THIS GREEN HOUSE II

BUILDING MOMENTUM ON GREEN JOBS AND CLIMATE ACTION THROUGH ENERGY RETROFITS ACROSS CANADA

by Robert Duffy and
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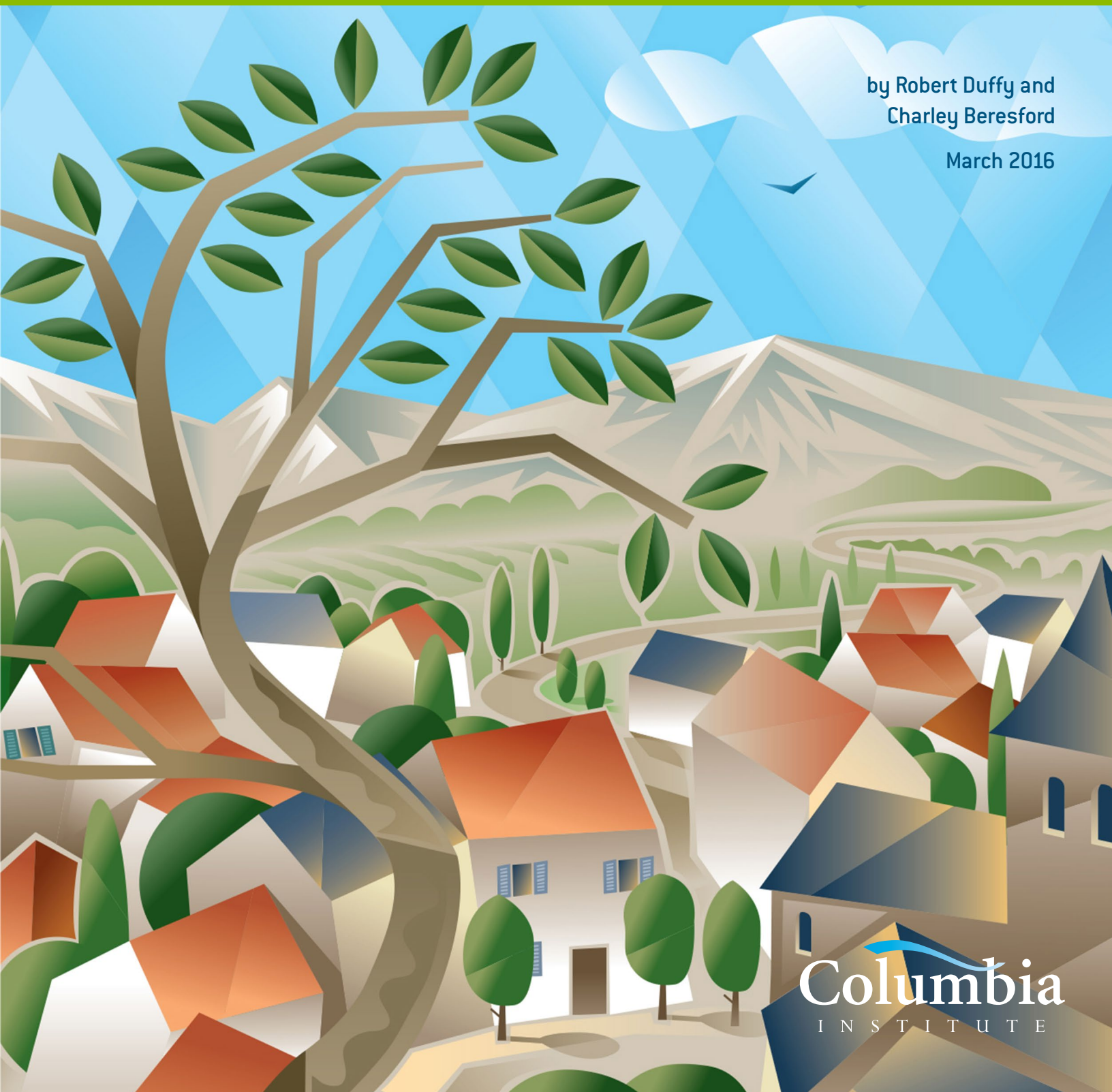
March 2016



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ABOUT THIS REPORT

This Green House II builds on the research behind our earlier report on local government-led retrofit programs. When we published *This Green House I* in 2011, local improvement charge (LIC) retrofit financing—a proven and secure mechanism for financing residential improvements—and its twin sister, on-bill financing, were relatively new ideas in Canada.

Since then, Ontario and Nova Scotia have both changed their legislation, allowing local governments to use this innovative financing mechanism to support climate action. Local governments have jurisdiction over construction and renovations and bring the necessary know-how, initiative, and leadership to make this happen. The good news is that communities in those provinces are stepping up to the plate.

Innovative leadership on energy retrofits is the fastest way to take action on climate change. At current emission rates, the entire carbon budget for a 50 per cent chance of keeping global warming to 1.5 degrees will be exhausted by 2025.The time for action is now.

Our goal is that Canada's provinces and territories follow up on this innovation and make the minor legislative changes needed to open the door to local government leadership on retrofits and climate action. It's a win-win.

THIS GREEN HOUSE II: Building Momentum on Green Jobs and Climate Action Through Energy Retrofits Across Canada

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PART 1

Context

The Paris Agreement

IN DECEMBER 2015, 196 countries met in Paris to hammer out the Paris Agreement under the United Nations Framework Convention on Climate Change.

International attention on climate change is gaining momentum as severe weather events and deepening scientific knowledge make it clear that continuing business as usual will mean catastrophic climate change.

The Paris Agreement "aims to strengthen the global response to the threat of climate change in the context of sustainable development and efforts to eradicate poverty." The agreement, which signatory countries will sign in a high level ceremony at the UN headquarters in New York on April 22, 2016:

- Moves from a goal of holding global warming to 2 degrees above pre-industrial levels to "well-below 2 degrees and to pursue efforts to limit the temperatures increase to 1.5 degrees." The agreement directs the Intergovernmental Panel on Climate Change, the climate science arm of the UN, to draw up a report by 2018 on how to reach 1.5 degrees Celsius.
- Resolves to "reach peak global greenhouse gas emissions as soon as possible to achieve a balance between anthropogenic emissions by sources and removals by sinks in the second half of this century." Essentially, this means net zero emissions by 2050.
- Establishes a five-year cycle for stock taking when countries will announce how they've reduced emissions. Countries are expected to update and enhance their plans at these meetings. This is widely seen as an important ratcheting mechanism because the current targets are not sufficient. (If fully implemented they will mean 2.7 degrees of warming.)
- The first stock taking is to take place in 2023, then every five years thereafter, with a common framework of transparency.

International attention on climate change is gaining momentum as severe weather events and deepening scientific knowledge make it clear that continuing business as usual will mean catastrophic climate change.

Canada went to the Paris discussions with the weakest targets in the developed world.

PHOTO COURTESY PROVINCE OF BC VIA FLICKR

The Canadian Context

Canada went to the Paris discussions with the weakest targets in the developed world. The Climate Change Performance Index from Germanwatch ranked Canada at 58th of 61 (only Kazakhstan, Australia, and Saudi Arabia were rated lower.) To put this in context, Canada is the 10th largest emitter of greenhouse gases (GHGs) globally.

Under new federal leadership, Canada's former reputation as an environmental leader began rehabilitation in Paris. Canada's Minister of the Environment was appointed one of the facilitators and Canada was an early adopter of language around an aspirational goal of 1.5 degrees of warming.

The Prime Minister has committed to consulting with the provinces to develop new climate action goals for Canada. In preparation for Paris, a number of provinces updated their climate actions plans. The first meeting of the Prime Minister and Premiers on climate was held in Vancouver in March 2016.

But Canada has a long way to go. In May 2015, Environment Canada reported that Canada in 2013 had increased its GHG emissions for the fifth year in a row and is on course to overshoot the 2020 target (17 per cent of 2005 levels) by a wide margin.

According to Climate Action Tracker, Canada needs to set a more ambitious goal of reducing industrial emission by at least 74 per cent below 2005 levels.

Cities and Buildings

Canada's communities offer rich ground for improving Canada's climate performance. Cities, and especially those from developed countries like Canada, are the home of the majority of global GHG emissions. If all production and consumer based emissions are taken into account, (sub)urban residents emit 80 per cent of the world's GHGs.

Although constrained by funding models and downloading from other orders of government, local governments can take action on transportation emissions, waste management, urban regeneration, and urban biodiversity. According to the Federation of Canadian Municipalities, local governments have direct or indirect control of 45 per cent of Canada's greenhouse gas emissions, most of which are driven by energy consumption. Better tools and more resources to help municipalities reduce GHG emissions are crucial to an effective national climate strategy.

Enabling municipalities to take action on buildings makes sense. Energy-efficiency retrofits in buildings offer some of the fastest and most affordable opportunities for reducing GHG emissions. Retrofits can be started right now, using existing skills and technologies. They offer significant co-benefits for homeowners, workers, and local economies.

Energy use in buildings accounts for a significant portion of GHG emissions in Canada. In British Columbia, for example, they account for 20 per cent of energy use and 12 per cent of emissions. While the profile varies from individual municipality to municipality, in many, such as Saanich, B.C., heating and cooling accounts for 30 per cent of greenhouse gas emissions.[1]

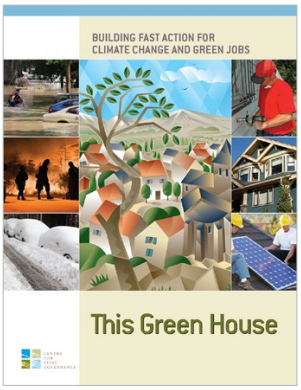
In its October 2015 report, the B.C. Climate Leadership Team modeled and recommended a 50 per cent reduction in GHG emissions from the built environment by 2030. Based on 2015 emissions levels, that would amount to 3.4 MT of CO_2 annually, reducing overall emissions by close to 6 per cent. If implemented successfully, reductions across the buildings sector would account for around one fifth of the reductions needed to meet the province's overall targets for 2030.[2]

Across Canada, widespread investments in the residential sector could mean slicing off about 4 per cent of Canada's emissions from energy use and 2.6 per cent of Canada's overall total.

Municipalities are well-positioned to take the lead in program delivery, especially if buttressed by regulatory support, financing mechanisms, and renewed investment in homeowner rebates by senior levels of government.

