmap for Retrofits in Canada, 2017, pg. 3. <u>https://www.cagbc.org/cagbcdocs/advocacy/CaGBC_Roadmap_for_Retrofits_in_Canada_2017_EN_web.pdf</u>

^{vi} From LAS records, 2021

^{vii} Report of the Standing Senate Committee on Energy, the Environment and Natural Resources, Reducing Greenhouse Gas Emissions from Canada's Built Environment, 2018, pg. 28.

^{viii} LIC authority enables municipal governments to recover the costs of capital improvements (such as water and wastewater infrastructure, repaving roadways, construction of sidewalks, curbs, streetlights, speedbumps, etc.) made on public or privately owned land from property owners who will benefit from the improvement. The municipality has the ability to spread the cost of a local improvement over several years (according to the service life of the asset) to minimize the annual payment to property owners. In 2012, energy efficiency and renewable energy projects were added as eligible works under O. Reg. 586/06.

^{ix} From The Pembina Institute's "Property Assessed Clean Energy in Canada", 2020 pp. 7-8. <u>https://www.pembina.org/reports/property-assessed-clean-energy-2020.pdf</u>

× From The Pembina Institute's "Property Assessed Clean Energy in Canada", 2020 pg. 8. https://www.pembina.org/reports/property-assessed-clean-energy-2020.pdf

^{xi} From the FCM website <u>https://fcm.ca/en/news-media/news-release/gmf/home-energy-retrofit-financing-initiative-expanded/backgrounder</u>

^{xii} From The Pembina Institute's "Property Assessed Clean Energy in Canada", 2020 pg. 6. <u>https://www.pembina.org/reports/property-assessed-clean-energy-2020.pdf</u>

^{xiii} Ibid



^{xiv} From The Pembina Institute's "Property Assessed Clean Energy in Canada", 2020 pg. 7. <u>https://www.pembina.org/reports/property-assessed-clean-energy-2020.pdf</u>

^{xv} Ibid ^{xvi} Ibid

^{xvii} From the FCM website <u>https://fcm.ca/en/news-media/news-release/gmf/home-energy-retrofit-financing-initiative-expanded/backgrounder</u>

^{xviii} From The Pembina Institute's "Property Assessed Clean Energy in Canada", 2020 pg. 8. <u>https://www.pembina.org/reports/property-assessed-clean-energy-2020.pdf</u>

^{xix} Ibid

^{xx} From the FCM website <u>https://fcm.ca/en/news-media/news-release/gmf/home-energy-retrofit-financing-initiative-expanded/backgrounder</u>

^{xxi} From The Pembina Institute's "Property Assessed Clean Energy in Canada", 2020 pp. 8-9. <u>https://www.pembina.org/reports/property-assessed-clean-energy-2020.pdf</u>

^{xxii} From The Pembina Institute's "Property Assessed Clean Energy in Canada", 2020 pg. 9. <u>https://www.pembina.org/reports/property-assessed-clean-energy-2020.pdf</u>

^{xxiii} From the FCM website <u>https://fcm.ca/en/news-media/news-release/gmf/home-energy-retrofit-financing-initiative-expanded/backgrounder</u>

xxiv From the PACE Nation website https://www.pacenation.org/pace-programs/