Why municipalities? Community know-how and initiative, municipal jurisdiction over construction and renovations, and local leadership commitments for GHG reductions. Municipalities are signing up in record numbers for the Partners for Climate Protection program, run by the Federation of Canadian Municipalities and ICLEI–Local Governments for Sustainability, and committing themselves to corporate and community wide emissions cuts. These leaders are motivated.

When the Columbia Institute published our initial report on residential energy retrofit financing in 2011, on-bill and LIC financing for retrofits on private property were both relatively new ideas in Canada. While Manitoba had been operating on-bill loan programs for almost a decade at that point, the first LIC pilot in the country was still in preparatory stages in Halifax. Since then, momentum has built, with pilot programs launched and enabling legislation passed in a number of jurisdictions in Canada.



When the Columbia Institute published our initial report on residential energy retrofit financing in 2011, on-bill and LIC financing for retrofits on private property were both relatively new ideas in Canada. Since then, momentum has built.

PART 2

Benefits of Residential Energy Efficiency Retrofits

Widespread residential retrofit investments could mean slicing off 4 per cent of Canada's emissions from energy use and 2.6 per cent of Canada's overall total.

PHOTO COURTESY GREEN ENERGY FUTURES/FLICKR

ENERGY-EFFICIENCY RETROFITS in buildings offer some of the fastest and most affordable opportunities for reducing greenhouse gas emissions. And unlike some other measures, retrofits can be started right now, using existing skills and technologies. And they offer significant co-benefits for homeowners, workers, and local economies.

Reduced Energy Consumption and GHG Emissions

Statistics from federal energy retrofit and audit grant programs in Canada give some sense of the potential for reduction in energy consumption and GHG emissions at the household level.

Data collected from the federal EnerGuide for Houses retrofit incentive program (which ran from 1998 to 2006) showed that the average energy saving per retrofitted home represented approximately 26 per cent of pre-retrofit consumption, and the greatest energy saving per individual house amounted to 88.3 per cent of pre-retrofit consumption. These savings were achieved with retrofits costing less than $7,000 per home, on average.[3]

A study of retrofits funded through the more recent federal ecoENERGY retrofit grants found that upgrades supported by that program on average reduced household energy consumption by about 23 per cent and GHG emissions by approximately 3.1 tonnes per house annually, with significantly higher savings in older, less energy efficient houses.[4]

Recent case studies have shown that reductions of more than 50 per cent are possible with higher investments in what are called "deep energy-efficiency retrofits."[5]

More research needs to be done regarding the cumulative potential of retrofits in the Canadian context, but a major study in the U.S. found that widespread investments in energy-efficiency retrofits in that country could cut energy use in that sector by 28 per cent and GHG emissions by 27 per cent, while saving billions of dollars annually. Reductions on that scale in Canada's residential sector would mean GHG reduction in the range of 19 Mt of CO_2e per year—slicing off about 4 per cent of Canada's emissions from energy use and 2.6 per cent of Canada's overall total.[6]

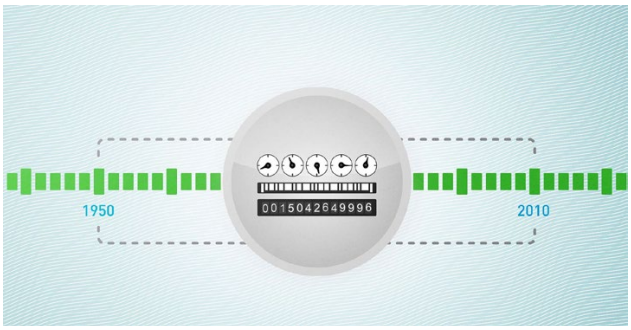
Energy efficiency through retrofits, improved technologies, and other measures is the cheapest way to increase the amount of energy available—much more so than

building new electrical generation facilities or extracting more fossil fuels. As a leading physicist and advisor to the U.S. government on energy efficiency noted, "saving electricity needs about 1,000 times less capital, and repays it about 10 times faster, than supplying more electricity."[7] And because saving energy costs less than buying it, energy efficiency ultimately frees up money to be spent elsewhere in the economy, opening opportunities for businesses, governments, and consumers.[8]

Co-Benefits of Residential Energy Efficiency

In addition to climate action and environmental protection, there are a wide range of significant economic and social co-benefits in residential energy efficiency.

Lower Residential Energy Bills



Retrofits reduce energy use and costs for consumers. The federal government estimates that implementing retrofit recommendations from the federal energy audit program would net a typical homeowner $700 a year on a $2,000 annual heating bill. Savings in areas with cold winters and older housing stock can range even higher.[9]

This combination of collective environmental and individual economic benefits seems to resonate with the Canadian public and many policy makers. For example, surveys carried out in 2015 in support of the B.C. Climate Leadership Plan found strong support for both greening buildings and making climate solutions more affordable. The most popular 'value' in guiding climate change policy (chosen by 32 per cent of respondents) was to "Improve affordability of solutions to address climate change," while "regulations and incentives for greener buildings" was tied for first place in respondent priorities under "the Way We Live" category of the survey. Energy-efficiency retrofits sit right at the intersection of these two public priorities.[10]

Reducing energy consumption in buildings will become even more important as energy costs rise significantly in coming decades, as forecast by utility companies and other market analysts.

Reducing energy consumption in buildings will become even more important as energy costs rise significantly in coming decades, as forecast by utility companies and other market analysts.

PHOTO COURTESY
TODD SMITH/FLICKR

Increased home value

Energy retrofits add value to homes. A 2008 survey by the Appraisal Institute of Canada found that "Energy efficient upgrades are at the top of the list of home improvements that add value to the resale price of a home," and that on average owners recover 61 per cent of the cost of energy-efficiency upgrades in the increased resale price of their home.[11]

More Comfortable, Healthier Homes

Last but not least, energy efficiency improves residents' comfort and quality of life. Maintaining a comfortable temperature is easier and more affordable if your home is properly insulated and energy efficient. This is a particularly big issue for seniors and others on low and fixed incomes, who sometimes face tough times paying for enough energy to keep their homes sufficiently warm during cold Canadian winters.

(Green) Job Creation

Energy-efficiency retrofit programs can produce a lot of jobs, with considerably lower environmental impact than many other sectors.

A Federation of Canadian Municipalities report estimates that energy-efficiency retrofits generate up to 20 local jobs for every $1 million invested.[12] Research from University of Massachusetts economist Robert Pollin found that each $1 million spent on building retrofits in the U.S. produces 16.7 jobs, while simultaneously reducing energy consumption and GHG emissions. In contrast, fossil fuel-oriented projects, such as with oil and natural gas, create only 5.2 jobs per $1 million of expenditures and generally increase GHG emissions significantly."[13]

Research on job creation and GHG emissions in B.C. has identified similar patterns. A 2015 report from the Pacific Institute for Climate Solutions (PICS) estimates that a major retrofit financing program would create 600 to 1,080 direct and indirect jobs annually in the province. It would add $60 million per year in additional economic activity.[14]

The Canadian Centre for Policy Alternatives found that it takes almost $4 million in additional output in oil and gas extraction to create a single direct job, while sectors involved in retrofitting (construction and repair and maintenance) create between 13 and 16 direct jobs with only $1 million of increased output, or roughly 50 to 60 times the number of jobs.[15]

Training and Skills Development

Retrofit financing programs in a number of jurisdictions have also incorporated vocational and skills training programs to help the unemployed, youth, and other disadvantaged groups.

Some of the best Canadian examples of this approach can be found in Manitoba, where the provincial government, Manitoba Hydro, and social enterprise organizations are collaborating on programs that combine residential energy retrofit financing with skills training for youth, aboriginal people, and others facing barriers to entering the workforce (see case studies on page 1).

Retrofit financing programs in a number of jurisdictions have also incorporated vocational and skills training programs to help the unemployed, youth and other disadvantaged groups.

PHOTO COURTESY SCOTT ASHKENAZ/FLICKR

Another good example can be found the U.S. Oregon's Enhabit (formerly Clean Energy Works Oregon), has created more than 1,000 jobs and provided training for women, people of colour, and veterans. Enhabit has grown from a 500-home City of Portland pilot project to the region's largest home renewal service, completing more than 4,500 projects and generating over $90 million in local economic activity by 2015.

Enhabit has expanded beyond energy efficiency upgrades to include services such as seismic retrofits, solar energy installations, and radon testing and mitigation. More than half of the hours worked on Enhabit projects have been performed by women and people of colour.[16]

INVESTING IN THE ENVIRONMENT AND IN PEOPLE: ENERGY EFFICIENCY, SKILLS TRAINING AND JOB CREATION IN MANITOBA

Retrofit programs work with social enterprises to train and employ workers

Building Urban Industry for Local Development (BUILD) and the Brandon Energy Efficiency Program (BEEP) are Manitoba social enterprises that train multi-barriered workers.[17]

Through Manitoba Hydro's Affordable Energy Program and Pay as You Save (PAYS) program, participants install attic, basement, and wall cavity insulation. BEEP has completed energy and water-efficiency and insulation upgrades in over 600 Manitoba Housing units. More recently, Manitoba Housing hired BEEP to complete asbestos and mold remediation on 25 duplexes in Brandon prior to completing exterior refreshes. These contracts provide excellent training opportunities to BEEP participants so they can develop marketable skills.[18]

Launched in 2006, BUILD today works with 50 trainees per year. Trainees tend to be Aboriginal men who live in Winnipeg's Inner City and/or North End. There are also some newcomers and women, and almost all are undereducated, lack stable housing, and most have had contact with the justice system. For two months trainees learn trades-based math for 1.5 hours every morning in preparation for an essential skills assessment. Trainees then continue on to hard skills training in building insulation, taping, mudding, door hanging, and drywalling.

SPRAY FOAM PHOTO COURTESY GREEN ENERGY FUTURES/FLICKR

Those workers who successfully work through training have the opportunity to move to the social enterprise side of BUILD, where they expand their on- the-job training with government procurement jobs through Manitoba Housing and Manitoba Hydro.

In 2014, Manitoba's Affordable Energy Program partnered with Manitoba Housing and BUILD to complete a drain water heat recovery pilot program in 50 Manitoba Housing units. This partnership enables on the job apprenticeship for BUILD trainees and provides lower-income tenants with an opportunity to reduce their energy bills. It is estimated an additional 1,500 drain water heat recovery systems will be installed in Manitoba Housing units.

Manitoba's community geothermal program promotes job growth through energy efficiency

In Manitoba, an Aboriginal-owned social enterprise, Aki Energy (Aki is Oji-Cree for earth) works with Manitoba Hydro to enable First Nations—the majority of which rely on expensive electric heating—to access pay as you save (PAYS) financing.[19]

Manitoba's Aboriginal-owned Aki Energy program, the first of its kind in Canada, strives to help make Manitoba's First Nations the most energy efficient in the country.

AKI ENERGY PHOTO

This program finances the upfront cost of equipment and installation for geothermal systems, recovering the financing through an on-bill charge over 20 years. Energy bill savings are greater than the financing charge, so that participating First Nations households see energy bill savings from day one. This program is the first of its kind in Canada and it strives to help make Manitoba's First Nations the most energy efficient in the country.

In the first year, Aki Energy trained 30 First Nation geothermal installers who completed 110 residential geothermal systems on Peguis First Nation and Fisher River Cree Nation. Families who received the new systems will cumulatively save about $44,000 per year in reduced utility costs.

Building on the success of a pilot project, the program added two more First Nations for the 2014 installation season, for a total of four First Nations participating. To date, 45 community members have been trained and nine of those went on to receive full International Ground Source Heat Pump (IGSHPA) certification.

For the 2015 installation year, First Nation participants met with Manitoba Hydro and established that, at minimum, 135 systems will be installed in each community. As well, the participating First Nations and Manitoba Hydro will review their commercial buildings to assess the potential savings with respect to retrofitting to energy efficient technologies.

In 2015, Manitoba Hydro announced plans to install $18 million worth of geothermal installations (around 1,200 homes) over the next three years, and Aki Energy was, at the time of writing, expanding this program to a number of additional First Nations.

PART 3

Barriers to Residential Energy Retrofits (and Potential Solutions)

SO, IF THERE'S SUCH A COMPELLING CASE for individuals to carry out energy retrofits on their homes — cost savings, comfort, increased home value — why aren't they doing it?

Research has shown a number of reasons that more homeowners are not undertaking energy retrofits. This paper provides a brief overview of information/communication and administrative/technical barriers, before moving on to focus on financial barriers.

Information and Communication Barriers

Barriers:

- Retrofit programs won't work if people don't know about them or don't understand their economic, environmental, and personal benefits. Likewise, support will be difficult to build if the public misunderstands a program financed by a local improvement charge (LIC) as a "new tax," or overestimates the level of financial risk involved to the municipality.

Solutions:

- Community engagement and clear, effective communications are crucial to the success of these types of programs.
- Targeted sector and neighbourhood-based marketing have proven successful in promoting retrofit programs in a number of Canadian and U.S. jurisdictions. For example, a successful pilot in Oregon targeted a specific neighbourhood with a large number of older, energy-inefficient homes and low to moderate income residents. The program engaged local churches, environmental, labour, and community groups in marketing and promotion. A Manitoba program using a similar approach has also met with success (see page 11).
- A number of sources have noted that contractor/supplier buy-in can play a crucial role in the uptake of retrofit programs. According to a 2015 study by Pacific Institute for Climate Solutions, "the greatest element in a successful OBF [on-bill financing] program is the level of supplier buy-in, where contractors are certified to ensure quality delivery of retrofit services. Moreover these contractors can promote the scheme and assist home owners with filling out the paperwork for a loan thus ensuring a faster turnaround of applications."[20] The City of Nelson's attributes some of the popularity of its EcoSave retrofit program to its prioritization of contractor engagement and buy-in in their outreach and marketing strategy.[21]

Technical and Administrative Barriers (Complexity)

Barrier:

- Bouncing between different offices, agencies, and levels of government adds time and complexity to the retrofit process and can act as a deterrent to some homeowners.

Solutions:

- "One-stop shopping" single window of entry programs: Ideally, applications for financing, building permits, inspections, and retrofit evaluation can be kept together in a one-stop shopping intake model that makes the process as simple as possible for property owners. It also makes sense for the program to help participants connect or even coordinate with grant and rebate programs administered by other levels of government or energy utilities.
- In Canada, pilot programs in Toronto and Halifax have both found that 'one window' access to programs has shown high customer satisfaction.

CASE STUDY

"TAKING IT TO THE STREETS" COMMUNITY RETROFIT MARKETING PARTNERSHIPS IN MANITOBA

Manitoba Hydro has taken an innovative approach to promoting energy retrofits by partnering with neighbourhood groups to increase participation in hard to reach markets.[22]

Building on the success of the Neighbourhood Power Smart Project in William Whyte and Brandon, which saw over 140 homes participate in 2014/15, Manitoba Hydro plans to increase participation by a further 100 homes in 2015/16.

Working with the North End Community Renewal Corporation and Brandon Neighbourhood Renewal Corporation, lower-income customers can benefit from energy efficient upgrades with the assistance of a community coordinator and social enterprise contractors completing the retrofits.

This community-led initiative helps to reduce barriers to participation with a door-to-door approach and provides employment opportunities to members of the community.

‘ONE STOP SHOPPING’: MAKING RETROFIT PROGRAMS USER FRIENDLY

Technical complexities and administrative hassles can act as deterrents to homeowners considering energy retrofits. To address this issue, many of the more successful retrofit programs have used a ‘one-stop shopping’ intake model, keeping applications for financing, building permits, inspections, and retrofit evaluation together to make the process as simple as possible for property owners.

A number of successful programs also help participants connect or even coordinate with grant and rebate programs administered by other levels of government or energy utilities.

In addition, some successful programs have used a full ‘turnkey’ approach that go beyond the intake process to assist in the actual delivery of retrofits, including certifying and coordinating contractors, and sometimes even purchasing proven energy efficiency and renewable energy equipment on behalf of participants to simplify the retrofit process and realize economies of scale.

NELSON, BC

The City of Nelson’s report on its retrofit pilot reports that “designing a program that was simple was a high priority” and that keeping the process easy, and accessible was a key point in the overall project plan.

While the delivery of Nelson’s on-bill financing program involves several agencies (the City of Nelson, Nelson Hydro, Nelson District Credit Union, and City Green Solutions as the energy assessment contractor), the program uses a dedicated coordinator’s office as a single access point for program participants.[23]

HALIFAX

Jurisdictions such as Halifax have taken a streamlined, ‘turnkey’ approach, retaining control over which retrofits are eligible and providing a complete package of services along with the loan itself. Turnkey-style programs can addresses more than one barrier to homeowners undertaking energy retrofits — both the financial aspect and the hassle factor.[24]

TORONTO

Toronto’s HELP program lets homeowners choose and manage contractors, but combines financing with a ‘one-window’ service that covers natural gas, electricity, and water conservation improvements as well as access to rebates and incentives available from Enbridge Gas and Toronto Hydro.[25]

TORONTO CONDOS PHOTO MARK HOGAN/FLICKR

Financial Barriers

The key financial barriers to residential energy retrofits include upfront costs, costs of consumer credit, and home ownership lengths that are too short to realize cost savings from a retrofit.

This section provides an overview of two promising financing models and shows how they can overcome those barriers.

Using local improvement charges or property assessed payments for energy retrofits has a number of promising features. Similar financing programs in both the residential and commercial sectors have been operating in the U.S. since 2008.

LIC Financing Model

The model of using LIC (local improvement charges) for energy efficiency (or "property assessed payments for energy retrofits") has a number of promising features.

In this financing model, municipalities provide low-cost financing for homeowners to pay the upfront cost of approved energy-efficiency retrofits, and participating owners repay the city over time as a special assessment on their property taxes. (See Appendices for examples of provincial legislation and local bylaws used to enable LIC based energy retrofit programs on private property.)

- The special assessment can be attached to the property rather than the owners, so that upon resale of the property, responsibility for any remaining repayments are passed to the new owner.
- Repayments can be scheduled to balance out with energy bill savings, so that repayments are cash-flow neutral for participating homeowners during the financing period.
- The special assessment can be secured with alien on the property in the event of default, similar to what happens in the case of failure to pay property taxes. Default rates have been very low in similar programs elsewhere.
- Program participation is entirely voluntary and does not affect the property taxes of non-participants.

LIC-based retrofit pilot programs for detached and multifamily homes are currently underway in Toronto, and Halifax is launching a long-term LIC-based residential solar energy installation program after a successful two-year pilot involving 400 homes (see details on page 17).

Similar financing programs in both the residential and commercial sectors have been operating in the U.S. since 2008.

LIC FINANCING: HALIFAX SOLAR CITY

In 2013, the Halifax Regional Municipality launched Halifax Solar City, a two-year pilot project using LIC-based financing to support residential solar hot water system installations. The LIC financing was made possible by a 2010 provincial government amendment to the Halifax municipal charter (see page 29). The pilot was supported by an $8 million loan from the Federation of Canadian Municipalities Green Municipal Fund.

Results for Homeowners

By the end of the pilot, nearly 400 participants had installed systems through the program, and another 2,500 homeowners had expressed interest. Homeowners installing a solar thermal system are expected to experience an average return on investment (ROI) of approximately 5 per cent over 25 years.

The 388 residents who installed the systems are likely to save more than $5.5 million over the expected 25+ year lifespan of the system and reduce greenhouse gases by 16.1 million kg of CO_2. Additionally, over 1,265 homes had water conservation measures implemented free of charge during their solar assessment and could save 320 million litres of water in the next 20 years and $120,000 annually in water and heating costs.

For materials and installation, total costs per home under the program have typically been $6,500 to $7,900, plus financing costs. Homeowners who choose to have their system financed were charged a fixed interest rate that recovers the municipality's financing costs. Repayment is through a through property tax supplement (essentially an LIC). The applicable interest rate is fixed for the payment schedule (maximum of 10 years). Homeowners have the option to pay off their systems at any time without penalty and save themselves the costs of financing.[26]

Local Economy and Innovation

The pilot has supported significant employment of local contractors and manufacturing, as well as spurring technological innovations, including investments within the solar industry to develop user-friendly, real-time monitoring for solar domestic water heaters. Over 60 per cent of Solar City homeowners adopted a live Internet-based monitoring system, collecting an unprecedented amount of data on the performance of solar water heaters. The data collected are not only useful to homeowners, but will help the municipality calibrate the success of the program and inform future decisions.[27]

Building on Successes

A well-promoted, single entry point program that allows residents to access approved contractors, proven technology, and affordable financing though a simple process appears to have had a major impact on uptake of the solar systems. In fact, the program's operators say number of solar thermal residential installations under the Halifax pilot exceeded the number of annual residential installations Canada wide. The large number of installations through the program also allowed for greater economic efficiency through economies of scale.[28]

The program was implemented with minimum risks to the municipality, with the funding needed to execute program being financed separately from other capital expenses. It is designed as a user-pay model that is financially self-sustaining to the municipality (i.e., no net cost) and does not compete with any other capital needs.[29]

After the successful two year pilot project, Halifax Regional Council approved the continuation of the Solar City Program for another three years, with registration opening in 2016. The new Solar City program aims to complete 450 installations of a variety of solar technologies, including Solar Photovoltaic, Solar Air and Solar Thermal (Hot Water), and may open the program to include small commercial properties.[30]

LIC FINANCING: TORONTO'S HOME ENERGY LOAN PROGRAM (HELP) AND HIGH-RISE RETROFIT IMPROVEMENT SUPPORT (Hi-RIS)

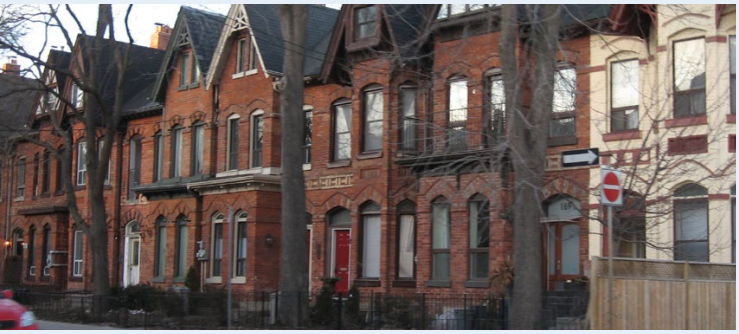
In 2014, Toronto launched the Home Energy Loan Program (HELP) and the High-rise Retrofit Improvement Support (Hi-RIS) program, a three year pilot for LIC-based residential energy retrofit financing. HELP and Hi-RiS were both recognized with Sustainable Cities Awards from the Federation of Canadian Municipalities in 2016.

Home Energy Loan Program (HELP)

HELP is a $10 million pilot program aimed at single-family, detached homes in the City of Toronto. Homeowners voluntarily apply to the program and enter into agreements with the City to undertake qualifying energy efficiency and water conservation improvements.

The City then imposes a special charge—equal to the cost of the improvements, plus interest and an administrative charge incurred by the City—on the participating property. The LIC-based financing mechanism was enabled by legislation passed by the Province of Ontario in 2012.[31]

Payments to the City are made over a period of up to 15 years as a special charge indicated on the property tax bill. The payment obligation attaches to the property, not the owner, and is secured by the City's priority lien status. If a property changes ownership, the new owner would assume the financial obligation and continue to make payments to the City until the special charge is fully paid.



As of November 2015, the City had extended funding offers to 194 homeowners to undertake their home energy retrofit projects and 89 projects were either in progress or completed. Approximately $1.6 million in total home retrofit projects has been committed since January 2014.[32] Significantly more homeowners have applied, but experienced hurdles due to challenges in receiving consent from mortgage lenders (see page 28 for discussion of this federal regulatory issue and potential ways forward).

Individual project costs have ranged from $2,960 to $35,225, with an average value of $14,000 and homeowners receiving $1,400 in coordinated utility incentives. Homeowners are accessing HELP to finance, on average, four energy and water improvements per project, with the most common being:

- Insulation 27%
- Windows/doors 23%
- Heating system 16%
- Air sealing 10%
- Water heater 8%
- Central air conditioner 8%
- Toilet 7%

On average, completed projects have reduced natural gas consumption by over 30 per cent and abated 2.5 tonnes of GHG annually.[33]

High-rise Retrofit Improvement Support (Hi-RIS)

The High-rise Retrofit Improvement Support Program (Hi-RIS) is a three year pilot program offered by the City of Toronto to help residential property owners pursuing energy and water efficiency and conservation improvements. The multi-residential stream of the program has a $10 million funding envelope with a participation target of approximately 10 buildings.

Eligible properties must be residential buildings of five storeys or more located in the City of Toronto. Properties that have multiple single owners, such as condominiums, are not eligible for the program without commitment from all property owners. All registered owners of a property must consent to participating in the program, and property tax, utility bills, and all other payment obligations to the City for the past five years must be in good standing.

Qualifying improvements include:

- **BUILDING ENVELOPE** such as insulation upgrades, air sealing, and exterior cladding;
- **MECHANICAL SYSTEMS** such as boiler upgrades and replacement, bi-level lighting in parking garages, and hot water circulation pump controls; and
- **WATER FIXTURES** such as low-flow toilets.

All improvements that receive funding though the Hi-RIS program must be identified in an energy assessment report that meets the program criteria. The maximum funding amount for any property cannot exceed 5 per cent of the property's current value assessment (CVA). Interest rates range from 2.5 per cent for a five-year term to 4.5 per cent over 20 years. The payment obligation is attached to the property and not the owner, so benefits and costs of the obligation are assumed by a new owner if the property is sold.[34]

As of November 2015, funding offers had been extended to five projects, and two projects had been contracted. About $3.5 million, 35 per cent of the Hi-RIS $10 million envelope, has been committed to projects at two buildings, benefitting 802 apartment units.[35]

Committed projects range in value from $0.48 million to $1.8 million with an average project value of approximately $1.7 million. Completion of the committed projects are projected to yield an average energy consumption savings of 28 per cent and average 340 tonne reduction in greenhouse gas emissions annually over the useful life of the projects. Project timeframes have averaged about eight months.[36]

Completion of the committed projects are projected to yield an average energy consumption savings of 28 per cent and average 340 tonne reduction in greenhouse gas emissions annually over the useful life of the projects.

TORONTO PHOTO TIMOTHY NEESAM/FLICKR

On-Utility Bill Financing (or "Pay as You Save")

In "on-utility bill" or "pay as you save" (PAYS) financing, energy consumers borrow money to carry out retrofits and then pay back the loan as a charge on their energy utility bills. Repayment is usually designed so that monthly payments are approximately equal to (or even less than) the savings in energy costs resulting from energy-efficiency measures.

At the municipal level, on-bill financing programs are most viable for municipalities that own their local energy utilities. Other municipalities could play a role through partnerships with provincial public utilities or even private energy companies.

Nelson, B.C. conducted a two-year pilot of a PAYS based program in 2012/2013 through the municipally owned Nelson Hydro electric utility. More than 100 homes carried out retrofits, with an average 35% reduction in energy use in retrofitted homes (see case study below).

Manitoba Hydro is operating a number of successful on-bill financing programs at the provincial level (see case studies on page 22 for details).

OBF/PAYS CASE STUDY 1

NELSON'S ECOSAVE ENERGY RETROFITS PROGRAM[37]

Nelson, B.C.'s EcoSave is an energy retrofits program with optional on-bill financing offered through the city's municipally owned electrical utility.

The program was established as a key strategy in the City of Nelson's Low Carbon Path to 2040, Community Energy and Emissions Action Plan, and is designed to simplify the process for homes and businesses to reduce energy consumption and lower greenhouse gases within the community. The program was launched as a pilot in 2012 and 2013, and was renewed from 2014 onward through a local bylaw.

Successful Pilot

The two-year pilot began in 2012, to fund improvements such as improved insulation, reduced air leakage, and the installation of more efficient space and water heating systems. The pilot received funding support from Fortis BC, Natural Resources Canada, and the Columbia Basin Trust.

The average energy reduction for participants in the pilot was 35 per cent, slightly higher than the initial program target of 30 per cent. A total of 107 participants completed a post-retrofit assessment, which found a total annual energy savings was 5,837 GJ — a $72,896 reduction in annual energy costs and a 260 tCO_2e reduction in GHG emissions — equivalent to taking approximately 1,430 cars off of the road.

On Bill Financing

Financing is not mandatory, but was accessed by close to half of pilot program participants. The maximum loan amount available is $16,000, over a five or 10 year

In its first two years, Nelson's EcoSave program realized a $72,896 reduction in annual energy costs and 5,837 GJ in energy savings. It was the equivalent of taking 1,430 cars off the road.

NELSON PHOTO COURTESY GOTHPHIL/FLICKR

term at a 3.5 per cent fixed interest rate. A $100 processing fee is charged each time funds are dispersed to the participant.

Residential customers repay the on-bill financing loan on their regular Nelson Hydro utility bill, through automatic withdrawal. The loan is non-transferable, and needs to be paid in full upon the sale of the house. The loan is available to those who reside within the City of Nelson, and residents do not need to provide any personal information such as income or credit details, as the loan is based on payment history and property verification. This makes the process quick for homeowners to access.

In the event of default, the on-bill financing charge is subject to normal utility collection procedures, including service disconnects and the addition of outstanding amounts to property tax.

During the pilot, 39 City of Nelson residents signed up for a total of $318,000 in on-bill financing through Nelson Hydro, and another 11 Nelson Hydro business or residential customers outside city boundaries took on a total of $118,000 in retrofit financing, as arranged between the program and Nelson District Credit Union. The average loan was about $8,100 and largest was $16,100.

Retrofits and financing through Ecosave can generally be coordinated with rebates offered by the natural gas utility, Fortis BC.

Marketing and Delivery

The marketing plan for Nelson's EcoSave program was developed to be flexible and adaptable. Program operators say one effective strategy was to inform local suppliers, contractors, and community stakeholders prior to the program launch. Meetings were held with contractors, suppliers, and realty groups and presentations were made to two Nelson Rotary groups and the Landlord Association, plus councilor Donna Macdonald, who was on the advisory committee, presented the program to the Housing Committee.

The program also placed a high priority on being accessible to participants, and employs a dedicated coordinator. Through the coordinator, participants, suppliers, and contractors are kept well informed and able to find answers easily.

ON-BILL FINANCING: MANITOBA HYDRO'S PROGRAMS[38]

Power Smart Residential Loan

Manitoba Hydro's Power Smart Residential Loan (PSRL) was launched in March 2001. In 2015/16, the program is expected to finance energy efficient upgrades for 5,700 homes, achieving 0.5 GW.h and 0.3 MW of electric savings and 0.3 million cubic metres of natural gas savings. Combined with achievements to date, 86,992 homes will be retrofitted, resulting in 11.1 GW.h and 6.2 MW of electric savings and 15.8 million cubic metres of natural gas savings by the end of 2015/16.

Manitoba Hydro's Power Smart Residential Loan provides up to $7,500 per residence for measures including adding insulation, sealing air leaks, replacing windows and doors, electrical service and wiring, upgrading the efficiency of an existing furnace or water heater and solar water-heating systems. The average loan amount under the program to date is $4,640.

Loans are repaid as monthly installments on participants' energy bill, and owners, rather than tenants, are responsible for repayment. The loan becomes due and payable when the house is sold, so the program is not a fully transferable PAYS program (however, Manitoba Hydro has more recently also launched a transferable PAYS financing system with longer terms of repayment — see below).

Manitoba Hydro reports that the default rate is lower even than expected and below the default rate of typical banks loans in Canada. The participation rate of 2 per cent of residential customers each year is one of the best in North America.

Power Smart PAYS Financing

Manitoba's Power Smart PAYS Financing program was launched in November 2012. PAYS financing differs from Manitoba Hydro's other financing programs in that the loan is transferable between homeowners when a property is sold, and is transferable from a landlord to a tenant where the tenant is responsible for paying the energy bill.

In 2015/16, the program is expected to finance energy efficient upgrades for 336 homes, achieving 0.3 GW.h and 0.1 MW of electric savings. Combined with achievements to date, 919 homes will be retrofitted, resulting in 1.8 GW.h and 0.5 MW of electric savings by the end of 2015/16.

The program offers low-interest, on-bill financing for energy efficient upgrades. Financing is available over a term of up to 25 years (depending on the technology financed) with a five-year fixed interest rate.

Energy efficient upgrades that may qualify for financing include high efficiency natural gas furnaces, natural gas boilers, geothermal heat pump systems, insulation upgrades, and drain water heat recovery systems. The program also covers WaterSense-labeled toilets (in conjunction with energy efficient equipment).

The target market consists of all electric and natural gas customers in Manitoba. This offering complements and supports existing incentive-based programs by assisting customers in managing the installation cost of their upgrade. To qualify, upgrades must have sufficient

estimated annual utility bill savings to offset the monthly financing payment, thereby resulting in an energy bill that is less than or equal to the total bill prior to the retrofit.

As of 2015, the average loan amount under the program is $6,630.

Residential Earth Power Loan

Manitoba's Residential Earth Power Loan (REPL) was launched in April 2002. In 2015/16, program participation is expected to be 130 loans, resulting in 0.7 GW.h and 0.3 MW of electric savings and 0.1 million cubic metres of gas savings. Combined with achievements to date, 1,388 customers will participate resulting in 16.3 GW.h and 4.9 MW of electric savings and 3.0 million cubic metres of natural gas savings by the end of 2015/16. The program is forecast to reach 0.5% of targeted customers by the end of 2015/16.

The loan is designed to support the adoption of geothermal heat pump technology Although more expensive to install, geothermal heat pump systems offer significant electricity savings, thereby reducing customers' monthly utility bills. The convenience and flexibility of the on-bill REPL reduces the financial barrier that exists when installing a geothermal heat pump system. The program was also designed to build awareness of emerging technologies and foster new, growing industries that utilize these technologies through educational materials, technical support, and training workshops. Solar hot water systems were added as an eligible technology in 2010.

Customers are eligible for up to $20,000 in financing for installing geothermal heat pump systems or $7,500 in financing for installing solar domestic water heating systems. The average loan amount to date is $18,831.

The financial terms include a five-year fixed interest rate over a 15-year maximum amortization term. The interest rate for the balance of the financing period is established at Manitoba Hydro's cost of borrowing at the time the fixed interest rate term expires.

Manitoba Hydro's Power Smart Residential Loan provides up to $7,500 per residence for measures including adding insulation, sealing air leaks, replacing windows and doors, electrical service and wiring, upgrading the efficiency of an existing furnace or water heater and solar water-heating systems. The average loan amount under the program to date is $4,640.

WINNIPEG PHOTO COURTESY SANCHO MCCANN/FLICKR

PART 4

How Financing Can Help Overcome Barriers

Research suggests that the relatively high upfront costs of retrofits and the relatively long time it takes to recoup retrofit expenses through energy savings are barriers for many homeowners.

LIC-BASED AND ON-BILL FINANCING mechanisms can address some of the key barriers to energy-efficiency retrofitting.

Barrier 1: Upfront Costs of Energy-Efficiency Retrofits

While the economic and environmental benefits of energy-efficiency retrofits are widely known by policymakers and much of the general public, research suggests that the relatively high upfront costs of retrofits and the relatively long time it takes to recoup retrofit expenses through energy savings are barriers for many homeowners. When financial incentives that mitigate some of these upfront costs have been offered in Canada — for example the federal ecoENERGY home retrofit program — demand has often been higher than expected.

Barrier 2: Financing Costs

High upfront renovation costs are compounded by expensive private financing options. Homeowners often have to turn to credit cards or other types of higher-interest, unsecured loans to finance retrofits, which can act as a deterrent to borrowing.

Analysis of recent B.C. PAYS-based retrofit financing pilots suggests a correlation between financing uptake and lower rates of interest. Pilot programs offered though local utilities in Penticton and Nelson offered the lowest interest rates of the six programs examined, and saw 44 per cent and 59 per cent of participants, respectively, access retrofit financing through the program. Less than 6 per cent of participants accessed financing in the four other programs examined, all of which had higher interest rates.[39]

LIC-based financing, offered on a not-for-profit basis and secured through a property tax based lien, opens the door to much more affordable interest rates. It may also be possible to record the repayment as a "tax" rather than a loan, so that the loan would not affect the borrower's official debt levels and credit rating. Energy utilities may also be in a position to offer favourable financing rates through on-bill financing programs.[40]

Barrier 3: Length Of Home Ownership

A potential disincentive for retrofits is the fact that homeowners often move before the end of the repayment period and feel they are unlikely to realize the long-term benefits in energy savings — and may even take a hit financially by having to carry the financing costs of a retrofit in a house they no longer own.

However, LIC-based financing is typically attached to a property rather than to a person, which means the owner pays only while they actually own the property, and then pass any remaining repayments to a subsequent owner upon resale of the property. In essence, the owner initiating an LIC-financed retrofit does not lose out if they sell their home before the full costs of the retrofit are recouped in energy savings after full repayment.

If designed properly, the retrofit repayment will be roughly revenue-neutral because of decreased energy bills during their occupancy, and any remaining repayments will be the responsibility of the next owner (who will likewise benefit from decreased energy costs during repayment and probably save money once the retrofit has been paid off). In fact, because energy efficiency retrofits in Canada typically recoup much of their initial cost through increased home value at resale, homeowners initiating LIC-financed retrofits could even come out ahead financially when they resell.

On-utility-bill financing programs can be similarly structured, so that repayment obligations are attached to the meter and passed on to new owners at the time of resale.

Why Municipalities?

Retrofit financing programs can of course be implemented by various levels of government, energy utilities, or even private financial institutions. However, there are a number of reasons for municipalities to take the lead in program delivery, especially if buttressed by regulatory support, financing mechanisms, and renewed investment in homeowner grants and rebates by senior levels of government.

- **SECURE AND PROVEN FINANCING MECHANISM:** LIC, or local improvement charge, financing offers a proven and secure mechanism for financing improvements and ensuring repayment. Moreover, this mechanism is unique to local governments, and particularly well suited to addressing some of the barriers associated with retrofit financing for consumers. In many provinces LICs could be extended to finance energy efficiency retrofits on private property with only minor legislative changes or regulatory clarifications (see Appendices).

- **LOCAL LEADERSHIP, COMMUNITY KNOW-HOW AND INITIATIVE:** Communities with a strong consensus on the benefits of energy efficiency retrofits could move ahead on programs without waiting for support to build in regions that are less interested in the concept. Given wide variations in construction and climate across and even within individual provinces, local governments may also be in the best position to develop retrofit programs tailored to the specific needs and circumstances of their communities.

PHOTO COURTESY STEPHEN URQUHART/FLICKR

- **MUNICIPAL JURISDICTION OVER CONSTRUCTION AND RENOVATIONS:** Municipalities play a key role in the approval and administration of building permits and other issues related to retrofit construction and are thus well placed to run "one-stop shopping" retrofit programs that simplify the process for participants by bringing all of the administrative steps under one roof.

- **ACCESS TO AFFORDABLE CAPITAL:** In many provinces, municipalities are able to access capital at below-market rates through provincial-level municipal financing bodies, opening the door for lower-cost financing than would be available to most homeowners through private loans. Infrastructure Ontario has already approved this model for LIC-based energy retrofits on private property. Municipal provision of capital on a break-even basis, rather than seeking a financial return on investment, would likely reduce financing costs for homeowners in comparison with private loans.

  With renewed federal government interest in climate change mitigation and economic stimulus after the 2015 election, it is also worth reconsidering proposals for federal capital support for residential retrofit financing. A 2009 report prepared for the Canada Mortgage and Housing Corporation outlines options for a federal loan fund to support municipally-led LIC retrofit financing.[41] One of the options proposed would see municipalities borrow at low rates of interest from a federal fund, then repackage the capital as LIC-backed retrofit financing available to home-owners at below standard consumer interest rates. According to the CMHC report, loans could be provided without adding to a municipality's credit risk (i.e., off balance and without increasing the municipality's debt) by a special provision through which the federal government (or the respective provincial government) carries the full default risk for municipal LIC programs (which would be very small, given that repayments are collected trough participants' property taxes).

With renewed federal government interest in climate change mitigation and economic stimulus after the 2015 election, it is also worth reconsidering proposals for federal capital support for residential retrofit financing.

- **COST-RECOVERY OPERATIONS:** Well-designed municipal retrofit financing programs can operate at full cost recovery for the municipality or in some cases generate a small surplus for reinvestment in the program. For example, an analysis of the Halifax Solar City pilot in 2015 by Grant Thornton LLP found "an estimated excess of revenues over expenses" and that the program had met the objective of being "financially self-sustaining, without impacting the non-participating HRM taxpayer."[42]

- **LOCAL GHG REDUCTION COMMITMENTS:** Energy-efficiency retrofits can help municipalities meet legislated and voluntary GHG reduction commitments. In B.C., for example, municipalities are required to include community-wide emissions reductions targets in their official community plans. As the B.C. Climate Leadership Team report notes, "communities have influence over approximately 40 per cent of greenhouse gas emissions in British Columbia and are a key partner in reducing greenhouse gas emissions."[43]

- **HESITANCY/INACTION BY UTILITY COMPANIES:** While Manitoba Hydro has been effectively offering retrofit programs for years, utilities in some other jurisdictions have been slow to move on retrofit financing. In B.C., while both BC Hydro and Fortis BC have been enabled through provincial legislation to deliver PAYS-type financing, programs have yet to progress beyond the pilot stage. Documents released in 2015 under a Freedom of Information request suggest that utilities actively lobbied to cancel the pilots (see Appendix I for excerpts, including a ministerial report).[44]

This raises the possibility that in B.C. stronger provincial action is needed to motivate or incentivize utility companies to offer retrofit programs, or alternatively that the public sector should take the lead in program delivery. A report from the Pacific Institute for Climate Solutions notes that unfavorable perception of the 'brand' of a utility company may have even been a factor in low uptake of one B.C. retrofit financing pilot, and that government leadership can be important for public confidence and uptake of programs.[45] Municipally-led programs are one option for public sector delivery, possibly complimented by provincial or regional district delivery in smaller communities and un-incorporated areas.

Keys to Municipalities Moving Forward

- **ENABLING LEGISLATION:** Municipalities need clarity from their provincial government regarding the use of local improvement charges to finance energy-efficiency improvements on private property.

  Ontario and Nova Scotia are leading the way. Nova Scotia passed legislation permitting LIC-based residential energy retrofit financing across the province in 2012, building on earlier legislation that enabled the use of LICs for the Halifax Solar City pilot. The Ontario legislature passed legislation allowing the use of LICs for residential energy retrofit financing in 2012, enabling the launch of Toronto's HELP and Hi-RIS pilots and stimulating interest from more than 20 other Ontario municipalities (for more on the Nova Scotia and Ontario legislation, see page 29).

In some jurisdictions, specific legislative amendments may also be required to allow LIC-backed retrofit financing to stay attached to a property (rather than the owner) upon resale of a home. Vancouver encountered barriers to this mechanism in its efforts to launch a residential retrofit pilot in 2012.

"As we move forward with our next Community Energy Action Plan in Yellowknife, I'm hoping to see us move beyond municipal-owned facility improvement and use new funding tools like innovative financing mechanisms to give Yellowknifers options to reduce their own emissions and save on the high cost of fuel and electricity."

— Yellowknife City Councillor Dan Wong, February 2016

Provincial Legislation Supporting LIC and On-bill Financing

If LIC financing programs are going to be part of the solution to Canada's GHG reduction strategy, municipalities need their provincial governments to write clear enabling legislation and regulations. Nova Scotia and Ontario are the first two Canadian provinces to move on LIC-based municipal financing for energy efficiency and renewable energy improvements on private property. In both provinces, enabling the use of LIC financing entailed amendments to provincial legislation governing municipalities and their use of local improvement charges.

In general terms, these provincial amendments were required to:

- Clarify what kinds of local improvements can be done (i.e., include energy efficiency works and renewable energy works);
- Clarify where the local improvements can be carried out (i.e., private property) and who can access local improvement funding (i.e., individual property owners); and
- Allow municipal councils to approve LIC programs as a whole rather than requiring bylaws to be passed for each individual local improvement.

LENDER CONSENT: In some cases, Toronto's LIC based retrofit program has run into problems around the inability of about half of mortgage holders to attain consent from their mortgage lender for LIC financing. The core issues are:

- The LIC is subject to a priority lien in favour of the City, which subordinates the lender's position;
- For default-insured mortgages, CMHC has signalled to lenders they will not insure any LIC arrears on a given property; and
- Current mortgage underwriting lacks the flexibility to reflect the savings that arise from investments in energy efficiency.

Federal government action could help address the issue with CMHC, and program advocates have also suggested establishing a 'loss reserve program' for homeowners with default insured mortgages. A loss reserve program would reimburse the first mortgage lender in the case of losses linked to an LIC program for a property undergoing disclosure. In essence, the lender is put back in the same position as it would be without an LIC lien. California has used this model to support thousands of LIC-type retrofits.

Studies from the U.S. show that energy retrofitted homes are in fact about one third less likely to default on mortgages than average. The default rate for Manitoba Hydro's Power Smart Residential Loan has been only 0.48 per cent on more than 86,000 loans through the program since 2001.

It's important to note here that studies from the U.S. show that energy retrofitted homes are in fact about one third less likely to default on mortgages than average.[47] The default rate for Manitoba Hydro's Power Smart Residential Loan has been only 0.48 per cent on more than 86,000 loans through the program since 2001.[48]

CAPITAL SOURCES: While financing programs can be designed to be full cost-recovery and thus revenue-neutral, municipalities will nonetheless need sources of capital to back retrofit financing programs. Possibilities include:

- Low-interest borrowing to municipalities via provincial municipal financing authorities. Infrastructure Ontario has already approved this model for LIC-based energy retrofits on private property in Ontario, setting a precedent for equivalent bodies in other provinces, such as the Municipal Finance Authority of BC (see page 32 for details);
- Establishment of a federal or provincial energy-efficiency loan fund;
- Municipal/community bonds;
- Credit-enhanced capital pools;
- Partnerships with credit unions or other financial institutions; and
- Energy utilities as "banks" for municipally administered retrofit financing.

UTILITY COMPANY CHARTER CHANGES: To make PAYS type financing more effective, utility company charters may need to be changed to allow financing of retrofit measures that have impacts beyond their specific energy product. In B.C., energy utilities are currently only able to fund programs that reduce usage of the specific type of energy they supply.

RECORD LIC CAPITAL SEPARATELY FROM MUNICIPAL DEBT: Municipalities would benefit from legislative amendments allowing them to record money borrowed to fund full cost-recovery local improvement projects separately from regular municipal debt. Vancouver already has this capacity under its Charter, as do municipalities in Ontario.

LEGISLATION SUPPORTING LIC ENERGY FINANCING PROGRAMS

Halifax LIC Legislation (2010)

In December 2010, the Nova Scotia Legislature passed amendments to the Halifax Regional Municipal Charter that allowed Halifax to move ahead on a proposed LIC-financed residential solar hot water project and opened the door to expanded use of LICs to finance other types of energy-efficiency and renewable energy measures on private property. Prior to this amendment, the only use of LICs to fund work on private property had been for tree removal.

Two main factors seem to have come together in facilitating the change in the Halifax charter. First is the initiative shown by the Halifax Regional Municipality in deciding to formally ask the province of Nova Scotia to amend the Halifax municipal charter to allow participants to be billed as part of their annual tax bill. The second factor was the Nova Scotia government's commitment to moving forward on renewable energy and energy efficiency efforts, and a willingness to support innovative policy measures.

Halifax LIC Legislation Extended to Entire Province of Nova Scotia (2012)

The amendments to the Halifax charter set an important precedent for other jurisdictions interested in using LIC financing for energy-efficiency and renewable-energy measures. In 2012, the Nova Scotia legislature passed amendments to the Municipal Act to allow local councils to "make by-laws imposing, fixing and providing methods of enforcing payment of charges for the installation of energy efficiency equipment on private property with the consent of the property owner" (see Appendix A for the text of the legislation). By late 2015, several Nova Scotia municipalities had responded by passing bylaws allowing for LIC-based energy retrofit financing, and programs were under development in a number of communities across the province, including Shelburne, Berwick, Bridgewater, and Guysborough.

Ontario LIC legislation

In 2012, the Ontario legislature passed amendments that enable municipalities to set up LIC-based retrofit and renewable energy programs. The Ontario changes followed requests from the City of Toronto and citizen groups.

The Ontario amendment introduce the use of an agreement between the municipality and a property owner, and enables a special charge for local improvement works on particular properties to be placed on the property tax roll and receive priority lien status.

The Ontario legislation includes the flexibility for allowing a municipality to pass an entire LIC program, rather than go through a bylaw approval and public consultation process for each individual retrofit project.

See Appendix B for the Ontario legislation.

LIC Legislation Elsewhere in Canada

The City of Yellowknife in the North West Territories is, as of 2016, actively exploring LIC retrofit financing and has drafted a territorial legislative proposal drafted with help of Pembina Institute.[46]

According to the Pembina proposal, enabling LIC financing in the NWT would require changes to Cities, Towns and Villages Act (CTV Act) along lines similar to recent amendments in Ontario and Nova Scotia.

Necessary amendments would focus on:

- Clarifying what kinds of local improvements can be done (i.e., include energy efficiency works and renewable energy works);
- Clarifying where the local improvements can be carried out (i.e., private property) and who can access local improvement funding (i.e., individual property owners); and
- Allowing municipal councils to approve LIC programs as a whole, rather than requiring bylaws to be passed for each individual local improvement.

PART 5

Retrofit Financing Across Canada: Building Momentum Since 2011

Momentum has built, with pilot programs launched and enabling legislation passed in a number of jurisdictions across Canada.

WHEN THE COLUMBIA INSTITUTE PUBLISHED our initial report on residential energy retrofit financing in 2011 (see columbiainstitute.ca), on-bill and LIC financing for retrofits on private property were both relatively new ideas in Canada. While Manitoba had been operating on-bill loan programs for almost a decade at that point, the first LIC pilot in the country was still in its preparatory stages in Halifax. Since then, momentum has built, with pilot programs launched and enabling legislation passed in a number of jurisdictions across Canada.

British Columbia

Nelson's successful EcoSave on-bill-financing initiative has continued as regular program since the completion of a two-year pilot in 2013 (see page 20), showing that well designed and implemented retrofit financing programs can work well in BC.

However, some other B.C. pilots highlight both the need for better provincial support and the importance of getting details right in program design and delivery. While the B.C. government passed legislation in 2012 enabling on-bill energy retrofit financing through utility companies, pilots launched in 2012 by Fortis BC and BC Hydro in Colwood and the south Okanagan had disappointing results and were cancelled early. An evaluation of the B.C. pilots by the Pacific Institute for Climate Solutions (PICS) suggested low uptake was related to problems with marketing, failure to secure contractor buy-in, overly stringent underwriting criteria, and unnecessary complications in the energy audit and program application processes.[49] It is worth noting that the City of Penticton component of the Okanagan pilot, which was modeled on Nelson's EcoSave program, had significantly higher uptake on financing than the other programs in the pilot, possibly because of lower interest rates and lower barriers to entering the program.[50]

In addition, B.C. government documents released under access to information requests suggest resistance to the pilots on the part of B.C. utility companies, and that the pilots were cancelled by the Minister after two weeks of "intensive briefing" with utility company representatives. Both BC Hydro and Fortis BC expressed reluctance to take on administrative, labour, and marketing costs associated with the pilot programs, and were resistant to taking on the costs of upgrading their automated billing systems to make on-bill financing more viable (see Appendix I for Ministerial briefing notes on the pilots).[51]

A 2011/12 Vancouver pilot involving a type of property-secured financing also had relatively low uptake, with evaluations of the pilot suggesting the initiative was undermined by complexities related to interest rates, loan amounts/terms, and the city's inability (under current legislation) to offer a true LIC repayment system (financing was arranged through a separate financial institution).[52]

Despite these challenges, there is growing awareness among policymakers and the public of the potential for building retrofits to help meet emissions targets, save energy, and stimulate the economy. In its October 2015 report to the provincial government, the B.C. Climate Leadership Team (CLT) recommends targeted programs aimed at existing buildings as one of its four key strategies for a 50 per cent reduction in GHG emissions (or 3.4 MT of CO_2 annually) from the B.C. built environment by 2030. To this end, the CLT called for the province to establish by 2016 a buildings strategy that includes as a core element "programs (such as on-bill financing) that encourage retrofits that reduce GHG emissions and encourage energy efficiency in existing building stock." As the CLT report notes, "affordability for building owners, occupants, builders, developers, and the provincial government is a critical consideration," and the authors recommend "financing programs to help British Columbians and B.C. businesses access the capital needed."[53]

Manitoba

As noted in the case studies in this report, Manitoba Hydro offers a range of successful on-bill financing programs that can provide lessons for programs elsewhere.[54] The well-established Power Smart Residential Programme is entering its 14th year, and serves approximately new 5,000 participants yearly, with annual total loan amounts of approximately $29 million. In terms of loan volume, this is one of the most successful on-bill financing programs in North America, having reached 15 per cent of households within its target market. Total loan volume has reached nearly $300 million, with a default rate of just 0.48 per cent.[55]

In 2012, Manitoba launched the Power Smart PAYS Financing (pay as you save) program, which differs from Manitoba Hydro's other financing programs in that the loan is transferable between homeowners when a property is sold, and is transferable from a landlord to a tenant where the tenant is responsible for paying the energy bill.

Manitoba's Residential Earth Power Loan (REPL), launched in 2002, is designed to support the adoption of geothermal heat pump technology. Although more expensive to install, geothermal heat pump systems offer significant electricity savings. Solar hot water systems were added as an eligible technology in 2010. Combined with achievements to date, 1,388 customers will participate in REPL by the end of 2016, resulting in 16.3 GW.h and 4.9 MW of electric savings and 3 million cubic metres of natural gas savings.

A 2015 analysis of Manitoba Hydro programmes by the Pacific Institute for Climate Solutions attributes some of their success to elements that include:[56]

- Underwriting criteria and eligibility requirements are relaxed compared to traditional bank renovation financing;
- Interest rates are kept relatively low;
- Convenient and easy to use program that offers a quick turnaround time for approval;
- Robust supplier and contractor buy-in and participation;
- Manitoba Hydro's strong brand equity—it is seen as a trusted entity; and
- Relatively relaxed underwriting criteria that allows for greater market penetration, as the loan rejection rate is only about 5 per cent.

Nova Scotia

Success in Halifax and Momentum Province-wide

Following the passing of province-wide enabling legislation in 2012 (see page 29) and success of the Halifax Solar City pilot (see case study on page 17), local governments in a number of Nova Scotia communities have begun passing LIC retrofit financing bylaws and setting up programs. Nova Scotia municipalities moving toward LIC programs include Shelburne, Berwick, Bridgewater, and Guysborough. Examples of local retrofit financing bylaws in Nova Scotia can be found in Appendix A.

Nova Scotia municipalities moving toward LIC programs include Shelburne, Berwick, Bridgewater, and Guysborough.

Ontario

LIC Programs Gaining Momentum

Legislative and regulatory changes have set the ball rolling in Ontario, with Toronto currently in the final year of its HELP single-family residential and Hi-RIS multi-family residential retrofit financing pilots as of 2016 (see page 19).

In the fall of 2015, the City of Guelph passed legislation paving the way for the launch an LIC financing program, the Guelph Energy Efficiency Retrofit Strategy (GEERS). As proposed, the program will be turnkey style and aims to keep the process as simple as possible for participating homeowners. Each applicant will have a single point of contact at the City tasked with explaining the program, handling registration, and following up with the applicant throughout the process.[57] GEERS aims to achieve a 20 to 40 per cent reduction in residential energy use, retrofitting between 2,000 and 3,000 homes per year between 2015 and 2031. Once the residential program is underway, the City of Guelph plans to tackle the industrial, commercial, and institutional sector.[58]

At least 19 Ontario municipalities have been actively exploring retrofit programs through the Collaboration on Home Energy Efficiency Retrofits in Ontario (CHEERIO), an initiative of the Toronto Atmospheric Fund that brings municipalities together to better understand how to use specialized financing to promote home energy retrofits. The overall goal of CHEERIO is to "collaboratively design a high-quality, multi-municipality pilot that will assess the effectiveness of the LIC financing powers in accelerating deep residential energy retrofits, and provide insights and guidance regarding full-scale implementation. The priority focus will be on the residential sector in Ontario, both single-family and multi-unit."[59] Outcomes of the Toronto pilot programs will likely influence the momentum and trajectory of CHEERIO over the next few years.

Infrastructure Ontario Funding for LIC Retrofit Programs

Infrastructure Ontario has formally clarified that municipalities can take advantage of the provincial agency's affordable long-term rates to provide the financing and price certainty they need to support residential energy efficiency programs funded by LICs. Those municipalities in Ontario that decide to use the LIC financing model would manage the local improvement program within their jurisdiction and would be responsible for lending to private property owners. The municipality sets the requirements for local improvement programs, and Infrastructure Ontario does not lend directly to private property owners.[61]

COLLABORATION ON HOME ENERGY EFFICIENCY RETROFITS IN ONTARIO

At least 19 Ontario municipalities have been actively exploring retrofit programs through the Collaboration on Home Energy Efficiency Retrofits in Ontario (CHEERIO), an initiative of the Toronto Atmospheric Fund that brings municipalities together to better understand how to use specialized financing to promote home energy retrofits.[60] Municipal members of CHEERIO include:

- Aurora
- Barrie
- Burlington
- Durham Region
- Town of East Gwillimbury
- Frontenac
- Guelph
- Hamilton
- Town of Huntsville
- Kingston
- London
- Mississauga
- Newmarket
- Markham
- Ottawa
- Region of Peel
- Richmond Hill
- Toronto
- Windsor

North West Territories

Yellowknife Moving Towards a Residential Retrofit Program

The City of Yellowknife commissioned a Pembina Institute study on residential retrofit financing options. Released in 2015, the report found both a need and a significant demand for an LIC program in Yellowknife, particularly among owners of houses built in the 1960s and 70s.

The report recommends the establishment of a municipally run Yellowknife Energy Savings Program, based on a 'turnkey' approach that would not only help residents access low-interest financing, but also provide an assessment of home energy costs and savings, assist clients in securing contractors at a fair price, and provide convenient links to existing rebate programs.

In addition to addressing environmental and energy security concerns, commentators have noted that retrofit programs could help mitigate the ongoing cost of living/affordability crisis for residents in the Canadian north.

Pembina projects significant economic and environmental benefits through the proposed program, with an average homeowner saving of about $1,300 in energy costs, reducing energy use by 40.3 GJ and cutting GHG emissions by about 3.75 tonnes of carbon dioxide equivalent (CO_2e). Such saving would amount to about 47 per cent of average household energy use in Yellowknife, and 60 per cent of average household GHG emissions.

Yellowknife Mayor Mark Heyck included the concept in the platform for his successful re-election campaign in the fall of 2015, suggesting public support and political will exists to move the ahead on a program.[62] Draft enabling legislation prepared by the Pembina Institute can be found in Appendix C.

CONCLUSION

PHOTO COURTESY ANN FOLEY/FLICKR

WHEN THE COLUMBIA INSTITUTE published our initial report on residential energy retrofit financing in 2011, on-bill and local improvement charge (LIC) financing for retrofits on private property were both relatively new ideas in Canada.

While Manitoba had been operating on-bill loan programs for almost a decade at that point, the first local improvement charge pilot in the country was still in its preparatory stages in Halifax. Since then, momentum has built with pilot programs launched and enabling legislation passed in a number of jurisdictions across Canada. Ontario and Nova Scotia have both changed their legislation to allow local governments to use this innovative retrofit financing mechanism and communities in those provinces are stepping up to the plate.

Beyond climate action, scaling up retrofits has a host of co-benefits: lower residential energy bills, increased home value, more comfortable, healthier homes, and job creation.

This Green House II finds that widespread investments in the residential sector across Canada could mean slicing off about 4 per cent of Canada's emissions from energy use and 2.7 per cent of Canada's overall emissions. Innovative leadership on energy retrofits, the fastest way to take action on climate change, couldn't be more timely. At current emission rates, the entire carbon budget for a 50 per cent chance of keeping global warming to 1.5 degrees will be exhausted by 2025.

The key to unleashing local government leadership on retrofits is minor provincial legislative change. Local governments have jurisdiction over construction and renovations and bring community know how, initiative, and leadership. Local improvement charge (LIC) financing offers a proven and secure mechanism for financing improvements and ensuring repayment.
This approach offers an innovative way to scale up retrofits and climate action, especially if federal and provincial energy grant programs are re-instated. In the meantime, provinces can open the door to local government leadership and clarify local improvement charge (LIC) legislation.

ENDNOTES

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It should be noted that a number of analysts have raised serious concerns about BC's lack of progress since 2012 towards meeting those targets. Energy Forum, an industry-NGO coalition, wrote in a February 2016 letter to the BC Premier that "we are concerned that the stall in B.C.'s climate policy development since 2012 left the Climate Leadership Team in the position of being unable to produce recommendations that would get B.C. on track to its legislated 2020 target" (Energy Forum Letter re: CLT recommendations, Feb. 9, 2016: http://energyforum.ca/wp-content/uploads/2016/02/EnergyForum-CLP-letter-20160209.pdf).

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Sample Legislation

APPENDIX A

Nova Scotia Legislation Permitting the Use of Local Improvement Charges for Energy Efficiency and Renewable Energy Financing

In 2012, the Government of Nova Scotia added an amendment to the Municipal Government Act, Chapter 18 of the Acts Of 1998. The Amendments followed similar changes to Halifax Regional Municipality Charter in 2010.

Full text at http://nslegislature.ca/legc/statutes/municipal%20government.pdf

APPENDIX B

Ontario Legislation Permitting the Use of Local Improvement Charges for Energy Efficiency and Renewable Energy Financing

In October 2012, the Ontario Ministry of Municipal Affairs and Housing authorized Ontario Regulations 322/12 and 323/12, amending O.Regs. 586/06 and 596/06 under the Municipal Act, 2001 and the City of Toronto Act, 2006. The amendments came into force on October 25, 2012.

Local Improvement Charges Regulation Amendments Under the Municipal Act and the City of Toronto Act

Summary of Decision:

O. Reg. 586/06 (Local Improvement Charges (Priority Lien Status) made under the Municipal Act, 2001, was amended by O. Reg. 322/12, and O. Reg. 596/06 (Local Improvement Charges (Priority Lien Status) made under the City of Toronto Act, 2006, was amended by O. Reg. 323/12.

These amendments address:

- Municipal flexibility to undertake different types of capital works as a local improvement, including, but not limited to renewable energy, energy efficiency and water conservation capital works;
- Flexibility for municipalities to enter into agreements with willing private land owners to undertake local improvements on private property and recover the cost from owners; and,
- Alternative methods of apportioning the costs of local improvements on private property beyond a charge based on frontage.

Full text at: Regulation Number(s): O.Reg. 586/06 (Municipal Act, 2001) https://www.ontario.ca/laws/regulation/r12322

Full text at: O.Reg. 596/06 (City of Toronto Act, 2006) https://www.ontario.ca/laws/regulation/r12323

APPENDIX C

Proposed North West Territories legislation for Local Improvement Charge Based Energy Efficiency and Renewable Energy Financing (Pembina Institute, 2015)

An Act to Enable Municipalities to Use Local Improvement Charges for Energy Efficiency Measures

Summary: This Bill amends the Cities, Towns and Villages Act to enable municipalities to use their local improvement charge authority to finance property-assessed pay-as-you-save energy efficiency investments in private local buildings.

Full text at https://www.yellowknife.ca/en/resources/Green_Energy_Retrofit_Program_-_March_31_2015_-_Pembina.PDF

APPENDIX D

Halifax Regional Municipality By-Law for Solar City Program

Halifax Regional Municipality, By-Law Number S-500, Respecting Charges for Solar City Program

This local government bylaw establishes financing, lien and repayment terms for loans under the Halifax Solar City program.

Full text at https://www.halifax.ca/legislation/bylaws/hrm/documents/By-lawS-500.pdf

APPENDIX E

Town of Bridgewater Chapter 199 Property Assessed Clean Energy Program (Pace) By-Law

This local government legislation from Nova Scotia is provided as an example of the type of municipal bylaw being used to structure LIC-based retrofit programs in that province after the introduction of provincial enabling legislation in 2012.

Full text at: https://www.bridgewater.ca/town-council/town-by-laws-and-policies/by-laws/965-chapter-199-property-assessed-clean-energy-pace/file

APPENDIX F

City of Toronto By-Law on LIC Financing

CITY OF TORONTO BY-LAW No. 1105-2013 To authorize the undertaking of energy efficiency and water conservation works on private residential property as local improvements under the Residential Retrofit Program.

This bylaw authorizes the undertaking of energy efficiency and water conservation works on private residential property as local improvements, for the purpose of raising all or part of the cost of the work by imposing special charges on lots upon which all or some part of the local improvement is or will be located.

Full text at: www.toronto.ca/legdocs/bylaws/2013/law1105.pdf

APPENDIX G

City of Nelson EcoSave Energy Retrofit Bylaw

City of Nelson EcoSave Energy Retrofit Program Bylaw No. 3235, 2012
Revised: November 17, 2014

A new bylaw was created for the on-bill financing component of Nelson's EcoSave Energy Retrofits Program. In the bylaw, it states that the loan will form a component of the Nelson Hydro utility bill and will be subject to the normal utility collection procedures including disconnects and addition of outstanding amounts to property tax. The bylaw also creates clarity around who is eligible for participating in the program, particularly the on-bill financing component.

Full text at: https://nelson.civicweb.net/document/19848

APPENDIX H

British Columbia's On-Bill Financing Legislation

These 2012 amendments to the BC Clean Energy Act enable owner transferable on-bill financing through BC utilities, and in fact mandate that a "prescribed public utility must establish and maintain a program to offer financing to eligible persons for improving the energy efficiency of a building, or a part of a building, owned or occupied by a borrower."

See Section 17 of CLEAN ENERGY ACT [SBC 2010] CHAPTER 22

Full text at: www.bclaws.ca/civix/document/id/complete/statreg/10022_01

APPENDIX I: FREEDOM OF INFORMATION RESPONSE

Government of British Columbia response to FOI Request - EGM-2014-50164 Relating to the On-Bill Financing Pilot Program, also known as the Home Loan Pilot Programs

Full text at: http://docs.openinfo.gov.bc.ca/Response_Package_EGM-2014-50164.pdf

APPENDIX J

Overview of Energy Retrofit Financing in Canadian Provinces and Territories, 2016

Province/ territory	LIC financing	On-bill financing (and other models)
British Columbia	B.C. municipalities need clarified regulations and/or legislation from the province permitting the use of LICs to finance energy efficiency improvements on private property. Precedents for this now exist in Ontario and Nova Scotia.	A successful program has operated since 2012 by the City of Nelson's municipally owned hydro utility. Provincial legislation has also enabled and mandated pilots by major utilities, but pilots have performed poorly because of problems in program design and apparent resistance to administering these programs by major utilities in B.C.
Alberta	The current Alberta government has expressed intentions to launch a $5 million energy retrofit loans program in 2016, but hasn't at the time of writing announced a preferred model. Past analysis suggests that the Municipal Government Act defines local improvements flexibly, which could open the door to the use of LICs for energy efficiency improvements without changing existing legislation. However, local governments would be more likely to move ahead if given legislative and regulatory clarification from the province. Precedents for this now exist in Ontario and Nova Scotia.	The current Alberta government has expressed intentions to launch a residential $5 million energy retrofit loans program in 2016, but hasn't at the time of writing announced a preferred model. Edmonton and Calgary both own large energy utilities, which raises the potential for municipally led on-bill retrofit financing programs. Further research will be required to ascertain any legislative or regulatory measures necessary to move ahead on that type of program in Alberta.
Saskatchewan	While past analysis found no specific barriers to the use of LICs for energy efficiency projects under Saskatchewan municipal legislation, experience elsewhere suggests legislative/regulatory clarity from the province is necessary to encourage local governments to move ahead on LIC programs. Precedents for this now exist in Ontario and Nova Scotia.	Two Crown corporations, SaskPower (electricity) and SaskEnergy (natural gas) provide the vast majority of energy used in residential and commercial buildings in Saskatchewan. While neither at present operates a specific on-bill financing program, they have over the years provided reduced interest rate loans and flexible repayment on loans for specific efficiency and renewable energy measures. On-bill financing for retrofits could be seen as in keeping with these existing programs, as would capitalizing or providing guarantees for a capital pool that municipalities could draw upon for LIC-based programs.

Province/ territory	LIC financing	On-bill financing (and other models)
Manitoba	Past analysis found no specific barriers to the use of LICs for energy efficiency projects in the wording of the Municipal Act or the Winnipeg Charter. However, Manitoba Hydro's existing suite of province-wide on-bill financing programs may limit the need for LIC-based programs.	Successful on-bill financing programs are available through Manitoba Hydro, some of them dating back to 2001.
Ontario	Enabling legislation was passed in 2012, and pilots are running in the City of Toronto. Other municipalities are actively investigating programs.	A number of major electric utilities in Ontario, notably Toronto Hydro and Ottawa Hydro, are municipally owned, opening up the possibility of municipally led on-bill retrofit financing programs, financed and administered through local energy utilities, with repayment collected through participants' utility bills.
Quebec	Past research found no formal legal barriers in Quebec to LIC financing for residential energy-efficiency retrofits, but the provincial municipal affairs ministry told those researchers that LIC for energy efficiency was "against the spirit" of existing municipal legislation.	Provincially owned Hydro-Québec supplies most of the province with electricity and has perhaps the "cleanest" electricity supply on the continent. Given the prevalence of electricity in residential heating in the province, Hydro-Québec would be well placed to administer on-bill financing for energy-efficiency improvements or potentially for conversion to electric heating equipment in residences currently reliant on wood or fossil fuels.
New Brunswick	New Brunswick's legislation governing LICs is explicit about what measures are permissible and energy efficiency/ renewable energy improvements are not included in the current list of allowed local improvements. Legislation would be required.	Loans for energy efficiency retrofits were in the past offered through Efficiency New Brunswick (which has now been rolled into the NB Power utility), but no financing programs appear to be in operation as of early 2016.
Nova Scotia	Enabling legislation was passed in 2012, and a successful program is operating in Halifax. Other municipalities have passed local enabling bylaws and are at various stages of program development.	Efficiency Nova Scotia offers low interest financing (rates of 0% to 2%) of up to $25,000 for five years or up to $5,000 in rebates to owners of electrically heated homes who carry out specific retrofits based on a home energy assessment.
Newfoundland and Labrador	Past research found no apparent barrier to using LICs for energy-efficiency financing under existing legislation, but municipalities would want to seek clarification/approval from the province. Precedents for this now exist in Ontario and Nova Scotia.	Newfoundland Power's Electrical Services Financing Plan is available to residential customers of Newfoundland Power who have an active account and own the premise for which the loan is required. The program offers loans for specific insulation and efficiency improvements and on-bill repayment, but for a maximum term of 60 months. The repayment is not transferable to another account holder.

Province/ territory	LIC financing	On-bill financing (and other models)
Prince Edward Island	Past analysis found that PEI legislation could provide a path to LIC financing for energy efficiency and renewable energy measures. Municipalities would have to specifically apply to add EE/RE improvements as services municipalities can offer under section 30 of the PEI Municipalities Act.	PEI cancelled a provincial residential energy efficiency loan program in 2013 and reallocated funds to increase a provincial energy efficiency grant program.
Northwest Territories	Yellowknife city council commissioned a Pembina Institute report in 2015 that supports the case for an LIC program and includes draft legislation for the NWT government.	N/A
Yukon Territory	LICs have been used to finance renewable energy systems for off-grid residents in the rural Yukon since 1998, which could set a precedent for similar financing of energy retrofits.	N/A

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